



IMPLEMENTATION OF DIGITAL FLASHCARD LEARNING MEDIA TO INCREASE VOCABULARY MASTERY OF 8TH GRADE STUDENTS AT SMP LABORATORIUM UNDIKSHA

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ABSTRACT

This research investigates the effectiveness of the implementation of digital flashcard learning media in improving vocabulary mastery among 8th grade students at SMP Laboratorium Undiksha. The design of this research is quasi-experimental with pre test for both control and experimental group. The sample of this study is two classes with each 26 and 25 students, 51 students in total. The findings revealed a notable improvement in the post test score of experimental group, with the mean score of 81.72 which is higher compared to the post test mean score of the control group which is 72.40. Moreover, independent sample t-test result indicates that the score is statistically significant, further supported by the result of Cohen's d effect size that demonstrated the strong effect of digital flashcard towards vocabulary mastery. These findings signifies the effectiveness of digital flashcard as an engaging and interactive learning media to address the challenges of vocabulary mastery in English as a foreign language, particularly in the context of urban school with access to adequate technology.

Keyword: *Digital Flashcard, Learning Media, Vocabulary Mastery, English Language Education*

INTRODUCTION

Vocabulary is the foundation of language ability (Webb & Nation, 2017). In learning English as a foreign language, mastery of vocabulary is the key to developing other skills such as writing, listening, reading, and speaking. Vocabulary knowledge includes comprehending the meanings, connotations, and proper situations for application. Knowing words and their meanings facilitates learning grammar, syntax, and pronunciation by providing a framework for comprehending and creating the language. However, according to Cahyono and Widiawati (2008), The teaching and learning of vocabulary appears to be overlooked in the context of English language education in Indonesia. The method of English vocabulary in the Indonesian education system continues to depend on traditional approaches, such



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as reading tasks and practice exercises. These methods of teaching are inadequate in meeting the varied demands and preferences in learning styles of students.

SMP Laboratorium Undiksha, a junior high school in Indonesia, faces comparable challenges in teaching English vocabulary. According to the preliminary findings of the research through classroom observations revealed that a majority of students were disengaged during traditional vocabulary instruction methods, such as memorization and repetitive exercises. Additionally, a teacher at the school also highlighted this issue, stating, “*Many students have difficulty retaining vocabulary because the current methods, like memorization, and repetitive exercise fail to capture their interest and encourage active learning*”. This may be the result of teaching methods that do not adequately inspire children to acquire language.

Given the difficulties related with vocabulary mastery among ESL learners, it is critical to investigate and implement more effective teaching and learning techniques that address the various requirements of students. This is where multimedia input, mainly digital flashcards, is an effective option. According to Teng (2022), multimedia input integrates text, vocals, pictures, and videos for language acquisition. Furthermore, it is a vital stimulus for several areas of vocabulary knowledge. Mayer (2001) contended that multimedia input can keep learners cognitively engaged, such as when selecting relevant material, organizing content into visual and verbal models, and associating these new models with previous knowledge (Iskandar, Helmie, and Saepuloh 2024). Through digital flashcards, teachers can present students with learning resources that are more actively engaged and dynamic. Digital flashcards provide students with the opportunity to learn vocabulary with music, graphics, and spaced repetition exercises, which makes the process more enjoyable for the students.

Research on the use of digital and electronic flashcards has consistently demonstrated significant benefits for improving students' vocabulary mastery across various educational contexts. For example, a 2021 study by Yulsardi and Ratmanida found that students taught with digital flashcards outperformed those using traditional methods, with a highly significant effect ($p = 0.000$) and an average score increase of 34.8 points. Similarly, a 2018 study by Nashir and Lail revealed that electronic flashcards significantly improved vocabulary proficiency, with average scores rising from 58.24 in the pre-test to 77.3 in subsequent cycles, and the proportion of students meeting the competency threshold increasing from 70.27% to 81.08%. Furthermore, a 2024 study by Azzahra et al. highlighted not only improved vocabulary acquisition but also enhanced student engagement, reduced shyness, and increased motivation in the classroom. These findings collectively underscore the effectiveness of flashcards in boosting vocabulary learning while also positively influencing student attitudes and classroom dynamics.



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The utilization of digital flashcards has consistently demonstrated a substantial improvement in student's vocabulary mastery across diverse educational environments. Furthermore, students' increased involvement and enthusiasm indicate that flashcards provide a more dynamic and engaged educational setting. The results highly support the integration of digital flashcards into vocabulary education in order to maximize learning outcomes.

