The effect of using online games on learning English language grammar and vocabulary by primary third-grade students

Amani Abd Almonem Yousef [1]*, Atef Abuhmaid [1]

[1] The Hashemite University, Zarqa, JORDAN
*Corresponding Author: amani.yosef123@gmail.com

ABSTRACT

Online games are considered as one of the most significant techniques in educational technology due to proven applications. They are used as a new method to improve English vocabulary and grammar for the English as a second language. This study aims to determine the effectiveness of using online games as technology based learning method among primary third-grade students (74 male and female students) in learning vocabulary and grammar. Quantitative data was collected by testing the students' achievement scores via a pre- and a post-test to see their improvement of grammar and vocabulary. The experimental group was taught using online games in which the students were involved, whereas the control group was taught using regular methods such as drills and pictures that depend on repetition. Statistical analyses were conducted for all experimental findings. The findings of the study revealed that employing educational online games, as an interactive learning technique, dramatically increased learning vocabulary and grammar. The mean ± standard deviation values for the achievement pre-test for two groups were 11.8 ± 3.1 and 9.8 ± 5.4, whereas the post-test values were 19.7 ± 2.3, and 11.3 ± 5.0. This proves the successful implementation of teaching and learning using online games in educational technology. In light of our findings, using online games teaching, learners improve their achievement through acquiring new vocabulary easily with correct grammar.

Keywords: online games, teaching English grammar and vocabulary, primary third-grade students

INTRODUCTION

We are living in a digital world dominated by the internet, and computers are becoming a natural part of people's life. Most of the students spend their free time interacting with computers and playing online games. This emergence of new technology should be followed by thinking about educational reasons for using it in the teaching and learning environment. Educational institutions play a crucial role in fostering students' abilities to achieve academic and career goals. The teaching and learning of the English language are particularly significant, as it enables students to develop communicative competence and language aptitude (Rao, 2020). English instructors employ various up-to-date teaching methods and approaches to facilitate effective English language instruction (Çil, 2021). Due to the importance of learning grammar and vocabulary in achieving communicative goals of English as a foreign language (EFL) learners, teachers have to be aware of most workable strategies, methods and techniques which help them in teaching it. Teachers and students should prioritize the acquisition of a key foreign language and emphasize English grammar and vocabulary as a crucial aspect of language courses (Hashim et al., 2019). Technology-based English

learning, particularly grammar and vocabulary, is challenging for some students. Primary education institutions are currently providing students with a favorable English-speaking environment and essential digital resources, such as language labs equipped with the latest technology. For primary students, Veronika et al. (2018) mentioned that learners should pass the lower stages first until they reach a higher stage. Accordingly, teachers need to use various methods and ideas to teach the English language by adding fun and interesting teaching and using technology in teaching to improve students' performance and to keep the language very familiar to them (Mursidin et al., 2022).

In some studies, for example, Klimova et al. (2015) mentioned that young learners have different characteristics and motivations from adult learners, and need an interesting, interactive teaching lesson. They added that cognitively teachers should produce new ideas and innovations with high creativity in teaching English at this level. Mursidin et al. (2022) remarks that using online games has many benefits in motivating and interacting in the classroom and bringing good competition among the students. In a similar way, Castillo-Cuesta (2020) states that using grammar and vocabulary games to review language lessons in a new method might be improving learners' communicative competence. Veronika et al. (2018) claims that learners become responsible for learning and using online games to develop

their language. So, using online games in teaching English grammar and vocabulary can facilitate teaching in a simple way, make it easier and more meaningful, and enhance effective communication.

