UNIVERSIDAD DE CUENCA

Facultad de Filosofía, Letras y Ciencias de la Educación

Carrera de Pedagogía de los Idiomas Nacionales y Extranjeros

Analyzing the Advantages and Disadvantages of Using Computer-Assisted Educational Games for English Grammar Teaching

Trabajo de titulación previo a la

obtención del título de Licenciada

en Pedagogía del Idioma Inglés

Autoras:

Michelle Fernanda Chalan Minga

C.I: 1104241326

Correo: michellechalanminga@gmail.com

Michelle Maribel Chocho Vera

C.I: 0150056455

Correo: michelle.chochov@gmail.com

Director: Mgst. Cynthia Soledad Hidalgo Camacho

C.I: 1802355212

Cuenca – Ecuador 2021

16-diciembre-2021

Resumen

Esta síntesis de investigación exploró el rol que tiene el uso de juegos de aprendizaje de idiomas asistido por computadora (CALL, por sus siglas en inglés) en la adquisición de la gramática inglesa. El objetivo de esta síntesis fue analizar las ventajas y desventajas del uso de estos juegos CALL para la enseñanza de la gramática del inglés como lengua extranjera. El estudio incluye, según los criterios de inclusión y exclusión, 20 estudios cuantitativos, cualitativos y de método mixto, publicados desde 2014 en los que se analizó los efectos de usar los juegos antes mencionados y las percepciones de los estudiantes hacia ellos.

Los resultados revelan que los juegos de aprendizaje asistidos por computadora mejoran la adquisición de la gramática inglesa en estudiantes con un nivel intermedio, aumentan la interacción y potencian las percepciones positivas por parte de los alumnos hacia la gramática inglesa. Por lo tanto, en base a los resultados, el uso de juegos de aprendizaje asistidos por computadora podría ser recomendado ya que crean ambientes motivacionales en los que los estudiantes se sienten interesados por las clases de gramática mientras mejoran su aprendizaje. Además, esta síntesis de investigación puede contribuir en futuras investigaciones relacionadas al tema.

Palabras clave: Aprendizaje de idiomas asistido por computadora (CALL). Juegos CALL. Gramática inglesa. Estudiantes de inglés como lengua extranjera.

Michelle Fernanda Chalan Minga
Michelle Maribel Chocho Vera

Abstract

This research synthesis explored the role of computer-assisted educational games in the acquisition of English grammar. The aim of this study was to analyze the advantages and disadvantages of using Computer-Assisted Language Learning (CALL) games for English as a Foreign Language (EFL) grammar teaching. The study includes, according to the inclusion and exclusion criteria, 20 studies, that are quantitative, qualitative and mixed-method, published since 2014, analyzing the effects of using English grammar and the students' perceptions towards them.

The results reveal that CALL games improve English grammar acquisition in intermediate-level learners, enhance students' relationship among their classmates and upgrade positive learners' perceptions towards English grammar. Thus, based on the results, it is recommended to use CALL games since they create motivational environments in which students not only feel interested in grammar classes, but also improve their learning. Besides, this research synthesis can contribute to future research related to the topic because it provides useful information.

Keywords: Computer-assisted Language Learning. CALL games. English grammar. EFL learners.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Table of contents

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

List of Tables

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Cláusula de Propiedad Intelectual

Yo, Michelle Fernanda Chalan Minga, autora del trabajo de titulación "Analyzing the Advantages and Disadvantages of Using Computer-Assisted Educational Games for English Grammar Teaching", certifico que todas las ideas, opiniones y contenidos expuestos en la presente investigación son de exclusiva responsabilidad de su autora.

Cuenca, 16 de diciembre del 2021

Michelle Fernanda Chalan Minga

C.I: 1104241326

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

UNIVERSIDAD DE CUENCA

Cláusula de licencia y autorización para publicación en el Repositorio Institucional

---

Yo, Michelle Maribel Chocho Vera, en calidad de autora y titular de los derechos morales y patrimoniales del trabajo de titulación "Analyzing the Advantages and Disadvantages of Using Computer-Assisted Educational Games for English Grammar Teaching", de conformidad con el Art. 114 del CÓDIGO ORGÁNICO DE LA ECONOMÍA SOCIAL DE LOS CONOCIMIENTOS, CREATIVIDAD E INNOVACIÓN reconozco a favor de la Universidad de Cuenca una licencia gratuita, intransferible y no exclusiva para el uso no comercial de la obra, con fines estrictamente académicos.

Asimismo, autorizo a la Universidad de Cuenca para que realice la publicación de este trabajo de titulación en el repositorio institucional, de conformidad a lo dispuesto en el Art. 144 de la Ley Orgánica de Educación Superior.

Cuenca, 16 de diciembre del 2021

Michelle Chocho Vera.

_____

Michelle Maribel Chocho Vera

C.I: 0150056455

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Cláusula de Propiedad Intelectual

Yo, Michelle Maribel Chocho Vera, autora del trabajo de titulación "Analyzing the Advantages and Disadvantages of Using Computer-Assisted Educational Games for English Grammar Teaching", certifico que todas las ideas, opiniones y contenidos expuestos en la presente investigación son de exclusiva responsabilidad de su autora.

Cuenca, 16 de diciembre del 2021

Michelle Chocho Vera.

Michelle Maribel Chocho Vera

C.I: 0150056455

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Acknowledgments

I undoubtedly and forever thank God since he owns my achievements, learnings and, of course, every step that I have taken and will take in my life. Moreover, I am completely beholden to my tutors Mgst. Mónica Abad and Mgst. Cynthia Hidalgo for their substantial help, their time and willingness throughout the process of this work. I indeed acknowledge my great friend and co-worker Michelle for providing me with her friendship and rich help during our process of accomplishing this research synthesis. Last but not least, I would like to express my gratitude to all my university professors for sharing all their knowledge with me, which has guided my academic life, and I will never forget.

- Michelle Chalan Minga.

I am forever indebted to Mgst. Mónica Abad and Mgst. Cynthia Hidalgo who demonstrated unwavering support, encouragement, and patience throughout this process. I also extend my gratitude to all my teachers from the University of Cuenca who have taught me not only educational lessons but also life long-term lessons. Finally, special thanks should be given to my dear friend and work partner, Michelle, who has given me her friendship during these 4 years of education, for constantly, consistently, and continually working with me on this thesis project.

- Michelle Chocho Vera

Michelle Fernanda Chalan Minga
Michelle Maribel Chocho Vera

Dedication

I dedicate this to my dear mother, Margarita, and my dear father, Luis who have been my guides during all my life, and who have heartened me to achieve every goal I have set.

I dedicate this to my beloved and best friend and sister, Katty who has upheld me during my life, and with whom I have shared the best and never-to-be-forgotten moments of my life.

I dedicate this to my loved and caring aunt, Narcy. Her exceptional support and care during my university years have helped me in my growth and firmness to fulfill my goals.

- Michelle Chalan Minga.

To the greatest artist, God, on whom my life relies.

To my family, especially María, Julio, and Nathi; what I achieve from now on will be an everlasting act of gratitude for the continuous effort you have done.

To my source of inspiration, growth, and strength, my grandparents; words will not be enough, but acts undoubtedly will be.

To the ones who were, are, and will be there.

-Michelle Chocho Vera

Michelle Fernanda Chalan Minga
Michelle Maribel Chocho Vera

Introduction

Due to the integration of technology in academic fields, CALL and CALL games have developed in education (Sadeghi & Dousti, 2013). According to Kayan and Aydin (2020) and Wichadee and Pattanapichet (2018) the use of computer-assisted educational games has changed a traditional grammar teaching method to a digital teaching method in which CALL games help students to acquire the language by experiencing an enjoyable and exciting learning process. Nevertheless, in the Ecuadorian educational context, teachers conserve traditional methods emphasizing translations, memorizing, etc. (Calle et al., 2012) which results in a lack of interest from students. Therefore, achieving the target language efficiently is rather difficult. This research synthesis aims to explore the advantages and disadvantages of using CALL games for EFL grammar teaching and to provide relevant data that could be employed in later research.

The report of this study is structured in six chapters. The first chapter involves the description of the research, the background, the statement of the problem, the justification, the research questions, and the objectives. The second chapter, the theoretical framework, consists of key theories and concepts such as teaching EFL grammar, relevant characteristics of CALL games, and digital and traditional methodologies. The third chapter, the literature review, encompasses a brief overview of the primary research studies selected for this paper. Additionally, in the fourth chapter, the description of the methodology illustrates both the method in which this investigation was carried out and the inclusion and exclusion criteria used to select the

13

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

20 studies. The fifth chapter entails the analysis of the results collected from the primary studies selected. Finally, the conclusions and recommendations from the analysis are found in the last chapter.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Chapter I

I. Description of the research

1.1. Background

Grammar is the study of phrase and sentence structures, and it is considered essential in the teaching-learning process, since it allows English learners to use the language correctly and communicate accurately (Yule, 2010, as cited in Ahmad et al., 2018). According to Hashim et al. (2019), grammar has a fundamental role in second language acquisition because it contributes to the development of the four English macro skills (reading, writing, listening, and speaking).