While the usage of digital learning media is increasing, previous research on the efficacy of digital flashcards, particularly in urban Indonesian educational contexts with technologically advanced resources, is scarce (Helmie, Nurviyani, and Setiawan 2023). The effect of digital flashcards on vocabulary mastery among junior high school children in Indonesia has not been adequately investigated. As a result, this research aims to determine any significant effect on grade 8th SMP Laboratorium Undiksha students' vocabulary mastery after using digital flashcards. The hypothesis of this research is outlined below:

1. Null Hypothesis (Ho): There is no significant difference on the vocabulary mastery
2. Alternative Hypothesis (Ha): There is a significant difference on the vocabulary mastery

This research will be highly relevant and influential in resolving the difficulties that Indonesian teachers encounter when teaching English vocabulary to increase student's vocabulary mastery. It is expected that the findings of this research will contribute to a better understanding of the efficacy and effect of digital flashcards on the vocabulary mastery of students, particularly in the setting of schools in Indonesia with adequate technology located in urban areas.

THEORETICAL FRAMEWORK

Vocabulary Mastery

Hiebert & Kamil, (2005) define "vocabulary mastery" as the skill of effectively conveying the meaning of words, including their patterns and associated information. Cameron (2001) stated that vocabulary skill includes 4 aspects, which are: pronunciation, spelling, grammar and meaning. Pronunciation is defined as the precise manner in which a person articulates words in a particular language. Spelling refers to the process of accurately constructing words using individual letters Wehmeler (2003) in Gushendra (2017). Furthermore, Cameron (2001) highlights the importance of grammar in vocabulary mastery, because grammatical knowledge is linked to words, and acquiring vocabulary can lead students towards understanding grammar. Lastly, Meaning is defined as the process of comprehending the significance of an unknown word in a foreign language, which can be established by translating it into the learner's native language and finding



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words that have the same meaning as the phrase being taught (Ur 1996). Vocabulary learning is a complex process that involves careful attention to detail and constant practice. Each part of this process contributes to the learner's total language ability. Therefore, the involvement of media is crucial in aiding the vocabulary mastery process.

Learning Media

Media is a significant instrument for teaching and studying the English language. It can help teachers transmit and convey content to students. According to Cross (1993), a flashcard is a basic picture on a piece of card that serves as a visual assistance in the teaching and learning process. It signifies that digital flashcard is one of teaching medium that may help teachers in teaching vocabulary properly. A digital flashcard, utilized in either a website or a mobile application, employs a paired-associate learning paradigm that generally encompasses two modes: the presentation mode and the retrieval mode, which has two phases (Serfaty, 2020). During the presentation mode, the target words are displayed alongside their corresponding translations. During the retrieval mode, more precisely in the retrieval stage, the learner observes an item and tries to generate the associated pair. During the subsequent phase, known as the feedback stage, the desired response is displayed. Recently, there has been a noticeable increase in the number of language learning software and websites that claim to be able to aid in and occasionally replace language classes (Helmie and Susilawati 2018). For this study, the digital application selected as the main subject of the research is Quizlet. Quizlet has a user base of over 300 million active learners, with an impressive collection of over 140 million publicly accessible flashcard sets created by its users (Quizlet, 2024).

METHOD

This study will be conducted with quasi pre- test control group experimental study design. Campbell's (1963) statement refers to using a quasi-experimental method to analyse and interpret data that does not fulfil the complete standards of experimental control such as not randomly assigning units to at least two "treatment" conditions. According to Creswell (1994), quasi-experimental design involves sampling, but it does not utilize random sampling to assign the population into groups.

In this study there are two variables used: independent variable and dependent variable. The independent variable in this research is the digital flashcard, and the dependent variable is vocabulary mastery.

The study population comprises 8th-grade students at SMP Laboratorium Undiksha. The 8th grade students of SMP Laboratorium Undiksha in the academic



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year of 2023/2024. The sample is drawn from two groups of students, with each group consisting of 26 and 25 students. One group will be designated as the control group and will receive conventional teaching methods, which are the standard methods of teaching employed by the English teacher at the school. In contrast, the experimental group will be administered treatment through the use of Digital Flashcards specifically designed to improve students' vocabulary mastery.

Table 1. Research Sample

Class	Group	Students
VIII 1	Experiment	26
VIII 2	Control	25
Total		51

Source: Researcher (2024)

Several research instruments were used in this research, including lesson plan, pre-test, post-test and learning media. To analyze the data obtained, the data analysis technique utilized includes descriptive statistic, independent t-test and effect size.

FINDINGS AND DISCUSSION

Findings

Pre-test were conducted to both groups to determine equality of the student's vocabulary mastery before the treatment. After the treatment is carried out, both groups were administered post-test to examine the difference between the control group using conventional teaching method, and experiment group using digital flashcard. The result of the descriptive statistic can be seen below:

Table 2. Descriptive Statistic

	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test Control	25	40	87	62.56	11.920
Pre-Test Experiment	25	43	94	67.96	13.758
Post-Test Control	25	50	90	72.40	11.094
Post-Test Experiment	25	58	98	81.72	10.869

Based on the statistic above, it can be seen that the pre-test mean scores reveal that both groups started with comparable levels of vocabulary mastery, with the control group averaging 62.56 and the experimental group slightly higher at 67.96. The standard deviations also indicate a relatively similar spread in scores within the groups.



