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RESEARCH ARTICLE/ARAŞTIRMA MAKALESİ

Implementing and evaluating the impact of English vocabulary activities based on digital games

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Abstract

Vocabulary acquisition is essential for English as a Foreign Language (EFL) students. This study explores how implementing activities based on digital games optimizes vocabulary learning in the EFL context. Twenty-four Ecuadorian EFL students with A2 English proficiency participated in this research. Vocabulary strategies, authentic and accurate tasks provided real-life context for meaningful communication using digital games such as Kahoot, Quizizz, Quizlet, and Duolingo. In this action research, pre and post-tests, observation checklists, semi-structured interviews, and questionnaires were applied to gather information on the participants. The study findings showed that using these technological tools increased students' vocabulary knowledge and motivation to participate in the classroom. Furthermore, this study analyzed pedagogical implications and suggestions based on students' perceptions and opinions regarding applying digital games to increase student's English vocabulary.

Keywords: Gamification, EFL, vocabulary, ICT

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1. INTRODUCTION

Vocabulary plays a vital role in learning a foreign language, and it is the element that links speaking, listening, reading, and writing skills (Rashid et al., 2022). Therefore, to communicate adequately in a foreign language, students should acquire sufficient words and know how to use them accurately (Tahir et al., 2020). Moreover, to improve these target language skills, EFL students must be taught how to use the vocabulary words in context by providing them plenty of opportunities to use and practice the language authentically (Hunt & Beglar, 2005).

Even though students recognize the importance of vocabulary when learning a language, most Ecuadorian students learn it passively. Students only think of vocabulary learning as knowing the primary meaning of new words. Therefore, they ignore all other functions of the words. They usually acquire new vocabulary through new words in textbooks or when given by teachers during classroom lessons. Abdulmalik (2020) states that students may recognize a word in a written or spoken form and think that they already know the word, but they may need help to use it in different contexts or pronounce it correctly. Therefore, Baumann et al. (2003) claim that the ultimate goal of the English vocabulary teaching method is to help students learn the meaning of words in different contexts to communicate effectively.

Due to COVID-19, social distancing generated opportunities for students and teachers to apply new technological tools in the teaching process. However, recent research indicates that teaching vocabulary may be problematic because many teachers need more confidence concerning best practices and sometimes require help knowing where to begin to form an instructional emphasis on word learning (Baa, 2022). The pandemic pressured teachers to change traditional methodologies, strategies, and resources concerning English teaching, especially vocabulary (Ghabeli et al., 2020). With these new approaches, mobile-assisted applications and digital games have become mandatory for teachers and students because of the vocabulary learning benefits (Fithriani, 2021).

Wouters et al. (2013) defined digital games as any game played using electronic devices that employs consistent rules or constraints, has a clear goal, provides feedback, and monitors progress via scores or other methods. In the same way, Sailer and Hommer (2020) claimed that gamification is a term that refers to the use of game-based elements such as mechanics, aesthetics, and game thinking in non-game contexts aimed at engaging people, motivating action, promoting learning, and solving problems. The benefits of gamification and game-based approaches in education have been investigated since the 1980s. In recent years, there has been a growing interest in gamification and its applications and implications in education since it provides an alternative to engage and motivate students during the learning process. Many digital games are applied in education. The present action research utilized Kahoot, Quizizz, Quizlet, and Duolingo. Kahoot is a game-based learning platform for formative assessment to review students' knowledge about specific topics (Wang & Tahir, 2020; Derakhshan & Khatir, 2015). Likewise, Quizizz is a gameshow style like Kahoot, but on this platform, the questions and possible answers are displayed individually on students' devices. Quizlet is a digital game that allows students to work in teams using flashcards to memorize vocabulary words (Bueno & Nemeth, 2022; Khan et al., 2018). Finally, Duolingo is a popular game to learn languages where learners are involved in different activities related to speaking, listening, reading, and writing (Shortt et al., 2023).

