Artículo de investigación

The use of gamification in formative assessment of vocabulary learning

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ABSTRACT

The objective of this research was to evaluate the use of gamification in the formative assessment of vocabulary learning in seventh grade students of EGB of the Unidad Educativa Fiscomisional Mons. Luis Alfonso Crespo Chiriboga. The study population consisted of 48 students of 7th grade EGB of A and B classes. This work used a quasi-experimental design to with a cross-sectional descriptive, analytical and explanatory scope, in this sense, the present study established the type of relationship that exists between the variables raised, to understand the circumstances or situations in which the gamification methodology affects the learning of vocabulary. During the research four types of gamification applications were used: Wordwall, Kahoot, Blooket and Quizizz. The techniques and instruments used to collect data and criteria were the pre-and post- test, the former was applied before starting the teaching process and the latter was carried out at the end of the process. Likewise, the survey was used, which was applied at the beginning of the teaching process to gain better insights into EFL students' beliefs about the incorporation of games as a strategy to assess vocabulary. The results showed that the employment of gamification was effective in students' vocabulary learning. Therefore, applying gamification in the classroom can be a promising and innovative strategy for educators to engage not only their students' attention, or receive instant feedback, but also to develop students learning skills such as self-regulation, autonomy, or to increase the motivation.

Keywords: Gamification; strategy; vocabulary; formative assessment.

1. Introduction

Learning vocabulary plays a fundamental role in the process of learning a foreign language such as English, and its assessment is crucial to monitor students' progress. In this way, vocabulary is the element that links speaking, listening, reading, and writing skills (Rashid, Lan, & Hui, 2022) and Schmitt & Barclay (2019) asserts that students who are learning English as a foreign language (EFL) must have the knowledge of between 2000 and 3000 words to participate in basic everyday conversations and read authentic English texts. In fact, if students do not have sufficient vocabulary knowledge, they will not be able to actively participate in the language learning process and will feel anxious or nervous when performing speaking and writing activities in class (Ulug'bekovna, 2023).

Nevertheless, through observation during the English classes, it has noted that one of the main challenges that students face is the domain of vocabulary, it has been evidenced when students have problems to express their ideas, or when students repeat the same words many times instead of looking for synonyms. At the same time, it has been observed that students had problems with vocabulary because students find complicated to understand reading activities.

Based on the previous information, this study attempts to analyze the effect of gamification in the formative assessment of vocabulary learning in seventh grade EGB students of the Unidad Educativa Fiscomisional Mons. "Luis Alfonso Crespo Chiriboga" of the Espíndola canton, Loja province.

The term gamification is defined as the process of incorporating game thinking and game mechanics into nongame activities to engage in problem-solving activities related to the learned lessons (Waluyo & Tran, 2023). Gamification can help students to improve their interaction, participation, collaboration, creativity, and self-guided study (Maghawr, 2021). Gamification also accelerates student learning, reinforces concepts taught, increases student interest in the class, increases the competitive spirit in the classroom, and motivate them to engage in the learning process (Pintado, 2023). The integration of gamification in didactic contexts applies: a reflection of the teacher for the updating of contents, which implies an analysis of their relevance and a restructuring of activities and evaluations, to assertively relate them to the needs and context of the students (Trejo, 2020).

In the same way, Panmei & Waluyo (2022) asserts that gamification has progressively transformed the landscape of English vocabulary learning, and the integration of gamification in the formative assessment of vocabulary in English as a foreign language can offer a powerful tool for educators since gamification facilitates vocabulary study and support the development of learner autonomy outside of the classroom, and this may improve the difficulties posed by restricted class time for vocabulary learning. For example, Kuan, Alvarez, Ruiz, & Santos (2024) found that using platforms like Kahoot, Quizizz, Quizlet, and Duolingo enhanced students' vocabulary knowledge and motivation to participate in the classroom.

