PROJECT
(Professional Journal of English Education)
Volume 8, No. 5, September 2025
p–ISSN 2614-6320
e–ISSN 2614-6258

The Use of Digital Flashcard in Teaching Vocabulary Mastery

Intan Nurjanah Author-name[1], Kurniawan Yudhi Nugroho[2]

English Education Study Program, Faculty of Languages, Literature and Culture, Universitas Islam Sultan Agung, Semarang, Indonesia
[1] intannurjanah@unissula.ac.id, [2] kurniawan@unissula.ac.id

Abstract

This study examines how well digital flashcards can improve elementary school students vocabulary mastery, with a particular emphasis on number vocabulary. A fourth-grade classroom in Semarang Regency, Central Java, Indonesia, served as the study's site because it was recognised that many students lacked adequate vocabulary skills. To gauge vocabulary growth, the study used a pre-test and post-test as part of a pre-experimental design and quantitative methodology. With the pre-test mean at 60.83 and the post-test mean increasing to 82.22 following the intervention, the results showed a significant improvement in the students' scores. The Statistical Package for the Social Sciences (SPSS) was used to analyse the data. The paired t-test revealed a significant increase in vocabulary mastery, with a p-value of 0.000, below the 0.05 cutoff. As a result, the null hypothesis (H0) was rejected and the alternative hypothesis (Ha) was accepted, demonstrating the efficacy of digital flashcard in improving vocabulary acquisition. Based on the results, digital flashcard can be a useful teaching tool that can be used in a variety of ways and offer young learners an engaging and interactive learning experience.

Keywords: Digital Flashcard; Elementary School Student; Teaching English; Vocabulary

INTRODUCTION

English has four skills that have to be learned and mastered. They are listening, speaking, reading, and writing (Kusumawardhani, 2020). They also need to understand components of English including vocabulary, pronunciation, and grammar, to enhance their language proficiency. The first thing that must be learned is vocabulary. In acquiring vocabulary, elementary school students find it easier to remember new words compared to adults who are more cautious and pay more attention to language forms. The selection of vocabulary is also adjusted to the characteristics of elementary school students, such as mastery of standard vocabulary between 500-1500 words, using objects, drilling, spelling, drawing, using expressions and gestures, guessing from context, games, and simple grammar used in everyday communication (Deni & Fahriany, 2020; Kurniawati & Karsana, 2020; Susantini & Kristiantari, 2021). Vocabulary is one of the basic language components that students must master (Pradini & Adnyayanti, 2022). In English language teaching, vocabulary is the first important thing that must be learned. Vocabulary is important for language acquisition and improves speaking, writing, listening, and reading abilities. Among the various types of vocabulary, numerical or number vocabulary holds a unique position, as it is essential for performing basic communication functions such as telling time, counting, shopping, and describing quantities. Mastery of numerical vocabulary is very important for young learners, as it supports their linguistic development. Students learning English as a foreign language (EFL) generally acquire up number vocabulary early on since it is utilized extensively in both classroom activities and daily communication. Although it seems simple, there are still many obstacles in the process of learning English. Some students have difficulty recognizing, pronouncing, and using number words in English accurately. These factors can come from the

teachers themselves, the approaches used, students' interest and desire to learn English. Students may have difficulty mastering vocabulary, lack of knowledge, or lack of utilization of learning media to teach vocabulary (Handayani, 2024; Simpuruh & Syamsinar, 2021). This kind of learning strategy, of course, makes most students feel bored even to the point of losing motivation to learn English (Wijaya & Devianto, 2019). Students' Lack of motivation can also affect vocabulary mastery. Previous studies have emphasized the importance of targeted strategies to enhance vocabulary acquisition, such as Nasution & Rahim (2022) examines how effective paper flashcard are for improving the vocabulary of Islamic primary school students. Pramadanti (2023) examined how using paper flashcard effectively improves speaking skills in elementary school students. Also, Deni & Fahriany (2020) investigating how English vocabulary is provided to elementary school students using Quizlet. However, research specifically focused on numerical vocabulary is still limited. Given how important this is, it is important to investigate efficient methods for enhancing English proficiency with numerical verbs. Thus, the aim of this research is to find out whether using digital flashcard could help elementary school students' vocabulary improvement in English. These results could help improve learning, particularly when it comes to early language learning.