Due to the importance that grammar has for language learning, finding innovative methods and strategies that contribute to the acquisition of English grammar will be beneficial for teaching English as Foreign Language. During a long time, EFL teachers have focused on teaching grammar by using traditional methods such as teacher-centered classrooms, teacher-lecture methods, and the use of textbooks, books, and worksheets that can make the teaching-learning process repetitive and may cause students to get uninterested in the subject (Lin et al., 2020). In addition, lessons taught with traditional methods usually involve the memorization of definitions and structures that could have a negative effect on learners since students' boredom and anxiety can take place (Kayan & Aydin, 2020). Similarly, as traditional methods present grammar in an explicit way,

Michelle Fernanda Chalan Minga
Michelle Maribel Chocho Vera

English learners may not be exposed to real and daily life contexts; consequently, they may be unable to communicate in the target language accurately (Al-

Jarrah et al., 2019).

Kayan and Aydin (2020) stated that since learners have been born in a technological era, traditional methods may be considered old fashioned. Furthermore, Hakami (2019) claimed that the use of technology has created new opportunities and significant changes in education. For instance, students who learn English with computer-assisted educational games tend both to participate more energetically in the classroom and to get more actively involved in English grammar classes than students who learn in traditional classrooms (Kayan & Aydın, 2020). In fact, as mentioned by Wichadee and Pattanapichet (2018), computer-assisted educational games provide a favorable learning environment in which learners may increase their grammar interest and comprehension. According to Lin et al. (2020), these technological games provide a context in which learners can enhance their grammar and communicative performance. Nevertheless, despite their efficiency, computer-assisted educational games may function as distractors when the design is not closely associated with the English teaching objectives; consequently, EFL teachers should focus on the selection of a welldesigned digital game (Lin et al., 2020). Moreover, Khamkhien (2011) pointed out that one major drawback of implementing Computer Assisted Language Learning in EFL classrooms was the lack of understanding and experience that both teachers and students had towards the use of technology. He also stated that due to elevated costs of computers and their maintenance, teachers could encounter difficulties to CALL in EFL classes at high schools.

16

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

As it can be seen from the studies mentioned above, it is necessary to do more research about the advantages and disadvantages of computer-assisted educational games for English language learning since they can enhance the learning process if used appropriately.

1.2. Problem Statement

Cam and Thu (2017) have highlighted the importance of grammar for language learning:

> Without some understanding of Grammar, students would not be able to do anything more than utter separate items of language for separate functions. The expression of functional language is only possible through the use of the Grammar of the language. (p.58)

English grammar has played an important role in EFL teaching and learning since it is necessary for functional language and, therefore, to communicate in the target language. Reynolds and Kao (2019) claimed that grammar has been taught merely by the utilization of papers, pencils, and textbooks which could cause monotony in English classes and create demotivation and disinterest in learning grammar. Conversely, when using computer-assisted educational games, students may feel excited in grammar classes (Wichadee & Pattanapichet, 2018). In addition, Lin et al. (2020) found out that advances related to communication and interaction among students took place since real-life contexts were supplied by computer-assisted educational games. In Ecuadorian

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

EFL high schools' classrooms, many teachers tend to utilize traditional methods to teach English grammar; therefore, most learners are neither motivated nor interested during the English classes (Calle et al., 2012).

Since using traditional methods can have a negative effect on EFL learning, finding out about new methodologies such as computer-assisted educational games may help students to be more interested and involved in the English learning process, provide a more enjoyable and real environment, and enhance students' grammar comprehension skills.

1.3. Justification

Due to traditional teaching methods, students' opportunities to be motivated and interested when learning English grammar could be limited; consequently, students are not able to communicate effectively in real-life contexts since they lack grammatical skills (Al-Jarrah et al., 2019). As explained by Calle et al. (2012), in Ecuadorian high schools, the use of traditional methods such as memorization of structures, rules, and translations is drastically affecting not only students' grades, but also students' grammar understanding. In order to approach this issue, the use of computer-assisted digital games to learn English grammar has been suggested by Wichadee and Pattanapichet (2018) who pointed out that using computer-assisted digital games can replace traditional teacher-centered classrooms for learner-centered classrooms by making students feel both excited and motivated to learn English grammar.

18

Digital games, according to Lin et al. (2020), provide students with an authentic environment in which they become immersed in simulated real-life contexts. Hence, through this technique, EFL classrooms may benefit by having students who assume more responsibilities for their learning due to the fact that a teacher-centered-learning process is converted into a learner-centered process (Bullard & Anderson, 2014).

Consequently, Computer-Assisted Educational Games may benefit EFL teachers by facilitating the teaching grammar process.

A study carried out by Consulting Center for ELT (CONCELT) (2004, as cited in Calle et al., 2012) from the University of Cuenca showed that many English teachers neither knew nor used recently developed methods, especially in grammar and reading classes. In order to deal with this pedagogical gap in teaching English grammar, our research synthesis focuses on analyzing relevant data on the advantages and disadvantages of using computer-assisted educational games for grammar teaching and the effects that these games have on learners' attitudes is highly recommended.

1.4. Research Questions

The following research questions will be addressed:

1) What are the advantages and disadvantages of using computer-assisted educational games for teaching grammar to EFL students at secondary and university levels?

2) What are EFL students' attitudes towards computer-assisted educational games for learning grammar?

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

1.5. Objectives

1.5.1. General objective

To analyze the advantages and disadvantages of using computer-assisted educational games for EFL grammar teaching.

1.5.2. Specific objectives

To determine the effects of teaching English grammar through the use of computer-assisted educational games.

To determine EFL students' attitudes towards learning grammar with computerassisted educational games.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Chapter II

2. Theoretical Framework

In order to provide a basis for CALL games and their impacts on the English grammar learning process, it is vital to review some key concepts and definitions. In the present section, certain aspects such as theories and concepts of teaching EFL grammar, relevant characteristics of CALL games, and digital and traditional methodologies are presented.

2.1. English Grammar and its Importance

2.1.1. Grammar Definition

Grammar has been defined as a set of rules that combine words to form meaningful sentences (Phuong & Nguyen, 2017). Moreover, according to Larsen (2014), grammar should not be considered a study of static and decontextualized rules, as morphology (form), semantics (meaning), and pragmatics (use) are necessary to acquire an accurate understanding of how the language works. Larsen (2014) provides a definition of the mentioned terms: 1) Grammar form defines the construction of grammatical structures in a sentence or text, 2) semantics refers to the meaning of a structure which can be lexical or grammatical, and 3) pragmatics is "the study of those relations between language and context that are grammaticalized or encoded in the structure of a language" (Levinson, 1983, p. 9 as cited in Larsen, 2014). In addition,

Hinkel (2018) classified grammar into descriptive and prescriptive.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

2.1.2. Descriptive and Prescriptive Grammar

Descriptive grammar is the study of language structures by focusing on the real usage of the language (Greenbaum & Quirk, 1990, as cited in Hinkel, 2018). Descriptive grammar aims to seek information on how the language is actually used in daily contexts rather than to seek information on how the language should be used according to established rules (Hinkel, 2018). On the other hand, the author states that prescriptive grammar focuses on grammar rules, principles, correct uses of the language, standard forms, and specific syntactic constructions. Descriptive and prescriptive grammar have the same significance in the acquisition of a foreign language since prescriptive grammar provides learners with the ability to communicate effectively using the target language in academic contexts, while descriptive grammar allows learners to communicate in daily and casual contexts (Hinkel, 2018).

2.1.3. The Importance of Grammar

Grammar focuses on the analysis and study of language structures necessary to the correct use of the language, communicative competence acquisition, and the development of the four basic skills (speaking, reading, listening, and writing) needed for a suitable language gain (Cam & Thu, 2017; Hashim et al., 2019; Yule, 2010, as cited in Ahmad et al., 2018). According to Wang (2010), people who understand and master grammar may use and express themselves in the foreign language without any difficulty. Additionally, acquiring grammar may provide learners with functional language to communicate in academic, daily, and future work contexts (Cam & Thu,

22

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

2017). Likewise, Hudson and Walmsley (2005) pointed out the importance of mastering grammar for language learning: "grammar is children's main tool for talking about logical connections such as classification, causation and time, so they should understand this tool" (Hudson & Walmsley, 2005, p. 594). Moreover, Lin et al. (2020) acknowledged the importance of acquiring grammar because of its contribution for students' language and social skills development. Thus, for foreign language teachers, grammar is an indispensable part in language teaching (Wang, 2010).

