# THE IMPLEMENTATION OF WORDWALL GAMES
# IN VOCABULARY LEARNING

**Nasru Ilahiyati\*, Zuliati Rohmah, Hamamah**
Brawijaya University
(nasruilahiyati@student.ub.ac.id)

## ABSTRACT

This article investigates the use of online-based application "WordWall Games" as a vocabulary learning tool. The research aims to observe the participants' ability to enhance pronunciation, memorize vocabulary, and construct words into sentences. This study addresses three research questions: How is the design of *WordWall games* beneficial for developing students' vocabulary?; How is the application of *WordWall games* integrated into vocabulary teaching?; How do students acquire new vocabulary after being instructed using *WordWall*? To collect the data for this study, the researchers conducted direct observations involving ten students studying English Literature in Malang as participants of this study. Six game-based media were utilized, including Random Card Games, Crossword Games, True or False Tasks, Translation Tasks, Construct Word Tasks, and Anagram Tasks. The research findings indicate that using *WordWall games* as a learning tool effectively improves students' pronunciation, memorization, and sentence construction skills.

**Key Words:** Online-based learning; *wordwall games;* vocabulary learning

## ABSTRAK

*Artikel ini membahas penggunaan aplikasi berbasis online "WordWall games" sebagai alat pembelajaran kosakata. Penelitian ini bertujuan untuk mengobservasi kemampuan partisipan dalam meningkatkan pengucapan, menghafal, dan menyusun kata-kata menjadi kalimat. Artikel ini membahas tiga pertanyaan: 1. Bagaimana desain WordWall games bermanfaat untuk mengembangkan kosakata siswa? 2. Bagaimana penerapan WordWall games dalam pengajaran kosakata? 3. Bagaimana siswa memperoleh kosakata baru setelah diajarkan menggunakan WordWall? Peneliti melakukan observasi langsung yang melibatkan sepuluh mahasiswa yang sedang menempuh pendidikan Sastra Inggris di Malang. Enam media berbasis permainan digunakan, termasuk Random Card Games, Crossword Games, True or False Tasks, Translation Tasks, Construct Word Tasks, dan Anagram Tasks. Temuan penelitian menunjukkan bahwa penggunaan WordWall games sebagai alat pembelajaran efektif dalam meningkatkan pengucapan, penghafalan, dan kemampuan menyusun kalimat.*

*Kata Kunci: Aplikasi berbasis online; permainan wordwall; pembelajaran kosakata*

**How to Cite:** Ilahiyati, N., Rohmah, Z., Hamamah. (2023). The Implementation of Wordwall Games in Vocabulary Learning. *IJEE (Indonesian Journal of English Education), 10*(1), 144-159. doi:10.15408/ijee.v10i1.29905.

## INTRODUCTION

Vocabulary is an essential factor in English language learning. Vocabulary is integral to learning grammar, structure, and pronunciation (Suparmin, 2017). When learning vocabulary, the students need to write the vocabulary and memorize it in front of the class and usually use textbooks, spelling drills, and listening, and students are required to take notes when teachers explain (Yu, 2018). This kind of phenomenon is still a conventional style for teaching vocabulary. Almost all students feel bored and uninterested because they are forced to memorize it within a specific time frame and several words (Devanti & Amalia, 2018). Thus, students need various activities to enhance their vocabulary and build exciting learning situations.

Recently, games have been referred to as effective media for teaching English, especially for vocabulary comprehension, as game-based learning enhances students' creativity and increases their knowledge (Rohmah, 2012; Rohmah, 2013; Shiddiq, 2021). Furthermore, gaming media can provide a motivating and enjoyable environment (Aini, 2020). Using games in vocabulary learning, students feel challenged and curious as they play them. Game-based learning evokes emotions in students as they think about answers and solve challenges within the game. This aligns with previous research conducted by Yuniarti and Rahkmawati (2021), stating that games help students solve problems, enhance critical thinking skills, and make judgments in the learning process. Moreover, studies conducted by Kherzlou et al. (2017), Alzahrani and Roberts (2021), Munoz et al. (2021), and Perez (2022) reported that using media with moving objects or images (animation) and audio clips as game media can help students and teachers become more interactive in learning, especially in improving vocabulary mastery. Previous studies reinforce that game-based learning helps students enhance their language proficiency, particularly in understanding vocabulary.