In Ecuador, traditional education is prevalent. Due to pedagogical, infrastructure, and educational policy factors, Ecuadorian EFL teachers still apply traditional techniques to teach English in the classroom (Sevy et al., 2020). Therefore, Grammar Translation and Teacher-Centered approaches are still being used as the primary classroom methods. This study applied different digital games to compare and contrast with traditional techniques to find the more suitable for teaching vocabulary at an Ecuadorian secondary school. Thus, considering that learning vocabulary sometimes makes it difficult to remember many words, this action

research was led by the following research question: 1) Can vocabulary activities based on digital games improve EFL students' linguistic competence at a secondary school in Ecuador?

2. LITERATURE REVIEW

Learning vocabulary is one of the most essential concerns of foreign language learning. Different factors play important roles in vocabulary acquisition and development. For instance, innovative activities motivate students to learn the language better. According to Riahipour and Saba (2012), traditional activities such as memorization of long vocabulary lists, derivations, repetition of words, translation, and fill-in-the-blank exercises are boring for students. Researchers neglected vocabulary learning research up to the 1960s. Nevertheless, recently, it has gained the attention of many researchers (Muliawati & Ismail, 2017).

Learners should focus on the shape, context, and use when figuring out what a word means. Nation (2001) stated that a word's shape includes pronunciation (spoken type), spelling (written form), and any terms that constitute this object (prefixes, roots, and suffixes). An instance of word pieces can be found in the word *uncommunicative*, which features the prefix *un* and the suffix l*ive*; people use this term when talking about people who cannot speak. Hence, Alqahtani (2015) argued that acquiring an adequate vocabulary is essential for successful foreign language use because, with an extensive vocabulary, a language learner can use the structures and functions we may have learned for comprehensible communication.

Ulug'bekovna (2023) stated many reasons for devoting attention to vocabulary. First, a large vocabulary is essential for mastering a language. Besides, knowing numerous vocabulary words will motivate learners to continue learning and improving their language skills. On the other hand, if students do not have enough vocabulary knowledge, it will hinder them from being active in the language learning process and makes them feel anxious or nervous when conducting speaking and writing activities in the classroom (Woodeson et al., 2023; Gamlo, 2019). Consequently, motivation is a crucial factor in learning vocabulary. Learners experiment with two types of motivation according to their needs: instrumental and integrative. Gardner and Lambert (1972) indicated that instrumental motivation is the desire to learn a second language for a specific purpose, such as passing a degree, getting a job, or traveling. By contrast, integrative motivation is the desire to learn a language to get to know its culture and to communicate with its speakers.

Much research has been conducted to provide the benefits of using gamification to increase students' vocabulary and motivation to learn a foreign language. Lin & Lan (2015) claimed that digital games offer learners an interactive and authentic learning experience that is more engaging for students than traditional teaching strategies. Ebrahimzadeh and Alavi's (2016) study found that using digital games for vocabulary learning creates enjoyment and motivates EFL students to learn the target language. Similarly, Cam and Tran (2016) explained that using games to teach English helps students boost their vocabulary, grammar, and English skills by connecting their learning with accurate and exciting topics.

3. METHODOLOGY

The research was carried out at a private school in Cuenca, Ecuador. It offers the levels of kindergarten (inicial), elementary school (básica elemental), middle school (básica media), high school (básica superior), and baccalaureate (bachillerato). This private school has 737 students, both female and male. It is not a bilingual school. However, English is taught as a foreign language 5 hours per week in kindergarten, elementary, middle, and 7 hours in high school and baccalaureate. Due to the pandemic, English was taught 3 hours in primary and 5 hours in secondary and baccalaureate. The participants in this study were 24 students, 12 female and 12 male. Their ages ranged between fourteen and fifteen years. Their native language is Spanish, and they took English as a Foreign Language subject as a mandatory requirement.

