Enhancing EFL Learners' Vocabulary Acquisition with Socrative Digital Flashcards: An Experimental Study

Jihan Rahmawati[1] & Mujiono[2] & Ayu Liskinasih[3]

[1,2&3]Universitas PGRI Kanjuruhan Malang, Indonesia
Correspondence: Mujiono, Universitas PGRI Kanjuruhan Malang, Indonesia.
E-mail: moejie_nova@unikama.ac.id

Abstract: Effective communication in a foreign language requires an in-depth knowledge of the language's vocabulary. Teachers are expected to include interactive multimedia in their vocabulary instruction. The current study examined the impact of Socrative digital flashcards on English as a foreign language (EFL) learners' vocabulary acquisition. The study recruited 54 students from the State Junior High School of Malang in Indonesia. Their ages varied from 12-14 years old. This was a quasi-experimental study, and they were categorized into two groups, 27 for both experiment and control. An independent sample t-test and normalized gain were employed to analyse the data. The results showed that learners who used Socrative digital flashcards had significantly higher vocabulary acquisition than groups who used PowerPoint flashcards. Socrative digital flashcards contributed to developing E FL learners' vocabulary acquisition.

Introduction

The employment of technology in the educational process is now widely recognized as fundamental. Incorporating technology into the learning process makes vocabulary learning more meaningful and enjoyable for learners. Vocabulary acquisition is critical for learning English as a foreign language (EFL). The English vocabulary serves as the foundation for all elements of English learning (Yue, 2017; Alghamdi & Elyas, 2020). However, mastering vocabulary requires not just knowledge of meanings but also knowledge of their context (Sakata, 2019). Studying English will be difficult without acquiring vocabulary (Hiebert et al., 2019). EFL learners face numerous obstacles in pursuing English acquisition (Abdullah et al., 2020). Technology can be used to teach vocabulary due to that one (Boddaert et al., 2021). Technology has a significant impact on many elements of globalization, including education (Hazarika, 2017), (Bavi, 2018). Teachers use it to better their approaches (Klimova, 2021). Students nowadays are fascinated by technology (Ashcroft et al., 2018). Teachers may adapt to integrate technology in teaching and learning. Technology use has a beneficial effect on the teaching-learning process (Castillo-Cuesta et al., 2021).

Previous research has demonstrated that teachers can use technology to accomplish three goals: implementing real-time evaluation, increasing student willingness to study, and establishing an active learning space (Mendez & Slisko, 2013). Additionally, technological advancement compels researchers to disclose the use of technology, such as Socrative, that tries to assist learning. Various researchers undertake multiple studies on Socrative such as (Kaya & Balta, 2016; M Dakka, 2015; Wash, 2014). Socrative is believed to be one of the learning tools that can enhance students' engagement (Kaya & Balta, 2016) and can assist the teacher in making the learning process more interesting (M Dakka, 2015). Unlike traditional learning in classroom settings, Socrative can improve students' learning (Nurhasanah & Khasanah, 2020).

Socrative formerly was used as a formative assessment tool that helps teachers and students assess their learning progress (Wash, 2014). However, in its development, Socrative is commonly used as learning instruction since it can motivate students to learn English (Rofiah & Waluyo, 2020). Dakka (2015) mentions that teaching and learning process assisted technology such as Socrative helps the students be involved in the class, understand the study's objective (Manning et al., 2017) and have a greater understanding (Kaya & Balta, 2016). It is possible because the Socrative method forces students to concentrate during the learning process (Nurhasanah & Khasanah, 2020).

Several researchers have explored the usefulness of Socrative in the learning process. Mendez & Slisko (2013) examined the use of Socrative and smartphone on students' engagement in the learning process. This study found that Socrative effectively made the students actively follow the learning process. Socrative also gives the students a better learning experience since they can directly obtain feedback from the teacher. In addition, Kaya & Balta (2016) explored the advantage of Socrative in language teaching classes. According to the findings of this study, Socrative is an effective tool for increasing student participation in the classroom. Mohamad et al (2019) further looks into the lecturer and students' response on the integration of Socrative. According to the data, students and lecturers positively replied to Socrative's perceived usefulness and ease of usage.