Although it has become very difficult for primary students to acquire a second language, teachers need to use effective techniques to keep the language very familiar and to facilitate vocabulary and grammar acquisition by using online games (Sirbu, 2017). Sandamali (2020) states that the methods that the teachers are using can be a reason for the failure of the learners to master the language. Chen and Lee (2018) report that teaching English vocabulary in a traditional way using visual memory, flashcards, wall charts, and gestures might raise the possibility of learners forgetting most of the vocabulary they learned and memorized. According to Ibrahim (2016), among using traditional activities such as crossword puzzles, and worksheets, in teaching grammar, teachers noticed that learners are not interactive and not pleased with learning grammar. Bavi (2018) mentioned that teachers should adopt the using of effective technology which enhance boring lessons and motivate learners to practice English grammar and vocabulary and other four skills. Thus, online games are increasingly being researched as an alternative to the learning textbook (Vasileiadou & Makrina, 2017).

The current study, the researcher examined the effectiveness of online games in teaching grammar and vocabulary for third primary grade in Jordan public school. The researcher focused on the primary stage because younger learners are naturally attracted to using games more than older ones, and online games have several levels that are suitable for their ages. Therefore, the researcher investigated the effectiveness of using online games in raising the level of proficiency in English grammar and vocabulary for third-grade students and in motivating them to learn in Jordanian schools. The most important focus area was to achieve the required goals of learning new vocabulary easily and understanding the correct grammar rules by changing the environment of the English classroom.

As Da Silva (2014) mentions that online games may give students more opportunities, and high motivation to express their opinions and feelings, besides increasing cooperation. As he mentions, online games could help teachers to have a better view of using a new variety of entertainment activities. Azman and Dollsaid (2018) states that online games teaching can be useful to support the English language learning process in an effective way. Hasram et al. (2021) remarks that there are a lot of websites that provide and support online games to learn the English language, but the most important ones are "word wall" online games. Usually, when students are learning through online games, they think about how to be the winner by solving the game (Sipayung, 2018). However, the time is limited in "word wall" games, so the learners should have more attractive, accurate, and speedy in playing the online game (Wardani.H et al., 2020). Besides, Wardani.H et al. (2020) add that the teaching experts also should find a way for the learner to not just play the online games but also to learn the lesson, especially in learning English grammar and vocabulary. According to Bakhsh (2016), using another teaching alternative for attracting and interactive activities in learning English is a very funny and enjoyable way. Based on what Turner et al. (2018) and Mursidin et al. (2022) and other previous studies mentions for using online games the learners not only play the various games but also indirectly learn grammar and vocabulary effectively and do the exercises of their English textbook.

Online games have become popular in education in recent years. Efendi (2013) mentioned that combining education with games is integrated with entertainment education. According to Rosydiyah et al. (2022) and Sipayung (2018), students who learn English grammar or vocabulary through using online games produce positive moods and attitudes with more motivated studying time. Hou (2011) discussed educational online games as the employment of games to support teaching and learning, it can be used as a support tool to complement the traditional method of teaching grammar and vocabulary and improve it. Seli (2015) mentioned that using online games in teaching language grammar and vocabulary can facilitate teaching in a simple way that makes it easier, more meaningful, and with effective interaction.

Thompson and van Gillern (2020) state that usually English vocabulary is taught as words separated from the context, while the orientation of this study is not to separate teaching vocabulary from its context in learning. Thus, teaching vocabulary needs to be taught through online games. Saleh and Ahmed Althaqafi (2022) observed that learners have a very limited vocabulary; especially in the primary stages they faced some difficulties such as pronouncing vocabulary and memorizing their meanings just for spelling vocabulary in standard English. Taheri (2014) clarified that teachers should be required to use an interactive method to motivate learners in class, especially young learners who need more interactive activities to learn new vocabulary through playing games. Lorenset and Henrique Soufen Tumolo (2019) remarked that learners cannot communicate effectively without learning and mastering vocabulary. Veronika et al. (2018) observed that learners through online games do not think just about how to solve the games and win, the games rather introduce them to vocabulary inductively and provide a meaningful communication background by creating fun activities that encourage introverted students to participate in classroom activities, which make them do their exercises in the textbook easily. In traditional teaching, Sirbu (2017) states that the teacher is at the center of the class when she/he is giving instructions to the students and asking them to read, write, and memorize vocabulary. Chen and Lee (2018) report that teaching English vocabulary in a traditional way using visual memory, flashcards, wall charts, and gestures might raise the possibility of learners forgetting most of the vocabulary they learned and memorized.

