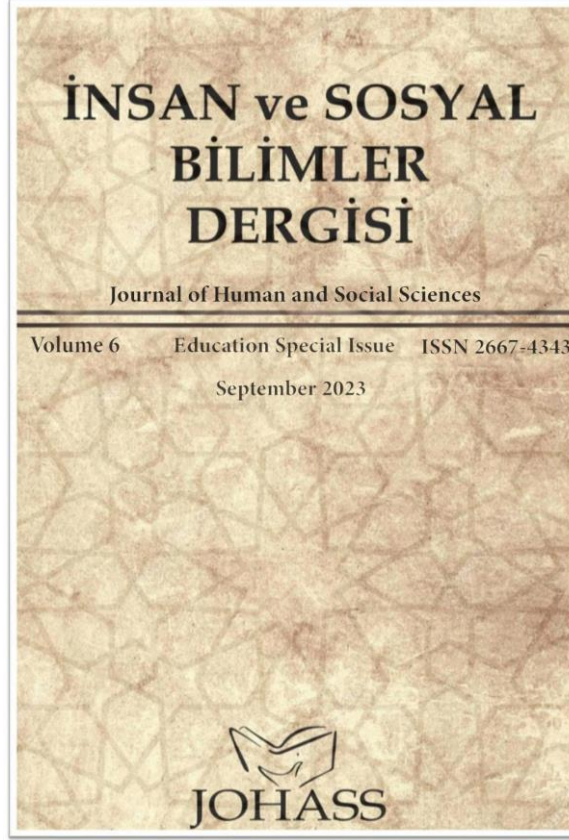


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### Comparative Analysis of Gamification and Storytelling Strategies in EFL Vocabulary Acquisition

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## Comparative Analysis of Gamification and Storytelling Strategies in EFL Vocabulary Acquisition

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### Abstract

In both first and second-language education, vocabulary acquisition serves as a crucial skill. This quasi-experimental research study was carried out to assess the impact of storytelling and gamification strategies on the lexical abilities and working memory development of EFL young learners. The research cohort comprised 40 Turkish students aged 9 to 10 and the study was conducted within the confines of an elementary school affiliated with a foundation in Türkiye. An independent sample t-test was employed, permitting the evaluation of variations in vocabulary assessment scores which were conducted on four separate occasions both within and between groups. The empirical findings reveal a notably higher level of achievement within the gamification environment as opposed to the storytelling milieu, resulting in more substantial lexical advancements. Accordingly, this study ascertained that the integration of educational games as a pedagogical strategy with young learners serves to enhance vocabulary acquisition. Furthermore, the research uncovered the salient influence of repeated exposure on the expansion and retention of acquired vocabulary over time. In light of these findings, this study advocates for a more intensive integration of educational games within language instruction, particularly in the context of children embarking on the journey of learning English as a foreign language.

**Keywords:** Episodic memory, gamification, storytelling, vocabulary acquisition, EFL young learners

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## **Introduction**

Learners' ability to acquire a language is greatly influenced by their vocabulary (Cameron, 2001). It is recognized that vocabulary links the four main skills: Listening, speaking, writing, and reading. According to Laufer and Nation (2016), the acquisition of a substantial vocabulary is essential for the proficient utilization of a second language because it empowers students to effectively employ linguistic structures and functions. In a similar vein, Susanto (2017), highlights the importance of lexical knowledge for developing conversational skills and expanding one's vocabulary in a second language. To draw the importance of vocabulary instruction, Thornburry (2002), asserts that teaching words is a fundamental component of learning a language. However, instruction needs to account for the traits of young learners, who tend to lose interest quickly due to their short attention span and desire for enjoyment while learning. In order to make language learning exciting and instructional, Cameron (2001), suggests that cartoons, realia, songs, games, puppets, and toys are appropriate materials that might excite young learners' imaginations. Bruder (2014), distinguished between "games" and "gamification, the latter of which is defined as employing game concepts and gamified thinking to improve engagement. Additionally, it should be noted that to qualify as a "gamification activity," the entire group or all participants must be proficient in using the game's ideas and tactics.

