

The Impact of Gamification on Secondary School Students' Grammar Proficiency*

Gözde KOÇ¹

Başkent University

Selim Soner SÜTÇÜ²

Başkent University

Abstract

The aim of this study is to investigate the academic achievement of 6th grade students in grammar course gamified with an online tool and their opinions regarding the application. The study employed quasi-experimental design and a semi-structured interview was utilised to obtain the qualitative data. The application lasted for 6 weeks during which the experimental group received gamified grammar education whereas the control group received content-based language learning. Pre-test and post-tests were applied to both groups to check if there were any differences between the scores. Since the quantitative data were not parametric, Wilcoxon Matched – Pairs Signed Ranks Test and Mann Whitney U Test were used in the analysis of the data. Also, a semi-structured interview was utilised to learn about the opinions of the students in experimental group. The results yielded a significant difference in favor of students who received gamified grammar learning. The results were also supported by the positive opinions of the students towards gamification of grammar with an online tool as an in-class material.

Keywords: English Language Learning, Grammar Proficiency, Computer Assisted Language Learning, Gamification, Kahoot

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¹Graduate Student, Institute of Educational Sciences, Başkent University, Ankara, Türkiye, ORCID:0000-0002-6810-5402

Correspondence: gozde.ipek1@gmail.com

² Assistant Prof. Dr. Faculty of Science and Letters, Başkent University, Ankara, Türkiye, ORCID:0000-0002-8875-5955

Email: ssoner@baskent.edu.tr

Introduction

Traditional teaching strategies frequently concentrate on a single learning domain, such as the cognitive or psychomotor domain. Contrarily, this hardly satisfies the criteria of knowledge, competence, and attitude. As a result, teaching strategies that concentrate on a single learning area both impede active learning and cause learning to be delayed or stopped by lowering students' motivation. Students must employ multiple abilities at once to solve problems in the real world in order to develop the new century skills. This requires the development of the learning environments which consider new teaching strategies and surroundings. Even though traditional methods have been refined over hundreds of years and include tremendously valuable and useful knowledge, today's children need much more (Warschauer, 1998, p. 62). As a result of this urgent need triggered by the immense development in Internet and Communication Technologies (ICT), technology-based learning models, environments, and tools have started to replace traditional learning models. Language learning has always been open to these innovative technologies and been one of the first fields to adopt them, with an established approach namely Computer Assisted Language Learning (CALL) which serves as the key catalyst for the development of technology based pedagogical approaches. Grammar is the base of language learning and effective use of language skills calls for a high degree of grammatical competence. However, teaching of grammar has always been perceived as difficult to teach (Brindley, 1984; Baron, 1982) and boring to learn (Leki 1995; Schulz, 2001). CALL has been proved to be effective when teaching foreign language, and playing computer games with students has been shown to increase their understanding of the grammatical structures of the target language (Simoës, 2013, p. 13). There is a continual need to investigate the affordances of new emerging technologies that can be used to gamify grammar teaching. Hence, this study aimed to investigate the impact of one of these Technologies; Kahoot! as a gamification tool on the grammar knowledge achievements of English language learners as well as to assess students' attitudes and opinions on the usage of Kahoot! for grammar instruction.

Gamification

Technology advancements have led to a rise in the popularity and reality of games. Reality can resemble a game to certain people (Çağlar & Kocadere, 2015, p. 84). In the 1930s, Huizinga referred to our species as "Homo Ludens," which is Latin for "playful human people." Today, games have merged seamlessly into everyday life. The act of playing games is currently being used to increase learning and performance in learning-teaching processes, and there are many games and gamified apps related to learning and awareness that are readily available (Yıldırım & Demir, 2014, p. 660). The basic objective of gamification is to encourage and promote positive behaviours by integrating game design aspects into non-game themes, circumstances, or services. Huotari and

Hamari (2013) define gamification as a technique for boosting motivation and emphasising desired actions.

Games have increased in popularity and reality as a result of technological developments and have become an integral aspect of people's lives today. There are numerous games and gamified applications related to learning and awareness widely available, and the act of playing games is now being utilized to improve learning and performance in learning-teaching processes (Yıldırım & Demir, 2014, p.660). Gamification's main goal is to use game design elements in non-game topics, situations, or services to stimulate and promote desirable behaviors. Gamification is described as a motivation-enhancing method used to emphasize desired actions, according to Huotari and Hamari (2013).