In the context of English language learning according to Schmitt (2002), there are two types of vocabulary, productive and receptive. Receptive vocabulary refers to the form that are acknowledged and comprehended by both native speakers and non-native learners, however rarely deployed; this vocabulary is utilised passively while listening and reading. In both speech and writing, productive vocabulary is utilised actively. Initially, numerical vocabulary is receptive vocabulary because students first hear and recognize numbers. After they start using it in speaking or writing, the vocabulary of numbers becomes productive vocabulary. There is no need to strictly separate receptive and productive vocabulary because students must acquire vocabulary knowledge receptively and then use it productively.

There are several principles of vocabulary for elementary school students. One of the most important principles is repetition. Repetition helps solidify word meanings and promotes long-term retention (Dakhi & Fitria, 2019). This can happen through reading, speaking, writing, and listening activities that use the target vocabulary. Another principle is to actively engage students with vocabulary through discussions, games, and hands-on activities to encourage deeper word processing (Tejera, 2020). It can use a variety of tools, such as visuals (pictures, videos), physical activities (acting out words), and digital tools (vocabulary development apps) to help reinforce vocabulary learning.

Based on the principles and characteristics of students in vocabulary selection, this research aims to teach number vocabulary through digital media that provides learning and teaches appropriate vocabulary. This can help students develop language and gain new life experiences. Mastery of number vocabulary is important for students because it includes words used to express numbers such as one, two, three, and so on. And of course, it is also related to daily activities such as counting, telling time, prices, and sequences. However, students often face difficulties, especially in terms of pronunciation, writing, and articulation (for example, fifty-five, eighty-eight, etc.). Therefore, this research aims to determine whether the use of enjoyable and interactive digital media can enhance students' vocabulary in accordance with student's principles and characteristics in vocabulary selection.

In elementary school, flashcard are one of the learning tools that can be used to help students memorize English vocabulary. There are many types of flashcard, there are paper flashcard and digital flashcard. Paper flashcard are physical objects that are ideally sized to be seen by all students in a classroom and can be easily handled. However, flashcard are in digital form due to the times. Digital flashcard are typically created, stored, and used via websites, smartphone apps, and/or other programmes (Zung et al., 2022). They are easy to use and practice anywhere

and anytime. According to Sudrajat et al (2023), a digital flashcard is a kind of educational material that utilizes technology to improve the effectiveness and efficiency of its current use. The use of digital flashcard is a successful teaching strategy that improves ability by facilitating understanding and increasing student interest through the use of electronic learning cards with text, symbols, or visual components (Hanisah et al., 2024). Digital flashcard can present learning materials interestingly and interactively. There are many advantages to using digital flashcard as a teaching tool, including helping with language visualisation and improving vocabulary acquisition through images that illustrate concepts (Yüksel et al., 2022). Digital flashcard can be used as a learning tool that enriches students' learning experience as they offer engaging and interactive content. According to Chen & Chan (2019), users of digital flashcard have access to all the tools they need to learn new vocabulary in an online environment, including definitions, examples, images, audio recordings, videos, and interactive exercises. With various features, digital flashcard can provoke interest and maintain students' attention while learning English vocabulary.

It is usually made using online tools such as Canva, Wordwall, Quizlet, and Knowt. Some research on digital flashcard mostly uses Quizlet as a learning media, as in the research of Lubis et al (2022). However, this research employs the Knowt application since it is one of the digital media that can be accessed for free by anyone is easily available via mobile devices and PCs, is simple to use, and, most importantly, keeps students' interest. Additionally, the Knowt application contains features to help students in learning English vocabulary, like a spelling tool that improves spelling. Additionally, this application was designed and suggested for efficient learning methods that enhance proficiency in English number vocabulary. Therefore, the purpose of this research is to find out whether digital flashcard can improve elementary school students vocabulary understanding, especially in numbers vocabulary.

METHOD

Design

Quantitative methods were used in this research (Wulandari & Chadafi, 2022). This pre-experiment design involves one experimental group that is given a pre-test and post-test. This design does not include a control group, and the focus of the research is to observe how the treatment impacts the subject being studied. This design was chosen because the research aims to obtain evidence about the effectiveness of digital flashcard in a real learning environment in a small-scale classroom, especially in educational settings where resources and time are limited. Therefore, the chosen design is considered suitable for this research because it provides a clear and manageable framework to measure the impact of the independent variable (digital flashcard) on the dependent variable (students' vocabulary mastery).