Gamification is the process of applying game mechanics to non-game contexts. It enhances the performance of learners by drawing their attention to the task, motivating them to participate, and increasing the flow to accomplish maximum achievement. Integrating games into the methodology increases class participation, and it offers lots of benefits to young learners (Gruss, 2016). Playing games allows students to learn a language more quickly and readily while also boosting their enthusiasm and self-confidence (Wang, 2011).

Working memory is beneficial for a variety of cognitive tasks because it can temporarily store a finite quantity of information in an accessible state (Adams et al., 2018). In addition to choosing which information should be retained in long-term memory, it plays a crucial part in decision-making. According to Cowan (2017), working memory is a set of mechanisms that temporarily preserves a limited quantity of information in a state of greater availability for use in current processing. Working memory not only temporarily stores new knowledge but also determines what to do with it, such as what to do next or how to react right away to an emergency. In relation to language acquisition, episodic memory helps

retrieve a previous experience in acquiring new input processes. Episodic memory is the link between one's relations between their environment, experience, and input (Tulving, 2002). The episodic memory begins to form at the age of 4 and deteriorates as people become older (Riggins et al., 2015). According to Fansury & Januarty (2018), semantic and episodic memory play an important part in language recall. Examples of episodic memory types include creating a classroom environment that is similar to a daily life situation (such as a cafe), asking students to keep diaries and build new language skills upon it, using authentic materials, etc. In relation to working memory, the best fit for the combination of episodic memory and language acquisition is 'storytelling'. This approach has the advantage of engaging students' working memory and episodic memory, enabling them to connect their personal experiences with recently learned material, a process referred to as internalization.

### **Research Purpose and Problem**

Within the EFL setting, a conspicuous gap exists in research that directly assesses the effectiveness of storytelling and gamification techniques, despite the extensive investigation into diverse methods aimed at improving vocabulary skills in second language acquisition. Accordingly, the purpose of this study is to assess the impact of gamification and storytelling on young learners' EFL vocabulary retention. To undertake the study, the following research questions have been incorporated:

1. To what extent does gamification facilitate the vocabulary retention of EFL young learners?
2. To what extent does storytelling facilitate vocabulary retention in EFL young learners?
3. To what extent do the storytelling and gamification groups make progress in vocabulary retention over time?

### **Method**

#### **Sample and Population**

According to Piaget's theory, 7-11 years are in an operational stage of cognitive development and can solve concrete (hands-on) problems logically. However, they are not able to solve abstract problems (as cited in Woolfolk & Nicolich, 1980, p. 53). Consequently, the study's participants comprised 40 Turkish fourth-grade students from two classes, aged

between 9 to 10 years old by which time they had been studying English as a foreign language for four years.

### **Data Collection Tools**

To assess the gained vocabulary knowledge of the students in both groups, four sets of vocabulary exams comprised of 12 vocabulary items were employed. For the storytelling group, a total number of 25 animal stories for young children have been used. 7 target vocabulary items including *whale, camel, leopard, elephant, kangaroo, crab, and butterfly* were practiced with Rudyard Kipling's *Just So stories* (Kipling, 1902); '*How the Whale got his Throat*', '*How the Camel got his Hump*', '*How the Leopard got his Spots*', '*The Elephant's Child*', '*The Sing-Song of Old Man Kangaroo*', '*The Crab that Played with the Sea*', and '*The Butterfly that Stamped*'. The other vocabulary items were utilized from the Aesop for children (Aesop & Winter, 1919). On the other hand, the gamification group received online game training to acquire the target vocabulary (<https://www.eslgamesplus.com/>).