One of the game applications based on educational and interactive quizzes is *WordWall* (Shiddiq, 2021). Usually, crossword games can be found in magazines or newspapers. However, with the help of technological developments, crossword puzzle games can now be accessed via the *WordWall* application. The *WordWall* application combines modes of speech, images, colors, moving images, sound, and music to make the media more attractive. Using *WordWall*, students and teachers can easily access it

anywhere and anytime. In addition, students can develop new language learning skills in a way that is easy to remember because the game features can be used as reference material if students have difficulty finding the correct vocabulary (Yuniarti & Rahkmawati, 2021). The *WordWall* application features provide 18 interactive games, including *Match up, Open the Box, Random Cards, Anagrams, Labeled, Categorized, Quiz, Find the Match, Matching Pairs, Missing Word, Wordsearch, Rank Order, Random Wheel, Group Short, Unjumble, Gameshow Quiz, Maze Chase and Airplane*. They have different and exciting game designs, and many users state that this application can contribute to the interactive student learning process (Shiddiq, 2021).

One of the previous research stated that the tendency of conventional learning in an era of advanced technology would create less efficient learning situations (Li, 2021). However, the excessive use of technology impacts students' dependency during learning (Devanti & Amalia, 2018). Kacetl and Klimova (2019) stated that technology is widely accepted to support language acquisition. Additionally, Kacetl and Klimova (2019) asserted that technology help develop all language skills, primarily retaining new vocabulary. So, the use of technology as a support for

student education is very beneficial. Hence, some people are still debating if this educational-based game will increase motivation, self-confidence, and a more comprehensive understanding of vocabulary. Therefore, the current research is presented to see how technology can enhance the students' language mastery, especially the *WordWall Game* application, to improve vocabulary.

This study is expected to confirm the great potential of games-based learning to increase vocabulary learning significantly. Thus, this study aims to show whether the *WordWall games* are appropriate for teaching vocabulary. The research questions are formulated as follows: How is the design of the *WordWall* games to develop students' vocabulary? How is the application of the *WordWall* games in the teaching of vocabulary? How do the students acquire new vocabulary after being taught using the *WordWall*?

## METHOD

### Research Design

The research design applied in this study is to use descriptive qualitative research. According to Cohen, L (2017), qualitative descriptive research is a research design that focuses on describing individuals' and groups'

lived experiences and perceptions. It aims to provide a detailed, comprehensive account of the phenomenon being studied through rigorous data collection and analysis methods. The selection of qualitative descriptive design in this research is based on the relevance of ongoing events and current conditions regarding the analysis of *Wordwall games* in learning vocabulary.

## Research Site and Participants

The participants are ten students in the 1st semester majoring in English Literature in UIN Malang who joined "Teman Belajar" as one of the programs intended for new students majoring in English literature to improve their English skills. Mostly, the students who have joined this program are in basic capabilities, especially in English.

## Data Collection and Analysis

The researchers used triangulation of data sources to gain specific information through observation and semi-structured in-depth interviews. The observation technique in this study aims to observe the participant's ability to learn vocabulary using *WordWall games* as a medium. The instrument used in this research is classroom observation involving the researcher as the educator directly in the classroom.

The researcher introduced *WordWall games* as the media with the topic of "transactional activities" and selected five types of games for the participants: *Random card games, Crossword games, True or false, Translation tasks, Construct words,* and *Anagram tasks*. Then, the researcher will compare and assess the participants' vocabulary abilities before and after learning the material. The scores from both activities will be compared and observed to determine whether there is an improvement during the learning process. The final scores will determine the success of *WordWall games* as a vocabulary learning media. To examine the participants' perceptions, the researcher conducts semi-structured in-depth interviews after the conclusion of the learning process. The purpose of the semi-structured in-depth interviews is to assist the researcher in understanding the participants' perceptions after applying *WordWall games* as a vocabulary learning media. This is supported by the statement from Newby (2004) that semi-structured in-depth interviews facilitate the exploration of specific topics in detail between the interviewer and the participant. Therefore, it will help the researcher describe the participants' perceptions of the used learning media.