Similarly, Rosydiyah et al. (2022) state that teaching grammar focusing on similar types of exercises from grammar textbooks might lead to learners' losing interest and motivation and being dependent on rules and memorization, which are considered dull and boring for students. Calvo-Ferrer (2017) claims that learners become responsible for learning by using online games to develop their language. Al-Eqabi and Alnoori (2021) concluded the necessity of using educational online games as the employment of games to support teaching and learning, so they can be used as a support tool to complement the traditional method of teaching grammar and vocabulary and improve it. Hou (2011) states that time is limited in online games, so learners should have more speed in achievement and acquisition of knowledge, attractive, accurate, and speedy in playing the online game. Therefore, teachers should have found a way for the learner not just to play online games but also to learn the lesson, especially learning English grammar and vocabulary. According to Seli (2015) teaching and learning vocabulary should be interesting things that can keep the students engaged. The language should be introduced with good structure and vocabulary by giving examples from their real-life situations and using a new method like

online games. Moreover, it improves learning engagement and motivates students to learn language grammar.

There are multiple goals for using online games in grammar teaching, according to what Cam and Tran (2017) state that online games are not a wasting time method; it's important to enhance and facilitate learning grammar through playing great fun online games. Nur et al. (2020) note that learners need to acquire grammar rules by playing suitable online games, and it is good for learners to feel that they learn grammar spontaneously and in a natural way through playing online games.

The purpose of this study is to examine the effectiveness of using online games method on teaching English grammar and vocabulary to third-grade primary students in Jordan's school. This research examines the effects of using online games on learning English grammar and vocabulary by trying to investigate the following two questions:

1. How effective are online games in learning English grammar and vocabulary by third-grade students?
2. Are there any significant differences in the impact of learning English grammar and vocabulary through using online games on students due to gender?

The current study tackles a contemporary issue in teaching and learning English language for young learners. Therefore, the study is hoped to provide theoretical and practical insights on the issue. Theoretical importance: the study is expected to add to the literature in the field of English language learning especially when trying to implement new digital technologies. In addition, the findings of the current study are expected to provide decision makers and supervisors in the educational field with frameworks and insights on integrating new teaching methods and media which they might consider when they plan for curriculum design and development.

Practical Importance

The study may provide English language teachers with effective ways to address their teaching career. The study might provide them with viable and effective alternatives to accomplish their teaching outcomes. Thus, instead of sticking to outdated and uninteresting methods of teaching English to young learners, teachers may consider implementing more interactive and effective ones.

METHODOLOGY

This study applied a quasi-experimental design. There were two groups of participants. The participants assigned to the experimental group learned grammar and vocabulary from the content in textbook through online games. Whereas the participants of the control group learned vocabulary and grammar in a traditional way using worksheets, drills, and memorize. After six weeks, the achievement test was applied to both groups.

Limitations of the Study

The study is limited to the 3rd (male and female) students in one Al-Yarmouk government school in Zarqa City, in Jordan. It has been implemented in the academic year 2022/2023. Besides, the training course material was mainly taken from the 3rd English textbook "action pack" by Liz Kilby.

1. This study used online games, the word wall website and the researcher gave instructions of how to use this website on a smart board in a classroom.
2. It is limited to the students' achievements toward the suggested method of using online games on teaching grammar and vocabulary.
3. The duration of the study is limited to a period of six weeks.

Aspects of teaching English language are limited to grammar and vocabulary.

Research Design

To answer the questions of the current study, the research used the appropriate quasi-experimental design. It involves two groups, an experimental class, and a control class. They are treated differently; the experimental class used the online games method, while the control class used the traditional method of teaching.

The experimental group and the control group did the pre-test in the first meeting. The treatment was applied during (20) classes, but in the control group the treatment was not applied. The post-test after using the treatment on the experimental group. Thus, both the experimental and control group did the post-test at the last meeting. The participants of the research consisted of 74 students studying at Al-Yarmouk primary public' school both male and female, where the researcher had a good access in order to implementing the study.