The studies above showed that Socrative was considered positive. However, the data are somewhat to be limited since it is restricted on the benefits of Socrative in language learning (Kaya & Balta, 2016), Engaging learners in the learning process (Mendez & Slisko, 2013), and the lecturer and students' perception (Mohamad et al., 2019). The study aims to see how efficient Socrative as a digital flashcard is at improving students' vocabulary acquisition. This media is relatively new in the teaching and learning process. While traditional media plays an important part, Socrative as a digital flashcard appears to be more helpful in assisting students in the teaching and learning process. Here are some research questions:

1. Do the use of Socrative digital flashcards and PowerPoint flashcards differ in EFL learners' vocabulary acquisition?
2. Does using Socrative digital flashcards effectively affect EFL learners' vocabulary acquisition?

2. Literature Review

2.1 Learning Vocabulary

Among the most critical facets of learning a language is developing vocabulary. Vocabulary acquisition is a critical and essential aspect of learning a language (Alghamdi & Elyas, 2020; Aravind & Rajasekaran, 2021). Vocabulary is the fundamental component that learners must master to advance (Ajisoko, 2020). It is fundamental, yet it is difficult for many EFL students. They require lexical knowledge to effectively communicate their ideas and deliver messages, as incorrect language usage can lead to misunderstanding and communication breakdown (Rebuschat et al., 2021). In addition, vocabulary knowledge allows students to access a wide range of written and spoken input. As a result, a significant length of time should be set aside for vocabulary study, which advances language learning faster than grammar (Klimova, 2021). All students, regardless of their ability level, must study vocabulary. Toy & Buyukkarci (2019) emphasize the significance of vocabulary learning, claiming that linguistic knowledge is necessary for communicative competence and second language acquisition.

A limited vocabulary in a foreign language impedes successful communication, vocabulary knowledge is usually seen as a critical skill for foreign language learners (Toy & Buyukkarci, 2019). Researchers such as Akçelik & Eyüp (2021) and others have discovered that vocabulary acquisition is crucial for effective foreign language use and plays an essential role in constructing entire spoken and written texts. To effectively communicate using the structures and functions we've learnt, we require a large vocabulary (Akdogan, 2017).

On the other hand, vocabulary has been identified as the most significant source of difficulty for EFL learners (Akçelik & Eyüp, 2021). This statement could indicate that learners consider a vocabulary system's open-ended source of the problem. Another reason could be that, unlike syntax and phonology, vocabulary has no standards for learners to follow to acquire and increase their knowledge. In other words, it is unclear which rules apply to EFL vocabulary development or which vocabulary items should be learnt first.

2.2 Socrative

Socrative is a Web 2.0 vocabulary learning program that allows users to design and use digital flashcards. Based on Manning et al. (2017) theory, Socrative is easy to use because it is available in every app store or on the web, and it is also free. Although Socrative is free, users can take advantage of all of its features and build flashcards in multiple-choice, short answers, or true or false quizzes. Socrative is a learning digital media, according to (Wahyuni et al., 2019), is very user-friendly, easy to use, and has a very swift interface that is easy to notice. Because it eliminates paper usage, Socrative will be a good choice for quizzes and regular evaluations. It is also beneficial to teachers because they do not have to check the test results manually.

In conclusion, Socrative is one of the vocabulary learning systems designed to encourage students to participate in class, understand what to think about a particular subject, work collaboratively, and acquire further knowledge. Socrative is also easy to use and has a very swift interface that is easy to notice.

2.3 Socrative in Teaching Vocabulary

Digital-based media has been widely used in teaching vocabulary (Hiebert et al., 2019). Learning vocabulary with the help of technology makes the process easier and more enjoyable. One technology that can be used in teaching vocabulary is Socrative (Manning et al., 2017). Mendez & Slisko (2013) mention that students who experience using Socrative in the learning process can assist students in becoming more involved in class, comprehending what to think about a particular topic, cooperating in groups, and acquiring additional knowledge. It is possible because the Socrative requires leaners to concentrate on the application's tasks. According to Wash (2014), students can boost their class participation, provide rapid feedback on what students know, create pleasant classroom interactions, and increase their engagement in class. Wash (2014) continues by stating that teachers can leverage the numerous available instructional technology tools to create new methods to engage their students rather than viewing instructional technology as a disruptive innovation

In short, the use of Socrative in teaching vocabulary is beneficial. It can increase learners' motivation to participate in the class. The usage of Socrative can also assist learners in becoming more engaged in class, understanding what to think about a particular issue, working in groups, and gaining more knowledge. It is possible because the Socrative App requires learners to concentrate on the tasks.