## FINDINGS AND DISCUSSION

### Findings

The findings reveal the design of the *WordWall* games in teaching English vocabulary, the implementation of the *WordWall* media in vocabulary class, and the assessment of the students after being taught using the *WordWall.*

### The Multimodal Design: The WordWall Games

The game-based learning used in this study is the *Wordwall* application. This application is designed interactively to support language or vocabulary learning with various game features. In this observation class, the teacher used five kinds of games aimed at mastering English vocabulary. Among them are *Random Card Games, Crossword Games, True or False Tasks, Translation Tasks, Construct Word Tasks,* and *Anagram Tasks.*

The *WordWall* application can be accessed by anyone, especially teachers who need educational game-based learning media as a form of fun digital media. The *Wordwall* apps provide several features that can be accessed for free and premium service. The premium features have more media game choices, while free features restrict access to media usage.

Nevertheless, in the present study, the researchers use the premium service for a more extensive range of game coverage and learning activities per the classroom's learning needs.

The first media in the *Wordwall* app is the *Random Card Games*. This game has a design like a *Poker Card* formed from origami paper or printed paper as a learning device in the class. However, these *Random Card Games* are digital-formed and only accessible via electronic devices such as laptops and smartphones. The *Random Card Games* are created by purposively selecting words on transactional activities. The words contain 20 transactional activities, for example, aisle, buy, expensive, etc. Once the media is ready for classroom use, the researchers share the game link for the students to access by filling in a username. Filling the identity can make the teacher easy to monitor if the students have opened the link and to score the student's performance.



Figure 1. The Random Card Design

The second media is the digital *Crossword Game*. Similar to the one primarily found in magazines or newspapers but this game requires the users to fill in the squares with the answers from the glossary on shopping words. At the same time, the users of digital *Crossword Games* must click the word in the squares to answer the question. Digital *Crossword Games* have several colorful design options. There are five design options: cartoon design, space design, sky design, monochrome design, and simple design. The researchers chose the simple design without presenting cartoon characters because the target students are not children, so the design is determined based on the target users.



Figure 2. The Crossword Games Design

The third media is the *True or False Task* which requires the students to match the sentences with the pictures on the screen. When the pictures and the sentences are matched, the students have to click True, and conversely, they have to click False if the pictures they see disagree with the statements. The

students only have a limited time to read the statement, and then students answer whether the statement is true or false. After all the answers are filled in, each student's scores will appear, and the answer key will be available as a student reference for further learning.



Figure 3. The True or False Task Design

The fourth and fifth media are *Translation Task and Construct Word Task*. These media require the students to arrange random words about shopping in order and to interpret the word arrangement, for example, of the random word *"milk-a-at-want-section-buy-diary-to-I."* The students must drag the words individually until the sentence is appropriately arranged. The students can continue to the next random word if the sentence structure is correct. While the answer is still wrong, the students stay on the same page and cannot continue.

The last medium is the *Anagram Task*. This media requires the students to arrange random letters in the correct sentences. For example, the right

sentence, "*We are moving to the third aisle,*" was randomized to be "*ew – ear-ivomgn-ot- drthi- least.*" The students must compose letters by letters to form the proper word order. Next, the sentence structure will be wholly formed if all the random words have been composed. This media confused the students when they carried out the long word; for example, the word "*bargain*" scrambled into "general." The advantage of this activity is that the users make them more challenging.



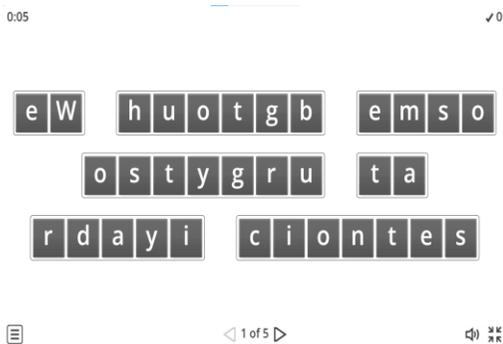Figure 4. The Construct Word and Translation Design



Figure 5. The Anagram Task Design

## The implementation of the Word Wall games in the vocabulary

Implementing the *WordWall* game-based media in vocabulary learning includes several objectives: mastery of remembering, translating, and using the appropriate vocabulary depending on the context. Within 60 minutes, the implementation of learning includes three significant activities points:

Table 1. Activities to Implement the WordWall Games

| Stages | Activities |
|---|---|
| Pre activity | - Greetings<br>- Warm-up (crossword games) |
| Main Activity | - Watch the Video "grocery shopping."<br>- Listen and mention related vocabulary.<br>- Practice vocabulary comprehension using: True or False Tasks, Translation Tasks, Construct Word Tasks, and Anagram Tasks. |
| Post activity | - Feedback |

