

The Impact of Digital Gamification on Vocabulary Acquisition and Retention in EFL Learners

تأثير استخدام الألعاب الرقمية في اكتساب المفردات والاحتفاظ بها لدى متعلمي اللغة الإنجليزية

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Abstract

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This study aims to investigate the impact of digital gamification on vocabulary acquisition and retention among Grade 5 EFL learners in a Lebanese school. A quasi-experimental design was employed with 60 students divided into two groups: an experimental group of 30 learners who received vocabulary instruction through digital gamification-based lesson plans, and a control group of 30 learners who were taught using traditional textbook-based methods. Data were collected through a pre-test, an immediate post-test, and a delayed post-test administered two weeks after the five weeks of intervention. The data obtained from the pre and post tests were analyzed using SPSS version 26. The results showed significant difference between groups at the pre-test stage, confirming comparable baseline proficiency. On the other hand, the experimental group showed a significant increase in post-test scores compared to the control group, demonstrating the effectiveness of digital gamification in promoting vocabulary acquisition. Moreover, the experimental group maintained its performance in the delayed post-test, indicating strong vocabulary retention. Upon the findings of the study, it was recommended that digital gamification must be incorporated in the teaching process since it was proven to enhance Grade 5 EFL students' vocabulary acquisition and retention.

Keywords: digital gamification, vocabulary acquisition, vocabulary retention, EFL learners.

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أستاذة مساعدة في الجامعة اللبنانية - كلية التربية. حاصلة على دكتوراه في العلوم التربوية من جامعة القديس يوسف.

المستخلص

فروق ذات دلالة إحصائية بين المجموعتين في مرحلة الاختبار القبلي، ما يؤكد تكافؤ مستوى الكفاءة الأساسية بينهما. في المقابل، سجلت المجموعة التجريبية ارتفاعاً ملحوظاً في نتائج الاختبار البعدي مقارنة بالمجموعة الضابطة، ما يدل على فاعلية الألعاب الرقمية في تعزيز اكتساب المفردات. علاوة على ذلك، حافظت المجموعة التجريبية على أدائها في الاختبار البعدي المؤجل، ما يشير إلى قوة الاحتفاظ بالمفردات المكتسبة. استناداً إلى نتائج الدراسة، أوصت الباحثة بضرورة دمج الألعاب الرقمية في عملية التعليم لما له من أثر مثبت في تعزيز اكتساب واحتفاظ طلاب الصف الخامس بمفردات اللغة الإنجليزية.

الكلمات المفتاحية: الألعاب الرقمية، اكتساب المفردات، الاحتفاظ بالمفردات، متعلمو اللغة الإنجليزية كلغة أجنبية.

Introduction

Learning English as a foreign language has become increasingly crucial in today's interconnected and globalized society (Zhang, 2024). Accordingly, millions of learners worldwide invest significant time and effort in acquiring English proficiency; however, the path to successful language acquisition is often fraught with challenges, some of

تهدف هذه الدراسة إلى استقصاء أثر الألعاب الرقمية في اكتساب المفردات والاحتفاظ بها لدى متعلمي اللغة الإنجليزية كلغة أجنبية في الصف الخامس في إحدى المدارس البنائية. استخدم في الدراسة تصميم شبه تجريبي شمل 60 طالباً قُسموا إلى مجموعتين: مجموعة تجريبية تضم 30 متعلماً تلقوا تعليم المفردات من خلال دروس قائمة على الألعاب الرقمية، ومجموعة ضابطة تضم 30 متعلماً علموا استخدام الأساليب التقليدية المعتمدة على الكتاب المدرسي. جُمعت البيانات من خلال اختبار قبلي، واختبار بعدي مباشر، واختبار بعدي مؤجل أجري بعد أسبوع من انتهاء مدة التدخل التي استمرت ثلاثة أسابيع، ثم حُلَّت البيانات المستخلصة من هذه الاختبارات باستخدام برنامج SPSS الإصدار 26. أظهرت النتائج عدم وجود

which stem from traditional teaching methodologies that may be ill-suited to sustaining learner motivation and promoting meaningful engagement (Haryadi & Aminuddin, 2023). Vocabulary is a cornerstone of EFL language learning, as it enables learners to comprehend, communicate, and construct meaning effectively (Robiya et al., 2024). In language learning, the importance of vocabulary

cannot be overstated; gamification is a vital instrument that allows students to understand, communicate, and engage with the world (Kovalenko, 2024).