Participants of the Study

The researcher selected a sample of the primary third-grade population from 9 classes which was 360 students at Al-Yarmouk School in first Zarqa Governorate in Jordan. The participant of the study was 74 male and female students distributed in two groups. The experimental group consisted of 15 males and 22 females, while the control group consisted of 20 males and 17 of females. They were divided into the experimental group which was taught via online games word wall learning, and the control group which was taught via traditional learning.

Instruments of the Study

In this study, the research instrument was a grammar and vocabulary test. It consists of 23 items, 9 items of grammar distributed, as follows: prepositions, possessive pronouns, and negative sentences, and 14 items of vocabulary distributed, as follows (nouns, time terms, and days of week), as shown in **Table 1**. The test was constructed by the researcher based on grammar and vocabulary that the learners had learned through the online games activities which were chosen from the same topics found in Action pack third-grade textbook

The Validity of the Test

To investigate the validity of the achievement test, the researcher presented the test, the table of specifications, and the content analysis of the initial form to a group of 10 arbitrators with expertise and specialization in the field of the curricula in teaching methods from faculty members in the Jordanian universities. The researcher also consulted a group of English language teachers and supervisors to take their opinion in maintaining the integrity of the paragraphs on the scientific side and linguistic formulation, and to know how each item is relative to the level of the required educational outcomes. Some modifications were made to the test items through the suggestions of the arbitrators by deleting 4 grammar items and 3 vocabulary items. So,

Table 1. Distribution of items in the test

No	Kinds of grammar	Number of items	Kinds of vocabulary	Number of items	Total
1	Prepositions	7, 8, 9, 10, 11	Noun	5, 6, 12, 13, 14, 15, 16, 17	
2	Possessive pronouns	3, 4	Time terms	18, 19, 20, 21	
3	Negative sentences	1, 3	Days of week	22, 23	
Total		9		14	23

Table 2. Reliability coefficients of the test

Repeat reliability coefficient (Pearson's coefficient)	Internal consistency reliability coefficient (Cronbach's alpha)	Number of items	Fields
**0.801	**0.852	9	Grammar
**0.704	**0.784	14	Vocabulary
**0.773	**0.884	23	Total

Table 3. Difficulty coefficients and discrimination coefficients for the test items

Number of items	Difficulty coefficients	Discrimination coefficients	Number of items	Difficulty coefficients	Discrimination coefficients	Number of items	Difficulty coefficients	Discrimination coefficients
1	0.45	0.7	11	0.85	0.3	21	0.85	0.3
2	0.85	−0.1	12	0.75	0.5	22	0.85	0.3
3	0.80	0.2	13	0.60	0.4	23	0.70	0.2
4	0.65	−0.1	14	0.45	0.7	24	0.30	0.4
5	0.50	0.6	15	0,45	0.5	25	0.20	0.4
6	0.50	0.4	16	0.60	0.6	26	0.40	0.4
7	0.10	0.0	17	0.45	0.3	27	0.45	0.3
8	0.85	0.3	18	0.90	0.0	28	0.95	0.1
9	0.35	−0.3	19	0.75	−0.1	29	0.75	0.3
10	0.50	0.6	20	0.45	0.3	30	0.65	0.5

the test consists of 23 items instead of 30 in its final version. It consisted of 9 items for grammar and 14 items for vocabulary.

The Reliability of the Test

The researcher applied the same test to a pilot sample from outside the study sample to assess the reliability by employing test-retest. After two weeks the researcher used the same test for the pilot sample to measure the validity coefficient. The pilot sample was 20 students chosen randomly from the primary third-grade students at Al-Yarmouk school. The reliability coefficient used the Cronbach's alpha to measure the internal consistency reliability coefficient, which was 0.852 for grammar, and 0.784 for vocabulary. Kouder-Richardson KR20 equation, which was 0.801 for grammar, and 0.704 for vocabulary, which is considered a good indicator for measuring the reliability of the test. **Table 2** shows the internal consistency reliability coefficient of the test.