The first stage is a pre-activity lesson. The first pre-activity stage begins with a warming-up session divided into two: *Random Cards and Crossword Games*. In the *Random Card* session, the researchers asked the students to choose a random card from the grocery shopping vocabulary and to pronounce each word. Each student got three unfamiliar vocabulary words and then tried to pronounce them as well as

possible. This is done to recall the grocery shopping vocabulary that they might previously forget because some of them did not know the vocabulary beforehand. Some students were very enthusiastic and active when they had to pronounce the vocabulary in front of their friends, although the other students felt embarrassed when they did so. Then, the students listened to the teacher's model of pronouncing the vocabulary correctly and had to repeat after together. This activity aims to build their confidence without fear of learning new experiences, especially when pronouncing the vocabulary in front of the class.

To remember what was learned in the first session, the students searched for the available vocabulary in the random box by looking at the already available keywords. This activity is called *Crossword Game*. The activity invited students to find the vocabulary they found in the first session. They must click on the link shared to access the games. Then the students found twenty keywords and started enthusiastically collecting random words one by one in five minutes. The students who found the twenty vocabularies in the list at the end of the session were ranked from first place until the last one. The students could see the score at the end of time.

The next main activity is watching videos. The researchers shared a video from an English learning site, Learn English with Bob the Canadian, in the link (https://www.youtube.com/watch?v=NG-de6qu_WkE&t=241s). The duration of the video is about 5:18 minutes showing a man doing a mini vlog while shopping at the supermarket. The vlog shows a man doing grocery shopping while mentioning some vocabulary in the appropriate context. For example, the man mentions that the first step before entering the market should take the cart. The man mentions the word "cart" while showing the picture of the cart, and the place of the chart should be taken. In addition, he also gives the model of pronouncing the word "*Cart*" accurately in English. After watching the video, the teacher asked the students to mention new words they found in the video and to write them on their personal vocabulary record sheet. The students should mention the words with the meaning. They can use offline or online dictionaries to help them find the meaning.

The next main activity is to practice some tasks. The activity aims to investigate the students' ability to master vocabulary. The activity started with the researchers sharing the link to games in the WhatsApp group and gave 20 minutes for the students to

complete all of the tasks. For each task, the students had 5 minutes to complete and continued to the next task in the same duration. The researchers monitored the students' performance by walking around the class to assess the accuracy and quickness of the student's responses. The first task started with the *True or False Tasks.* The students determined the statement according to the context of the previous video. If the statement is true, the answer is valid; if it does not match the answer, it is false. After the statements were shown individually, the students clicked on the true or false button. Afterward, the students worked on games about constructing random words (*Construct Word Tasks)* and random letters (*Anagram Tasks*). The aims of the last two assignments are that the students will not only memorize the vocabulary and how to pronounce it, but they will be able to remember and write the correct arrangement of letters and words. After doing all the activities, the researchers asked the students which activities they enjoyed or disliked. Then, the researchers asked the students' scores and recorded them based on the results of their work.

At the end of the teaching stages, the researchers asked the students to make an oral reflection on the last session of the class. After that, the researchers asked them what they liked about the material, which part of the games or tasks they liked, their interests in the video, and whether the tasks were easy or difficult. All students answered that they enjoyed the topic of learning, the games, and all activities carried out from the beginning to the end of the session because they found some unfamiliar words that they had learned. For example, they never knew the word "*aisle,*" which is the synonym for the "*corridor*" in the supermarket. It means they have a chance to enrich the new vocab and the synonyms of the words. Also, the researchers asked them which type of media they preferred. Some admitted that the *WordWall* games had not been applied before in the class. From their simple reflection, the researchers could conclude that the students are interested in, enjoyed, and focused their attention when learning vocabulary using multimodal media, games, and video.