3. Method

3.1 Research Design

A quasi-experimental design was employed in this research. Table 1 could be used to illustrate the design. This study's sample was selected using non-probability sampling. According to Donald Ary et al. (2010), different treatments were used to compare the two groups, and the significant difference among both pre-test and post-test was examined. Both groups received digital flashcards, while the control group received a PowerPoint flashcard.

Table 1: The design of quasi-experimental research

Groups	Pre-test	Treatment	Post-test
Experimental	Y_1	X_1	Y_1
Control	Y_2	O	Y_2

Notes: Y1: Given pre-test in experimental class; Y2: Given pre-test in control class X1: Treatment (given digital flashcard); O: No treatment (given Power Point flashcard) Y1: Given post-test in experimental class; Y2: Given post-test in control class.

The researcher took the learners who got scores less than 75 on their final examination of the first semester. However, since the researcher did not know the learners' scores, the English teacher determined the sample. Additionally, the learners were assessed to ensure that they were all performing at the same level of proficiency.

The study enrolled 54 state junior high school learners from Malang, Indonesia. Their ages ranged from 12 to 14 years. They were divided into control (26) and experimental (28) learners. The teacher used Socrative digital flashcards to teach the experimental group, whereas the control group used PowerPoint flashcards. Before and following the interventions, the students took a pre- and post-test.

3.2 Instrument

In this study, the instrument used was a three-part test: try out, pre-test, and post-test. A pre-test was administered to both the control and experimental groups. The validity and reliability of the test were assessed using the try-out test. A pre-test was administered to measure the level of language knowledge before treatment. After treatment, the post-test was used to see a significant difference in learners' capacity in both groups.

3.3 Validity and Reliability

To determine the test's reliability, researchers examined its content validity and the reliability of the items on it. Furthermore, the researcher devised multiple-choice exam items that were administered to learners. The pre-test result showed that 15 of the 25 items were valid in the final analysis.

The reliability of the test was determined by calculating Cronbach's Alpha. A range of test administration settings is used to compare the consistency of the results. As proposed by Tavakol & Dennick (2011), the researcher employed Cronbach's Alpha ranges. It came out to be .633 using Cronbach's Alpha. According to the Value Coefficient of Reliability table, there was a high-reliability coefficient for each test, with values greater than or equal to.80.

3.4 Research Procedure

The researchers held four data collection meetings per class. Each class had a pre-test, a treatment, and a post-test. These meetings employed synchronous communication, and the researcher used Zoom for simultaneous communication. The researcher gave a pre-test to learners in the Experimental and Control Groups on three separate occasions: during the second, third, and fourth meetings, respectively. Before starting the primary activity, the teacher explains the study's objectives. The researcher started the program and told the learners to stare at the screen. The learners next took the researcher's quiz. The post-test was completed after each group received treatments.

3.5 Data Analysis

The researcher used Levine's test to determine the homogeneity of the data. The normality test was performed to establish whether or not the data collected was normally distributed. The Shapiro-Wilk test was used to establish whether or not the data was normal. To determine if the null hypothesis had been accepted or rejected, an independent sample t-test was used to analyse the data. The researcher also employed the N-gain test to measure the success of a learning process and whether the second hypothesis was accepted or rejected. The following calculation, which was supplied by Nani & Kusumah (2015), was used to determine the n-gain, and the normalized gain criterion is presented in Table 2:

$$\text{Normalized gain } (<g>): \qquad \frac{\text{post-test score - pre-test score}}{\text{maximum score } - \text{ pre-test score}}$$

Table 2: Criteria for the normalized gain index

N-gain Score	Interpretation
<40	Not effective
40-55	Not effective enough
56-75	Effective enough
>75	Effective

4. Findings

4.1 Normality and Homogeneity

Pre-test and post-test are used to determine the difference in students' learning outcomes before and after treatment in experimental group and control classes. In addition, pre-test and post-tests results data are used as data to test the normality and homogeneity of the data and test the research hypothesis. The results of the normality and homogeneity tests are shown in the following table:

Table 3: Test normality with Shapiro-Wilk

Group	Statistics	Df	Sig.
Experiment	.947	27	.178
Control	.925	27	.052

The normality test in table 1 of Shapiro-Wilk showed significant scores for the experimental group .178 and the control group .052. The result of the normality test of pre-test showed that signification in control classes and experimental groups was greater than a significant level of .05, so the distribution of experimental class data and control classes was declared normal.