### **Data Collection and Analysis**

The SPSS (Statistical Package for Social Sciences) for Windows 22 program was used to record and analyze the data. Before choosing the tests (parametric or nonparametric tests) to run on the data, the presumptions were tested. The distribution's normality was determined using the Kolmogorov-Smirnov, kurtosis, and skewness values, further tenets of the normal distribution. The difference between the dependent groups was examined by the Repeated ANOVA test in the independent sample t-test (Independent sample t-test) comparison of two independent groups. The determination of whether the obtained values were significant was made using the significance threshold of 0.05 as a criterion. In terms of procedure, both groups of students were asked to match the vocabulary items with the pictures. Twelve vocabulary items from the pool of 48 words were randomly chosen for the vocabulary tests.

### **Intervention Program**

The intervention program involves practicing a set of 48 vocabulary items divided into 12 vocabularies of the weekly planning. Both groups practiced the target vocabulary using flashcards. However, the gamification group was trained by online flashcards. Additionally, the storytelling group used paper-based stories while the gamification group received training

using online game tools. The stories that included the target vocabulary items were deliberately chosen as they provide context-based learning.

**Table 1**

*Target Vocabulary and Instruments Weekly Modules*

	<b>Target Vocabulary</b>	<b>Storytelling</b>	<b>Gamification</b>
<b>Week 1</b>	Dog-goose-frog-ox-rabbit-weasel-cat -raven-swan-peacock-crane-pigeon	The <b>Dog</b> and the shadow The <b>Goose</b> & the Golden Egg The <b>Frogs</b> & the <b>Ox</b> The <b>Rabbit</b> , the <b>Weasel</b> , & the <b>Cat</b> A <b>Raven</b> & a <b>Swan</b> The <b>Peacock</b> & the <b>Crane</b> The thirsty <b>Pigeon</b>	Spin the wheel game
<b>Week 2</b>	Wolf-sheep-lion-mouse-goat-tortoise-ducks-monkey-dolphin-ant-grasshopper-pig	The <b>Wolf</b> & the <b>Sheep</b> The <b>Lion</b> & the <b>Mouse</b> The Two <b>Goats</b> The <b>Tortoise</b> & the <b>Ducks</b> The <b>Monkey</b> & the <b>Dolphin</b> The <b>Ants</b> & the <b>Grasshopper</b> The Sheep & the <b>Pig</b>	Online crossword
<b>Week 3</b>	Crab-butterfly-whale-camel-leopard-elephant- kangaroo-bear-bees- cock-fox-snake	The <b>Crab</b> that Played with the Sea The <b>Butterfly</b> that Stamped How the <b>Whale</b> got his Throat How the <b>Camel</b> got his Hump How the <b>Leopard</b> got his Spots The <b>Elephant's</b> Child The Sing-Song of Old Man <b>Kangaroo</b> The <b>Bear</b> & the <b>Bees</b> The <b>Cock</b> & the <b>Fox</b> The Farmer & the <b>Snake</b>	Online scrabble
<b>Week 4</b>	Zorilla-aardvark-coyote-flamingo-giraffe-jellyfish-koala-orangutan-tarantula-vulture-walrus-yak	Short stories Zoo Transcript ( <a href="https://www.calameo.com/books/0066889393cb354d3391e">https://www.calameo.com/books/0066889393cb354d3391e</a> )	Online storytelling

## Findings

**Table 2**

*The Comparison of Word Recall Success Between Groups and Time*

	Game-based vocabulary teaching		Story-based vocabulary teaching		t	p
	Mean	Standard deviation	Mean	Standard deviation		
1st exam	83,59	15,38	82,58	13,72	0,28	0,78
2nd exam	88,64	12,47	76,52	17,11	3,29	0,01
3rd exam	88,64	12,47	75,76	15,64	3,70	0,01
4th exam	88,89	12,61	84,09	11,67	1,60	0,11
	*F:8,29; p:0,01 mean :1<2,3,4		**F:1756,6; p:0,01 mean:2,3<4			

\*Greenhouse-Geisser

\*\*Sphericity Assumed

t: Independent sample t test

The success rate of word recall in the gamification group shows a statistically significant difference between the exams conducted over time (F:8.29;  $p < 0.05$ ). When comparing the exam results using the Bonferroni method it is seen that the 1st exam results were significantly lower than 2, 3, and 4.