2.2. Teaching English Grammar

López and Luque (2012) stated that over the last century, the teaching grammar process has been changing its role in school because of the development of different methodologies and theories. Therefore, in order to have a better understanding of this development, it is important to describe how grammar has changed its role in the second half of the twentieth century.

From 1960 to 1980, leaving behind the real usage of the target language, language teachers' main goals were to teach prescriptive grammar explicitly through the analysis of sentences and to teach children to avoid English grammar errors (Hudson & Walmsley, 2005). Additionally, Collins and Hollo (2017) affirmed that traditional grammarians defined grammar as the study of rules and structures in terms of morphology and semantics; for example, they describe "the past tense simply as a form

of the verb that expresses the meaning past time" (Collins & Hollo, 2017, p. 3).

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Conversely, from 1980 to 2000, descriptive grammar developed; as a result, teachers taught their grammar classes emphasizing the use of the language, semantics, and pragmatics through substantial texts (Fries, 1951 as cited in Hudson & Walmsley, 2005). Moreover, modern grammarians, in contrast to traditional grammarians, defined grammar as the study of rules and structures in terms of morphology, semantics, and pragmatics stating that grammar forms can have several meaning-based definitions depending on the grammatical category used; for instance, "simple past tense expresses not only past time but also possibilities in the future when it is used in conditionals" (Collins & Hollo, 2017, p. 4).

It has also been mentioned that there are a wide number of different methods which result in a diversity of teaching practices (Ishtawi, 2011). For instance, the mentioned author also stated that some language teachers instruct their classes with explicit definition teaching methods whilst others use non-explicit explanations of grammar.

2.3. Traditional Grammar Teaching Methods

According to Ishtawi (2011), the traditional teaching method is a teachercentered method in which students are considered receptors of the information. Giving their students specific tasks and interacting formally and impersonally, teachers perform the roles of controllers and authorities of the learning process (Wang, 2007). Regarding teaching materials, textbooks, worksheets, and lectures are used (Ahmad et al., 2018; Lin et al., 2020). Additionally, as Wang (2007) claimed, in traditional methods, teachers focus

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

on presenting the language functionally with isolated grammatical rules and analysis, memorization, and translations; as a result, reading and writing skills play a major role. Moreover, Ishtawi (2011) stated that traditional methods use a model called the presentation, practice, and production model (PPP): the presentation stage consists of presenting grammar rules and structures by using images and visual stories, the practice stage consists of using drills and monitored activities as sentence matching and gap filling to make students practice the previous rules and structures, and the production stage consists of students' accomplishment of activities by using their own words and structures without the teacher's assistance (Ishtawi, 2011). Lastly, as Wang

(2007) mentioned, the evaluation is summative because it focuses on students' outcomes; as a result, teachers use quizzes and exams to register quantitative results that are used to show the students' level of language acquisition.

2.4. Digital Teaching Methods

Shishkovskaya et al. (2015) classified digital teaching methods into "training methods, demonstration methods, problem-solving methods, team working methods, and creative research methods" (p. 201). Regarding the training method, the authors stated that it consists of using a virtual platform to build self-discipline among students. For instance, the use of blogs in a writing class is perceived as an influential entity that supports learners to write academically and improve their grammar (Shishkovskaya et al., 2015). Similarly, demonstration methods emphasize that to introduce and explain new English topics, digital flashcards, Youtube videos, PowerPoint presentations, podcasts, and so forth can be employed for the students' language learning process. In regard to the

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

problem-solving method, which is a student-centered method, the focus is on learners' critical reasoning; therefore, pupils are encouraged to recognize, examine, solve, execute, and assess their own learning process. The next method Shishkovskaya et al. (2015) described is the team working method, which includes a number of communicative tools that create a "synchronous mode of communication" (p. 202) among students. The authors further indicated that using an online application such as Gmail, Skype, Zoom, Google Meets or any other computer program can engage learners to practice both speaking and writing skills in a collaborative mode. Shishkovskaya also claimed that the creative research method, also known as project-based method, arises from traditional teaching principles; however, the greatest variation is noted in the technological teaching process since this method takes into account "the individual characteristics of each student and creates conditions for the development of his/her personality potential" (p. 202).

2.5. Computer-Assisted Language Learning for Teaching English Grammar

2.5.1. Definition of CALL

Computer-Assisted Language Learning (CALL) is defined as "the search for and study of applications of the computer in language teaching and learning" (Levy, 1997, p. 1). Likewise, Chapelle (2001) described CALL as a technological and educational field that has been changing continuously due to the increased amount of digital teaching materials that have emerged every year. In agreement with the mentioned authors, Kayan and Aydin (2020) pointed out that CALL is a complementary tool that needs to be managed by language teachers since they have to "select the tools to support their teaching

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

and determine what CALL applications language learners are exposed to and how learners use them" (Hubbard, 2008, p. 176).

2.5.2. CALL Historical Background

According to Warschauer and Healey (1998), the history of Computer Assisted Language Learning (CALL) has been categorized into three main stages during the last years: Behaviouristic CALL, Communicative CALL, and Integrative CALL. The first stage was developed throughout the 1950s but implemented during the 1960s; audiolingual teaching methods, behaviorist theories of learning, repetitive language drills (known as drill and practice), computers that functioned as programmed instructors, and learning activities that focused on efficiency rather than fluency were some of the main characteristics that this phase entailed. On the other hand, Warschauer and Healey (1998) indicated that due to theoretical and pedagogical issues that both scholars and practitioners manifested about the first approach, a new proposal called Communicative CALL was introduced during the 1980s. This new phase was based not only on learners' communicative competence but also on learners' discovery, expression, and development processes (Warschauer & Healey, 1998). The last phase, Integrative CALL, took place during the late 1980s and the early 1990s. This approach focused on integrating the four English language skills and a variety of technological tools into the learners' educational process (Torut, 1999).

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

2.5.3. CALL in the EFL Context

Torut (1999) identified four major uses of CALL in second language learning: 1) vocabulary learning: providing students with "the same information in multiple modes, such as visual plus aural plus textual" gives them many opportunities to drill and practice (Warschauer & Healey, 1998, p. 59); 2) learning material delivering: computers as tutors are used to introduce the class topics in a digital form; 3) challenging learning: computers used for simulation/problem-solving situations encourage students' reasoning; 4) pleasurable learning: educational programs based on computer and internet applications such as games focus on motivating student' learning through both demanding and pleasant settings.

2.5.4. Advantages and Limitations of CALL

Warschauer and Healey (1998) stated that some of the benefits of using CALL in a class are the following:

> multimodal practice with feedback, individualisation in a large class, pair and small group work on projects, either collaboratively or competitively, the fun factor, variety in the resources available and learning, styles used, exploratory learning with large amounts of language data, and real-life skill-building in computer use. (p. 59)

Likewise, Torut (1999) mentioned four pedagogical adaptations that can occur in learners: a) an academic adjustment in students' abilities, choices, and learning styles, including self-learning, b) a personal language learning process, c) several options for education, and d) total control of students' own progress. In the same vein, Candlin and

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Hall (2009) indicated that CALL "can present opportunities for learners to study on their own, independent of a teacher. CALL can also offer opportunities for learners to direct their own learning" (p. 11).

The wide range of CALL advantages is undeniable; nevertheless, there are some limitations to consider regarding teacher's attitudes, learners' autonomy, and cost. EFL teachers may manifest a discouragement towards the implementation of CALL due to their lack of expertise, which is the first drawback of using educational games in a classroom (Torut, 1999). Moreover, in relation to learners' autonomy, it should be noted that CALL programs provide explicit motivation rather than implicit; as a result, students are likely to "lose their autonomy and the task becomes purely teacher-centered and teacher-directed, adopting a behaviourist model of instruction" (Candlin & Hall, 2009, p. 117). In addition, some software programs may not be affordable for some institutions since some computer-assisted programs may offer extensive and complex learning and teaching language material (Warschauer & Healey, 1998).

2.5.5. CALL Digital Games

A CALL game is defined as "a kind of game created through adjusting entertaining and motivating computer games in order to increase the quality of education" (Ural, 2009 as cited in Kayan & Aydin, 2020, p. 121). Kayan & Aydin (2020) further highlighted that digital games are considered recreational activities especially when these games are suitably connected to learners' age rank, educational level, ethical practices, gender, sex, etc. Moreover, Yukselturk et al. (2018) claimed that the use of digital games as "an alternative method" has led teachers to make a shift in their EFL classrooms from

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

a monotonous environment to an engaging digital learning setting (p. 160). Indeed, when integrating game-based learning in language classrooms, learners can foster not only their knowledge but also their experience to learn language skills since the use of these educational games are considered new and attractive to them (Lin et al., 2020).