Table 4: Homogeneity test

Levene Statistic	df1	df2	Sig.
0.051	1	52	.602

Table 2 indicated that the significance value of .602 is higher than the significant level of .05, indicating that the data are homogeneous.

4.2 The Result of Independent Sample T-Test

The researcher provided two hypotheses. The first was to establish a clear distinction of mean scores between the groups provided Socrative and those given Power-Point Flashcards. The second was to know

whether the use of Socrative was more effective than PowerPoint Flashcard or not. The following table displays the results of the pre-test independent sample t-test.

Table 5: The result of the experimental group t-test for pre-test and post-test

Group	N	Mean	SD	t-value	Df	Sig.
Pre-test	27	62.07	12.279	1.281	52	.000
Post-test	27	87.03	6.919	7.294	52	.000

In the experimental group, the mean pre-test score was 67.07 and the post-test score was 87.03, showing a significant difference between the two tests. Table 4 showed that the t-test considered the experimental group's pre-test and post-test difference less than (.05). Both pre- and post-test results revealed .000 significant differences. Table 5 showed the post-test Independent sample t-test for experimental and control groups.

Table 6: The post-test t-test results for the experimental and control groups

Group	N	Mean	SD	T	Df	Sig.
Experiment	27	87.03	6.919	7.294	52	.000
control	27	69.40	10.481	7.294	45.046	.000

The Independent sample t-test considered the significance level of difference between the experiment and control groups for post-test to be smaller than 0.05. Both groups showed statistically significant differences. The experimental group got a mean of (87.03), and the control group received a mean of (69.40). The statistics also revealed .000 significant differences between the two groups. The use of Socrative digital flashcards (experimental group) and PowerPoint flashcards (control group) differ in EFL learners' vocabulary acquisition.

4.3 Analysis of n-gain Score

To measure the second hypothesis, the researcher applied the N-gain test. To determine the effectiveness of a learning process, the researcher employed the N-gain test. The N-gain score has four classifications of significance, as shown in Table 5.

Table 7: Classification of n-gain score

Percentage (%)	Classification
<40	Not effective
40-50	Less effective
56-75	Effective enough
>76	Effective

A score of less than 40 suggests the data is ineffectual, according to table 5. A 40-55 indicates ineffective data, which means the information is adequate from 56 to 75. A score of 76 or higher indicates valuable data. Table 6 displays the result of n-gain.

Table 8: Descriptive statistics of n-gain

Class	Mean	Median	SD	SE	Min	Max
Experiment	60.2	62.5	32.15	6.188	-50	100
Control	8.44	20	63.5	10.297	-250	40

Table 6 showed that the experiment class mean score was 60.2, the median was 62.5, the standard deviation was 32.15, the standard error was 6.188, the minimum was -50, and the maximum was 100. The control group's mean score was 8.44, median 20, and SD was 63.5. The standard error was 10.297, while the minimum and maximum scores were -250 and 40. The mean score for the researcher was 60.2 in the experimental class and 8.44 in the control class. The n-gain index of the two groups can be presented in the following figure. 1.
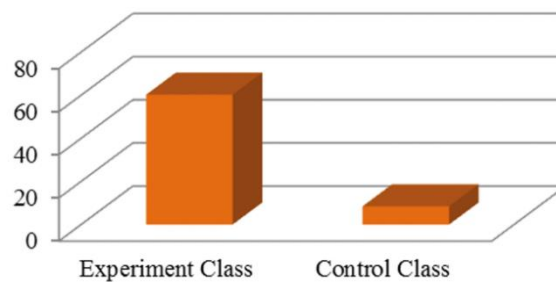

Figure 1: The n-gain score of the experiment and control group

Fig. 1 concluded that Socrative as a digital flashcard media is more effective than PowerPoint Flashcard on learners' vocabulary acquisition.