Four instruments were applied for data collection:

1. Tests

Vocabulary tests were used to collect data about vocabulary knowledge to compare the strategy's effectiveness. The content of the tests was based on the curriculum and teacher's syllabus according to the school timetable. The teacher created online activities using different platforms such as Duolingo, Quizlet, Quizizz, Google Classroom, and Kahoot. Pre-tests and post-tests were conducted at the beginning and end of this study. The main goal of using the two tests was to compare and analyze the results of students' vocabulary before and after implementing the two methodologies: traditional techniques and online games. The pre-test and post-test consisted of multiple-choice questions related to three parts of speech: nouns, verbs, and adjectives.

2. Observation Checklist

An observation checklist was used to obtain more information regarding students' perceptions and participation during the research process. The observation checklist consisted of behavior traits when using online games. The researcher observed students working before the intervention plan's application and during pre- and post-tasks. The checklist indicators were twelve items integrated into three scales: yes, no, and sometimes. On the other hand, the classroom observation took three weeks, during twenty-five sessions of the class and forty minutes per lesson. The classroom observation results were coded and integrated into the data, interviews, and questionnaires.

3. Interview

Five participants were interviewed for this study. The interviews aimed to identify students' perspectives on using online games for learning purposes. They were held at a neutral place where participants felt free to express their opinions and comfortable sharing their experiences without fearing being ridiculed by others. The participants offered to be volunteers for these interviews. The semi-structured interview was conducted through the Zoom platform. It consisted of ten questions to elicit information about interviewees' perspectives on vocabulary learning, feelings, and beliefs during the action plan.

4. Questionnaire

The questionnaire was designed to gain better insights into EFL students' beliefs about the incorporation of games as a strategy to learn vocabulary. Also, it measured attitudes and behavior that could not be directly observed. The questionnaire consisted of closed-ended questions with a list of predetermined responses from which to choose the answer. The rating scale was assigned a letter code of categories without a neutral point in the middle. The scale indicated each participant's overall positive or negative orientation toward the question. The researcher balanced positive and negative items to reduce the participants' set bias. The participants took the test in a Google Form where the questions had multiple choice, and they selected the best option according to their opinions. The test was taken in 40 minutes. The criteria provided in the test were Always, Usually, Sometimes, and Never.

4. RESULTS AND DISCUSSION

The participants of this study had an intermediate (A2) level of vocabulary knowledge. Most of them understand the words in context and the identification of the meaning of words. However, they presented a low ability to speak (A1), perceived as a significant problem. Besides, the results show that students' perceptions about learning vocabulary before the intervention were negative because they lacked the confidence to communicate and actively participate in the class. There is a need for vocabulary words to use the language authentically. However, after implementing technological tools, their perceptions changed by indicating that online games could benefit language learning. Table 1 presents the results of the pre and post-tests. It indicates the students' improvement via game-based learning versus the traditional approach.

Table 1. Pre-tests and Post-test results

Tests

	Pre-test Scores		Post-Test	
	Traditional	Game-based	Traditional	Game-based
Average	16.68	14.53	15.79	18.53
Standard Deviation	3.07	4.55	3.08	1.31
Min	9.00	5.00	9.00	16.00
Max	19.00	20.00	19.00	20.00

The maximum score on the test was 20 points. There is a difference of approximately four points between the pre and post-test using games. The average grade for the post-test is about 19/20 points. The standard deviation shows low dispersion in the data, represented by the minimum value of 16 points and the maximum value of 20 points achieved by several students in the post-tests using the gamification technique.

In the interviews, the students indicated that playing games to learn the language was more enjoyable and stimulating than using coursebooks and other teaching materials. Student 5, for instance, suggested that *using Kahoot was exciting since she could compete with her classmates and consolidate her knowledge about new vocabulary words.* Wang and Tahir (2020) supported these results by indicating that Kahoot or Quizizz are game-based learning platforms for formative assessment that allow students to review or improve their knowledge about specific topics.