Gamification in this context considers the requirements and objectives of users by offering an intrinsic motivation coupled with dedication (Kapp, 2012 p. 90). The game's rules and manner of thinking, according to Zichermann and Cunningham (2011), are created to hold players' interest and facilitate problem-solving. The term "gamification" was first used in the disciplines of digital media and marketing, but since 2010 it has also been applied to other fields (Deterding, Dixon, et. al., 2011). Gamification is also cited as being extremely helpful in learning by Pappas (2014) as listed below:

- Gamification will inspire interest in and dedication to the lesson,
- The idea of e-learning will be both enjoyable and educational,
- The information will become permanent,
- Students will have the chance to experience their real lives;
- It will offer an effective learning environment.

Theoretic Approaches in Gamification

Along with the fact that gamification contains important parts of the game elements, motivation and motivational behavior change are seen on the basis of gamification. In this context, taking into account the theoretical approaches in gamification studies in the field of education, Malone Motivation Model, Self-determination Theory and Fogg Behavior Model are the main approaches that should be emphasized. These three approaches will help to achieve a better result by understanding the psychological basis of gamification in the process of implementing gamification on a system (Glover, 2013, p.64).

Malone and Lepper Intrinsic Motivation Classification

This model, which was developed by Malone and Lepper whose starting point was educational computer games took the final form of the intrinsic motivation classification. This classification; consists of struggle, curiosity, fantasy and control elements.

- Struggle: Having the most appropriate level of difficulty according to one's performance towards a goal or result.
- Curiosity: The formation of a state of curiosity by taking into account the knowledge status of the person and presenting the appropriate level of information in a complex and contradictory way.
- Fantasy: Making the person think that s/he is in that environment or taking on a character by creating an imaginary environment or extraordinary environments.
- Control: The person has authority and can use his/her authority through different options within the structure. (Lepper, 1973, p.135)

Self-Determination Theory

Self-determination theory is an important motivation theory that deals with extrinsic and intrinsic motivation problems. In this theory, three basic psychological needs, which are universal and human innate, are mentioned, namely autonomy, competence and relatedness. These needs must be nurtured for people to reach their potential (Ryan & Deci, 2000, p.72).

- Autonomy: The ability of a person to act according to his own will without being affected by any external factor, to make a choice.
- Competence: Having the motivation to do any job or affecting the level of motivation.
- Relatedness: One's need to be in contact with other people.

Fogg Behavior Model

According to Fogg (2009), in order to achieve the desired behavior, one must have three components: sufficient motivation, skill and an effective trigger. (p.4)

- Motivation: The necessary motivation for the desired behavior to occur.
- Skill: The opportunity and skill that the person has to acquire the behavior.
- Trigger: Triggering the behavior to occur and initiate.

Gamification in EFL

Learning a new language is an intense and challenging process that requires mental, emotional, and physical commitment on the part of the learner. The main objective of gamification is to increase user engagement and motivation through the use of game elements like points, leaderboards, and instant feedback. The L2 learning strategies also make use of these elements. Technology has been a significant factor in L2 learning over the years and has been essential to learning second languages Ybarra and Green (2003) (p.56). "In L2 learning, integrating technology has become crucial, and the incorporation of Computer Assisted Language Learning (CALL) has been instrumental for the development of teaching and learning," according to Flores (2015) (p. 37).

The effectiveness of gamification was the subject of a year-long study by University of Colorado Denver professor Traci Sitzmann (2011). She gathered data from 6,476 adults in total. The results showed that learners who learned in the following manner improved most quickly (p.512) ;

- Skill-based knowledge level increased by 14%
- Factual-knowledge level increased by 11%
- Retention of material learnt increased by 9%

Technology has a crucial role in EFL classrooms and enhances students' interest. Shyamlee and Phil (2012) claimed that;

The last two decades have deposed a revolution due to incipience of technology, and has shifted the dynamics of various industries, and has also affected the industries and the way people communicate and work in the society. This speedy rising and advancement of information technology has proposed a greater pattern to explore the new teaching model. As a result, technology plays a highly important role in English teaching (p. 69).