The Difficulty and Discrimination Coefficients

The difficulty and discrimination coefficients were calculated for the test items and their fields. So, the difficulty coefficient is useful for knowing if the items are difficult or easy. While the discrimination coefficient is useful for determining the effectiveness of students in distinguishing between students with high performance and those with low performance. The items whose discrimination coefficient was less than 0.25 were deleted, and the items whose difficulty coefficient was less than 0.20 were deleted. The number of items before calculating the difficulty coefficient and discrimination was 30 items, and after deleting the items it became 23. The difficulty coefficient values for the test items ranged between 0.95 and 0.35, while the discrimination values were between 0.70 and 0.20, and these values are acceptable, and the test scores are considered to have appropriate degrees of difficulty and discrimination. As shown in **Table 3**, the difficulty coefficients and discrimination coefficients for the test items.

The Test Correction

The students were given one mark for the correct answer and zero for the wrong one. So, the marks range for the test is from 0 to 23.

The Test Performance Time and Its Preparation

The time for conducted the test to the students was 45 minutes within the specified class time. The test was used as a tool for the current study before applying the experiment on the students as a pre-test study. After six weeks of the experiment, the researcher applied the same test as a post-test to measure if using the online games method would affect teaching grammar and vocabulary. The test prepared by following these steps:

1. Selecting the first and second units of the English language course for the primary third-grade students used by public education system in 2022-2023 year.

2. Determining the learning outcomes of the first two units.

3. Making a content analysis of the lessons in the first and second units.

4. Classifying the learning outcomes into three cognitive levels (remember, understanding, and application).

5. Creating a test tool specification table according to Bloom's cognitive hierarchy.

6. The final form of the test consisted of 23 items and 7 paragraphs which verity according to defer of complexity between ease and difficulty. The existing paragraphs were the correct answer, look and complete, write the missing letter, fill in the blanks, draw a line from the word to its picture, write the correct time according to the pictures, and lastly write the name of the missing days.

7. Determining the marks of each paragraph in the test, the first three paragraphs consist of two items given two marks. The

Table 4. Means, standard deviations, adjusted means, & standard errors of the student's answers on the pre-post achievement tests

Group	N	Pre-test		Post-test		Adjusted mean	Standard errors
		Mean	Standard deviation	Mean	Standard deviation		
Experimental	37	11.84	3.11	19.65	2.26	19.28	0.591
Control	37	9.84	5.36	11.27	4.99	11.64	0.591

fourth has 5 marks for five items, the fifth has 6 marks for six items, the sixth has 4 marks for four items, and the last paragraph has 2 marks for two items, and thus the total score is 23 marks.

Variables of the Research

The current study has two dependent variables and one independent variable.

1. Dependent variables are learners' performance in grammar and that in vocabulary.
2. Independent variable: the teaching method using online games.

Instructional Materials

The experimental group was taught grammar and vocabulary via online games, whereas the control group was taught grammar and vocabulary via traditional methods of teaching. The online games were designed in an innovative and appropriate way to integrate with the activities of grammar and vocabulary in the textbook.

Instructional Treatments

The experimental group learners played online games that were designed by the researcher via Word Wall online games. The games were purposefully chosen to cover the same topics of the grammar and vocabulary activities found in the third-grade Action- Back textbook, whereas the control group developed their learning of grammar and vocabulary through regular learning in the textbook. Both groups were taught by the same teacher. The online games were presented on a smart board.

Method and Procedures of the Study

1. The experiment and the control groups were randomly chosen through a random lottery from all the 9 primary third grades classes in the school.
2. The selection was made by two teachers under the supervision of the principal teacher and the other two teachers in the school.
3. Both groups consisted of 37 students, and the level of the two samples was equivalent by conducting a level test for both samples.
4. Both groups were tested pre-test before the experiment application to ensure their level and equivalence of them before starting the experiment.
5. The experimental group learners were taught grammar and vocabulary exercises through online games that were presented on the smart board in the school theatre.
6. The experiment was applied for seven weeks during the first semester in 2022/2023 among 20 lessons during four classes in one week, and the time of the classes was 45 minutes.
7. The researcher described the material to be taught to the teacher before applying the experiment. Then she explained the

online games application for the students, how to use it, and its benefits before using it.