Table 2. Observation Checklist results

Observation

Variable	Yes		No		Sometimes	
	Count	%	Count	%	Count	%
The classroom atmosphere is alive.	6	25	15	63	3	12
Ss participate actively in the class.	3	13	19	79	2	8
Ss look motivated.	3	13	18	75	3	12
Ss pay attention to the class.	5	21	16	67	3	12
Ss enjoy the vocabulary strategies.	10	42	8	33	6	25
Ss look enthusiastic	4	17	15	63	5	20
Ss use new words to express their ideas.	2	8	22	92	0	0
Ss are motivated to compete.	20	83	4	17	0	0
Ss participate actively.	3	12	21	88	0	0
Ss produce the language correctly.	7	29	14	59	3	12
Ss understand instructions carefully.	15	63	4	17	5	20
Ss learn using a variety of tasks.	21	88	3	12	0	0

Table 2 presents the results from the classroom observation. Regarding the classroom atmosphere, the beginning of the process revealed that only 25% of the students had their cameras on, and they answered any question when the teacher asked them; 12% of the students participated in the class but did not turn the cameras on. Additionally, more than half of the students (63%) turned off their cameras and did not answer questions. In the interview, they indicated that they prefer to turn off the cameras because they feel anxious or nervous about participating in front of their classmates. The findings also indicated that 79% of the participants did not participate actively in the class. Student 3 claimed that *even though he likes learning English, it is challenging for him to participate in speaking activities because of his lack of English vocabulary and his fear of making mistakes.* Woodeson et al. (2023) supported these findings by indicating that creating a safe classroom environment and providing students with enough vocabulary knowledge before conducting any activity is crucial in teaching EFL. Consequently, students will feel more comfortable and relaxed to learn the target language.

According to the students' motivation, only 13% were motivated to learn the language. The students indicated that it was challenging to learn

any subject due to the pandemic. Likewise, only 21% of the students paid attention to the teacher during the lessons. The students indicated that *sometimes it is difficult to follow their teacher because they usually need clarification and fear of making mistakes due to their lack of vocabulary knowledge.* For that reason, it is implied that motivation and vocabulary words are critical factors that provide many benefits for language learning (Gardner & Lambert, 1972). Furthermore, teachers can use online games to help students foster motivation and knowledge of English, such as vocabulary, grammar structures, and pronunciation (Cam & Tran, 2016; Lin & Lan, 2015).

Even though students were not motivated to learn the language, 42% indicated that they enjoyed the teacher's strategies to teach vocabulary, while 25% said they felt more comfortable using games. In the interviews, the students indicated that *they like how the teacher teaches vocabulary to them by using different activities and games. Moreover, they said they would love to apply frequently online games to learn English.* In fact, related to using traditional and game-based learning strategies, most students (63%) did not feel enthusiastic about attending online classes. Student 5 claimed: *I do not like online classes because I prefer to be in school with my classmates and teachers.* Likewise, student 1 stated that *online classes are not as practical as offline classes, mainly in English, because it is better to practice the language face-to-face.* For that reason, Hunt and Beglar (2005) claimed that teachers must address students' necessities to provide them with plenty of opportunities to use and practice the language and encourage them to continue learning. Thus, they will be more interested in studying the language online or offline (Tahir et al., 2020).

Concerning students' participation in the lessons, only 8% of the students participated actively. Managing this issue was challenging for the teacher because the students did not turn on their microphones. Before the implementation, the students mentioned that they disliked participating in the classroom because they were afraid of making mistakes, and sometimes, it was difficult to understand what the teacher expected from them in each activity. However, students participated enthusiastically after the intervention, and the classroom atmosphere was more active and friendly. According to the observation results, designing and implementing games to teach vocabulary is a process whereby students actively engage in class activities and the improvement of language skills. For that reason, implementing genuine strategies and aligning them with online games can create suitable environments and promote some benefits, such as creating a positive attitude and making the learning process more enjoyable (Tahir et al., 2020).