5. Discussion

This study demonstrated that learners who were given Socrative and those who were given PowerPoint flashcards had different vocabulary scores. The disparity is attributable to the learners' diversity. The first is the learners' learning environment, and the learning environment for the learners who learn at home is different. The second point to consider is the disparity in learning perspectives. It can motivate learning if the learners believe what they are learning is significant and engaging. Those assertions are in line with Ginsberg (2016) who claims that the learning environment, learners' perspectives, and school culture can all impact learners' willingness to learn.

FL learners know that their vocabulary limits their ability to communicate in English, but many are confused about enhancing their vocabulary (Altiner, 2011). In this case, teachers are expected to have the ability to direct and assist learners in improving vocabulary skills. Conversely, language teachers are

unsure how to integrate vocabulary study into their classes (Dizon, 2016). Therefore, an exciting tool to support the teaching and learning process should be implemented. The current study identified that Socrative makes the learners less easily bored. The exciting features provided in Socrative make the learners interested in joining the learning process.

Socrative is a valuable digital flashcard technology that can help learners improve their vocabulary acquisition. Learners who are having trouble expanding their vocabulary can benefit from Socrative. Socrative, according to Nurhasanah & Khasanah (2020), can improve learners' ability to teach language. Thanks to the features given in, learners can recognize and understand each word based on context.

Kaya & Balta (2016) further argued that Socrative is a valuable tool that English teachers may use in their classes to improve teaching and learning outcomes. As part of their language activities, learners can offer feedback and answers to questions and quizzes during a lesson (Kaya & Balta, 2016). Educators and learners can identify areas of difficulty when feedback is provided immediately. It also fosters active engagement from learners, allowing teachers to become more involved with their learners (Mohamad et al., 2019).

Unengaged learners do not listen or participate in learning activities (Awedh et al., 2014). Therefore, their engagement is critical during the learning process. In this case, connected technologies help motivate learners and teachers. There are various learning tools available in today's schools, one of which is Socrative. Socrative is simple to incorporate into a classroom environment. It gives teachers multiple options for engaging learners in the topic (Kaya & Balta, 2016). Integrating smartphones with other classroom gadgets improves individual and group learning results while allowing learners to participate in more detailed discussions (M Dakka, 2015).

In addition, Mofareh (2019) believes that digital-based can help learners reach their learning goals. The wide range of quizzes, game modes, and images accessible show this. Because Socrative gives a description function for each item on quizzes, learners can understand faults in their work. So that learners may immediately recognize what is wrong and what is correct. Therefore, the purpose of the provided photographs is to help learners grasp the word in context. It keeps learners from making mistakes, and allows learners to recall the meanings of each vocabulary word.

The current study also supported the previous research conducted by several researchers. According to Rofiah & Waluyo (2020), using Socrative to teach vocabulary is effective regardless of the number of learners or proficiency levels. The average score of the experimental group is higher than the average score of the control group. To put it another way, learners who are given Socrative do better than learners are given Power Point Flashcard. As a result, it can be stated that Socrative's digital flashcards are an effective medium for teaching vocabulary acquisition.

Additionally, Ashcroft et al. (2018) attempted to explore the impact of utilizing a digital flashcard versus a paper flashcard for second language learners. The study's findings revealed that using digital flashcards to promote vocabulary acquisition is beneficial (Wash, 2014). Although the digital flashcard format differed, the result was essentially the same.

The scores of learners are not linked from one evaluation to the next. If teachers want to track a student's progress, they must create it themselves. Learners frequently have to leave the session and log back in because the interface is clunky and unresponsive. Socrative, according to Mendez & Slisko (2013), lacks sophisticated features such as alerts if student performance is declining, achievements learners earn for growth, and ways to learn from student data other than their average on a single evaluation.

In this study researcher also finds the difficulty and the lack during the implementation of this research. The first is about time management. As this research is conducted using synchronous, many learners were not present at the meeting on time. It is due to the signal strength and the student's discipline. So, the researcher was unable to start the class immediately. The second is that the learners do not understand the features in Socrative. On the first meeting in experiment class, most learners do not know how to finish the quiz game in Socrative. Thus, the researcher needs to provide a detailed tutorial. In this case, further research is needed to test how to fix time management and learners' lack of experience.