Sample

This research was conducted at one of the elementary schools in Semarang Regency. The reason for choosing this research location is that fourth-grade students at this school still struggle to improve their English vocabulary skills, making it a relevant and meaningful setting to determine the improvement in students' vocabulary using digital flashcard. This research has a population of 35 students. The sample consists of 18 students from class 4B. Teacher recommendation and consistent student participation in English learning activities were the reasons why this class was purposively selected. Additionally, class 4B was chosen because it represents a manageable group size to effectively implement digital flashcard media within the available time and resources.

Instrument

Tests utilizing an instrument modified from Lestari (2019) were used to collect the results. The instruments employed were pre-test and post-test assessments, which consisted of number vocabulary. Each test contains 20 questions to be completed in 30 minutes. The assessments were designed as multiple-choice, short answer, and word construction questions. The choice of these test forms was based on the consideration that the combination of questions could provide a more comprehensive picture of the participants' vocabulary acquisition. Multiple choice questions are used to measure the ability to recognize vocabulary quickly and accurately, while short fill-in-the-blank questions are used to evaluate participants' recall ability of vocabulary without the help of answer choices, and word order tests participants' skills in actively understanding the structure and meaning of vocabulary. Thus, this instrument is expected to capture the development of students' vocabulary skills more thoroughly after using digital flashcard.

Process of Collecting Data

This research was conducted in December 2024. There were 18 students in fourth grade who participated in this research. Several techniques were carried out by researchers to be able to collect data. Researchers conducted 5 meetings. The first meeting served as an introduction and pre-test. In the second meeting, which was the treatment, researchers provided the students with information on vocabulary related to numbers from 50 to 60. Researchers then offered them an additional task that involved locating hidden words to measure their comprehension. In the third meeting, which was also a treatment session, researchers provided them with information on number vocabulary from 61 to 70. They then worked in groups to create flashcard based on their own ideas. The fourth meeting consisted of repeating the vocabulary content from 50 to 70, followed by questions and answers. The post-test is the final meeting. The fourth-grade Merdeka Curriculum material "Numbers After Fifty" is the foundation for this vocabulary mastery. This test aims to analyze and determine whether the digital flashcard used can improve the vocabulary of elementary school students.

Data Analysis

Once the data was collected, quantitative analysis was conducted with the Statistical Package for Social Science, also known as SPSS. The two analysis methods used were descriptive and parametric statistics. Descriptive statistics show the minimum, maximum, mean, and standard deviation for each independent and dependent variable. Hypotheses about population parameters, indicated by the t-test, are evaluated with parametric statistics. The aims of this research is to provide empirical evidence on how the use of learning media, specifically digital flashcard, can significantly improve students' vocabulary skills. Pre-test and post-test scores were used to determine the extent to which digital flashcard help students improve their vocabulary.

RESULTS AND DISCUSSION

Results

By using digital flashcard, the data collected showed the students' understanding of English vocabulary. In the following sections of this research, the data collected from the two tests were evaluated using IBM SPSS version 25. First, the data were statistically described. Then, the normality test was used as a prerequisite test. After the normality test results were declared normal, the data from the two paired samples were compared using a paired sample t-test.

Descriptive Statistics

The first step is to present the data table containing the range, minimum, maximum, mean, and standard deviation, which was used to display the pre-test and post-test results.

Comparing the Pre-test and Post-test

In this section, tests were carried out by researchers both before and after treatment. The test consists of twenty multiple-choice and short fill-in questions, each scored at 5 points. Students get a score of one hundred if they successfully answer all questions within thirty minutes. The test data is shown in the following table (see Table 1).

Table 1. Score Range of Pre-test and Post-test

Score Range	Pre-test	Post-test
40-60	10	1
61-80	8	8
81-100		9

The data above shows the total student scores in each score range. According to the pre-test results, 10 students had scores ranging from 40 to 60. Three students received scores of 50, two students received scores of 55, and four students received scores of 60. Of the seven students who received scores ranging from 61 to 80, three received scores of 65, three received scores of 70, and two received scores of 75.