Therefore, the findings indicated that online games triggered students to participate more actively. It was observed that passive students participated more when conducting activities involving gamification. The students claimed that using games had positive benefits for learning English. Student 4 stated that *games helped improve English skills, mostly vocabulary because the apps were exciting and interactive*. Likewise, Student 1 manifested that *using games to learn English is important since it can foster skills, interest, motivation to learn the language, and self-confidence.* Ebrahimzadeh and Alavi (2016) support these findings by claiming that applying games in teaching languages provides different benefits for students; for instance, catching students' attention in class, helping students to improve their English skills and vocabulary, and motivating them to learn the language autonomously.

Besides, during the class observation, it was also noticed that students needed more vocabulary and grammar knowledge at the beginning of the intervention to conduct the speaking activities efficiently. However, after applying online games for learning purposes, the passive students changed their attitude by participating in the class more frequently. The students' responses had positive perceptions of incorporating games-related activities to learn English and increase their vocabulary and interest in learning the language. Student 4 affirmed *feeling more confident talking in front of the class because I enjoy playing games and acquired good experiences in group discussions.* Similarly, Student 1 stated that

using games encouraged to pay attention to class, making it more fun and exciting. Finally, students suggested that all school teachers employ games to encourage language learning.

Table 3 shows that all participants always (73%) and sometimes (26.3%) considered learning vocabulary essential. Similarly, all participants always (68.4%) and sometimes (31.6%) believe that learning English is essential. In the interviews, the students manifested that even though English is not spoken in Ecuador, learning this language is crucial for academic and professional reasons. Student 1 explained that *learning English is vital for a professional career because knowing English is a mandatory requirement to study abroad or obtain a scholarship to study in other countries.* Likewise, Student 4 claimed that *English is spoken worldwide, so knowing it for traveling abroad or getting a job in other countries is needed.*

Regarding motivation, 63.2% said they usually feel motivated to learn English. The students indicated they are motivated to learn English primarily because of their teacher. Student 2 claimed *to feel encouraged to learn English because my teacher always tells us that knowing English will provide better life benefits.* Likewise, *she always uses materials showing how people use the language authentically for different purposes* (Student 3). Therefore, teachers must always consider students' motivations to learn the language. Thus, they can focus on instrumental or integrative motivation to encourage students to continue learning the target language (Gardner & Lambert, 1972).

Most participants perceived English as an essential aspect of their lives. Nevertheless, 21.1% and 36.8% of students indicated that they always and sometimes feel nervous and anxious when speaking English in the classroom, respectively. The students revealed that they need more confidence in their English skills. Therefore, they are sometimes comfortable mainly conducting oral activities in the classroom. Student 5 stated that *even though I can communicate in English, sometimes I feel nervous about participating in speaking activities because of the lack of vocabulary. It makes me anxious and uncomfortable when talking to my classmates in English.* Woodson et al. (2023) supported these findings by indicating the importance of creating self-confidence in students to speak English in the classroom. Hence, devoting attention to a large vocabulary is essential for mastering students' language to motivate learners to continue learning and improving their language skills autonomously.

Finally, regarding using games to create a good classroom environment, 89.5% of students agreed with this statement. Students had positive perceptions of applying games for language learning purposes. Student 2 affirmed *feeling happy when the teacher asked to use some applications*