Understanding the meaning of new terms and being able to use these new terms in communication is referred to vocabulary acquisition, for that learning and understanding new vocabulary is the foundation of EFL learning since it is necessary for writing, speaking and reading comprehension skills (López-Fernández et al., 2023). In the Lebanese educational context, English is taught as a foreign language (EFL), and vocabulary acquisition remains one of the most challenging areas for learners, particularly at the elementary level (Saab & Abu Melhem, 2025). In language learning, the importance of vocabulary cannot be overstated. Traditional instruction mostly depends on memorization and mechanical drills, which may lead to short-term learning but limited retention (Nazarova, 2025). One of the creative approaches that was proven to enhance language learning in general and vocabulary acquisition and retention in particular is the use of educational games in the learning process (Arif, 2025). The integration of technology into education combines active learning strategies that are based on student engagement with modern educational strategies that allow

students to be parts of the learning process (Mohamed, 2024).

Several studies have shown that gamification enhances student motivation, increases engagement, and fosters deeper cognitive processing (Helvich et al., 2023). For young learners in particular, gamification provides a playful, interactive, and competitive learning atmosphere that may facilitate both vocabulary acquisition and long-term retention. Many recent educational studies emphasize the use of digital gamification which refers to incorporating fun, educational, and challenging games in the educational settings monitored by the teacher (Zhang & Hasim, 2023). Building on this, the study aims to examine the impact of digital gamification on vocabulary acquisition among Grade 5 EFL learners in Lebanon and to evaluate its effectiveness on vocabulary retention following a five-week intervention.

Statement of the Problem

Traditional teacher-centered techniques that emphasize short-term recall over long-term retention and communicative vocabulary use, like rote memorization, translation, and grammar-translation approaches, still predominate Lebanese classrooms (Halloun, 2018; Sabat et al., 2022). These

traditional teacher-centered methods frequently fall short of encouraging pupils to interact meaningfully with new vocabulary, leaving them with rudimentary knowledge that rapidly deteriorates over time. Even though English language instruction is highly valued in Lebanon, there is still little evidence of how successful teaching methods are, especially when it comes to vocabulary acquisition.

Furthermore, many researches focus on the difficulties that foreign language instruction faces in Lebanon, such as cultural nuances, out-of-date curricula, and insufficient teacher professional development (Bacha & Bahous, 2011; Diab, 2009), and this caused a lot of students to find it difficult to pick up and remember enough words to communicate clearly which negatively affects language acquisition and communication. Moreover, according to research done in Lebanon, vocabulary training is usually neglected in the curriculum and given less emphasis than grammar or reading comprehension (Bacha & Bahous, 2011; Halloun, 2018).

Additionally, research indicates that vocabulary acquisition may be one of the greatest difficulties that EFL learners face across the world; these challenges may be in contextualizing, remembering, and retaining new

terms (Lutfiyah, Nuraeningsih, & Rusiana, 2022; Hasan, 2024), and these difficulties are made worse in the Lebanese setting by the use of traditional teaching methods that fall short in addressing learner motivation, differentiated needs, or long-term retention tactics (Nazarova, 2025). As a result, a large number of Lebanese students finish elementary and even secondary school without gaining a solid vocabulary, which has a detrimental effect on their academic performance and communication abilities (Chehimi, 2021). Given these difficulties, the study aims to address the persistent gap between traditional teaching methods and the requirements of successful vocabulary learning in modern classrooms by examining the effects of digital gamification in the Lebanese Grade 5 EFL environment.

Purpose of the Study

This study aims to examine the impact of digital gamification on vocabulary acquisition among Grade 5 EFL learners. It also aims to evaluate the effectiveness of digital gamification on vocabulary retention after a five-week intervention.

Research Questions

The research aims to answer to main research questions:

1. How does the use of digital gamification affect vocabulary acquisition among Grade 5 EFL learners compared to traditional teaching methods?
2. How does digital gamification affect vocabulary retention after a delayed post-test compared to traditional teaching methods?