Chapter III

3. Literature Review

This chapter reviews some research that focuses on CALL games for English grammar acquisition in secondary and higher education. The studies have been organized in three sections: teaching EFL grammar with digital resources, the use of CALL games for learning English grammar, and EFL learners' attitudes towards CALL games.

3.1. Teaching EFL Grammar with Digital Resources

Learning EFL grammar may be benefited by the use of digital teaching materials such as educational games (Ahmad et al., 2018; Ali, 2018; Bush, 2016; Chu et al., 2019). For instance, Ahmad et al. (2018) investigated different types of online grammar exercises that students like to do at home, digital activities that the pupils select to practice grammar individually, and the level of accessibility that students have for instructional games. The participants, 110 pre-degree students aged 18 to 20, responded to a questionnaire that

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

consisted of demographic profile questions and Likert scale questions. The findings indicate that digital grammar tests, computer-assisted games, and tutoring games are some of the learning activities they preferred to do after the class finished. Regarding students' individual learning activity choices, it was found that online practice tests and computer-assisted games are the chosen materials for practicing grammar voluntarily. Finally, the results reveal that getting free access to instructional games was difficult for students. The authors concluded that identifying

the correct grammar learning activities may create a solid teaching environment for students' grammar learning.

Likewise, Chu et al. (2019) determined the effects of using the concept mappingbased collaborative approach and the traditional gaming approach on students' grammar learning. The sample of the study consisted of 130 students from an elementary school in northern Taiwan, who belonged to six classes of fifth-graders and were assigned to two groups: an experimental group and a control group. A pre-test, a post-test, and a questionnaire were administered to the participants to measure their cognitive load and self-efficiency. The findings reveal that the experimental group, who learned with the grammar concept mapping-based collaborative English gaming, had a higher learning achievement than the control group. The authors also indicated that the experimental group was able not only to learn but also to internalize their grammatical knowledge. In addition, Alian et al. (2018) carried out a study to investigate the effect of CALL-based tasks and written question tasks on students' English grammar teaching. The authors divided 60 Iranian junior high school students into two groups: an experimental group

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

(CALL-based task) and a control group. Then, by means of a pre-test and a post-test, the results reveal that the participants who learned with CALL-based tasks increased statistically significantly their grammar performance. In this line, Pirasteh (2014) carried out a study about the effectiveness of CALL in teaching and learning English grammar. The sample of the study consisted of 70 students who were randomly assigned to two experimental and control groups. The instruments for collecting data included a nelson test, a researcher-made test, and a book called English Grammar in use. The results establish that computers as a tool and e-mail as an application

facilitated language grammar teaching since participants in the experimental (e-mail) group outperformed the participants in the control (paper) group.

Similarly, Ali (2018) noticed that through a web-based instructional teaching and learning system, students improved their grammar performance. The researcher used a sample of 68 undergraduate learners and divided them into a control and an experimental group. In the control group, the pupils learned through traditional teaching methodology and used an English book to study modal verbs whereas the experimental group learned the modal verbs through Hot Potatoes CALL software. The results of this study show that the learners in the experimental group acquired a higher grammar level than the students who learned in the traditional context.

Contrary to what Ali (2018) found, a study by Bush (2016) showed that even though students felt motivated when using games, the games did not have a meaningful impact on pupils' grammar acquisition. The authors analyzed 34 Turkish learners of Anatolian High School in Istanbul, who were assigned to an intervention group and a

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

comparison group. A pre, post, and delayed post-test were employed, and T-tests and mixed Analysis of Variance (ANOVA) were run. The results of the posttest show that three class periods of games did not have a significant impact on grammar acquisition since the comparison group using traditional methods performed better on the posttests than the intervention group. Similarly, Chu (2014) investigated the cognitive and behavioral effects that CALL games have on students. After carrying out the study with 64 Taiwanese students of an elementary school, and using a formative assessment-based learning strategy, the findings reveal that overloading students' working memory (due to the immediate feedback that web-based tools provide) and setting limited practice time, which could make learners feel stressed and anxious, are some of the negative factors that affect students' learning achievement.

3.2. The Use of CALL Games for Learning English Grammar

The use of computer games in EFL classes has been increasing during the last years (Castillo, 2020; Chuquin et al., 2019; Kim, 2019; Widachee & Pattanapichet, 2020). In addition, CALL games may provide an authentic context and a meaningful environment that could help learners to foster their language abilities as well as their collaborative and partaking learning experiences (Lin et al., 2020; Hsu et al., 2013 as cited in Chuquin et al., 2019).

Aslani and Tabrizi (2015), in a comparative study, examined the way in which multimedia software can facilitate grammar teaching and learning at a Language Institute located in the north part of Isfahan, Iran. In this intervention, 87 Iranian EFL learners at an elementary level of language proficiency participated during one intensive summer

33

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

term. The results indicate that multimedia software had a positive effect on learners' grammar learning because there was an improvement in students' posttest scores of 16.12 points in the experimental group. Likewise, Chuquín et al. (2019) integrated digital didactic materials such as Kahoot, Storybird, Quizizz, among others, in order to establish the impact of digital didactic material on students' grammar acquisition and reading comprehension. In this study, 37 students of a public university in the southern region of Ecuador participated. They were in their 4th level of an intensive English course and their English level was A2 according to the Common European Framework of Reference for Languages (CEFR). The findings show that 90% of students improved their grammar skills after the posttest results, which asserted the effectiveness of digital didactic games in English classes. Likewise, a quasiexperimental, pre/posttest design study was carried out in Taiwan by Lin et al. (2020). They used a contextual game-based learning system to teach certain aspects of English grammar at a university of science and technology in northern Taiwan. In this study, a sample of 55 freshmen was divided into an experimental group (N= 31) and a control group (N=24). The first group used the contextual game-based learning system, whereas the latter only used the conventional technology-assisted learning approach (PowerPoint-led teaching). The results of the posttest indicate that the experimental group (mean=6.55%) outperformed the control group (mean=8.55%) in having a significantly lower context-related function error rate; in other words, the contextual game-based learning approach was beneficial to decrease students' context-related function error rate in terms of grammar learning in the game.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

A study conducted by Wichadee and Pattanapichet (2018) analyzed the implementation of Kahoot in foreign language teaching and learning. A total of 77 EFL Thailand students who were part of semester 1 of the academic year 2017 at a private university in Thailand were involved in this study during a 14-week semester. As a part of the course activities, the participants of the experimental group were asked to do 10 vocabulary quizzes and 5 grammar quizzes on Kahoot while the control group was asked to do the same number of quizzes on paper. The results indicate that the experimental group showed better grammar proficiency than the control group. In addition, Castillo (2020) analyzed the use of digital games to enhance EFL Ecuadorian students' grammar and vocabulary. Having a B1 level, according to the CEFR, 68

Ecuadorian students of a communicative grammar course of the English major who studied at a university in the southern region of Ecuador were enrolled in the study. The researchers used a mix-method approach and administered pretests, writing rubrics, and posttests. The intervention included the use of several online language games such as cloze activities, crossword puzzles, matching tasks, and unscramble sentences. Findings reveal that gamified learning was effective in terms of grammar and vocabulary achievement. The participants obtained better results when learning through crossword puzzles and matching games. On the contrary, Woo (2014) conducted a study to investigate the effects that Digital Game-Based Learning (DGBL) has on students' motivation, volition, and performance. In this study, 63 second-year university students of the Department of Art and Design were selected. A survey, a cognitive scale, and a performance scale were used. In terms of learners' cognition, the results reveal that even though DGBL enhanced their attention and motivation, the students presented a lack of

35

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

learning experiences. On the other hand, Yesilbag et al. (2020) conducted a study to determine the impact of CALL games on students' academic success and attitudes. The participants were 60 students who were enrolled in the 10th-grade at an Anatolian High School in the Merkezefendi district of Denizli during the 2019–2020 academic year. After the application of CALL games such as Quizlet, learning apps, the findings reveal that the average score of the experimental group ($\bar{X} = 57.73$) outperformed the average score of the control group ($\bar{X} = 34.53$), thus it can be said that CALL games contribute to the students' learning.

3.3. EFL Learners' Attitudes towards CALL Games

Technology is a tool that has changed learning environments and learning materials, from paper-based to computer-based ones (Kim, 2019). Moreover, the use of CALL games may make the teaching learning process pleasant and exciting and may increase students' interest and involvement (Ahmad et al., 2018; Ali, 2018; Kayan & Aydin, 2020; Kim, 2019; Lin et al., 2020).