## Students Vocabulary Mastery Using the WordWall Games

The assessment of each student is an important component to prove the effectiveness of *wordwall games* in vocabulary learning implementation. The assessment of participants is evaluated based on three aspects of vocabulary mastery: memorization, translation, and constructing words

into sentences. The researcher assessed the participants by comparing their scores before and after the activity. The pre-activity assessment was based on the highest score achieved by participants who completed 20 questions within 5 minutes. The following are the students with the highest scores in the pre-activity assessment :



Figure 6. The student's highest score on crossword games

The score result above shows the top two scorers with the allocated time. Out of 20 questions, Student A (1st) completed 20 questions in 4 minutes and 28 seconds. Furthermore, the next score was obtained by Student B (2nd), who solved 15 questions in 5 minutes. For the third rank, no student could complete more than 10 questions in 5 minutes, so they did not meet the requirements on the leaderboard. For the other 8 students, the researchers wrote a manual score for this game. All

scores are under 10 points. It was concluded that almost all students did not reach the target of memorizing assessments. The following table displays the students with the score under 10 points :

Table 2. The students' lowest scores on crossword games

| Name | Scores |
|------|--------|
| Student C | 8 |
| Student D | 7 |
| Student E | 6 |
| Student F | 6 |
| Student G | 7 |
| Student H | 8 |
| Student I | 8 |
| Student J | 9 |

Thus, it can be concluded that the pre-activity assessment shows that the overall student scores have not reached the maximum value. That evidence this out of 10 students, 2 could only answer questions at an accessible level within the specified time frame. Then, from the results of the main activities, the researchers assessed the students' abilities in translating and constructing sentences. Translating is in the True or False games, and constructing sentences is in the *Construct Word and Anagram Games*. The student's assessment is based on the accuracy of the total score of each task. The *True-False Game* consists of 20 questions, the *Construct*

*Word Task* consists of 20 questions, and the *anagram task* consists of 20 questions. Each student had a different score because the value is not only assessed from the activeness of answering questions but the assessment is based on the activity and speed of students doing the class assignments. The following table presents the average scores of true or false, construct word and anagram tasks:

Table 4. The median scores of students' task

| Name | Score | | | Mean |
|---|---|---|---|---|
| | True or false | Construct word | Anagram | |
| Student C | 95 | 95 | 95 | 95 |
| Student D | 90 | 85 | 100 | 92 |
| Student E | 85 | 95 | 95 | 92 |
| Student F | 90 | 90 | 90 | 90 |
| Student G | 90 | 90 | 95 | 92 |
| Student H | 85 | 85 | 90 | 87 |
| Student I | 90 | 95 | 95 | 94 |
| Student A | 100 | 100 | 100 | 100 |
| Student B | 95 | 95 | 95 | 95 |
| Student J | 85 | 90 | 90 | 88 |

Based on the explanation of students' assessment table 4, the assessment results are conducted by the Wordwall games system, wherein if a student completes more than 10 crossword puzzle questions within 5 minutes, that score falls into the top score category. Based on the comparison of assessments between the pre-activity and main activity, only 2 students could complete the crossword puzzle within 5 minutes, while the remaining 8 could not. The main-activity assessment shows significant results with an average score above 80 points, which meets the standard passing grade. Based on the average scores in the main activity, it is stated that 10 students successfully achieved scores above the passing grade, indicating that they meet the assessment standards in classroom observation. In addition, the semi-interview assessment or feedback session found that they felt they had not mastered the existing vocabulary because it is still foreign, so finding vocabulary in crossword games is challenging. After watching the video, they learned a lot of new vocabulary. Their teacher also asked them to record what they got through the video. Therefore, in most activities, including true or false tasks, *constructing words, and anagrams,* almost all students could answer them accurately, even though the allotted time was limited.

Therefore, comparing the grade tables above shows an increase in scores from the pre-activity to the main activity, proving that the presence of word wall games assists students as a vocabulary learning medium.

## Discussion

The study results show that games using the *WordWall* application can improve English vocabulary mastery. This agrees with the opinion of Shiddiq (2021) that *Wordwall* games benefit students, especially those just learning vocabulary through games that highlight the necessary and essential words to achieve the game's objective. This study also supports Li (2021), who states that games can create a fun atmosphere so that students learn quickly. The form of design also determines students' interest in learning. In the *Wordwall* applications, the game designs are available with various components. Its simple form makes it easier for students and teachers to operate its application. The features contained in the games are also varied and easy to understand for the users**.**

The six media's design is adapted to help language learners in mastering English by respecting the background of the participants so that they can speak basic English merely. The media

design is made as simple as possible without involving a lot of images and colorful components but adding enriched components, inputting the linguistic components, vocabulary, and learning topics. The researchers added colorful audio-visuals to make media content easier to see and remember. This is in line with the findings of Lin and Yu (2017) that showing texts and pictures combined may help students achieve the best scores in the post-test. Thus, using games in the class give benefits students in mastering vocabulary.