Significance of the Study

Applying digital gamification to the Lebanese setting can assist educators in using student-centered strategies that promote both short-term learning and long-term retention. It may help them find alternative ways that may replace traditional teaching methods that are based on repetition and memorization with one that actively use constructing knowledge. Digital gamification has been demonstrated to improve vocabulary outcomes, motivation, and learner autonomy. Moreover, the results may help educators and curriculum developers by showing how gamified lesson plans can be incorporated into the current curriculum to get around the drawbacks of conventional methods.

It is significant for educational policymakers in Lebanon looking for ways to update language instruction and make some reforms that ensure the incorporation of educational games in

the curriculum to help students in being active rather than passive learners.

Literature Review

Vocabulary Acquisition in EFL

Contexts

Studying vocabulary is an important part of learning English as a foreign language (EFL) because it has a direct effect on reading, writing, listening, and speaking skills. Several studies have examined several pedagogical approaches, including storytelling, contextualization, and digital resources to facilitate vocabulary development.

Kazazoğlu (2022) investigated the effects of incorporating games in the educational process on EFL vocabulary acquisition and retention in Turkey and the researcher compared this method with narrative tactics method to get better insights about the effects of each method. The study was done on 40 elementary students from Turkey aging between 9 and 10 years old. The results showed that both tactics helped students learn new words, but gamification got students more involved and helped them remember what they learned while storytelling helped them understand the context only. This shows how important it is to use relevant ways in vocabulary lessons to help students learn for a long time. In order to analyze the results using the

students' scores, the researcher used t-tests and it was found that there is a significantly greater degree of success in the gamification setting compared to the storytelling setting, leading to more significant lexical improvements.

In a similar vein, Aprianti (2024) investigated technology-integrated, gamified, and contextualized methodologies for vocabulary acquisition among Indonesian EFL learners using a mixed design. Gamified tools like Quizlet, for example, played an important role in enhancing students' motivation and facilitated vocabulary acquisition. On the other hand, multimedia resources such as subtitled films with enhanced receptive vocabulary and enriched cultural awareness. The results showed that the integration of gamification with contextualized tasks markedly enhanced vocabulary outcomes and learner motivation. This shows the efficacy of contextualized methodologies in integrating vocabulary acquisition with genuine language application. Qualitative information from interviews utilizing a mixed-methods approach and quantitative pre- and post-test findings indicate that cooperative and culturally sensitive approaches encourage engagement and effective language use. Despite barriers including differences

in digital literacy and technological access inequities, blended approaches that merge traditional and digital methods have yielded great success in enhancing students' learning outcomes. This indicates how adaptable teaching strategies are required to satisfy the needs of a diverse group of students.

The Role of Retention in Vocabulary Learning

Retention makes sure that language knowledge stays with you once you first learn it. Researchers are increasingly focusing on ways that increase delayed recall because words are often forgotten without reinforcement. The effects of incorporating gamification on students' vocabulary retention was examined by Arif (2025). The study was done on students during online learning. The design of the study was qualitative, and the data was collected using secondary resources which included extensive literature review about the influence of gamification on English vocabulary retention in online learning platforms. The research demonstrated that gamification not only facilitated rapid memory, but also markedly increased delayed retention, and this emphasizes the enduring advantages of gamified methodologies in digital learning contexts. The study also found that the capacity of gamified learning

environments to provide frequent exposure to language in relevant circumstances is one of their main advantages. Gamification introduces vocabulary through interactive scenarios, tests, and challenges, in contrast to traditional learning methods that frequently require students to memorize isolated terms.

Furthermore, Taskiran (2024) looked at retention in the Chinese EFL setting. By looking at how technology-enhanced gamified activities affected it, primary school pupils from several Wenzhou, China schools took a vocabulary pre-test as part of this study's mixed-methods sequential explanatory design. The participants received vocabulary education enhanced by gamified learning exercises over the course of five weeks. To record the teaching methods and student reactions, frequent observations of the classroom were made in addition to semi-structured interviews with teachers and students after the intervention to collect qualitative information on their perceptions and experiences, and pre-post intervention tests took place to check the effects of gamification. Results showed that middle school students who engaged with gamified digital tasks showed greater vocabulary retention than those in the control group.