Accordingly, Lin et al. (2020) carried out a study implementing a computer contextual game in a university to investigate both students' learning achievement and behavior. The results regarding the learners' behavior reveal that the students who learned with the computer contextual game experienced fun, excitement, and enjoyment. Likewise, Kayan and Aydin (2020) conducted a study to determine grammar achievement differences and attitudes toward CALL games. Two groups of 35 Turkish students were divided into an experimental group, who learned through Scratch games in a computer-assisted learning environment, and a control group, who were taught with traditional

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

methods. The study used a Turkish Course Attitude Scale and a Grammar Attitude Scale. The findings of the analysis indicate that the experimental group had significantly positive attitudes toward CALL games since they fostered learners' grammar performance. Similarly, Stelea and Girón (2017) conducted a study in a Spanish high school where they used JClic computer games as a pedagogical tool.

In order to measure students' level of learning motivation, a Likert- type scale was used. The results show that more than half of the participants (62 %) agreed that JClic computer games positively affected their level of engagement and motivation towards improving their grammar knowledge (specifically, the use of the present perfect).

Moreover, Gamlo (2019) conducted a study at the English Language Institute (ELI) in King Abdulaziz University (KAU). The findings regarding students' attitudes towards mobile game-based apps show that 86% of the participants agreed that Game-Based Language Learning Apps (GBLLAs) were beneficial to improve their motivation to learn English and to engage them to continue learning English grammar. Similarly, in a University in Krakow, Piskorz (2016) conducted a study to determine whether Kahoot can motivate students to learn grammar. 70 % of the participants felt motivated and enthusiastic to use Kahoot in EFL grammar classes, and 94 % of the participants agreed that when they played the game in class with others, they enjoyed the learning process more than learning with the traditional method. Similar findings have been found in a study carried out by Kim (2019). The study aimed to investigate the perceptions of students regarding the use of Socrative and Kahoot games as a language learning tool. 75 freshmen students, with an intermediate level, were divided into three groups: one traditional group and two experimental groups. One experimental group used Kahoot

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

whilst the other one used Socrative. The study used a questionnaire in order to obtain the data. The findings of the analysis indicate that the students who were in the experimental groups had more positive attitudes in comparison with the traditional group. Additionally, it is also shown that between the two experimental groups, the one using Kahoot showed more interest and motivation to learn grammar than the one using Socrative.

Nevertheless, Pinto et al. (2016) carried out a study to explore learners' attitudes toward some technological tools. 358 students ranging in age from 20 to 58 years old were selected. A questionnaire that included open, closed, yes/no, and Likert scale questions were used to ask the participants about their socio-demographic features, their current use of computer and internet platforms, and their employment of technological tools. The results show that the youngest students preferred to use technological tools and online forums to improve their level of grammar more than the oldest learners. The authors also state that the oldest learners showed certain difficulties using online materials due to their lack of familiarity.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Chapter IV

4. Methodology

Norris and Ortega (2006) have stated that when a research synthesis is being designed, there are four parameters that must be taken into account: concentration, selection, characterization of studies, and explanation of how the relevant literature was investigated. In order to obtain adequate sources for this research synthesis, a thorough investigation was conducted. The information was searched in online databases such as *ERIC, Taylor and Francis Online, Sci-Hub, and Google Scholar*. In relation to the criteria to classify the articles, it should be noted that three features were considered. First, the articles have to be empirical studies (quantitative, qualitative, or mixedmethods) that have been published since 2014. Second, the selected articles must be peer-reviewed journal articles and/or books that are written in English. Third, the participants of the studies in the articles have to be EFL learners that are at secondary or university levels.

The terms that were used to look for these files were the following: a) computer-assisted educational games, b) English grammar, c) EFL secondary and university students, d) teaching-learning process, e) digital teaching method, and f) traditional teaching method.

Some journals that were revised were the following: *International Journal of Learning, Teaching and Educational Research, GSTF Journal on Education (JEd),*

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Journals International Journal on e-Learning practices, Language Learning & Technology, ResearchGate, ScienceDirect, among others, which are considered important and reliable journals that will contribute positively to the research synthesis.

Chapter V

5. Data Analysis

In order to meet the objectives of this research synthesis, 20 studies were studied and analyzed. The results were categorized as the following: research design of the studies, data collection instruments, participants' levels, publication year of studies, advantages and disadvantages of CALL games on grammar learning, and analysis of students' attitudes towards CALL games. This analysis must clearly show how CALL games are effective in the education context. The first four categories are related to the methodological features, and the last two attempt to answer the research questions of the synthesis. The collected information has been organized in tables.

5.1. Research Design of the Studies

Table 1: Research Design of the Studies

Research Design	N	%
Quantitative	14	70
Mixed method	6	30

N=20

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Table 1 illustrates that, out of the 20 studies included in this research, 14 (70%) are quantitative. The reason behind this fact seems to be the objectivity that these studies have while collecting explicit data that can be easy for management (Anthony, 2018). In fact, quantitative design studies entail a scientific phenomenon of investigation that will prove a theory based on research as well as on measurement (Embleton, 2012). Moreover, it is worth remarking that 6 out of 20 studies have combined qualitative and quantitative methods. Additionally, mixed method is related to "procedures [...] in which the researcher converges or merges quantitative and qualitative data in order to provide a comprehensive analysis of the research problem" (Creswell 2008, as cited in Stelea & Garcia, 2017). Besides, it seems that according to the reviewed studies, the majority of the investigations that examine the effects of CALL games on grammar learning used a quantitative approach instead of a mixed approach.

5.2. Data Collection Instruments

Table 2: Data Collection Instruments used in the Studies

Instruments	N	%
Pre-tests and Post-tests	14	70
Questionnaires	12	60
Surveys	2	10

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Scales	2	10
Rubrics	1	5
Delayed posttest	2	10
Observation	1	5
Test	2	10

Studies are counted in more than one category

Percentages are calculated based on the total of the studies

Table 2 indicates types of instruments that have been used in the studies in order to collect the data. Among the instruments used, pretests, posttests, and questionnaires were the most common ones in the articles selected for this research synthesis. According to Pirasteh (2014), pre-tests are useful to guarantee homogeneous participants at the beginning of the study. Additionally, Kayan and Aydin (2020) pointed out that pretests and posttests make the researchers know what the starting point of the participants is, and they also test, and measure any change produced in the experiment. Moreover, pretests and posttests are necessary in order to measure the effect of computer-assisted digital games on grammar learning performance (Aslani & Tabrizi, 2015; Chu 2014; Pirasteh, 2014; Kayan & Aydin, 2020). It is also stated that the use of questionnaires allows to know the students' attitudes towards CALL games before and after the intervention (Aslani & Tabrizi, 2015; Castillo, 2020; Chuquin et al,

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

2019; Gamlo, 2019; Kim, 2019; Stelea & Garcia, 2017; Wichedee & Pattanapichet, 2020). The implementation of surveys and scales also help to examine learners' attitudes in relation to the use of computer-assisted educational games (Castillo, 2020; Piskorz, 2016).

5.3. Participants' English Levels

Table 3: Participants' English Levels

Level	N	%
Elementary	2	18
Intermediate	4	36
Not reported	5	46

N= 11

The exact number of primary studies in this table is 11 because only the studies that focused on the effects that CALL games have on teaching EFL grammar are accounted for. The studies that focused on learners' attitudes towards CALL games are not part of this table due to the lack of data regarding participants' English level.

Table 3 displays the participants' English levels into three main categories: elementary, intermediate, and not reported. It is noticed that 36 % of the studies have been carried out with students who had an intermediate level while 18 % of the studies have been conducted with students who had an elementary level; however, 46 % of the studies

43

have not reported the participants' English level. Additionally, even though the number of studies involving elementary students is reasonably low, these studies have yielded positive results, particularly when it comes to learning English grammar with CALL games (Chuqin et al., 2019; Stelea & Giron, 2017). In fact, Gamlo (2019) stated that Saudi beginners EFL learners presented a higher level of instrumental motivation during their English grammar lessons due to the clearness of Mobile Game-Based Language Learning Apps (MGBLLAs). Moreover, Ali (2018) and Kim (2019) demonstrated in their study that through the use of CALL games, Socrative and Kahoot and Hot Potatoes games respectively, learners who had an intermediate English level demonstrated a considerable grammar improvement on their activities. In this way, table

3 suggests that using CALL games for learning EFL grammar is suitable for intermediate-level pupils since this was the predominant level in the studies. Thus, taking into account that few studies have included elementary English level, further research should be performed on the analysis of using CALL games for teaching English grammar on this specific level.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

5.4. Publication Year of Studies

Table 4: Publication Year of Studies

Author/Year	Year	N	%
Aslani & Tabrizi (2015); Bush (2016); Chu (2014); Pinto et al. (2016); Pirasteh (2014); Piskorz (2016); Stelea & Girón (2017); Woo (2014);	2014-2017	8	40
Ahmad et al. (2018); Ali (2018); Alian et al. (2018); Chu et al. (2019); Chuquín et al. (2019);	2018-[1]	12	60

---

[1] ; Pirasteh, 2014; Sadeghil & Dousti, 2013, Stelea & Garcia, 2017; Wichadee & Pattanapichet, 2018; Woo, 2014). Additionally, Sadeghil & Dousti (2013) have highlighted the importance of the implementation of CALL in learning contexts:

It is effective for delivering instruction; it has unique pedagogical value; it enables teachers to better address students' need for individualization; it will help students better relate to life in the information age; it can potentially inform the foreign language education profession about the nature of language and how it is learned. (Bush, 1997 as cited in Sadeghil & Dousti, 2013, p.15)

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Gamlo (2019); Kim (2019); Castillo (2020); Kayan & Aydin (2020); Lin et al. (2020); Wichedee & Pattanapichet (2020); Yesilbag et al. (2020).