Table 3. Results Questionnaire

Questionnaire

Variable	Always		Usually		Sometimes		Never	
	Count	%	Count	%	Count	%	Count	%
Learning vocabulary is essential.	14	73.7	5	26.3	0	0	0	0
Learning English is important for you.	13	68.4	6	31.6	0	0	0	0
Do you feel motivated to learn English?	6	31.6	12	63.2	1	5.3	0	0
Do you feel nervous when you speak English?	4	21.1	7	36.8	7	36.8	1	5.3
Do you feel happy using games in your English class?	17	89.5	1	5.3	1	5.3	0	0
Do you feel bored using games in your English class?	1	5.3	0	0	1	5.3	17	89.5
Do you feel angry when you have to write and draw pictures to learn vocabulary?	0	0	3	15.8	8	42.1	8	42.1
Do you feel anxious when the teacher speaks too much English in class?	1	5.3	6	31.6	8	42.1	4	21.1
Do you think the use of games creates a good environment?	16	84.2	1	5.3	2	10.5	0	0
Is it easy for you to remember the vocabulary?	5	26.3	9	47.4	5	26.3	0	0

to learn English or evaluate knowledge. Likewise, Student 5 claimed that *when the teacher uses games in the classroom, students do not feel bored because liking technology and competing with classmates.* As Sailer and Hommer (2020) mentioned, gamification is an innovative approach that engages students in learning and promotes participation in the classroom. Due to this, apps such as Kahoot, Quizizz, Quizlet, Duolingo, and Kahoot can be used as technological tools to foster students' vocabulary, English skills, and motivation to learn English (Wang & Tahir, 2020).

5. CONCLUSIONS

The present study focused on the impact of designing and implementing vocabulary strategies incorporating games with Ecuadorian students from a private high school. Qualitative and quantitative mixed methods such as checklist observation classes, tests, questionnaires, and interviews were used to obtain and analyze data. As a result, 24 students were involved in the action process. The lessons were part of the regular teaching schedule, and the teaching contents comprised the school curriculum and teaching syllabus. As a vocabulary strategy, authentic and accurate tasks provided real-life context for meaningful communication using the following online games and platforms: Kahoot, Quizizz, Quizlet, and Duolingo.

The test results showed that using these technological tools increased students' vocabulary knowledge and motivation to participate in the classroom. After the intervention, students positively perceived using online games to foster their vocabulary skills. They actively participated in language learning by using online apps and games. Besides, they were more confident and motivated to share their ideas with their classmates without fear of making mistakes. For students, using online games helped them to get involved in an effective process and conditions to learn quickly and joyfully according to their context and learning styles.

Subsequently, EFL teachers must consider using online games in their lessons to gain interest from their students and provide them with various activities that enable the acquisition of vocabulary and meaningful communication. Besides, students must use a logical and coherent sequence of activities in which they have the opportunity to practice linguistic items that support their needs.

When using games, it is essential to balance competition and cooperation. In this way, students support the ability to work individually and enhance their social interaction skills working as a team. Therefore, students need to be involved in fun activities to improve their learning, such as game-based learning activities that promote a high level of motivation in which students can explore and take alternative solutions to accomplish their goals. Consequently, the teacher plays a vital role in helping students acquire knowledge of English. Hence, the teacher must provide digital strategies, activities, and materials to help students learn meaningfully.

This research contributes to the TEFL course design field because it empowers and inspires teachers to experiment and apply relevant and innovative strategies instead of traditional methods. Furthermore, this action research could be taken further by English teachers as a foreign language to disseminate some aspects of games as context to design and implement learning strategies.

Ecuadorian students' English is deficient, and teachers face this issue daily. Therefore, the present research could be an alternative to alleviate the problem and meet the needs of the educational community. Also, it will be helpful for learners to improve their skills, cooperative learning, and problem-solving toward learning the second language through games. Besides, it provides an alternative teaching strategy to change the perception of the role of teachers. Hence, it will inspire teachers to innovate, design, and implement vocabulary strategies to resolve students' vocabulary and communication problems and their low motivation levels during the teaching-learning process.

Further research can include the impact of strategies incorporating games between English as a foreign language environment

and implementation in a second language environment. Also, formal and informal environments could be compared. Another critical point is the impact of digital tools in vocabulary learning and studying the different types of games to determine which are the most appropriate and effective according to the student's context. Finally, these tech tools must be applied with a more significant sample to generalize the results to other contexts.

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