In addition, the post-test results showed that one student scored between 40 and 60, with a score of 60; eight students scored between 61 and 80, with details of 3 students scoring 70, 2 students scoring 75, and 3 students scoring 80; and nine students scored between 81 and 100, with 3 students scoring 85, 3 students scoring 90, 1 student scoring 95, and 2 students scoring 100.

Table 2. Descriptive Statistic of Pre-test and Post-test

	N	Range	Minimum	Maximum	Mean		Std. Deviation
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
Pre-test	18	35	40	75	60.83	2.260	9.587
Post-test	18	40	60	100	82.22	2.595	11.011
Valid N (listwise)	18						

Table 2 above presents descriptive statistical data from the pre-test and post-test. The pre-test involved 18 students/respondents (N). All students participated in this research procedure from start to finish, as evidenced by the fact that there were 18 students/respondents (N) at the time of the post-test.

The data shows the minimum value among 18 students in the pre-test is 40, while the maximum value is 75. In the post-test, the students' minimum score is 60, and the maximum score is 100.

There is a range of 35 pre-test values and 40 post-test values when seen from the minimum and maximum statistics. In descriptive statistics, the range shows the difference between the maximum and minimum values of each test. The pre-test's highest value is 75, while the lowest

is 40. Therefore, the pre-test's range or difference is 35. In the post-test, the maximum value is 100, and the minimum value is 60. Thus, the pre-test's range or difference of values is 40.

The average pre-test and post-test results for 18 students are displayed in the table above. The mean is the average of all the values from a set of data. The mean value on the pre-test was 60.83, with a standard error of 2.260. The mean value on the post-test was 82.22, with a standard error of 2.595. A lower standard error indicates a greater correlation between the sample mean and the population mean, and a lower standard error indicates a lower correlation between the sample mean and the true population mean.

The standard deviations for the total data distributions for the mean scores are displayed in Table 2. The pre-test standard deviation, 9.587, is lower than the mean of 60.83, and the post-test standard deviation, 11.011, is also lower than the mean of 82.22. If the standard deviation is greater than the mean, then the data will be more diverse. This shows that the diversity of the data distribution is lower.

The table shows the data range, minimum value, maximum value, mean, and standard deviation of the student's pre-test and post-test scores using digital flashcard in teaching English vocabulary. From the data above, we can see an increase in results before and after treatment.

Analysis prerequisite test

In the data analysis process, one test must be conducted to determine whether the data follows the prerequisites. The test is called the analysis prerequisite test. The prerequisite analysis test consists of a normality test and hypothesis testing.

Hypothesis Testing

There are two hypotheses in this research:

a. H_a (alternative hypothesis), there is a significant effect of using digital flashcard in teaching fourth-grade English vocabulary.
b. H_0 (hypothesis null), there is no significant effect on the use of digital flashcard in teaching fourth-grade English vocabulary.

Normality Test

This normality test determines whether the data comes from a normally distributed population. This test is a requirement before parametric statistical tests, which require data to be normally distributed. A nonparametric test is suggested if the data distribution is not normal. The criteria for normality testing are as follows:

a. A significance value (Sig.) greater than or equal to 0.05 indicates that the research data has a normal distribution.
b. A significance value (Sig.) less than 0.05 indicates that the distribution is not normal.

Table 3. Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pre-test	.132	18	.200*	.955	18	.514
Post-test	.100	18	.200*	.968	18	.754

*. This is a lower bound of the true significance.
a. Lilliefors Significance Correction

The researcher has 18 samples (N=18), which indicates that the data is less than 50 (N < 50), so it uses the Shapiro-Wilk analysis. According to the previous table, the pre-test variable has a Sig. 0.514 (p > 0.05), meaning that the data is normally distributed and the null hypothesis (H_0) is accepted. The post-test variable has a significance of 0.754 (p > 0.05), meaning that participants accepted the null hypothesis (H_0) and showed that the data is normally distributed.

Paired Sample T-Test

The normal distribution hypothesis of the data is used as the basis for the paired sample t-test to check the difference between the means of two paired samples. This value then determines the decision taken in the research. The value criteria are as follows:

a. If the Sig. (2-tailed) < 0.05 ($t\text{-}_{count} < t\text{-}_{table}$), then there is a significant difference between the first and second variables. This means that there is a significant effect on the difference in the results of the treatment given.
b. However, if the value of Sig. (2-tailed) > 0.05 ($t\text{-}_{count} > t\text{-}_{table}$), there is no significant. In other words, there is no significant effect on the difference in the treatment results.