N=20

Table 4 shows the number of studies organized by the year of publication. 60 % of the studies have been published from 2018 to 2020, and 40 % of the studies were published from 2014 to 2017. The majority of the studies have been published in the last three years; nevertheless, the 20 articles were published within the last seven years. The findings suggest that in the twenty-first century, the implementation of computer- assisted language learning has been developed and integrated in educational contexts (Ali, 2018; Castillo, 2020; Chu, 2014; Chu et al, 2019; Chuquin et al, 2019; Lin et al,

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

5.5. Advantages and Disadvantages of CALL Games on Grammar Learning

Table 5: Advantages and Disadvantages

Advantages and disadvantages [a]	No. of Studies	Author/Year	%
Advantages			
Engagement	4	Ahmad et al. (2018), Aslani and Tabrizi (2015), Chuquín et al. (2019), Wichadee and Pattanapichet (2018)	29
Interaction and participation	4	Alian et al. (2018); Aslani and Tabrizi (2015); Castillo (2020); Chu et al. (2019); Wichadee and Pattanapichet (2018)	29

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Better grammar Achievement/ Grammar improvement	9	Ali (2018); Alian et al. (2018); Castillo (2020); Chu et al. (2019); Chuquín et al. (2019); Lin et al. (2020);	64
		Pirasteh (2014); Wichadee and Pattanapichet (2018); Yesilbag et al. (2020)	
Immediate Feedback	3	Ali (2018); Kim (2019); Wichadee and Pattanapichet (2018)	21
Disadvantages b			
Insufficient Time	4	Bush (2016); Chu (2014); Kim (2019); Lin et al. (2020); Yesilbag et al. (2020)	29

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Immediate Feedback	1	Chu (2014)	7
Difficulty to obtain instructional games	2	Ahmad et al. (2018); Chu (2014)	14
Distraction	1	Lin et al. (2020)	7

N= 13 a: Studies are included in more than one

category

b: five studies revealed advantages as well as disadvantages of CALL games in grammar

learning.

Table 5 shows 14 studies highlighting the advantages and disadvantages of

CALL games in learning English grammar which respond to our 1 research question.

As in table 5 is shown, there are more advantages than disadvantages in the use of CALL

games when learning English grammar. The advantages are engagement, interaction and

participation, better grammar achievement and grammar improvement, and immediate

feedback although it is also understood as a disadvantage along with, difficulty to obtain

instructional games, and distraction.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

In regards to better grammar achievement and grammar improvement, the major number of studies reveal that they were the most common advantages. Applying CALL games on English grammar classes have a positive effect on learners such as improving their English grammar learning performance (Ali, 2018; Castillo, 2020; Chu et al., 2019; Chuquín et al., 2019; Lin et al., 2020; Pirasteh, 2014; Wichadee and

Pattanapichet, 2018; Yesilbag et al., 2020). For instance, in their study, Wichadee and Pattanapichet (2018) expressed that students learning grammar with Kahoot have an improvement in their grammar performance probably because of the immediate feedback and fun that students were exposed to with CALL games. In addition, in a study carried out by Yesilbag et al (2020) two groups participated; the experimental group using CALL games, and the control group using traditional methods. It was shown that computer educational games made a significant contribution in the improvement of grammar more than traditional methods did. Moreover, as Stelea and Garcia (2017) mentioned, CALL games contribute to a better understanding and learning with opportunities to measure their performance in grammar. For instance, the study of Lin et al. (2020) showed that through implementing computer game-based learning, students are able to better understand the usage of grammar, and improve their grammatical accuracy since the implemented game offered the functions of language development and contexts. In the same sense, Kim (2019) revealed that applying Socrative and Kahoot games help students to understand better English grammar and show more confidence and motivation. Nevertheless, the application of CALL must be designed according to the students' learning, it also must be evaluated in order to achieve the learning objectives since CALL

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

application affects the students' grammar learning internalization and improvement (Ali, 2018; Chu et al, 209; Kim, 2019).

With regards to engagement, 4 studies reveal that using CALL games is beneficial in order to engage students in the learning of grammar (Ahmad et al., 2018; Aslani and Tabrizi, 2015; Chuquín et al., 2019; Wichadee and Pattanapichet, 2018). For instance, Aslani and Tabrizi (2015) showed that in English grammar classes, the use of CALL games improves learners' engagement by providing a student-centered classroom, and by increasing interaction. Furthermore, in correlation with these two authors, Chuquín et al. (2019) expressed that by using digital didactic material, learners' engagement increases, and students enhance their learning due to interaction and participation.

Interaction and participation are also advantages that have been mentioned. Chu et al. (2019) mentioned that using concept mapping-based collaborative English gaming allows students to teach their peers the learned knowledge, and share their ideas and interpretations since concept mapping-based collaborative English gaming helps them to internalize grammar. Besides, Alian et al. (2018) added that with the application of CALL-based tasks, students have a better interaction with their classmates, and they learn grammar more effectively. Furthermore, students have a good relationship with technology in classes (Aslani & Tabrizi, 2015; Pirasteh, 2014).

Regarding immediate feedback, it is taken as an advantage in two studies whereas in one study, it is taken as a disadvantage. According to Ali (2018) and Wichadee and

51

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Pattanapichet (2018), the feedback that CALL games provided allows students to know and revise their performance during the game. Additionally, Kim (2019) stated that students gain involvement and motivation due to immediate feedback that Kahoot and Socrative games supply. Nevertheless, Chu (2014) expressed that immediate feedback is a disadvantage for learners due to the fact that learners need to read it repeatedly to understand, and giving immediate feedback tends to concern them.

Table 5 also shows disadvantages as insufficient time, difficulty to obtain instructional games, and distraction. The disadvantage mentioned the most is insufficient time which creates a difficulty to obtain better results in the studies. For instance, Bush (2016) mentioned that time was a difficulty in the experiment since learners needed time to understand the rules of the game before they could show their grammar knowledge. In addition, Chu (2014) expressed that time provided in the webbased learning tools, is an issue since students are not able to analyze the questions, and they answer without sense; therefore, they give incorrect answers. Chu (2014) added that English students who respond without sense tend to repeat the grammar mistakes. Regarding the time used to the experiment, Yesilbag et al. (2020) and Lin et al. (2020) expressed that due to the short time applying CALL, learners were not able to acquire and show improvements in their grammar learning performance.

In conclusion, based on what has been presented above, the results of this analysis propose the use of CALL games in English grammar classes owing to the advantages that they presented on learners' grammar achievement. However, it is important to take into

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

account both advantages and disadvantages in order to enhance the teaching-learning process of English.

5.6. Analysis of students' attitudes towards the use of CALL games

Table 6: Attitudes towards the use of CALL games

Attitudes	Author/Year	%
Positive attitudes	Alian et al. (2018); Aslani & Tabrizi (2015); Bush (2016); Castillo (2020); Chuquin et al. (2019); Chu et al. (2019); Kayan & Aydın (2020); Kim (2019); Gamlo (2019); Stelea & Girón (2017); Piskorz (2016); Pirasteh (2014); Wichadee & Pattanapichet (2018); Woo (2014)	67
Negative attitudes	Chu (2014); Pinto et al. (2016); Yesilbag, (2020).	33

N= 17

Table 6 shows that the majority of insights reported by participants' attitudes are more positive than negative at the moment of using CALL games in learning English

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

grammar. For this category, 17 out of 20 studies were taken into account since they stated students' attitudes towards the use of CALL games.