The use of games in the classroom environment attracts students' interest and boosts their motivation to meet learning objectives, according to a 2018 study by Bicen & Kocakoyun. Consequently, gamification might be utilised as a successful learning method when instructing L2 (p.22). Çakıroğlu et al. (2018) used gamification techniques to investigate the relationship between student engagement and academic success. The study involved 37 college students, ranging in age from 18 to 24. The use of gamification in the classroom was found to increase students' engagement and academic achievement (p.175). There aren't many studies that concentrate on how gamified learning affects students' achievement in a particular area of language acquisition, such vocabulary learning. The pretest posttest quasi-experimental study on two separate groups of engineering students done by Yip and Kwan (2006) is one of these investigations. Websites provided assistance with the group's vocabulary instruction. Contrarily, the control group studied the words in the conventional way. The outcomes demonstrated that the experimental group outperformed the control group in terms of academic growth (p.240).

Kahoot! in EFL

Since Kahoot! was launched in 2013, its popularity has grown significantly across the globe, especially in schools (Pede, 2017, p.23). According to Kapuler (2015), Kahoot! was the 36th-best Student Response System (SRS) application out of 100 (p. 15). According to Chiang there are three key aspects of Kahoot! which are classified as follows: "Kahoot! offers a game-like response platform for learners (Johns, 2015; Medina & Hurtado, 2017, p.89) and a multimedia tool promoting participation, which provides a competitive learning format (Dellos, 2015) and leads to easy acceptance by the click generation." (p. 34). Additionally, SRS applications are potent tools that

support by enhancing students' problem-solving and cognitive skills, critical thinking, and knowledge, claim Bicen and Kocakoyun (2018). Wichadee and Pattanapichet (2018) conducted a quasi-experiment study with thirty-eight students which are in experimental group and thirty-nine control group at a private university in Thailand on gamified learning performance in language learning. Ten vocabulary quizzes and five grammar quizzes were applied to participants. While the experimental group was assessed with Kahoot!, control group was assessed by traditional paper based quizzes. At the end of the experiment, a significant difference between control group and experimental group was found. Experimental group achieved success by means of fun and competitive environment provided by Kahoot! (p. 79). A literature review conducted by Klimova and Kacetl (2018) about effectiveness in vocabulary acquisition by using computer game-based learning showed that Kahoot! has a positive impact on students' motivation and concentration on vocabulary acquisition decreasing students' unwillingness and anxiety in the lesson. Uzunboylu (2009) conducted a study to determine the effectiveness of Internet-based education on English grammar teaching, while the experimental group used Kahoot! for English grammar exercises, the control group did similar grammar exercises with the traditional method. It was found that the success of the students in the experimental group was higher than the success of the students in the control group (pp. 140-150).

Method

Participants

Students in a private college secondary school's sixth grade were used to collect research data. Since it is challenging to collect data using experimental approach for social sciences, including quasi-experimental technique, an appropriate sampling technique was utilized for determining the sample. This common sampling strategy is employed when it is very challenging for a researcher to create a sample and obtain the experimental subjects while using the method that is used for experimental methodology. Due to limitations in terms of time, money, and employment, the sample is chosen using this method from readily available and usable units (Büyüköztürk et al., 2008, p.32). For these reasons, the sample for this research was composed of 80 6th graders from 500 school children. The study was carried out using two groups in accordance with the quasi-experimental methodology. 40 and 39 B1 Preliminary level English sixth graders enrolled in a private school made up the experimental and control group respectively. For both groups, Cambridge University Press's "Power Up 6" book was utilized.

Data Collection Tools

In this study, quasi-experimental method was utilised. Two groups were created as experimental and control groups. Achievement tests with 20 questions were given to each group as a pre- and post-test, and the results were used to collect quantitative data for this study. The achievement

test questions were selected from a pool of questions with a high level of validity, reliability, and distinctiveness. The achievement tests used in the study were selected from the "Sınav College Assessment and Evaluation Unit Question Bank" of previously analysed questions. Statistics on each item is provided in Tables 1. and 2. Table 1. provides statistical data regarding the achievement test items that were used as the pre-test.