6. Conclusion and Recommendation

The results showed a significant difference in EFL learners' mean score between digital flashcards in Socrative and without using Socrative on EFL learners' vocabulary acquisition. Normalize gain indicated that EFL leaners with digital flashcards in Socrative had higher vocabulary acquisition. Using the digital flashcard on Socrative Apps contributes to developing EFL learners' vocabulary acquisition. Further research is needed to establish to what extent digital flashcards on Socrative Apps influence EFL learners' achievement of skills of English. It is also confirmation of the previous study about digital flashcards. This study identified that Socrative is an effective medium for teaching vocabulary acquisition. Additionally, the results of this study indicate future research recommendations, including increasing the study's scope to include other moderator variables. These criteria may predict EFL learners' proficiency in English by.

References

Abdullah, M. Y., Hussin, S., & Ismail, K. (2020). Does flipped classroom model affect EFL learners' anxiety in English speaking performance? *International Journal of Emerging Technologies in Learning*, *16*(1), 94–108. https://doi.org/10.3991/ijet.v16i01.16955

Ajisoko, P. (2020). The use of duolingo apps to improve English vocabulary learning. *International Journal of Emerging Technologies in Learning*, *15*(7), 149–155. https://doi.org/10.3991/ijet.v15i07.13229

Akçelik, D., & Eyüp, B. (2021). The effect of intelligence games on the vocabulary knowledge of refugee students learning Turkish as the second language. *Education Quarterly Reviews*, *4*(2). https://doi.org/10.31014/aior.1993.04.02.264

Akdogan, E. (2017). Developing vocabulary in game activities and game materials. *Journal of Teaching and Education*, *07*(01), 31–65.

Alghamdi, A. A., & Elyas, T. (2020). The Effect of electronic flashcards on EFL students' vocabulary learning: The case of saudi arabia. *Randwick International of Education and Linguistics Science Journal*, *1*(2), 114–125. https://doi.org/10.47175/rielsj.v1i2.79

Altiner, C. (2011). Integrating a computer-based flashcard program into academic vocabulary learning. *ProQuest Dissertations and Theses*, *18*(1), 82.

Aravind, B. R., & Rajasekaran, V. (2021). Exploring dysphasia learners' vocabulary acquisition through the cognitive theory of multimedia learning: an experimental study. *International Journal of Emerging Technologies in Learning*, *16*(12), 263–275. https://doi.org/10.3991/ijet.v16i12.22173

Ashcroft, R. J., Cvitkovic, R., & Praver, M. (2018). Research paper students. *The Eurocall Review*, *26*(1), 14–28. https://doi.org/10.4995/eurocall.2018.7881

Awedh, M., Mueen, A., Zafar, B., & Manzoor, U. (2014). Using socrative and smartphones for the support of collaborative learning. *International Journal on Integrating Technology in Education*, *3*(4), 17–24. https://doi.org/10.5121/ijite.2014.3402

Bavi, F. (2018). The Effect of using fun activities on learning vocabulary at the elementary level. *Journal of Language Teaching and Research*, *9*(3), 629. https://doi.org/10.17507/jltr.0903.24

Boddaert, G., Cornut, C., & Casalis, S. (2021). Integration of newly learned L2 words into the mental lexicon is modulated by vocabulary learning method. *Acta Psychologica*, *212*(January), 103220. https://doi.org/10.1016/j.actpsy.2020.103220

Castillo-Cuesta, L., Quinonez-Beltran, A., Cabrera-Solano, P., Ochoa-Cueva, C., & Gonzalez-Torres, P. (2021). Using digital storytelling as a strategy for enhancing EFL writing skills. *International Journal of Emerging Technologies in Learning*, *16*(13), 142–156. https://doi.org/10.3991/ijet.v16i13.22187

Dizon, G. (2016). Quizlet in the EFL classroom: Enhancing academic vocabulary acquisition of Japanese university students. *Teaching English with Technology*, *16*(2), 40–56.

Donald Ary, Jacobs, L. C., & Sorensen, C. K. (2010). *Introduction to research in education eighth Edition*. In Nelson Education, Ltd.