Table 4. Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-test	60.83	18	9.587	2.260
	Post-test	82.22	18	11.011	2.595

The paired sample summary statistical results of the pre-test and post-test are shown above, which show that the pre-test is greater than the post-test, indicating that the impact is significant.

Table 5. Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre-test & Post-test	18	.775	.000

The table shows a correlation value of 0.775 between the pre-test and post-test variables at a significance level of 0.000. This implies a high correlation between the two tests.

Table 6. Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre-test - Post-test	-21.389	7.031	1.657	-24.885	-17.893	-12.907	17	.000

According to Table 6, it is found that the significance (2-tailed) is 0.000, which indicates that the t-table result is equivalent to the t-count. Thus, the alternative hypothesis (Ha) is recognized and the null hypothesis (H0) is rejected. The selection of digital flashcards to teach English vocabulary showed significant learning outcomes in the pre-test and post-test data.
Eighteen students took the pre-test and post-test, according to the results above. With a mean score of 60.83 and a standard deviation of 9.587, the pre-test results varied from 40 to 75. The post-test results showed a mean of 82.22 and a standard deviation of 11.011, with scores ranging from 60 to 100. The results of the normality test demonstrate that parametric analysis is feasible due to the normal distribution of the pre-test (Sig. 0.514) and post-test (Sig. 0.754) data. Since the Sig. (2-tailed) of 0.000 is less than 0.05, the alternative hypothesis is accepted based on the t-test results. The pre-test and post-test results differ significantly, demonstrating that using digital flashcard to teach English vocabulary greatly enhances students' learning outcomes.

Discussion

Based on the research findings, the use of digital flashcard media has proven effective in improving the English vocabulary mastery of fourth-grade elementary school students.This finding is significant considering the main issue faced is the low vocabulary comprehension among students. This is caused by the learning methods that are still conventional and monotonous without involving varied media. This situation causes students to easily feel bored, less motivated, and not actively engaged in the learning process. Therefore, engaging learning media is needed to enhance students' knowledge, such as digital flashcard media. The use of digital flashcard offers a more engaging and interactive approach. This media presents words in visual and audio forms, allowing students to see images, listen to pronunciations, and understand meanings directly.
This research's findings show several advantages of the use of digital flashcard in improving students' vocabulary mastery. One significant benefit is the interactive and engaging nature of digital flashcard, which can enhance students' motivation and interest in learning English vocabulary. Unlike paper flashcard, digital flashcard often have audio pronunciations and visuals to help students memorize material. The educational process in the classroom utilizing audio-visual learning media is more engaging than that with basic media (Mutia et al., 2020). Integrated visual and auditory aspects help students strengthen the association between words and meanings, as well as enhance their engagement in the learning process. Students' enthusiasm increases due to enjoyable and non-burdensome learning methods, making the learning atmosphere more lively and conducive.
Digital flashcard also offer flexibility and accessibility, allowing students to review vocabulary anytime and anywhere using their smartphones or tablets. This supports independent learning and encourages students to practice vocabulary outside the classroom, thereby contributing to more consistent exposure and repetition key factors in vocabulary mastery. Additionally, digital flashcard can be easily updated and customized, allowing teachers to adapt materials to specific topics, proficiency levels, or student interests. This adaptability encourages more relevant and contextual vocabulary learning, which can result in better understanding and usage.
This adaptability encourages the learning of more relevant and contextual vocabulary, which can lead to better understanding and usage. However, there are limitations with the media used, namely the time spent using digital flashcard, which is only around 15 to 20 minutes per session. Nevertheless, there are limitations to the media used, namely the time for using digital flashcard, which is only between 15 to 20 minutes per session. This limitation poses a unique challenge, especially when the target vocabulary is quite extensive. Researchers are required to be more selective in choosing the vocabulary taught to ensure optimal learning outcomes within a limited time. Therefore, the researchers chose numerical vocabulary that can be applied in

their daily lives. To keep students focused on understanding the vocabulary, researchers also conducted interactive activities to reinforce vocabulary understanding, such as guessing vocabulary, finding hidden words, and they made flashcard according to their creations. In that short duration, students continued to show improvement in vocabulary mastery. The results of the paired t-test statistical analysis showed that Sig (2-tailed) 0.000 <0.05, and the average pre and post-test scores were 60.83 and 82.22, respectively.