Table 1. Statistical information about the achievement test used for pre-test

Question no	Difficulty level	Difficulty	Distinctiveness	Index of validity
1	Easy	0.66	0.68	0.64
2	Easy	0.58	0.83	0.79
3	Medium	0.55	0.58	0.61
4	Hard	0.38	0.71	0.68
5	Medium	0.58	0.83	0.82
6	Medium	0.61	0.68	0.69
7	Easy	0.58	0.72	0.69
8	Hard	0.50	0.78	0.80
9	Easy	0.58	0.83	0.81
10	Medium	0.61	0.44	0.43
11	Hard	0.40	0.67	0.69
12	Medium	0.61	0.78	0.69
13	Medium	0.63	0.32	0.36
14	Hard	0.37	0.73	0.71
15	Medium	0.67	0.44	0.39
16	Medium	0.47	0.72	0.78
17	Easy	0.50	0.89	0.85
18	Easy	0.53	0.74	0.72
19	Medium	0.50	0.78	0.75
20	Medium	0.47	0.80	0.81

Reliability Co-efficient:0,71

Statistical data regarding the achievement test that was used as the post-test is given in Table 2 below.

Table 2. Statistical information about the achievement test used for post-test

Question no	Difficulty level	Difficulty	Distinctiveness	Index of validity
1	Medium	0.65	0.42	0.40
2	Easy	0.57	0.84	0.80
3	Easy	0.59	0.71	0.67
4	Medium	0.42	0.69	0.80
5	Medium	0.51	0.80	0.74
6	Medium	0.62	0.36	0.34
7	Hard	0.36	0.69	0.67
8	Medium	0.59	0.76	0.70
9	Easy	0.52	0.75	0.73
10	Medium	0.57	0.55	0.63
11	Hard	0.38	0.71	0.69
12	Medium	0.55	0.85	0.81
13	Hard	0.42	0.68	0.70
14	Medium	0.60	0.63	0.67

15	Hard	0.51	0.77	0.82
16	Medium	0.46	0.81	0.82
17	Easy	0.60	0.70	0.66
18	Medium	0.63	0.46	0.45
19	Easy	0.48	0.86	0.84
20	Easy	0.61	0.87	0.77

Reliability Co-efficient:0,70

Each group used a copy of the English textbook Power Up 6 by Cambridge Press, which is also used in many Turkish schools. Target grammar was taught to the experimental group via Kahoot! while the control group received conventional classroom teaching techniques over the course of four weeks. Semi-structured interviews were used to collect qualitative data for the study, which looked into the students' perceptions of the gamification programme Kahoot! Only members of the experimental group took part in the semi-structured interview after four weeks of instruction. Ten students from the experimental group volunteered to participate in interviews after the application was finished and the post-test was given.

Interview questions were utilised to get an answer to the sub-problem "What are the students' perspectives on learning English grammar using Kahoot! " To confirm the validity of the interview questions, an expert also reviewed the questions. A preliminary interview with five students who were familiar with the application was also conducted to see whether the questions were clear. The questions were modified as needed to produce the final interview form. The following are the interview questions, which are primarily composed of 5 items and are meant to ascertain students' opinions about Kahoot! and English grammar instruction:

1. What do you think about the game Kahoot! as an in-class activity that you have participated in?
2. How did you feel while you were playing Kahoot!?
3. Should the game Kahoot! be used for English lessons?
4. What do you think about learning English grammar via Kahoot!?
5. Has Kahoot! changed your opinions towards learning grammar?

Data Analysis

The Mann Whitney-U test was used for unrelated samples in the data analysis, while the Wilcoxon signed rank test was used for related samples in order to analyse the quantitative data obtained from the study. Data analysis was done using SPSS Statistics 22. By using content analysis, data from the semi-structured interview was obtained. Before the analysis, data accuracy was checked, and the data were organized. Afterwards, lost data were examined to check whether there was an extreme value and the initial data of one participant who could not attend the post-test, was excluded from the data set. During normality analysis, coefficients of kurtosis and skewness were

examined, and it was seen that the data were not distributed normally. Therefore, it was decided to continue analysis with non-parametric tests since the data were not distributed normally and the sample group was small (Büyüköztürk, 2011). From research questions, Wilcoxon signed rank test was conducted for related samples in order to examine the difference between the pre-test- post-test points of the experimental group who took grammar lessons via “Kahoot! and the difference between the pre-test-post-test points of the control group who received course-book based language education. Mann Whitney-U test was used in order to examine the difference between post-test grades of the experimental group who took grammar lessons via Kahoot! and the control group who took grammar lessons by course-book based language education. Analysis results were reported.