Gamification in Education

Gamification has become a popular teaching method in schools; it uses game features like points, leaderboards, and incentives to make students more interested and motivated to learn in all disciplines. Babazade (2024) focused on analysing the effects of educational technology on enhancing vocabulary learning. The study was done on Azerbaijani EFL learners, focusing on students aged 12 to 17 in Knoxvil. Secondary school students who learned with gamified digital tools had bigger vocabulary gains and remembered what they learned better than students who learned in a traditional way and the study's results showed that there is a positive effect of gamification in fostering active engagement and sustained focus in educational settings which helped students to enhance vocabulary acquisition and retention especially since it tackles visual and auditory learners. The quantitative results indicated that, on average, pupils utilizing digital technologies retained 20% more vocabulary words during the study period. Moreover, Fithriani (2021) examined mobile-assisted gamification inside Indonesian university EFL settings. The study employed a mixed-methods approach, demonstrating substantial vocabulary acquisition and favorable

learner perceptions. According to the results, students mentioned that they were more motivated, and independent which showed that gamification helps with cognitive learning and with the emotional side of education.

Digital Gamification and Vocabulary Learning

Scholars have taken notice of digital gamification in vocabulary learning because it mixes incentive elements with repeated exposure and practice. Foroutan Far and Taghizadeh (2024) investigated the effects of both digital and non-digital gamification methods in enhancing 75 Iranian EFL students at B1 level and it was found that both strategies enhanced outcomes. However, digital gamification had a bigger impact on learner engagement, flow, and retention, and this shows that technology-based gamified settings are useful for vocabulary-related tasks. Octaberlina (2023) concentrated on Indonesian high school pupils, investigating gamified versus non-gamified language training. The study had a quasi-experimental design, pre-tests were done before intervention to asses students levels at the baseline of the study and post tests were done after intervention to assess the intervention's effects on students' scores. It was found after comparing the pre and post

test scores that the majority of students had better scores after intervention since the mean scores of pre and post intervention tests were significantly different, and gamification was approved to be enjoyable by 75% of the students in the experimental group and the majority reported that they were more able to remember the new vocabulary that they learnt after playing these games since they felt part of the learning process this shows how digital gamification may motivate students in the classroom, especially teenagers.

The reviewed studies provide evidence on the effectiveness of gamification in enhancing students' vocabulary acquisition and retention. However, most studies did not target Grade 5 students specifically and did not address EFL vocabulary acquisition and retention simultaneously. This study contributes to the body of literature through providing evidence on the effectiveness of digital gamification on these two skills simultaneously focusing on Grade 5 EFL students in Lebanon. Moreover, studies done on contexts that have different educational systems may have different results compared to Lebanon. Based on this, the study addresses enhancing the students' vocabulary acquisition and retention through a Quasi-experimental design

by introducing a technology-driven, learner-centered approach in a context still dominated by traditional, teacher-centered instruction. This contributes to both the local and international body of knowledge on English language teaching.

Methodology

Research Design

This study has a quantitative approach with a quasi-experimental design. This design allows the researcher to study the effects of gamification by dividing the participants into two groups. The experimental group learnt through digital gamification, and the control group learnt using traditional techniques. This design was chosen because it makes it easier to check the difference between the students' pre and post scores using numerical data and statistical tests which reflect the effects of incorporating games in the educational process of Grade 5 EFL learners.

Population and Sample

The study took place in a private school in Beirut. The target population was Grade 5 students learning English as a foreign language. A total of 60 students were selected and put into two groups; the experimental group that consisted of 30 students exposed to

gamified vocabulary lessons while the control group consists of 30 students taught using traditional vocabulary instruction. These groups, based on their teachers' feedback, were similar in terms of vocabulary acquisition and retention before intervention and taught by the same teacher. They were also homogeneous in terms of age (10-11 years old) and gender (14 males and 16 females in the experimental group and 13 males and 17 females in the control group). This was ensured to eliminate any other variables that may interfere in the accuracy of the results.