The results of implementing the *Wordwall* media on vocabulary learning showed high enthusiasm for the students. This is because students have never had an experience using game-based digital media in their language learning. They find the different learning styles fun. During the lesson, the students mentioned their high interest in this media. Some said this media was unique because it matched their age. They were a generation that could not leave their gadgets behind during learning. This agrees with the research by Kacetl and Klimova (2019) reported that a person could not live without mobile technologies they use them daily, including in language learning. They feel bored when they have to memorize vocabulary monotonously. With audio-visual-

based game media, they are easier to remember due to the involvement of combining audio-visual and verbal into one media simultaneously. Their interest is shown by the full involvement of students during learning. During the learning activities, they actively work on instructions, assignments, quizzes, or games. Their responses assess that the implemented media is following the learning objectives.

However, Khezrlou and Sadegi (2017) stated that many challenges are evident when involving mobile technologies in learning. Their findings suggested that students prefer more traditional instructional technology for effective engagement and learning. One of the challenges of students using mobile technologies is that they do not like the problems with the existing infrastructure. For example, the internet connection may be inconsistent and slow. This response is in line with the study of Rahman (2015) stated that one of the problems with using technologies for learning is infrequent electric connection and slow internet because they are not allowed to use technology for study in their school. This also happened when the researchers entered the class. Some students' gadgets were not connected to the internet when doing assignments, and the university does not provide internet access with a

stable connection. This reduces the time to complete the tasks, so the students' opportunities to get perfect scores are constrained. This phenomenon shows that technology-based media is not always practical when applied to learning. This becomes an evaluation of the state of the classroom, and other equipment must be prepared; the teacher needs to remind the students to have internet quota before the class (Rahman, 2015).

During the learning activity, the students individually complete all learning activities. The assessment is based on the student's ability to understand the material through grocery shopping videos via the YouTube platform. They admit that what the teacher explained in the video is understood by them in terms of the context of the discussion, and the language used, and the storyline itself. The assessment started with the students' main activities within a limited time. The 20-minute time allocation puts pressure on the students to complete assignments. In addition, some students experienced unexpected conditions, such as difficulty connecting to the internet. This is not very clear for the teachers to take the scores because the time allotted was not the same as the other friends. The time allocation cannot be changed because the applied timer cannot be changed

spontaneously in the application. This situation agrees with the previous research by Kacetl and Klimova (2019), explaining that mobile applications for learning English always have problems in their application, like the features of time, design, etc. Therefore, this will create problems for the teacher to give an overall score.

Another learning problem is when the students have to make sentences with the vocabulary they have just learned. They feel embarrassed because they are nervous that the sentence they compose are not entirely correct, and they feel embarrassed by the pronunciation of the vocabulary. The atmosphere was awkward and made the students feel insecure about expressing their thoughts in front of the class because they became the center of attention of other students. This problem should be the researcher's evaluation to consider making a friendlier atmosphere in the classroom to make the students feel less tense. One way to improve this is by providing more pair-work discussions among the students in the class. As Marlena et al. (2015) stated that with the application pair work in the classroom, a cooperative atmosphere would be created where students will communicate with each other, listen to each other, and share giving and receiving, which these conditions will foster the spirit of, attitude and behavior that allows for positive dependency. Milal et al. (2020) also ascertain that cooperative learning through pair work enables students to learn and work together. Additionally, Sadipun (2020) stated that think-pair-share is a model to help students build confidence in their ability to solve mathematical problems so that it will reduce the anxiety that students often experience.

## CONCLUSIONS AND SUGGESTION

Game-based learning is an educational-based media game that can improve students' ability to learn vocabulary, especially the six games of *Random Card Games, Crossword Games, True or False Tasks, Translation Tasks, Construct Word Tasks,* and *Anagram Tasks*. The results of the media implementation in the classroom impacted their motivation and confidence in vocabulary mastery. Also, this indicates that technology-based media, especially games, have an impact on improving memorization, translation, and sentence construction. It should be noted that students showed positive responses during learning, despite some problems during learning vocabulary, but this did not significantly hinder the learning process. The learning problem becomes

the teacher's evaluation of learning. Thus, the teacher can fix it at the next meeting. Further research needs to be done to complement this study's deficiencies, especially in learning problems and solutions to time management and classroom situations by using game media in vocabulary class.