Qualitative data from the research question of the study: “What are the EFL learners' attitudes and opinions about the use of Kahoot! for grammar instruction?” was analyzed using content analysis after the interviews ended. According to Yıldırım and Şimşek (2016), the process used in content analysis for the analysis of semi-structured interviews with students is to collect similar data within the framework of certain themes and concepts, organize and interpret these statements in a way that the reader can understand. The first step in data analysis in qualitative research is to prepare and organize the collected data for analysis. For this, the interviews are written on a piece of paper and arranged according to their types. The researcher separates the data into relevant wholes, assigns codes to these meaningful sections, and ensures that the data in these sections are grouped with comparable codes during the coding process. According to Yıldırım and Şimşek (2016), The generated codes are brought together and evaluated in the first step, and themes that can explain and categorize the data are discovered. This is referred to as thematic coding. In this study, the answers of 10 students from experimental group who voluntarily participated in the interview for the analysis of qualitative data to open-ended questions prepared in advance were analyzed as mentioned above. First, the data was written down, arranged for analysis, carefully read and coded, the themes were determined, the themes were associated with each other, and the meanings of the themes were interpreted, as in Creswell's (2014) Data Analysis Chart in Qualitative Research. Finally, an experienced analyst analyzed the data to ensure the accuracy of the information acquired.

The interview questions used in the study were examined by three consultants to ensure the validity. At the same time, it was determined that the questions were understandable by conducting a preliminary interview with five students who knew the application before. The final version of the interview form was created by making necessary adjustments to the questions. According to Stewart and Cash (1985), interviewing is defined as a reciprocal and interactive process by asking and answering questions in line with a predetermined purpose. Stewart and Cash (1985) divided the interview types into two as structured and unstructured. Interviews with predetermined questions and answers are structured and open-ended interviews are unstructured interviews (Yıldırım & Şimşek,

2016). Karasar (2013), on the other hand, described the interview as a data collection technique through oral communication. Karasar (2013) divided the interview types into three as structured, semi-structured and unstructured. In this interview, both pre-prepared questions, which are the requirements of the structured interview, were used, and new questions were asked when deemed necessary according to the rule that new questions can be asked according to the developments in unstructured interviews. Therefore, this interview can be qualified as a semi-structured interview. Karasar (2013) stated that personal information can be obtained more easily in individual interviews. For this reason, individual interviews were conducted to make the students feel comfortable.

Findings

Findings related to the first question of the research “Does Kahoot! have any significant impacts on 6th grade EFL learners’ achievements with respect to grammar knowledge?”

Wilcoxon signed rank test results regarding pre-test and post-test results of the students who are amongst the experimental group and received grammar lessons via Kahoot! are given in Table 3.

Table 3. Wilcoxon signed rank test results regarding pre-test and post-test results of the students who were in the experimental group and received grammar lessons via Kahoot!

Post-test-Pre-test	N	Rank average	Rank total	Z	p
Negative Rank	2	23.50	47.00	4.70	.000*
Positive Rank	36	19.28	694.00		
Equal	1				

The analysis results show that there is a significant difference between pre-test and post-test points of the students who are amongst the experimental group ($z=4.70$, $p<.05$). When the rank total of the difference points is considered, this observed difference is in favour of positive ranks meaning post-test points. As per the analysis results, application of grammar lessons via Kahoot! programme is effective in increasing the success points of the students.

Wilcoxon signed rank test results regarding pre-test and post-test results of the students who were in the control group and received course book-based grammar lesson are given in Table 4.

Table 4. Wilcoxon signed rank test results regarding pre-test and post-test results of the students who were in the control group and received course book-based grammar lesson.

Post-test-Pre-test	N	Rank average	Rank total	Z	p
Negative Rank	13	17.88	232.50	1.58	.114
Positive Rank	23	18.85	433.50		
Equal	3				

The analysis results show that there is not a significant difference between pre-test and post-test points of pre-test and post-test of the students who are in the control group ($z=1.58$, $p>.05$). As

per the analysis findings, there is not a meaningful difference between the success results of the students who received course book-based grammar lessons before and after the implementation.