Therefore, in the following sections, previous empirical research on gamification in formative assessment and their use for the English vocabulary learning will be described.

Gamification in Education

In education, the presence of technology facilitates access to up-to-date information, promotes interactive learning and develops digital skills essential for the modern world. In this sense, Chavarría & Avalos (2023) express that nowadays it is essential that education incorporates active methodologies into every classroom to ensure students take an active role in their learning process, one highly effective tool gaining popularity among educators is gamification.

Gamification emerges as a promising option offering multiple approaches to capture learners' interest and stimulate their curiosity, since it combines various elements that promote participation and engagement, similarly it encourages interaction between students and teachers, between students and content, as well as among students themselves, creates a dynamic educational environment in which knowledge flows quickly and effectively beyond the confines of the classroom. (Sanchez, 2019)

In the same way, gamification is a good way to provide motivation to the students in the learning process and become another creative strategy which can be used by the educators on class management and as a replacement of the general assessments. (Sin & Mohamad, 2020)

Nevertheless, it is remarkable to mention that gamification is different from games, although it can produce entertaining actions, as the focus is not on fun but on motivating, engagement and leading to an understanding of the content, or specifically inducing behavioral changes with predetermined goals. Therefore, gamification allows people to do more engage digitally to stimulate educational activities and make learning more practical. (Sanchez, 2022)

Formative Assessment Through Gamification

Formative assessment offers suitable feedback during the learning process which can be applied by EFL teachers to show the learners their progress (Hamedi, Fakhraee Faruji, & Amiri Kordestani, 2022). The main advantages of online formative assessment are the increasement in scores and the improvement of fundamental complex mental processes including self-regulation. (Kıyançiçek & Uzun, 2022)

Based on Şad & Özer (2019), digital evaluation tools offer an efficient means for formative assessment, enabling teachers to receive timely and consistent feedback on student progress. This feedback facilitates the identification and correction of errors and misconceptions in a sustainable and engaging manner.

Some platforms that can be used to assess vocabulary are:

Kahoot

Kahoot! is a digital platform that allows students get immediate feedback directly related to their answer to know if they have got an answer right or wrong. They will analyze the responses and try to comprehend why they were right or not. This will consequently lead to a deeper understanding that helps the participation and retention of students' knowledge. It can be stated that integration of Kahoot! games in the learning process can help students increase their focus and encourage different interaction in the classroom. (Kıyançiçek & Uzun, 2022).

Kahoot! can be used as an assessment tool in language classrooms. Instead of assessing learners through traditional paper and pen quizzes or tests, teachers can use Kahoot! to see the progress in learners. Learners can also be informed about their strengths and weaknesses that they need to focus on.

Quizizz

It is a gamification tool in which teachers do not need to project questions on the board or screen because each student has access to their question-and-answer gameplay, likewise, the questions on automatically randomized for each student so that they cannot copy one another. According to Ibad, et al. (2023) formative assessment based on the Quizizz application is more effective than other applications.

Wordwall

Wordwall.net is another gamification tool in which there are multiple game choices, all played interactively or individually, such as information matching, picture matching, quiz, wheel of fortune, puzzles, etc. designed for vocabulary practice. (Çil, 2021).

Blooket

Blooket is a new form to enhance student's vocabulary since it generates an atmosphere of fun, and competition, which helps students to understand the vocabulary easier than using conventional methos such as repetition, or translation. (Sartika, et al. 2023).

2. Methodology

La This study applied a quasi-experimental design to investigate the use of gamification in the formative assessment of vocabulary learning. According to García, Vallejo, & Livacic (2014) "Quasi-experimental design is research that aims to test a causal hypothesis by manipulating (at least) one independent variable where for logistical or ethical reasons research units cannot be randomly assigned to groups."