On the other hand, the control group was taught grammar and vocabulary exercises through the same traditional instructions. At the end of the experiment, the researcher gave the post-test to the students at the last meeting. A post-test was administered for measuring the effectiveness of the treatment, and if they had a significant impact on their performance in grammar and vocabulary after they are taught by online games. The collection of data was analyzed using SPSS software.

Statistical Analysis

To answer the first question of the study, an analysis of covariance (ANCOVA) was used, and a t-test was used for the second question.

RESULTS

The findings of the research are presented with the analysis of students' scores in the pre-test and post-test based on using online games methods of learning grammar and vocabulary. The purpose of this study was to investigate the effect of using online games on teaching English language grammar and vocabulary to primary third-grade students. The results of the study are presented as follows.

Research Question 1. How Effective Are Online Games in Learning English Grammar and Vocabulary by Primary School Students?

To answer this question, means and standard deviations were calculated for the student's answers on the achievement test, as differences between the mean of the experimental group and the control group in both pre- and post-tests (**Table 4**).

Based on the data in **Table 4**, the results show the mean scores, standard deviations, and the adjusted means of the overall performance of the experimental group and the control group on the pre- and the post-test.

Table 5 shows a difference in the adjusted mean scores of the experimental group and the control group in favor of the experimental group. For better examination and clearer interpretation, ANCOVA was used to analyze the students' scores based on the variable of the teaching method, as shown in **Table 5**.

Based on the data in **Table 5**, the results show that there is a significant difference at ($\alpha = 0.05$) between the adjusted mean scores of the overall performance on the post-test in favor of the experimental group, who learned through using online games compared with the control group who learned through using the traditional method such as presents grammar verbally while students listen and take notes. Also, vocabulary repetition and memorization are an example of a traditional method. The adjusted mean of the experimental group was found to be 19.28 in comparison with the mean score of the control group (11.64), which was taught in the traditional method.

Table 5. The results of ANCOVA of the student's scores on the post-test

Source	Sum of squares	df	Mean square	F	Sig.	Partial Eta squared
Pre-test	185.17	1	185.2	14.7	0.00	
Teaching method	1,026.43	1	1,026.4	81.5	0.00*	0.534
Error	894.56	71	12.6			
Corrected total	2,378.38	73				

Table 6. Means and standard deviations for each level in the pre- and post-test scores, and adjusted means and standard deviations for each level in the post-test scores

| Variable | Group | Pre-test | | Post-test | | Adjustment | |
		Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Grammar	Experimental	4.89	1.39	7.84	1.24	7.70	0.313
	Control	4.46	2.27	5.49	2.57	5.63	0.313
Vocabulary	Experimental	6.95	2.67	11.81	1.65	11.61	0.406
	Control	5.38	3.61	5.78	3.21	5.99	0.406

Table 7. MANCOVA results for each of the post-test parts

Source	Dependent variable	Type III sum of squares	df	Mean square	F	Sig.	Partial Eta squared
Grammar (pre-test)	Grammar	24.39	1	24.39	6.96	0.01	0.090
	Vocabulary	4.66	1	4.66	0.79	0.38	0.011
Vocabulary (pre-test)	Grammar	3.61	1	3.61	1.03	0.31	0.014
	Vocabulary	27.31	1	27.31	4.62	0.04	0.062
Group	Grammar	74.96	1	74.96	21.39	0.00*	0.234
	Vocabulary	549.21	1	549.21	92.94	0.00*	0.570
Error	Grammar	245.32	70	3.51			
	Vocabulary	413.65	70	5.91			
Total	Grammar	394.55	73				
	Vocabulary	1,139.96	73				

Table 8. Means, standard deviation, and independent samples t-test of the impact of gender on the performance of students in the experimental group