Previous research looked at the use of digital flashcard to teach vocabulary. The findings of this research are consistent. For example Luthfillah & Fauzia (2023) showed that the use of digital flashcard in the classroom improved students' speaking abilities. The increase in students' speaking scores across all speaking subskills demonstrates this improvement. Similarly, Lubis et al., (2022) observed that Quizlet can be a helpful tool to help students learn vocabulary, contributing to improved outcomes in learning. Interesting features that are appropriate for carrying out a variety of learning activities support this. In another research, Sudrajat et al., (2023) materials that can be accessed via mobile phones and used in digital flashcard media improve student learning outcomes in grade four. These quizzes can make knowledge easier to remember and can be accessed at any time.

These previous findings support the conclusion of the current study that digital flashcard are an effective tool for vocabulary development. They collectively demonstrate that digital flashcard not only enhance motivation and independence but also provide repeated and contextual exposure, which is crucial for vocabulary mastery. The use of digital flashcard also makes it easier for students to study anytime. Students can continue learning even without meeting the teacher in person. Therefore, this research reinforces the increasing number of studies that show that integrating technology, particularly digital flashcard, into vocabulary learning can result in measurable improvements in students' English vocabulary.

CONCLUSION

The study's findings support the notion that digital flashcard greatly enhance students' vocabulary acquisition. This is demonstrated by the rise in the mean score from the pre-test to the post-test and by the statistical analysis's findings, which indicated that using digital flashcards significantly improved performance. Students' interest, motivation, and engagement are all increased by digital flashcards, which also help them retain more vocabulary.

However, the implementation of digital flashcard also has some limitations. First, this media can only be used for 15 to 20 minutes per session, so other activities that can support learning must be added. Second, the effectiveness of digital flashcard depends on the quality of the content design; poorly designed flashcard can reduce engagement and lead to ineffective learning. Despite these limitations, digital flashcard remain a promising and innovative tool for vocabulary instruction at the elementary school. This research is expected to be a reference for teachers in developing more interactive and fun learning strategies. Future research is recommended to explore ways to overcome these challenges and to test the effectiveness of digital flashcard in various educational contexts and larger populations.

ACKNOWLEDGMENTS

We would like convey our appreciation to all participants involved in the research.

REFERENCES

Chen, R. W., & Chan, K. K. (2019). Using Augmented Reality Flashcards to Learn Vocabulary in Early Childhood Education. *Journal of Educational Computing Research*, *57*(7),