The participants in this study were 48 students of the seventh grade of the groups A and B of the Unidad Educativa Fiscomisional Mons. "Luis Alfonso Crespo Chiriboga" of the Espíndola canton, province of Loja, in the period 2023-2024. Their ages ranged between

eleven and twelve years. The sample was of intentional character, the finite population was selected as a target group since it worked with the researcher, in addition, it was a population that required leveling to avoid academic problems in the next school year.

The researcher had 4 hours per week with each group A and B for three weeks. One class, 7th A with 25 students, was chosen as a control group, and the other class, 7th B with 23 students was chosen as an experimental group.

Two instruments were applied for data collection.

Test

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 Ecuadorian curriculum. Pre-test and post-test were conducted at the beginning and end of this study, and they consisted of matching, filling the gaps, and writing questions related to two aspects: personal pronouns, and verbs to describe their daily routine. The main goal of using the two tests was to compare and analyze the results of students' vocabulary of the experimental group vs-controlled group before and after implementing gamification.

Survey

The survey was applied to gain better insights into EFL students' beliefs about the incorporation of games as a strategy to assess vocabulary. The survey consisted of closed-ended questions with a list of predetermined responses from which to choose the answer. This instrument was based on 12 questions that make up seven dimensions of study: Feedback, Effectiveness of Formative Evaluation, types of games, gamified tools, type of interaction, and finally, participation and motivation.

The participants took the survey in a Google Form where the questions had multiple choice, and they selected the best option according to their opinions.

Data Analysis

The responses of students to the 12 closed-ended questions were examined using descriptive statistics (frequency and percentage).

3. Results

The results obtained and the analysis resulting from the survey are presented below in table 1.

Table 1.

Students' responses to questionnaire

Statements	Responses	f	%
1. What aspect of learning English do you find most difficult?	Writing	20	41.67%
	Vocabulary	14	29.17%
	Grammar	8	16.67%
	I have no difficulties	6	12.50%
	Total	48	100
2. What resources do you use to learn vocabulary in English?	Student's book	28	58.33%
	Flashcards	11	22.92%
	Gamification tools (Kahoot, Quizizz, Quizlet, Wordwall)	9	18.75%
	Total	48	100
3. How easy or difficult do you find it to remember the vocabulary you learn in class?	It's a little bit easy	32	66.67%
	It's very easy	11	22.92%
	It's very difficult	5	10.42%
	Total	48	100
4. From the following list of options. Which one do you use to remember new words in English?	Repeat aloud	21	43.75%
	Use word games	19	39.58%
	Use vocabulary cards	8	16.67%
	Total	48	100
5. You consider your knowledge of English vocabulary to be:	Deficient	1	2.08%
	Acceptable	13	27.08%
	Regular	18	37.50%
	Good	15	31.25%
	Very good	1	2.08%
	Total	48	100
6. Do you like to play online games during English class?	Always	19	39.58%
	Frequently	7	14.58%
	Sometimes	18	37.50%
	Almost never	2	4.17%
	Never	2	4.17%
	Total	48	100
7. What kind of games are most attractive to you?	Competition games	16	33.33%
	Quiz games	30	62.50%
	Role-playing games	2	4.17%
	Total	48	100
8. What elements do you find most motivating in a game?	Competing with other players	10	20.83%
	Overcoming challenges and levels	24	50.00%
	Collaborating with other players to achieve objectives	14	29.17%
	Total	48	100

9.	Does your teacher use digital tools such as: Wordwall, Kahoot, Blooket, Quizizz, or Quizlet during English classes?	Always	2	4.17%
		Frequently	18	37.50%
		Sometimes	21	43.75%
		Almost never	4	8.33%
		Never	3	6.25%
		Total	48	100
10.	How do you prefer to interact during classes where gamification is used?	Interacting individually	10	20.83%
		Working in teams with other classmates	32	66.67%
		Competing with other classmates.	6	12.50%
		Total	48	100
11.	Do you believe that digital tools such as: Wordwall, Kahoot, Blooket, Quizizz, or Quizlet help you reinforce vocabulary content?	Yes, definitely	18	37.50%
		Maybe, it depends on the game or activity	28	58.33%
		No, I don't think it has a significant impact	2	4.17%
		Total	48	100
12.	Do you feel more motivated to learn English vocabulary when you do it through games?	Yes, more motivated	33	68.75%
		Yes, a little motivated	14	29.17%
		Not motivated at all	1	2.08%
		Total	48	100