Variable	Gender	Number	Mean	Standard deviation	df	T	Sig.
Grammar	Male	16	8.06	1.181	35	0.964	0.342
	Female	21	7.67	1.278			
Vocabulary	Male	16	12.00	1.549	35	0.604	0.549
	Female	21	11.67	1.742			
Total	Male	16	20.06	2.205	35	0.970	0.339
	Female	21	19.33	2.309			

Table 6 shows the effect size of online games on the post-test. This was calculated by applying the Eta square statistics to the test results. **Table 6** shows Eta square the value was 0.534. This percentage means the students' achievement in the post-test in the experimental group after doing the treatment through online games has increased. In addition, means and standard deviations for English grammar and vocabulary, pre- and post-test scores, and adjusted means and standard deviations for each level in the post-test scores, were calculated and tabulated in **Table 6**.

Table 6 shows that there are differences in the mean scores for each part of the post-test attributed to the difference in the treatment variable, in favor of the experimental group who were taught through online games. In order to test the significance of these differences, multivariate analysis of covariance (MANCOVA) was applied on each of the post-test levels as presented in **Table 7**.

Table 7 demonstrates that there are statistically significant differences at the statistically significant level ($\alpha = 0.05$) between the two adjusted mean scores of each part in the post-test attributed to the treatment variable, in favor of the experimental group which was taught through using online games.

Table 7 shows the effect size of online games on the post-test for English grammar and vocabulary. This was calculated by applying the Eta square statistics to the test results. **Table 7** shows Eta square value was 0.234 for grammar and 0.570 for vocabulary.

Research Question 2. Are There Any Significant Differences in the Impact of Learning English Through Using Online Games on Students According to Gender?

To investigate the second question, the means and standard deviation of the male and female in the experimental group results on the post-test were computed. Independent samples t-test was used to measure the significance of differences. **Table 8** shows the results. **Table 8** shows that there were no statistically significant differences at the level of significance ($\alpha = 0.05$) in the impact of learning English grammar and vocabulary by primary school students due to gender.

DISCUSSION

In an attempt to answer the first question that asks about the effective of online games in learning English grammar and vocabulary

by primary school students. It was found that teaching grammar and vocabulary using online games has supported and improved students learning of English grammar and vocabulary. As manifested in their achievements score that were taught grammar and vocabulary by online games and comparing them with the scores of achievements of the students who were taught in the traditional way.

The findings of the study reveal that online games facilitated language learning and influenced students' achievement. The findings go in harmony with Mursidin et al. (2022) that online games help facilitating learning grammar and easy memorization of vocabulary for learners through interactive meaningful learning. So, the learners' performance was in the possessive pronouns, prepossessions, and negative sentences. As for vocabulary, several words presented better results related to the names of jobs, weekdays, clock times, and other vocabulary items. This revealed that using online games is a fruitful and important teaching method for grammar and vocabulary in the classroom because it has positive effects on students' achievement.

Online games' method can be an interesting option to increase a meaningful understanding of grammar because it allows learners to practice language skills such as reading, writing, listening, and speaking (Cam & Tran, 2017). Being interested in playing online games, learners' self-confidence increased the level of fun competition on their learning grammar (Hashim et al., 2019). So, the use of online games as supplemental learning aids increases learners' confidence, effort and interest (Turner, 2018). Furthermore, the findings are also in line with Rosydiyah et al. (2022), as they revealed that the use of online games allowed them to explore new vocabulary, grammar knowledge, concepts, and ideas without hesitation. As a result, students become more familiar with using online games as instructional tools, they may achieve effective goals.