Table 5. examines whether there is a change in the achievement test post-test points of the experimental group students who received grammar lessons via Kahoot! and the students who received course book-based language education.

Table 5. Mann Whitney U Test Results regarding post-test grades of the experimental group who received grammar lesson via Kahoot! and the control group who received grammar lessons through course book-based language education.

Group	N	RT	RA	U	Z	p
Experimental	40	45.28	1811.00			
Control	39	34.59	1349.00	569.00	-2.08	.038*

As per the applied Mann-Whitney U test results, achievement test points of the students who received grammar lessons via Kahoot! differs significantly compared to the students who received course book-based language education ($U=569.00$, $p<.05$). When the rank average is considered, success point averages of the experimental group students who received grammar lessons via Kahoot! are higher compared to the control group students who received grammar lessons through course book-based language education. As a result, it can be said that receiving grammar lessons via Kahoot! has an effect on achievement test results in language learning.

Table 6. examines whether there is a change in the pre-test points of the experimental group students who received grammar lessons via Kahoot! and the students who received course book-based language education.

Table 6. Mann Whitney U Test Results regarding pre-test grades of the experimental group who received grammar lesson via Kahoot! and the control group who received grammar lessons through course book-based language education.

Group	N	RT	RA	U	Z	p
Experimental	40	29.78	1191.00			
Control	39	50.49	1969.00	371.00	-4.38	.000*

As per the applied Mann-Whitney U test results, achievement test points of the students who received grammar lessons via Kahoot! differs significantly compared to the students who received course book-based language education ($U=371.00$, $p<.05$). When the rank average is considered, success point averages of the control group students who received grammar lessons through course book based language education are higher compared to the experimental group students who received grammar lessons via Kahoot!. Experimental group had lower points on achievement test before the commencement of the experiment. As a result of the conducted analysis, an additional Mann Whitney- U analysis regarding the difference between the post-test and pre-test results is shown

below in order to support the conducted analysis when the meaningful difference of pre-test and post-test points are taken into consideration.

Mann Whitney U test results regarding the difference between the post-test points and pre-test point of success points are given in Table 7.

Table 7. Mann Whitney U Test Results regarding post-test pre-test difference of the experimental group who received grammar lesson via Kahoot! and the control group who received grammar lessons through course book-based language education.

Group	N	RT	RA	U	Z	p
Experimental	40	50.00	2000.00			
Control	39	29.74	1160.00	380.00	-3.93	.000*

As a results of the conducted Mann-Whitney U test, it was seen that the achievement test points of the students who received grammar lessons via Kahoot! differed in a meaningful way compared to the students who received course book-based language education ($U=380.00$, $p<.05$). When the rank averages considered, it is seen that the success point averages of the experimental group students who received grammar lesson via Kahoot! are higher compared to the control group students who received grammar lessons through book-based language education. As a result, taking grammar lessons via Kahoot! has an effect on language learning.

Findings related to the second question of the research “What are the EFL learners’ attitudes and opinions about the use of Kahoot! for grammar instruction?”

The answers received from the students as a result of the semi-structured interview are as follows;

“What do you think about the game Kahoot! as an in-class activity that you have participated in?” to this question S1 answered that; *“I think that Kahoot! application is a very useful tool.”* S2 told that; *“I can understand the subjects better with Kahoot!”* S3; *“I find this tool very enjoyable.”* S4; *“It is very useful.”* S5; *“It’s a very fun tool.”* S6; *“Kahoot! is a very fun game.”* S7; *“I like competitive games like Kahoot!”* S8 told; *“A game tool which makes the lesson fun.”* S9; *“I think it’s a very fun game.”* S10 said; *“It was enjoyable and educational.”*

“How did you feel while you were playing Kahoot!?” to this question S1 answered that; *“I liked it very much.”* S2; *“I got very stressful while playing.”* S3 said that; *“I got so excited.”* S4; *“I got panicked because I don’t like losing.”* S5; *“I got bored.”* S6 said; *“Kahoot! was so exciting!”* S7; *“I felt competitive.”* S8; *“It was very fun, I really enjoyed while playing it.”* S9; *“I got panicked a little.”* S10 said; *“I felt happy while playing the game.”*