Source: Own elaboration (2024)

As it is seen in table 1, when students were asked about the most difficult aspect of learning English, 41.67% of the participants considered writing to be the aspect they find most difficult and 29.17% of the participants believed that it is vocabulary. In fact, according to Hamedi, et al. (2022) mentions that an individual's vocabulary knowledge is one of the most important aspects in language development because not only the level of vocabulary knowledge is important to success academically but also to communicate effectively, this is because without grammar very little can be conveyed, but without vocabulary nothing can be conveyed. In the same way, according to Khoshsima & Khosravi (2021) expresses that "words are the building blocks of language learning, and therefore, vocabulary is a significant part of acquiring a foreign language, and students can enhance their listening, speaking, reading and writing by learning new words" p (79). Therefore, learning vocabulary plays a remarkable role in the students' development of the English skills.

When asked about the technological tools they use to learn vocabulary, 58.33% of the participants stated they use textbooks to learn English vocabulary meanwhile, 18.75% of the participants commented they use gamification tools such as: kahoot, Quizizz, Quizlet and Wordwall. Based on that, Sin & Mohamad (2020) states that nowadays the teachers must use a teaching strategy which can follow the footsteps of the modern technological world to solve educational challenges that make students find the learning tedious and making the students lose interest and focus on participating in the class actively. Therefore, gamification could be a good way to enhance motivation to the students in class, likewise, gamification can become

another useful strategy for teachers on class management and as a replacement of the assessments.

On the other hand, when they were questioned about their retention to remember the vocabulary they learn during English classes, 66.67% of the participants find it a little bit easy to remember the vocabulary. When asked about the strategies they use to learn vocabulary, 43.75% of the participants use repeating words aloud, while 39.58% stated that they prefer to use word games. According to Chavarría & Avalos (2023) asserts that gamification has great advantages, among them gamification allows the student to enjoy and actively engage during classes since it fosters motivation and commitment, also gamification allows students to remember what they learn for a longer time since it promotes retention, they create their own experiences and students complete tasks increasing their efficiency and confidence.

On the other hand, when participants were asked about their current command of the English vocabulary, 37.50% of the participants consider their knowledge of English vocabulary is regular, while 31.25% believed their knowledge of English vocabulary is good. Nevertheless, the obtained results in the pre-test show students face difficulties in vocabulary since they got a media of 5.89 out of 10. Beltran & Velez (2024) in their research expresses that Ecuador has a low level of English, this is demonstrated in public schools where students who graduate do not have the required level of English according to the 2016 Curriculum. Similarly, a study conducted by Education First (EF) on the level and English proficiency of English speakers in the country in 2023 indicates that Ecuador currently has a low level of English proficiency, which places it in 80th place in Latin America (Education First, 2023).

When participants were asked about participation, 39.58% of the participants commented that they always are fond of playing games during English classes, while 37.50% of the participants sometimes like to play online games. In this sense, it is important to keep in mind that gamification is not the same as a game, although it can result in a fun activity, its focus is to motivate participation and lead to the understanding of the content or, especially, to provoke behavioral changes with previously identified objectives. (Sanchez, 2022)

Likewise, when inquired of types of games, 62.50% of the participants commented that quiz games are the most attractive. When asked about motivating elements of games, 50% of the participants found overcoming challenges and levels as a motivating element in a game. According to Ahmed, et al. (2022) asserts that when students participate in vocabulary games, they have the common goal of finding new words and beating other groups by working cooperatively. Even students with poor grades have the confidence to participate in the activity because they do not have to worry about their grades, and the teacher merely observes the students' progress and announces the winners and losers, thus helping to improve their ability to learn and retain vocabulary.