Concerning positive attitudes, Kayan and Aydin (2020) argued that participants who studied through Scratch games in a computer-assisted learning environment had a superior level of motivation than those who learned with conventional methods; consequently, there was an increase of interest and involvement in the class. Moreover, Kim (2019) affirmed that after using Student Response Systems (SRS) such as Kahoot! and Socrative on grammar learning, students manifested that using these online games helped them to boost their desire to not only learn and study English grammar but also to stay motivated during class. In fact, Wichadee and Pattanapichet (2018) showed that the use of CALL games increases learners' motivation by transforming boring grammar into an easier and more interesting skill to practice. Therefore, students enjoy attending grammar, participate more actively, and interact among them (Alian et al., 2018; Castillo, 2020; Chuquín et al, 2019; Wichadee & Pattanapichet, 2018). Moreover, learners feel motivated and interested in language learning sessions through CALL games due to the fact that technology is a current material for learning English that has free and manageable access (Pirasteh, 2014; Castillo, 2020; Wichadee & Pattanapichet, 2018; Stelea & Girón, 2017; Woo, 2014; Piskorz, 2016; Chuquin et al., 2019). Furthermore, in order to implement CALL games in EFL courses, teachers should take into account learners' English level, necessities, and knowledge (Gamlo, 2019) so that they can express a positive position towards CALL games such as paying attention or participating during English lessons (Chuquin et al., 2019). According to Aslani and Tabrizi (2015), the

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

analysis conducted indicated that "there is a positive relationship between student grammar learning and technology use" since it produced a feeling of fulfillment among pupils (p. 84).

Even though there are some studies that showed positive views towards the application of CALL games on English grammar, there are few articles that exhibited negative perceptions. Pinto et al. (2016) argued that through CALL games, the most experienced learners could not learn properly since they faced some obstacles in terms of how to use online games. Moreover, Yesilbag (2020) stated that using CALL games or traditional teaching methods in class did not allow students to either intensify or diminish their engagement towards English grammar. The author specified that some of the constituents that caused this effect on students were some preceding events, personal arguments, and the length of the game. In addition, in the study led by Chu (2014), few negative responses were given by students towards CALL games. The negative responses indicated that learners' high cognitive loads were overloaded since the pupils were continually asked to complete their activities in a limited amount of time which prompted them to feel stressed and anxious.

In this chapter, an analysis of primary investigations associated with the use of CALL games on English grammar learning was conducted to determine students' positive or negative attitudes. Moreover, these studies were previously reported in the literature review, and in this chapter, they were classified into different categories to examine them in-depth, to create important associations between the studies, and to illustrate a meaningful conclusion, which will be explained in the coming section.

55

Chapter VI

6. Conclusions, Recommendations, and Limitations

6.1. Conclusions

This research synthesis attempted to analyze the advantages and disadvantages of using computer-assisted educational games for EFL grammar teaching. Besides, the students' attitudes were also taken into account in this study due to the importance of the students' perceptions towards CALL games. The studies that have been analyzed have provided information in order to assume that the use of CALL games in English classes is useful for EFL learning processes, and motivational to EFL learners. Since the selected articles provided more positive results than negative, the mentioned beneficial assumptions have been made; therefore, applying CALL games in EFL classrooms may supply many advantages.

In terms of grammar learning, after analyzing the studies included in this research synthesis, the implication of CALL games in English classes was found to be positive. In acquiring English, grammar plays an important role to acquire the English language (Hashim et al., 2019). Therefore, using new technological tools as CALL games may present positive outcomes in EFL learners rather than the use of traditional methods (Kayan & Aydin, 2020). Adding CALL games in English grammar classes entails playing games and learning which carries out a students' better understanding and involvement; therefore, learners improve and achieve English grammar more effectively (Yesilbag,

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

2020). Moreover, the results in the analysis revealed that CALL games enhance grammar performance because they yield true-to-life environments in which students face real situations (Lin et al., 2020). As a result, learners have a better classmates relationship and share knowledge among them (Alian et al., 2018; Castillo, 2020).

In relation to the second research question about the reported EFL students' attitudes regarding the use of CALL games for learning grammar, it was found that the learners presented more positive attitudes than negative. In fact, findings from the studies that examined learners' attitudes have yielded positive results in terms of engagement and motivation (Aslani & Tabrizi, 2015; Chuquin et al., 2019; Castillo,

2020; Gamlo, 2019; Pirasteh, 2014; Piskorz, 2016; Stelea & Girón, 2017; Wichadee & Pattanapichet, 2018; Woo, 2014). Moreover, developing students' learning behaviours as well as attitudes through the use of CALL games is considered a linked action that empowers students to have higher levels of achievement when learning English grammar (Kayan & Aydın, 2020). Nevertheless, learners' lack of knowledge and high cognitive loads and the amount of time students spend in playing online versions of

CALL games are considered some drawbacks when it comes to students' attitudes on the use of CALL games for grammar learning (Chu, 2014; Pinto et al., 2016; Yesilbag, 2020). However, positive perceptions outweigh negative ones which lead to a conclusion that using CALL games in educational environments may have favorable outcomes on pupils' English grammar learning process.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

6.2. Recommendations and Limitations

Based on the findings of this research synthesis, there are certain recommendations for future research studies. First, it is recommended that teachers use and select computer assisted educational games in foreign grammar language teaching adequately so that there could be a student-centered learning environment so that students can improve their grammatical accuracy.

Second, it can be suggested to analyze and trigger further research in Latin America in order to provide EFL teachers, from countries like Ecuador, with information that adjust to their own educational context.

Moreover, the majority of the participants in the studies analyzed have an intermediate-level, thus the results shown cannot be established for students of all the levels. Consequently, further research taking into account participants with different levels of English should be done as a means to have more data regarding this criterion.

Lastly, since only a small number of studies regarding students' attitudes towards the use of computer-assisted educational games in English classes were found, the positive results cannot be generalized since it could be affected if there were a major number of studies. Therefore, it is also suggested to carry out research on this topic.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

References

Ahmad, T. S., Hussin, A. A., & Yusri, G. (2018). Discovering Students' Preference for Grammar Learning Activities Outside the Classroom. *Journal of Creative Practices in Language Learning and Teaching*, *6*(2), 60-71. https://core.ac.uk/download/pdf/323177008.pdf

Alian, J., Khodabandeh, F., & Soleimani, H. (2018). The Effect of CALL-Based Tasks on EFL Learners' Grammar Learning. *Teaching English with Technology, 18*(3), 54-68. https://files.eric.ed.gov/fulltext/EJ1186370.pdf

Ali, M. (2018). Computer-Based Instruction: How a Web-Based Course Facilitates English Grammar Instruction. *CALL-EJ, 19*(1), 43-59. https://www.researchgate.net/publication/323443489_Computer-Based_Instruction_How_a_Web-Based_Course_Facilitates_English_Grammar_Instruction

Al-Jarrah, J. M., Waari, O. T., Talafhah, R. H., & Al-Jarrah, T. M. (2019). Improving English Grammar Achievement through Educational Games among Eleventh Grade Students in East Jerusalem. *International Journal of Academic Research in Progressive Education and Development, 8*(1), 75–86. https://doi.org/10.6007/IJARPED/v8-i1/5529

Anthony, L. (2018). *Introducing English for Specific Purposes* (1st ed.). London: Routledge. https://doi.org/10.4324/9781351031189

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Aslani, S., & Tabrizi, H. (2015). Teaching Grammar to Iranian EFL Learners through Blended Learning Using Multimedia Softwares. *Journal of Applied Linguistics and Language Research, 2*(8), 76-88. www.jallr.com/index.php/JALLR/article/view/188

Bullard, B., & Anderson, N. (2014). "I'll Take Commas for $200." An Instructional Intervention Using Games to Help Students Master Grammar Skills. *Journalism & Mass Communication Educator, 69*(1), 5–16. https://doi.org/10.1177/1077695813518778

Bush, J. (2016). The Impact of Classroom Games on the Acquisition of Second Language Grammar. *Language in Focus Journal, 2*(1), 1-13. https://doi.org/10.1515/lifijsal-2016-0002

Calle, A., Calle, S., Argudo, J., Moscoso, E., Smith, A., & Cabrera, P. (2012). Los profesores de inglés y su práctica docente: Un estudio de caso de los colegios fiscales de la ciudad de Cuenca, Ecuador. *MASKANA, 3*(2), 1-17. https://doi.org/10.18537/mskn.03.02.01

Cam, L., & Thu, M. (2017). An Evaluation of using Games in Teaching English Grammar for First Year English-Majored Students at Dong Nai Technology University. *International Journal of Learning, Teaching and Educational Research, 16*(7), 55-71. https://www.ijlter.org/index.php/ijlter/article/view/962/pdf

Candlin, N., & Hall. D. (Eds.). (2009). *Teaching and Researching Computer Assisted*

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Language Learning (2nd ed). Applied Linguistics in Action. https://pdfs.semanticscholar.org/6641/a0cac9baa64a589b982cc4f355b79f42b7b7.pdf