Instruments

The data collection tools for this study involved three tools which are pre intervention test, post intervention test, and delayed post-test for the experimental group. These instruments were designed to measure students' vocabulary knowledge before, immediately after, and two weeks following the instructional intervention. The validity of the instruments was ensured by aligning all test items with the learning objectives and vocabulary content taught during the intervention. Additionally, the tests were reviewed by two language education experts to confirm content relevance and appropriateness for the learners' proficiency level. Moreover, the reliability of the vocabulary tests

was verified using Cronbach's alpha, which yielded a coefficient of **0.87**, indicating high internal consistency. This result suggests that the test items were reliable in consistently measuring students' vocabulary knowledge across administrations.

The vocabulary pre-test was done on both the experimental and control groups at the beginning of the study, and the purpose of this test was to evaluate the learners' baseline vocabulary knowledge and to ensure that the two groups were homogeneous prior to the intervention. The test consisted of four parts with a total of 20 items:

1. Part A – Matching (5 marks): Students matched five vocabulary words with their corresponding meanings.
2. Part B – Multiple Choice (5 marks): Learners selected the correct answer from four options to demonstrate understanding of word meanings and opposites.
3. Part C – Fill in the Blank (5 marks): Students completed sentences using appropriate vocabulary words.
4. Part D – Sentence Completion (5 marks): Learners completed partial sentences to show comprehension and correct usage of vocabulary items in context.

After the five-week intervention that took place in the experimental

group, an immediate post-test, identical in structure and content to the pre-test, as administered to both groups. This test aimed to measure the direct effect of the instructional methods on students' vocabulary acquisition.

Finally, to evaluate learners' long-term retention of the newly learned vocabulary in the experimental group, a delayed post-test was performed 5 weeks after intervention. This test also consisted of four sections with 20 items (matching, multiple choice, fill in the blank, and sentence completion) and was designed to assess how well students retained and applied the target vocabulary over time.

All three instruments were designed to be age-appropriate, aligned with the participants' language proficiency levels, and consistent in format to ensure reliability and validity across testing phases.

Instructional Materials and Intervention

The teaching materials for the study were selected **after** assigning the experimental and control groups, ensuring that they aligned with the intervention's specific goals and clearly distinguished the instructional approach used for each group. The lesson plans for the experimental group included digital gamification

features that were meant to make the lessons more interesting and help students learn new words actively. Nine lesson plans that included 3 main themes were applied during the period of 3 weeks. The lesson plans were based on three main thematic units (Everyday Life and Routines, School and Community, Food, Weather, and Hobbies) divided into 3 lesson plans per week. Each lesson lasted approximately 40 to 45 minutes. The gamification included leaderboards, badges, and timed challenges that were added to classroom exercises using digital tools like Kahoot and Quizizz, and the gamified materials gave students instant feedback, stimulated healthy competition, and kept them motivated all over time. All the games incorporated were monitored by the teacher to maintain students' engagement and provide assistance and feedback when needed. In contrast the control group, learned in a more traditional way, using vocabulary lists from textbooks, translation tasks, and drills that required them to repeat what they had learned. No changes were made to the lesson plans and students learnt the same material in both groups during these five weeks of intervention.

Data Collection Procedures

The data collection process of this

study had four stages in the period of five weeks. Both the experimental and control groups took a vocabulary pre intervention test to find out their starting levels of proficiency and make sure the groups were homogeneous at the onset of intervention. Then from weeks one to five the experimental group learned vocabulary using lesson plans that used games, whereas the control group learned through more traditional means. After intervention which lasted for five weeks an immediate post-test was done for both groups to see how well they had learned new words right after the intervention. Finally, in the fourth week, to see how well the students remembered the words two weeks following the intervention a delayed post-test was given to the experimental group. The students' grades on the pre and post tests were collected and inserted into an excel sheet that was then entered into SPSS software for statistical analysis.

Data Analysis

The data collected from the instruments were analysed using SPSS (version 26). Descriptive statistics included means, standard deviations and bar charts to describe the average scores of students on pre and post-tests. To test the hypotheses of the study, paired samples t-tests and independent

samples t-tests were used to check if there were statistically significant differences between the test scores of both groups at the significance level of $P < 0.05$. Independent samples t-test was used to compare acquisition and retention between groups in addition to paired samples t-test to compare within-group performance across pre-test, post-test, and delayed post-test.