“Should the game Kahoot! be used for English lessons? Why?” to this question S1 answered; *“Yes it should because it makes the lesson more fun.”* S2; *“Yes, because I understood grammar*

better.” S3; “Yes, it made me happy.” S4; “No, actually it wasn’t fun that much.” S5; “Yes, because I like competitions and winning. It’s a good way of practicing.” S6; “Yes, I can understand better with Kahoot!” S7; “Kahoot! is a very useful tool in English lessons, so yes.” S8; “Yes, because it motivates me.” S9; “Yes, because it’s a fun game.” S10; “Yes, I understood the topic very well.”

“What do you think about learning English grammar via Kahoot!?” to this question S1 answered; *“Grammar learning is more fun with Kahoot!” S2; “I understood the grammar topic better.” S3 said; “It’s a fun way to exercise so I think we should use this tool while learning grammar.” S4; “It didn’t make any difference in learning the grammar.” S5 said; “English grammar will be very fun with Kahoot!” S6; “Learning grammar will be easier with this tool.” S7; “Kahoot! is a very useful tool in learning English grammar.” S8; “Grammar is easier this way!” S9; “I can understand English grammar better with this tool.” S10; “I think it was a very fun lesson and I understood the grammar better with this tool.”*

“Has Kahoot! changed your opinions towards learning grammar?” to this question S1 answered; *“Grammar wasn’t that hard I guess.” S2 said; “Yes, it changed my opinions towards grammar.” S3; “I guess I learnt better with Kahoot!” S4; “Yes, it has.” S5; “No, it hasn’t grammar is still very hard for me to learn.” S6; “Yes, it has.” S7; “Grammar is fun now.” S8; “It’s a fun way of practicing grammar so yes.” S9; “Yes, it has.” S10; “Grammar learning is easier this way.”*

Discussion

The first question of the study; “Does Kahoot! have any significant impact on 6th grade EFL learners’ achievements with respect to grammar knowledge”.

The answers to this question demonstrate that using Kahoot! to teach grammar increases student performance. Students in the experimental group who received grammar instruction using Kahoot! outperformed those in the control group who received grammar instruction using content-based language education on achievement tests. Students' academic success is clearly increased when learning environments are enhanced with new approaches and tools that grab students' attention rather than using conventional approaches. This outcome is consistent with other research in the area. 90% of university students who used Kahoot to learn grammar had success, according to a 2016 study by Zarzycka-Piskorz on this topic (p. 47). A further study by Genç & Ersoy (2017) revealed a substantial difference between the students' pre-test and post-test average grammar scores. Additionally, Kapp (2012) discovered a link between grammar instruction and the usage of gamification tools in the classroom. Wichadee & Pattanapichet (2018) shown through a different experiment that Kahoot! had a significant influence on student achievement. Kahoot! is particularly good at teaching grammar concepts, according to a comparable study by Turan and Meral (2017). (p. 46). According to a different study by Chotimah & Rafi (2018), students who used Kahoot! had greater success with

reading comprehension and were more motivated. Because the students enjoyed playing the game on their phones and their focus improved to comprehend the questions regarding the reading text.

The achievement test results from the experimental group students were lower than those from the control group students prior to the experiment. A considerable difference between the pre-test scores was shown by the analysis's findings. To fully comprehend this situation, it was discovered through the analysis of the variations in post-test and pre-test scores that the achievement test scores of students who participated in grammar lessons using Kahoot! were very different from those of students who took a content-based language education lesson. The experimental group was able to close the gap and even surpass the control group as a result of the Kahoot! application, which had been lagging behind the control group at the outset. Another finding of this study indicated that there wasn't much of a difference between the exam results of the students who completed content-based grammar courses before and after the course. The employment of traditional methods may affect students' success with grammar but may not produce a gratifying difference, which is in line with the findings of the study done by Turan and Meral (2018). Gamification enhanced students' cognitive and achievement levels, whereas learning grammar via a text book had minimal impact on students' performance with grammar, according to a comparison of gamification and traditional techniques.