Castillo, L. (2020). Using Digital Games for Enhancing EFL Grammar and Vocabulary in Higher Education. *International Journal of Emerging Technologies in Learning, 15*(20), 116-129. https://doi.org/10.3991/ijet.v15i20.16159

Chapelle, C. (2001). *Computer Applications in Second Language Acquisition.* The Press Syndicate of the University of Cambridge. http://catdir.loc.gov/catdir/samples/cam031/2001269254.pdf

Chu, H. C. (2014). Potential Negative Effects of Mobile Learning on Students' Learning Achievement and Cognitive Load—A Format Assessment Perspective. *Educational Technology & Society, 17*(1), 332–344. https://www.jstor.org/stable/pdf/jeductechsoci.17.1.332.pdf?refreqid=excelsior%3Aa58f7090f9a84cc274c325c7832dd42c

Chu, H. C., Wang, C., & Wang, L. (2019). Impacts of Concept Map-Based Collaborative Mobile Gaming on English Grammar Learning Performance and Behaviors. *Educational Technology & Society, 22*(2), 86–100. https://www.jstor.org/stable/26819619

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Chuquín, M., Paguay, J., & Mora, S. (2019). Impact of the Digital Didactic Material on Students' Reading and Grammar Acquisition. *UTE Revista de Ciències de l'Educación 2020, 1,* 22-36. https://doi.org/10.17345/ute.2020.1

Collins, P., & Hollo, C. (2017). *English Grammar: An introduction.* Palgrave. https://books.google.es/books

Embleton, L. (2012). *Dissertation development for the dedicated: A manual for students and teachers carrying out research for dissertations and theses in the area of social sciences.* Editores e Impresores (EDIMPRES).

Gamlo, N. (2019). The Impact of Mobile Game-Based Language Learning Apps on EFL Learners' Motivation. *English Language Teaching, 12(4*), 49-56. https://doi.org/10.5539/elt.v12n4p49

Hakami, H. (2019). The effects of Using Games in Teaching and Learning English Grammar to EFL Learners. *Journal of Educational and Psychological Sciences, 6*(26), 147-15. https://www.ajsrp.com/journal/index.php/jeps/article/view/1880/1793

Hashim, H., Rafiq, M., & Yunus, M. (2019). Improving ESL Learners' Grammar with Gamified-Learning. *Arab World English Journal (AWEJ), 4*(5), 41-50. https://doi.org/10.24093/awej/call5.4

Hinkel, E. (2018). Descriptive versus Prescriptive Grammar. *TESOL Encyclopedia of*

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

English   Language   Teaching,   2-6.
https://doi.org/10.1002/9781118784235.eelt005

Hubbard, P. (2008). CALL and the Future of Language Teacher Education. *CALICO Journal, 25*(2), 175-188. http://www.jstor.org/stable/calicojournal.25.2.175

Hudson, R., & Walmsley, J. (2005). The English Patient: English Grammar and Teaching in the Twentieth Century. *Journal of Linguistics,41(3),* 593-622. https://doi.org/10.1017/S0022226705003464

Ishtawi, H. (2011). *The Effects of Game Strategy on the Learning of English Grammar for the Twelfth Grade Students* [Master's Thesis]. http://www.iugaza.edu.ps/en/

Kayan, A., & Aydın, I. (2020). The Effect of Computer-Assisted Educational Games on Teaching Grammar. *World Journal of Education*, *10*(1), 117-133. https://doi.org/10.5430/wje.v10n1p117

Khamkhien, A. (2011). Computer Assisted Language Learning and English Language Teaching in Thailand: Overview. *Mediterranean Journal of Social Sciences, 3*(1)*,* 55-64. https://doi.org/10.5901/mjss.2012.03.01.55

Kim, H. (2019). The use of Socrative and Kahoot! in English grammar. *Multimedia-Assisted Language Learning, 22*(4), 57-78. https://doi.org/10. 15702/mall.2019.22.4.57

Larsen, D. (2014). Teaching grammar. *Teaching English as a second or foreign language*, 279-296.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

https://englishforbeachpurposes.files.wordpress.com/2013/12/larsen-freeman-2014-teaching-grammar.pdf

Levy, M. (1997). *CALL: Context and conceptualization*. Oxford: Oxford University Press.

Lin, C.J., Hwang, G.J., Fu, Q.K., & Cao, Y.H. (2020). Facilitating EFL students' English grammar learning performance and behaviors: A contextual gaming approach. *Computers & Education*, *152*, 1-20.

https://doi.org/10.1016/j.compedu.2020.103876

López, J., & Luque, G. (2012). The role of the grammar teaching: from communicative approaches to the common European framework of reference for languages. *Revista de Lingüística y Lenguas Aplicadas, 7,* 179-192. https://doi.org/10.4995/rlyla.2012.1134

Norris, J., & Ortega, L. (2006). *Synthesizing research on language learning and teaching*. John Benjamins Publishing Company.

Phuong, H., Nguyen, T. (2017). The Impact of Board Games on EFL Learners' Grammar Retention. *IOSR Journal of Research & Method in Education (IOSR-JRME), 7(3),* 61-66. https://doi.org/10.9790/7388-0703026166

Pinto, A. M., Sanchez, M. C., Garcia, F. J., & Casillas. S. (2016). Students' perceptions and attitudes towards asynchronous technological tools in blendedlearning training to improve grammatical competence in English as a second language.

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Computers in Human Behavior, 72, 632-643.
http://dx.doi.org/10.1016/j.chb.2016.05.071

Pirasteh, P. (2014). The Effectiveness of Computer-assisted Language Learning

(CALL) on Learning Grammar by Iranian EFL Learners. *Elsevier Ltd, 98,*

1422-1427. https://doi.org/10.1016/j.sbspro.2014.03.561

Piskorz, E. (2016). Kahoot it or not? Can games be motivating in learning grammar?

Teaching English with Technology, 16(3), 17-36. http://www.tewtjournal.org

Reynolds, B. L., & Kao, C.W. (2019). The effects of digital game-based instruction,

teacher instruction, and direct focused written corrective feedback on the

grammatical accuracy of English articles. *Computer Assisted Language*

Learning, 32, 1-21. https://doi.org/10.1080/09588221.2019.1617747

Sadeghi, K. & Dousti, M. (2013). The Effect of Length of Exposure to CALL

Technology on Young Iranian EFL Learners' Grammar Gain. *English Language*

Teaching, 6(2), 14-26. http://dx.doi.org/10.5539/elt.v6n2p14

Stelea, S., & Girón, C. (2017). Computer-assisted instruction: 'JClic' as a new

pedagogical tool for EFL learners. *International Journal of Education and*

Development using Information and Communication Technology (IJEDICT),

13(1)*,* 4-31. http://ijedict.dec.uwi.edu/

Torut, B. (1999). *Computer Assisted Language Learning: An Overview*. Thailand-

Australia Science & Engineering Assistance Project (TASEAP).

http://www.thaiscience.info/journals/Article/SUIJ/10499160.pdf

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Wang, F. (2010). The Necessity of Grammar Teaching. *English Language Teaching, 3(2),* 78-81. https://doi.org/10.5539/elt.v3n2p7

Wang, T. (2007). The Comparison of the Difficulties between Cooperative Learning and Traditional Teaching Methods in College English Teachers. *The Journal of Human Resource and Adult Learning, 3(2)*, 23-30. http://www.hraljournal.com/Page/4%20Tzu-Pu%20Wang.pdf

Warschauer, M., & Healey, D. (1998). Computers and language learning: An overview. *Cambridge University Press, 31*(2), 57-71. https://doi.org/10.1017/S0261444800012970

Wichadee, S., & Pattanapichet, F. (2018). Enhancement of performance and motivation through application of digital games in an English language class. *Teaching English with Technology, 18*(1), 77-92. https://files.eric.ed.gov/fulltext/EJ1170635.pdf

Woo, J.-C. (2014). Digital Game-Based Learning Supports Student Motivation, Cognitive Success, and Performance Outcomes. *Educational Technology & Society, 17*(3), 291–307. https://www.jstor.org/stable/jeductechsoci.17.issue-3

Yesilbag, S., & Korkmaz, O., & Çakir, R. (2020). The effect of educational computer games on students' academic achievements and attitudes towards English lesson. *Education and Information Technologies, 25*, 5339–5356. https://doi.org/10.1007/s10639-020-10216-1

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera

Yukselturk, E., Altıok, S., & Başer, Z. (2018). Using Game-Based Learning with Kinect

Technology in Foreign Language Education Course. *Educational*

Technology & Society, 21(3), 159–173.

https://pdfs.semanticscholar.org/96aa/5a13e2a05a3803deb5cccadc093b0b31a4

d2.pdf?_ga=2.181299175.1766555000.1614231080-1319425324.1597107206

Michelle Fernanda Chalan Minga

Michelle Maribel Chocho Vera