Results

This section provides the results of the pre and posttests that were done

to evaluate the effectiveness of digital gamification on enhancing vocabulary acquisition and retention in EFL Gade 5 learners, and it starts with descriptive statistics the show the difference in average scores of each test on each group. Then this is followed by inferential statistics to compare statistically the difference in the mean scores of the pre and post-tests between the groups and within each group using t-tests, and this section finally provides the results of the hypotheses that the researcher aimed to investigate.

Descriptive Statistics

Table 1: Descriptive Statistics of Control and Experimental Groups' Vocabulary Test Scores

	Control					Experimental				
	Mean	Median	Maximum	Minimum	Standard Deviation	Mean	Median	Maximum	Minimum	Standard Deviation
Pre Test	8.63	8.50	12.20	5.20	1.79	8.96	8.90	13.90	5.20	1.81
Post Test	8.90	8.50	12.50	5.50	1.87	14.81	14.95	20.00	9.80	2.32

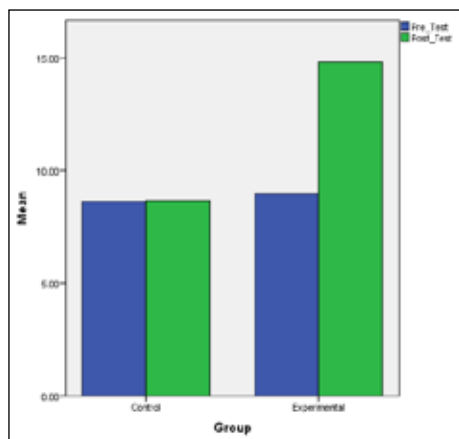


Figure 1: Control and Experimental Groups' Vocabulary Test Scores

According to the descriptive statistics presented in Table 1 and in Figure 1, the means of pre and post intervention tests shows a clear difference between the groups, both groups had almost the same starting point in the pre-test (Control Mean = 8.63, Experimental Mean = 8.96) which means they had similar vocabulary knowledge before the intervention. However, after five weeks of gamified education, the experimental group made a big gain in

vocabulary acquisition, with the mean group's mean had a minimal change going up to 14.81 while the control from 8.63 to 8.90

Results of the post-test and delayed post-test in the experimental group

Table 2: Descriptive Statistics of Experimental Group's Post-Test and Delayed Post-Test Scores

	Mean	Median	Minimum	Maximum	Standard Deviation
Post test experimental	14.81	14.95	9.80	20.00	2.32
Delayed Post	14.80	14.95	9.80	20.00	2.34

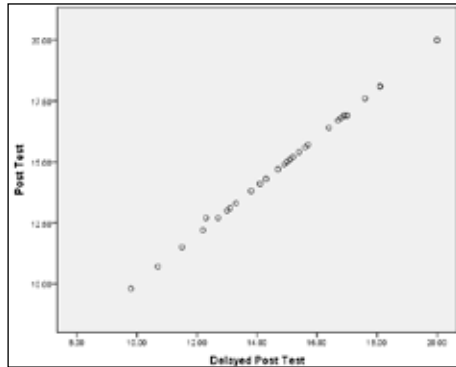


Figure 2: Experimental Group's Post-Test and Delayed Post-Test Scores

The results presented in Table 2 and shown in the scatter plot (Figure

2) show that in the experimental group when comparing the results of the immediate and delayed post-test, no significant differences were found, this is clear by looking at the mean scores (14.81) and (14.80), and the medians stayed the same at 14.95. This shows that the vocabulary increases made through gamified training were kept throughout time and the small shift in standard deviation also shows that the scores stayed consistent, with no big reduction in students' performance.