The success rate of word recall in the storytelling group shows a statistically significant difference between the exams conducted over time (F:1756.6;  $p < 0.05$ ). When looking at the difference between the exams by using the Bonferroni method, the 2nd and 3rd exams were found to be significantly lower than the 4<sup>th</sup> exams.

The independent sample t-test was then applied to examine whether each exam conducted showed a difference between the gamification and the storytelling groups. It was found that the 2nd and 3rd exams showed a statistically significant difference between groups. When the average values were taken into account, the word recall success percentage of the group that was taught vocabulary with games was higher than the group that was taught vocabulary by storytelling ( $p < 0$ ). It was found that the 1<sup>st</sup> and 4<sup>th</sup> exams did not show a statistically significant difference between groups ( $p > 0.05$ ).

## Discussion and Result

The current study enables a comparison of the effectiveness of storytelling and

gamification methods on Turkish elementary students' ability to learn and maintain vocabulary. According to the statistics, the participants in the gamification group excelled in vocabulary recognition and retention. The impact of exposure on the growth of the acquired vocabulary was another finding of the study. As a result, both groups showed progress over time regarding language retention.

The findings of the present study lend support to previous studies (e.g., Flores, 2015; Butler, 2015; Calvo-Ferrer, 2017; Jackson, 2017; Wu, 2018; Hitchen & Tulloch, 2018; Zou et al., 2019; Kurt, 2021) demonstrating how the gamification strategy efficiently aids students in increasing their vocabulary knowledge. In this regard, Costabile et al. (2003), suggest that younger generations might gain more from playing immersive games because their components are noted to maximize success and improve EFL vocabulary acquisition performance. Similarly, Wu (2015), compared the traditional paper-based learning approach with a mobile game-like APP. The findings showed that in terms of learning achievement, a mobile game-based method performed better than a paper-based one.

On the other hand, the past research on vocabulary acquisition through stories (Shepard, 1996; McGee & Richgels, 2000; Morrow, 2001; Dujmović, 2006; Barreras Gómez, 2010; Kazazoğlu & Bilir, 2021) emphasizes the benefits of learning English through storytelling. As technology integration advances across generations, educators must modify their teaching strategies to accommodate a variety of learning styles. Due to its proven capacity to maintain student involvement by stimulating their episodic memory, storytelling has traditionally been used as a highly successful way for teaching vocabulary in second language education. Nevertheless, due to the popularity of video games and the simple accessibility of other types of internet resources, young learners are becoming more accustomed to a range of stimuli. Considering this, offering a gamified educational framework to young students may be more beneficial than seeking to exclude them from the world of these captivating games.

### **Recommendations**

A significant paradigm change in education has occurred in recent decades due to technology gradually replacing several traditional pedagogical approaches. In contrast to past cohorts who learned and adapted to become technologically proficient, younger generations are innately steeped in technology from birth. The results of this study highlight how rapidly



developing technology is altering generational dynamics and the nature of schooling. Even tried-and-true instructional techniques like storytelling eventually experience diminishing returns. In the modern day, stronger stimuli are essential to achieve successful learning. Technology outperforms storytelling in terms of improving working memory capacity, even though both can engage different cognitive regions and create links between recently learned information and prior knowledge. It is crucial to understand that the storytelling paradigm needs to be modified to include new, practical strategies, even though it has not been deemed obsolete. Additionally, gamification features, such as progress bars, point systems, time constraints, and randomization, provide pupils with a sense of urgency that motivates them to perform above expectations. Teaching through multimodal approaches that incorporate suitable stimuli and tools is highly effective on vocabulary acquisition among a sample of today's young learners in Türkiye, and should be prioritized accordingly.

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