1812–1831. https://doi.org/https://doi.org/10.1177/0735633119854028
Dakhi, S., & Fitria, T. N. (2019). *The Principles and The Teaching of English Vocabulary : A Review*. *5*(February), 15–25. https://doi.org/https://doi.org/10.33541/jet.v5i1.956
Deni, R., & Fahriany, F. (2020). Teachers' Perspective on Strategy for Teaching English Vocabulary to Young Learners. *Vision: Journal for Language and Foreign Language Learning*, *9*(1), 48–61. https://doi.org/10.21580/vjv9i14862
Handayani, E. (2024). Learners' Mastery of English Vocabulary in Primary Schools. *Karimah Tauhid*, *3*(1), 771–781. https://doi.org/10.30997/karimahtauhid.v3i1.7903
Hanisah, Sutomo, M., & Saihan. (2024). Needs Analysis in Developing Digital Flashcards for Indonesian Language Learning in Elementary School. *Al-Adzka: Jurnal Ilmiah Pendidikan Guru Madrasah Ibtidaiyah*, *14*(1), 31–42. https://doi.org/10.18952/aladzkapgmi.v14i1.12924
Kurniawati, W., & Karsana, D. (2020). Aspects of Indonesian Vocabulary Mastery by Elementary School Students in Medan City. *Ranah: Jurnal Kajian Bahasa*, *9*(2), 286. https://doi.org/10.26499/rnh.v9i2.2977
Kusumawardhani, P. (2020). The Use of Flashcards for Teaching Writing to English Young Learners (EYL). *Scope : Journal of English Language Teaching*, *4*(1), 35. https://doi.org/10.30998/scope.v4i01.4519
Lestari, E. P. (2019). Developing English Vocabulary Cards for Teaching English Vocabulary to The Fourth Grade Students of SD N 02 Purwoyoso Semarang (Thesis). In *eprints.walisongo.ac.id*.
Lubis, A. H., Johan, S. A., & Alessandro, R. V. (2022). Quizlet as an Electronic Flashcard to Assist Foreign Language Vocabulary Learning. *Proceedings of the Sixth International Conference on Language, Literature, Culture, and Education (ICOLLITE 2022)*, 71–76. https://doi.org/10.2991/978-2-494069-91-6_12
Luthfillah, D. A., & Fauzia, N. (2023). Using Digital Flashcards (DFs) as Learning Media to Enhance Students' Speaking Skill. *Journal of English Teaching, Literature, and Applied Linguistics*, *7*(2). https://doi.org/http://dx.doi.org/10.30587/jetlal.v4i1
Mutia, L., Gimin, & Mahdum. (2020). Development of Blog-Based Audio Visual Learning Media to Improve Student Learning Interests in Money and Banking Topic. *Journal of Educational Sciences*, *4*(2), 436–448. https://doi.org/https://doi.org/10.31258/jes.4.2.p.436-448
Nasution, A., & Rahim, R. (2022). The Development of Flashcard Media to Improve Students' English Vocabulary in English Lessons at MTS Nurul Hidayah Medan. *JINoP (Jurnal Inovasi Pembelajaran)*, *8*(2), 215–223. https://doi.org/10.22219/jinop.v8i2.22521
Pradini, P. C., & Adnyayanti, N. L. P. E. (2022). Teaching English Vocabulary to Young Learners with Wordwall Application: An Experimental Study. *Journal of Educational Study*, *2*(2), 187–196. https://doi.org/10.36663/joes.v2i2.351
Pramadanti, R. (2023). The Effectiveness of Using Flashcards to Improve Vocabulary in Speaking English for Elementary School Students. *Simpati*, *1*(3), 213–222. https://doi.org/10.59024/simpati.v1i3.238
Schmitt, N. (2002). Vocabulary in Language Teaching (Cambridge Language Education). In *Canadian Journal of Applied Linguistics* (Vol. 5). http://www.lextutor.ca/cv/Schmitt.htm
Simpuruh, I., & Syamsinar, S. (2021). The Use of Gesture in Improving Students' Vocabulary Mastery in Selected Indonesian Junior High School. *Utamax : Journal of Ultimate Research and Trends in Education*, *3*(1), 9–13. https://doi.org/10.31849/utamax.v3i1.5701
Sudrajat, A., Salsabila, F. G., & Marini, A. (2023). Digital-Based Flash Card to Increase Social Studies Learning Outcomes for Elementary School Students in The Fourth Grade. *Journal of Education Technology*, *7*(2), 235–246. https://doi.org/10.23887/jet.v7i2.63327

Susantini, N. L. P., & Kristiantari, M. R. (2021). Interactive Multimedia-Based Flashcard Media for Early Childhood English Vocabulary Recognition. *Jurnal Pendidikan Anak Usia Dini Undiksha*, *9*(3), 439. https://doi.org/10.23887/paud.v9i3.37606

Tejera, Y. U. (2020). Vocabulary Learning: 5 Guiding Principles. *EFL Magazine*. https://doi.org/https://doi.org/10.12345/eflmagazine.v1i1

Wijaya, H. D., & Devianto, Y. (2019). Application of Web Based Multimedia in Learning Basic English Vocabulary. *International Journal of Computer Science and Information Security (IJCSIS)*, *17*(11), 45–50. https://doi.org/10.29126/23942231/IJCT-V6I1P12

Wulandari, E. M., & Chadafi, M. (2022). The Effectiveness of Using Flashcards on Teaching English Vocabulary. *Journal of English Education and Technology*, *2*(4), 522–531. https://doi.org/https://doi.org/10.59689/jeet.v5i04.58

Yüksel, H. G., Mercanoğlu, H. G., & Yılmaz, M. B. (2022). Digital Flashcards vs. Wordlists for Learning Technical Vocabulary. *Computer Assisted Language Learning*, *35*(8), 2001–2017. https://doi.org/10.1080/09588221.2020.1854312

Zung, I., Imundo, M. N., & Pan, S. C. (2022). How Do College Students Use Digital Flashcards During Self-Regulated Learning ? *Memory*, 1–19. https://doi.org/10.1080/09658211.2022.2058553