In the same way, when asked about the frequency of the use of digital games, 43.75% of the participants considered that the English teacher sometimes uses digital tools, while 37.50% expressed that she uses them frequently. Gamification has increasingly emerged as one alternative strategy for improving learner vocabulary learning due to the fact incorporating

internet-based applications into vocabulary learning instructions in an EFL classroom, traditional learning can be transformed into interactive learning modes. In fact, relying solely on teachers' explanation and class hours for learning is counterproductive and limits the number of words that students can learn. (Waluyo & Tran, 2023)

When they were questioned about type of interaction during classes using gamification, 66.67% of the participants commented they prefer to work in groups and 20.83% of the participants expressed that they prefer individually. Nyahuye & Steyn (2022) in their research state that gamification show potential to improve students' teamwork skills since as it gives students a sense of belonging to a group, which increases as they play more times with the team.

When they were questioned about the use of technological tools, 58.33% of the participants believed that digital tools help them to reinforce vocabulary content. In this sense, Blooket is often effective in promoting comprehension and acquisition of new vocabulary since using Blooket to improve students' vocabulary knowledge is fun, competitive, and accessible. In addition, students often use techniques such as guessing based on context, making lists of vocabulary, using synonyms, and using visual aids, likewise this technological tool not only provides students with instant feedback so that they can monitor their progress and identify areas for improvement, particularly in vocabulary learning, but it also improves the gaming experience by allowing students to adjust strategies and progress in real time. (Sartika, et al. 2023)

Similarly, when asked about motivation, 68.75% of the participants considered that they feel much more motivated to learn English vocabulary when they do it through games. Similarly, 29.17% commented that they feel a little motivated. As a digital tool, gamification helps to stimulate extrinsic and intrinsic motivation of EFL learners and helps them learn outside the confines of the classroom. Thus, the use of gamification applications can contribute to the significant improvement of the vocabulary knowledge of participants using gamification, as the introduction of technological tools in language learning environments has the potential to increase learner motivation. (Sanchez, 2022)

To proceed with the investigation, given the quantitative nature of the study, statistical analysis was conducted for data examination. SPSS Statistics was employed for analyzing the data, specifically to conduct a paired sample t-test comparison of the groups' test results, as it is presented below in table 2.

Table 2.

The Pre-test and Post-test Results

	N	Mean	Std. Deviation
Control Group Pre-Test	25	5.8980	1.36584
Control Group Post-Test	25	7.308	1.5362
Experimental Group Pre- Test	23	6.517	2.1939

Experimental Group Post-test	23	8.7109	1.46628

Source: Own elaboration (2024)

The paired sample t-test results represented in Table 2 indicate notable distinctions between the pre-tests and post-tests scores of both groups. This suggests that the teaching methodologies employed in each group have been effective. In the same way, comparing the post-test results of the two groups as it is shown in Table 3 and Table 4, the analysis demonstrates a significant difference ($p < 0.05$). Therefore, the intervention administered to the experimental group presented greater effectiveness than the control group. Consequently, in terms of addressing the research inquiry, the technological resources employed in this study were considered successful.

Table 3.

Paired Sample T-Test results Paired.

		Paired Differences					Sig.	
		Mean	Std. deviation	Std. Error Mean	t	df	P of a factor	P of two factors
Pair 1	pretest-posttest	-1.41000	.74833	.14967	-9.421	24	<.001	<.001
Pair 2	pretest-posttest	-2.19348	1.53906	.32092	-6.835	22	<.001	<.001

Source: Own elaboration (2024)

Table 4.

Groups' post-test results comparison.