On the other hand, findings also show that using online games in teaching vocabulary can increase students' understanding and comprehension of vocabulary. They have a significant effect on students' English learning patterns and thinking patterns, especially in writing and pronunciation vocabulary, due to the difference between them. Also, learners could write these words easily through vocabulary online games like the game of assembling the letters of word. Thus, using online games develops teaching vocabulary for students and makes it easier. It became more enjoyable through online games and help students to be active participants in the classroom. Due to the repetition patterns were used in varied ways on the online games. For instance, it helps learners enjoy and interact with the new language that they learn, which comes out with a maximum number of vocabulary words and expressions. In addition, the researcher presented the vocabulary to the learners by designing special online games in which students could read the words while understanding their meaning through playing. While in the traditional learning, students did the exercise in the textbook, or the teacher explained them on the board. It has been noticed that some students interacted during the lesson, while learning through online games. Every one of the students wants to participate in playing and solving the vocabulary exercises. Additionally, they did that in a funny and enjoyable way.

Moreover, Nur et al. (2020) mentioned that online games depend on winning and losing. Wherefore, if the student plays and loses, this may motivate him/her to play again until he/she wins. This could be a stimulus encouraging students to interact and have a desire to learn grammar and vocabulary simultaneously with more focus and without boredom. This finding is consistent with the finding of Safitri et al. (2022). While in contrary to Castillo-Cuesta (2020) found with regarding students focus that learning grammar and vocabulary increases competition between them rather than focusing on learning they focus only on winning. Therefore, teachers should reward their students even if they are failing to solve the game. As what Furdu et al. (2017) state learners should learn that failure leads to success, and they have many opportunities to achieve their goals. Sometimes, teaching grammar and vocabulary through online games increases competition between the students rather than focusing on learning grammar and vocabulary in the game (Castillo-Cuesta, 2020). For that reason, teachers should always encourage all learners to do a wonderful job not just for winners' students but to explain the grammar and the meaning of vocabulary within games. Therefore, a teacher should design online games that students can play more than once and repeat the game in case they are not successful in motivating their learning.

As a result, online games provide interaction among learners and take them to another interactive learning with chances to acquire a new learning experience. In contrast to the traditional learning, the competition between the learners is limited because there is not any required interaction as in online games. In learning based on online games, students have a competitive experience, which can improve students' achievement by gaining a good result. Therefore, the main goal was for them to learn grammar and vocabulary depending on their individual choices and actions.

Furthermore, these findings are confirmed with what was found by Castillo-Cuesta (2020), who observed that digital games helped students to enhance their vocabulary and grammar knowledge, which serves to improve their EFL writing. Also, Hasram et al. (2021) highlighted that online games promoted learners' active and dynamic learning, thus encouraged their interest in learning vocabulary. Veronika et al. (2018) and Rosydiyah et al. (2022), emphasized the positive effects of using these online games in teaching grammar and vocabulary in the classroom to improve students learning and achievement. In addition, online games are considered a beneficial tool to support learners' understanding of grammar in a simple way (Rosydiyah et al., 2022). As for vocabulary, Veronika et al. (2018) concludes that online games are considered to be a real help in mastering vocabulary and enhancing students' capacity of learning vocabulary.

Regarding the second question asking about difference in performance due to gender, not statistically significant differences were found. This indicates that online games method has influence on both males and females. A few studies have focused on the impact of using online games on teaching English language due to gender issue. AlNatour and Hijazi (2018) showed in their study that there was a similarity in the results of male and female students, which indicates that the implementation of online games is successful in teaching English language vocabulary and grammar for all male and female students. Additionally, Almusharraf et al. (2023) investigated the gender differences in utilizing a game-based approach in Saudi EFL students. At present study, the age of students can also have an impact on the absence of differences in score achievement between males and females. At their young age, students have a greater desire to play and interact with each other. The results stated that both male and female students reacted similarly, and both presented a great interest in using digital games. The researcher concluded that both female and male

students showed more success in learning English grammar and vocabulary through online games.

CONCLUSIONS

Grammar and vocabulary have an important role in learning English language. Recently, to remodel foreign language arts lessons to emphasize learners' communicative competence through following the inductive approach that encourages learners to discover the language grammar and vocabulary. Therefore, this study revealed that online games encourage learners with what increase their achievement in learning grammar and vocabulary. They can create several varieties of activities such as word games, quizzes, maze chases, and more than that to improve vocabulary and grammar teaching.

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