Inferential statistics

Comparison of pre, post and delayed post results within the groups

Table 3: Paired Samples Test Results (Within Groups)

Paired Samples Test									
Mean		Paired Differences					T	df	Sig. (2-tailed)
		Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1	Pre test experimental - Post test experimental	-.85667	1.53885	.28095	-6.43128	-5.28205	-20.846	29	.000
Pair 2	Pre test control - Post test control	-.02667	.38639	.07055	-.18095	.10761	-.520	29	.607
Pair 3	Post test experimental - Delayed Post	.01000	.07589	.01385	-.01834	.03834	.722	29	.476

The paired samples test presented in Table 3 shows that the test scores of the experimental group before and after intervention are statistically different which is indicated by the p value that is less than 0.05 ($p=.000$), while it shows minimal difference in the control group. In addition, while comparing the immediate and delayed post-test results that were used to measure vocabulary retention in the experimental group, the results indicated a p value greater than 0.05 which is not statistically significant ($p <.476$). This shows that gamified

education has a major beneficial influence on vocabulary acquisition; however, the control group exhibited no significant improvement between the pre-test and post-test ($p =.607$). This indicates that conventional approaches did not significantly affect the students grades in the control group while in the experimental group, there was no significant difference between post-test and delayed post-test scores ($p =.476$), demonstrating that vocabulary improvements were effectively preserved over time; thus, vocabulary retention was presented.

Comparison of pre and post test results between the groups

Table 4: Independent Samples Test (Between Groups)

Independent Samples Test										
F		Levene's Test for Equality of Variances		t-test for Equality of Means						
		Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
								Lower	Upper	
Pre Test	Equal variances assumed	.212	.647	-7.11	58	.480	-.33000	.46418	-1.25916	.59916
	Equal variances not assumed			-7.11	57.992	.480	-.33000	.46418	-1.25916	.59916
Post Test	Equal variances assumed	.978	.327	-11.287	58	.000	-6.15000	.54487	-7.24067	-5.05933
	Equal variances not assumed			-11.287	55.482	.000	-6.15000	.54487	-7.24172	-5.05828

The results of the independent samples t-test presented in Table 4

shows that the pre-test scores were very similar before intervention between the

control and experimental groups before the test ($p = .480$), and this shows that both groups started with about the same number of vocabulary knowledge; thus, the changes in the students' test scores and the improvement in vocabulary acquisition and retention can be explained by the intervention. However, there was a statistically significant difference between the groups at the post-test stage which is indicated by the p value which is <0.05 . These results significantly support the effectiveness of digital gamification in improving vocabulary acquisition and retention among Grade 5 EFL learners.

Discussion and Conclusion

The results of this study demonstrate that digital gamification significantly enhanced vocabulary acquisition among Grade 5 EFL learners in comparison to conventional teaching techniques. The two groups had equivalent vocabulary knowledge before the study which was proven through the absence of significant differences in pre intervention test results.

The post intervention test outcomes of the experimental group, which had gamified instruction, showed remarkable increase in vocabulary acquisition. While the control group where no intervention took place was

evidenced by the statistically significant difference in the mean scores of the pre and post-tests ($p < 0.05$). Meanwhile, the control group which was instructed using traditional teaching methods did not exhibit any notable enhancement from pre-test to post-test reflected by the non-significant change of the mean scores of the pre and posttests of this group ($p > 0.05$). According to these results the enhancements gained by the experimental group can be ascribed to the digital gamification intervention.

These results come in hand with the results of many studies done in different contexts. For instance, Arif (2025) showed that gamification improved both immediate recall and delayed retention in online learning platforms. This is also emphasized by Octaberlina (2023) who found that high school students who learned through gamified lessons did better than those who learned through traditional methods. This difference shows how important it is to change how languages are taught in Lebanon, especially by using fun, learner-centered methods like digital gamification. The mechanisms that the gamified learning environment provide such as points, badges, and challenges can be administrated to learners using online learning platforms. These elements serve

as external motivators that capture learners' attention and provided a continuous sense of achievement and progression. Digital points act as immediate feedback, allowing learners to recognize incremental progress. Badges serve as tokens of success, increasing learners' sense of accomplishment and status and challenges stimulate the learners' problem-solving and critical thinking skills, adding an element of fun and competition.

In this study, learners weren't just passively receiving vocabulary instructions, they were actively building information, evaluating their understanding, and strengthening their memory through game components like points, leaderboards, and digital challenges.

The study further examined the effects of digital gamification on vocabulary retention using a delayed post intervention test that was done on the experimental group. The test results indicated that vocabulary retention was enhanced, and it was clear from the p value that was above significance level that the differences between the delayed and immediate test scores was not statistically different. This indicates that students still remembered the vocabulary that they learnt during the five weeks of intervention.