The second question of the study; “What are the EFL learners’ attitudes and opinions about the use of Kahoot! for grammar instruction?”.

The majority of pupils showed support for the gamification of grammar using Kahoot! They claimed that using this strategy made learning enjoyable and that it ought to be used in other sessions as well. Additionally, they mentioned how Kahoot! helped them learn more effectively and with greater retention. The findings of this study are consistent with those of numerous other studies in the literature. According to the research done by McLaughlin & Yan (2017), this strategy had a positive impact on the students' cognitive abilities as well as their self-regulation, learning performance, motivation, and attitudes about the lesson. By fostering an enjoyable learning environment and allowing students to engage in more active learning, the technique significantly improves learning performance (p. 54). According to a research by Krause (2015), students' accomplishment and retention scores on exams increased by 25% and their average scores by 23% in classrooms that used gamification. It was discovered that the students' performance has improved by 40% in terms of memorability. Also in 2007, Dietz-Uhler et al. created an online course. By incorporating gamification components, they gave students access to an interactive learning environment. The statistics compiled at the completion of the courses revealed that the students' success was 95% higher than the average of the preceding six terms. According to Yıldırım & Demir (2014), game designs boost students' motivation and participation in class. According to research done by Güler & Güler (2015), incorporating game aspects into educational design has a good impact on students' motivation.

In a similar vein, Kocadere & Alar (2015) found that the gamified systems they utilised had a beneficial impact on students' motivation, fun, and success. They conducted a study in which they built a gamified evaluation system. In particular, Kahoot! is unmistakably a gamification tool that not only has a significant impact on students' academic achievement but also has an immediate impact on their motivation and interest.

Policy Implications

In terms of technology use in language education, this study is expected to contribute greatly to Türkiye's educational policies. By providing new insights for the use of cutting-edge technologies in education, such as digital gamification tools, this study is also believed to be helpful to other researchers and practitioners.

Conclusion and Recommendations

In recent years, technological applications have been seen as crucial tools for improving students' motivation and interest in learning a foreign language and acquisition (Licorish, 2018, p.12). According to Godwin-Jones (2015), teachers believe that using technology as a teaching tool contributes to learners' learning process. In teaching and learning, using technology provides enjoyable environment to the learners (p.15). The results of this study are inline with these findings. Gamification of grammar course help students better understand the grammar topics which are sometimes perceived as difficult to learn and least interesting in language learning. Using online gamification tools like Kahoot!, which was also the topic of this study, boost students' success together with their willingness and motivaton. Furthermore, the continual use of traditional techniques and tools could decrease students' motivation to learn and could be less effective. According to James Paul Gee (2003) well-organized and adapted technological games increase students' motivation and positively affect their participation in the classroom. Technological games are used for improving classroom dynamic, increasing students' success and motivation (p.18). English teaching can be made more effective with new technologies by using the sense of mystery and humor that strengthen students' motivation (Lee & Hammer, 2011, p.4). At the same time, a successful learning environment can be provided by integrating technology and English lessons by using the student's interests. With the help of available technology, students can develop their self-confidence and improve their competence to learn.

The findings of this study are also supported with answers given by the students to interview questions. Students mostly viewed Kahoot! as an effective tool in learning grammar topics much better than ever. They stated that they had so much fun that they lost the track of time when learning grammar topics via Kahoot! and their perspectives on learning grammar have changed in a positive way. They wanted the tool to be used in their other courses as well. Finally, the students stated that

Kahoot! facilitated grammar learning because it created an enjoyable opportunity to practice what they learnt.

It is believed that this study is important in terms of revealing how learning methods other than traditional learning methods contribute to students' learning. It might pave the way for studies with different variables effective in language learning. Also, gamification tools which take cultural aspects, different learner characteristics into consideration and adaptable to different learning needs could be designed and developed with the cooperation of experts from computer sciences.

Conflict of interest

No potential conflict of interest was declared by the authors.

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Ethical Statement

This research was ethically reviewed by Başkent University/Social And Humanities And Arts Research Committee and was approved ethically with the approval number 17162298.600-13 on 23 January 2021.

Credit Author Statement

Author 1 : Conceptualization and Methodology, Investigation, Formal Analysis, Original draft preparation. *Author 2* : Supervision, Methodology, Reviewing and Editing.

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