		Paired Differences					Sig.	
		Mean	Std. deviation	Std. Error Mean	t	df	P of one factor	P of two factors
Pair 1	a_posttest-b_posttest	-1.45000	1.89359	.39484	-3.672	22	<.001	.001

Source: Own elaboration (2024) Note: If the p-value is less than 0.05, the null hypothesis is

rejected.

4. Discussion

The present research work was focused on analyzing the use of gamification in formative

assessment of vocabulary learning in students of 7th grade. Therefore, this study applied quasi-experimental research, where two groups of students were chosen: 7th grade A (controlled group) and 7th grade B (experimental group). Both received the same numbers of classes weekly, as well as the same vocabulary. In the same way, both worked with similar strategies to learn vocabulary during English classes such as: using flashcards, matching on the board the word with the picture, watching videos, and performing the vocabulary through mimic, etc. Nevertheless, the formative assessment was different, the controlled group worked on exercises to fill in the gaps, unscramble sentences, and writing their own sentences. Meanwhile, experimental group participated individually and in groups in gamified questionnaires about the vocabulary they learned in class.

In the same way, a pre-test and post-test was applied to analyze the differences between the groups' scores. The results of the analysis indicated meaningful differences between the pre-test and post-test scores of both groups since their mean in the pre- test were 5.8980 (7th "A") and 6.517 (7th "B") demonstrating a low mastery of students' vocabulary. Nevertheless, the analysis of the post-test results of the two groups demonstrates a significant difference. In this sense, the finding confirmed that gamification is a promising strategy for effective English vocabulary learning since as it has been analyzed in other research, students can receive immediate and personalized feedback on their performance, allowing them to quickly identify areas for improvement.

Similarly, gamification allows personalization of the learning experience due to the challenges and activities that match the students' level of proficiency and pace of learning,

Likewise, by transforming formative assessment into a playful and less stressful experience, gamification increases students' motivation to actively participate in the vocabulary teaching-learning process. In fact, Chavarría Oviedo & Avalos Charpentier (2023) asserts that gamification enhances and encourages student motivation. Employing games creates an atmosphere favorable to enjoyment and rest, allowing students to engage actively while demonstrating the skills they've acquired during lessons. Moreover, educators acknowledge that games effectively capture student interest and foster greater engagement with the subjects under study or review.

Finally, it is worth mentioning that while the results of using gamification in formative vocabulary assessment are promising, there are still some important aspects to consider. First, it is important to properly plan gamified activities to ensure that they are aligned with the objectives and skills being worked on. Also, more research is needed to determine the long-term effects of gamification on students' development of receptive English skills.

5. Conclusions

In conclusion, using gamification in the formative assessment has statistically significant effects on students' vocabulary learning, since it not only helps to improve their knowledge of vocabulary due to the immediate feedback students can receive, but also to increase their level of participation, retention and interaction among their peers since during gamification activities, students feel more motivated to share what they have learned during classes. Furthermore, teachers can monitor the learning process, as well as make decisions about any modification of the lesson plan to help students increase their learning performance.

Nevertheless, it is important to keep in mind that limitations may arise during gamification activities, such as the poor quality of the Internet service, or the number of students in the room. Therefore, gamification activities must be well organized and created so that everyone participates and in this way be able to adequately monitor students' vocabulary learning.

On the other hand, it is important that teachers explore and experiment with different gamification applications to find those that best fit the learning objectives and context of the student. In this sense, the gamification activities developed by the student may have a greater impact. or lower level of complexity.

Furthermore, it is essential to provide training and continuous support to teachers in the design and implementation of gamification activities since not all teachers have the facility to master technological tools. Finally, it is advisable to evaluate the impact of gamification on vocabulary learning and the development of receptive English skills.

Conflicto de Intereses

Los autores declaran que este estudio no presenta conflictos de intereses y que por tanto, se ha seguido de forma ética los procesos adaptados por esta revista, afirmando que este trabajo no ha sido publicado en otra revista de forma parcial o total.

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