The results are in line with what has been shown around the world that digital gamification helps students remember and retain vocabulary in a better way. For instance, Fithriani (2021) discovered that university students employing mobile-assisted digital gamification maintained a greater amount of vocabulary over time in comparison to those utilizing traditional approaches which was also found in this study. Moreover, Babazade (2024) demonstrated that digital tools improved both immediate vocabulary acquisition and long-term retention among EFL learners, attributing these results to the interactive and repetitive characteristics of gamified practice. This was also emphasized by Taskiran (2024) who found that Chinese middle school students who participated in gamified digital activities had markedly superior vocabulary memory in delayed post-tests compared to their traditionally educated counterparts.

These findings collectively show that digital gamification enhances language retention by offering several possibilities for repetition, engagement, and feedback. On the other hand, conventional techniques like rote memorization and drills that are prevalent in Lebanese classrooms frequently do not yield enduring information, since they

inadequately stimulate memory or build significant associations with vocabulary items (Hasan, 2024) and allow the information to stay in the short-term memory which makes students forget what they learnt more easily since they were not part of the learning process. This is shown in the results of this study where students in the control group, educated using traditional methods, failed to retain language successfully after the immediate assessment.

Conclusion

The results clearly demonstrate that digital gamification is a powerful pedagogical tool in language learning. The experimental group, which experienced gamified learning, recorded notable and significant increase in the test score after intervention, indicating a substantial improvement in vocabulary acquisition and retention. The findings of this study reveal the potential of technology-integrated and engagement-based approaches to transform language learning since students become more immersed in the learning process. In addition, the results show the limitations of conventional teaching methods that limit the students' engagement and participation and positions them

as passive receivers of knowledge. When the students are active, they are more likely able to comprehend new vocabulary words and retain this knowledge because digital gamification provides fun and enjoyable learning environment that encourages students to share, engage, collaborate and interact. Moving forward, educators in Lebanon and beyond should consider integrating digital gamification into classroom practice as part of broader educational reform efforts. Children typically love playing games, the ideas of fun, mobility, and competition are all linked to games and children may become disinterested rapidly if the same activity is done repeatedly which is rooted in traditional learning methods. Moreover, students have a shorter attention span than adults do, the teacher must therefore employ a creative and efficient strategy to keep the students' attention while they are learning the material like what was done in the five weeks of intervention in this study.

The results of this study have important implications for English language instruction and curriculum development in Lebanon. They show that digital gamification can be a good way to teach young students new words and help them remember them.

This means that teachers should use digital games like quizzes, points, and leaderboards in the classroom to keep students interested and motivated. In addition, the results show that traditional rote-based methods have minimal impact on enhancing students' vocabulary acquisition and retention compared to digital gamification tools which makes it even more important for curriculum designers to switch to learner-centered methods that encourage active engagement and meaningful language use. The findings support initiatives for educational reform focused on updating EFL instruction in Lebanese schools, in accordance with global trends prioritizing digital literacy and innovative pedagogy.

Limitations

The study had several limitations. First, the study relied on small sample size (N=60) which was conducted only on a single school in Beirut and this may reduce the applicability of the results on a broader scope. In addition, the study was quantitative, and there were no qualitative study instruments like interviews due to time constraints. Moreover, the study focused exclusively on vocabulary without examining how digital gamification might affect reading, writing, speaking,

or listening which are also important in language proficiency.

Recommendations

It is recommended that teachers add game-like features like points, badges, and challenges to lesson plans to get students more interested and motivated. They have to make sure that the rules of the game are in line with the learning goals so that the focus stays on learning.

As for curriculum designers, they can create scalable and adaptable gamified resources that can be tailored to various learner levels and situations, increasing the accessibility and enjoyment of language acquisition.

It is recommended that researchers carry out extensive longitudinal research to investigate the enduring impacts of gamification on language memory and performance. They can also use randomized control trials and a wide range of participant samples to make sure that the results may be applied to a wide range of situations.

As for technology developers, it is recommended that they make gamified platforms that are easy to use and interactive for language learners. These platforms should have real-time feedback, adaptive challenges, and social aspects to encourage both competitive and cooperative learning.

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