## REFERENCES

Aini, Y, I (2020). Using digital scrabble games as an english learning medium. *Jurnal Batra (Bahasa dan Sastra), 6*(1), 76-87.

Alzahrani, S., & Roberts, L. (2021). The effect of visuospatial designing elements of zoomable user interfaces on second language vocabulary acquisition. *The system, 96* (1). 1-30, https://doi.org/10.1016/j.system.2020.102396

Cohen, L., Lawrence, M., & Morrison, K. (2017). Research Methods in Education. Eighth Edition. In Research Methods in Education.

Devanti, Y. M. (2018). The use of video as a medium to improve students' vocabulary mastery. *ELLITE: Journal of English Language, Literature, and Teaching, 3*(1), 42–47. https://doi.org/10.32528/ellite.v3i1.1778

Kacetl, J., & Klímová, B. (2019). Use of smartphone applications in English language learning: A challenge for foreign language education. *Education Sciences, 9(3), 179.* 1-9 https://doi.org/10.3390/educsci9030179

Khezrlou, S., Ellis, R., & Sadeghi, K. (2017). Effects of computer-assisted glosses on EFL learners' vocabulary acquisition and reading comprehension in three learning conditions. *A system, 65,* 104–116. https://doi.org/10.1016/j.system.2017.01.009

Li, R. (2021). Does a game-based vocabulary learning app influence chinese EFL learners' vocabulary achievement, motivation, and self-confidence? *SAGE Open, 11*(1), 1-12, https://doi.org/10.1177/21582440211003092

Lin, C.-C., & Yu, Y.-C. (2016). Effects of presentation modes on mobile-assisted vocabulary learning and cognitive load. *Interactive Learning Environments, 25*(4), 528–542. https://doi.org/10.1080/10494820.2016.1155160

Milal, A. D., Rohmah, Z., Kusumajanti, W., Basthomi, Y., Sholihah, D. N., & Susilowati, M. (2020). Integrating character education in English teaching at Islamic junior high schools in Indonesia. *TEFLIN Journal - A Publication on the Teaching and Learning of English, 31*(1), 88.

https://doi.org/10.15639/teflinjo urnal.v31i1/88-107

Muñoz, C., Pujadas, G., & Pattemore, A. (2021). Audio-visual input for learning L2 vocabulary and grammatical constructions. *Second Language Research, 00(0), 1-25,* https://doi.org/10.1177/0267658 3211015797

Marlena, N., Dwijayanti, R., & Dewi, R. M. (2015). Penerapan pembelajaran *think, pair, share* (TPS) untuk meningkatkan hasil belajar dan respon mahasiswa pada materi konsep diri mata kuliah pengembangan kepribadian. *Prosiding Seminar Nasional*

Newby, P. (2014). *Research methods for education.* Routledge

Rahman, T. (2015). Challenges of using technology in the secondary English language classroom. *Thesis. Brac University.* http://dspace. bracu.ac.bd, 8080.

Rohmah, Z. (2013). *Fun activities: Cara asik belajar bahasa asing.* Malang: CV Bintang Sejahtera.

Rohmah, Z. (2012). *Teaching English joyfully.* Malang: CV Bintang Sejahtera.

Sadipun, B. (2020). Penerapan model pembelajaran kooperatif tipe Think-Pair Share untuk meningkatkan prestasi belajar IPS siswa kelas V SD. *Inteligensi :*

*Jurnal Ilmu Pendidikan*, 3(1), 11–16. https://doi.org/10.33366/ilg.v3i1 .1461

Shiddiq, J. (2021). Inovasi pemanfaatan word-wall sebagai media game-based learning untuk bahasa Arab. *JALIE; Journal of Applied Linguistics and Islamic Education*, 5(1), 151-169.

Widyasari Press. (n.d.). Pentingnya kosakata pada keterampilan Bahasa Inggris. Widyasari Press.

https://widyasaripress.com/pent ingnya-kosakata-pada-keterampilan-bahasa-inggris/

Yuniarti, F., & Rakhmawati, D. (2021). Studi kasus: Game digital "Kahoot" dalam pengajaran Bahasa Inggris. *Jurnal Ilmiah Bina Edukasi*, 1(1), 46-59.

Zhonggen, Y. (2018). Differences in serious game-aided and traditional English vocabulary Acquisition. *Computers & Education*, 127, 214–232. https://doi.org/10.1016/j.compe du.2018.07.014.