Ginsberg, M. B. (2016). Cultural diversity, motivation, and differentiation. *Theory into Practice*, *44*(3), 218–225. https://doi.org/10.1207/s15430421tip4403_6

Hazarika, Z. (2017). Exploring the impact of technology in teaching english: tesol in the context. *European Journal of English Language and Literature Studies*, *5*(10), 19–28. www.eajournals.org

Hiebert, E. H., Scott, J. A., Castaneda, R., & Spichtig, A. (2019). An analysis of the features of words that influence vocabulary difficulty. *Education Sciences*, *9*(1), 1–24. https://doi.org/10.3390/educsci9010008

Kaya, A., & Balta, N. (2016). Taking advantages of technologies: using the socrative in English language teaching classes. *International Journal of Social Sciences & Educational Studies*, *2*(3), 4–12.

Klimova, B. (2021). Evaluating impact of mobile applications on EFL university learners' vocabulary learning - A review study. *Procedia Computer Science*, *184*, 859–864. https://doi.org/10.1016/j.procs.2021.03.108

M Dakka, S. (2015). Using socrative to enhance in-class student engagement and collaboration. *International Journal on Integrating Technology in Education*, *4*(3), 13–19. https://doi.org/10.5121/ijite.2015.4302

Manning, R. D., Keiper, M. C., & Jenny, S. E. (2017). Pedagogical innovations for the millennial sport management student: Socrative and twitter. *Sport Management Education Journal*, *11*(1), 45–54. https://doi.org/10.1123/smej.2016-0014

Mendez, D., & Slisko, J. (2013). Software socrative and smartphones as tools for implementation of basic processes of active physics learning in classroom: An initial feasibility study with prospective teachers. *European Journal of Physics Education*, *4*(2),

Mofareh, A. (2019). The use of technology in english language teaching. *Frontiers in Education Technology*, *2*(3), p168. https://doi.org/10.22158/fet.v2n3p168

Mohamad, M., Lestari, D. D., Zahidi, A. M., & Matore, M. E. M. (2019). Socrative in teaching tenses: indonesian students and lecturers' perceptions. *Creative Education*, *10*(01), 140–150. https://doi.org/10.4236/ce.2019.101010

Nani, K. La, & Kusumah, Y. S. (2015). The effectiveness ofict-assisted project- based learning in enhancing. *International Journal of Education and Research*, *3*(8), 187–196.

Nurhasanah, F., & Khasanah, N. (2020). The effectiveness of socrative application for formative assessment in teaching vocabulary at sma muhammadiyah 1 ponorogo. *ELTALL: English Language Teaching, Applied Linguistic and Literature*, *1*(2), 51. https://doi.org/10.21154/eltall.v1i2.2448

Rebuschat, P., Monaghan, P., & Schoetensack, C. (2021). Learning vocabulary and grammar from cross-situational statistics. *Cognition*, *206*(October). https://doi.org/10.1016/j.cognition.2020.104475

Rofiah, N. L., & Waluyo, B. (2020). Using socrative for vocabulary tests: Thai EFL learner acceptance and perceived risk of cheating. *Journal of Asia TEFL*, *17*(3), 966–982. https://doi.org/10.18823/asiatefl.2020.17.3.14.966

Sakata, N. (2019). Profiling vocabulary for proficiency development: effects of input and general frequencies on L2 learning. *System*, *87*. https://doi.org/10.1016/j.system.2019.102167

Tavakol, M., & Dennick, R. (2011). Making Sense of Cronbach's Alpha. *International Journal of Medical Education*, *2*, 53–55. https://doi.org/10.5116/ijme.4dfb.8dfd

Toy, F., & Buyukkarci, K. (2019). The effects of quizlet on foreign language learners. *I-Manager's Journal of Educational Technology*, *16*(3), 2019.

Wahyuni, S., Mujiyanto, J., Rukmini, D., & Wuli, S. (2019). persepsi guru terhadap penggunaan socrative sebagai media penilaian interaktif. *Jurnal Seminar Nasional Pascasarjana*, *1*(March), 309–314.

Wash, P. D. (2014). Taking advantage of mobile devices: using socrative in the classroom. *Journal of Teaching and Learning with Technology*, *3*(1), 99–101. https://doi.org/10.14434/jotlt.v3n1.5016

Yue, N. (2017). Computer multimedia assisted english vocabulary teaching courseware. *International Journal of Emerging Technologies in Learning*, *12*(12), 67–78. https://doi.org/10.3991/ijet.v12i12.7955