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After the treatment, the post-test mean scores show improvement in both groups. However, the experimental group, which utilized digital flashcards, experienced a more significant increase in vocabulary mastery, with a mean score of 81.72 compared to 72.40 in the control group. This suggests that the digital flashcard learning media was effective in enhancing student's vocabulary mastery. The lower standard deviation in the experimental group's post-test scores implies a slightly more consistent performance among students in the experimental group. Therefore, it can be concluded that the post-test result of the experimental group shows a greater score in vocabulary mastery, indicating that digital flashcard is a beneficial learning media to support student's vocabulary mastery.

The independent sample t-test was used to test the hypothesis in this research. Independent sample t-test is used to determine whether the independent variable influences the dependent variable. After that is established, the next step is to calculate the magnitude of the effect using Cohen's d effect size. The result of the hypothesis testing can be seen below:

Table 3. Hypothesis Testing

Post-Test Result	N	Mean	Std. Deviation	t-value	df	Sig. (2-tailed)	Effect Size (Cohen's d)
Control	25	72.40	11.09429	-3.000	48	0.004	0.848659.
Experiment	25	81.72	10.86861	-3.000	47.980	0.004	

Based on the result of the independent sample t-test result, the significance value Sig. (2-tailed) as 0.004. indicating that the null hypothesis (H0) is rejected. This result suggests that there are significant differences between the scores of students in the control group and the experiment group. In addition to the statistical significance, the effect size (Cohen's d) is 0.848659, which is classified as a large effect. This indicates that the observed difference is not only statistically significant but also practically meaningful.

Discussion

The result of this study illustrates the effectiveness of digital flashcard learning media in improving vocabulary mastery among 8th-grade students at SMP Laboratorium Undiksha. According to the descriptive statistic analysis, it revealed a notable difference in the post-test of control and experiment groups. While improvements from pre-test to post-test score are present in both groups, it should be highlighted that the experimental groups which undergo the treatment using digital flashcard demonstrated a significantly higher mean score of 81.72 in the post



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test compared to the control group which scored 72.40. This indicates the treatment of digital flashcard as a learning media had a positive impact on vocabulary mastery.

Furthermore, the hypothesis testing supports the findings. The independent t-test result showed a significant difference between the post-test score of the control and experiment group. Therefore, it can be inferred that the contrasting post-test mean score between both groups are statistically significant. Additionally, the effect size of 0.8486 suggest that the influence of digital flashcard to improve vocabulary mastery is large. These results align with previous literature that proves the effectiveness of digital learning tools specifically digital flashcard in improving vocabulary mastery by providing an interactive and engaging learning experience to students at junior high school.

CONCLUSION

This study researched the effectiveness of digital flashcard learning media in improving vocabulary mastery among 8th grade students at SMP Laboratorium Undiksha. The findings indicates that the experimental group using digital flashcard achieved significantly greater vocabulary mastery score compared to those using conventional method in the control group. The comparison between the mean score of the control group (72.40) and the experiment group (81.72) is substantial. Moreover, hypothesis testing confirmed that this difference is statistically significant, with a large effect size which indicates the strong impact of digital flashcard on student's learning outcomes.

It can be concluded that digital flashcard as a learning media is an effective tool to improve vocabulary mastery among 8th grade students at SMP Laboratorium Undiksha. Due to its engaging and interactive nature, digital flashcard supports the learning process and help students to achieve better result in terms of vocabulary mastery.

REFERENCES

- Azahra, N. H. N., Isnaini, S., Sudarmaji, I., Nuraini, H., Forsia, L., & Nirmala, N. (2024). Implementing the use of flashcards to improve students' vocabulary mastery; classroom action research. *Jurnal Basicedu*, 8(1), 225–232. <https://doi.org/10.31004/basicedu.v8i1.689>
- Cahyono, Bambang. Y and Utami Widiati. (2008). The Teaching of EFL Vocabulary in Indonesian Context: The State of The Art. *TEFLIN Journal*, Volume 19, Number 1, February 2008.
- Cameron, L. (2001). Teaching languages to young learners. <https://doi.org/10.1017/cbo9780511733109>



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- Campbell, D. T., Stanley, J. C., & Gage, N. L. (1963). Experimental and quasi-experimental designs for research.
- Creswell, J. W. (1994). Research Design: Qualitative, quantitative, and mixed methods approaches.
- Fleak, K., & Cross, D. (1993). A practical Handbook of language teaching. *Modern Language Journal*, 77(1), 93. <https://doi.org/10.2307/329567>
- Gushendra, R. (2017). An Experimental Study: Improving Students' Vocabulary Mastery By Using English Songs. *Indonesian Journal of Integrated English Language Teaching*, 3(1). <https://doi.org/10.24014/ijiet.v3i1.3968>
- Helmie, Jauhar, Vina Nurviyani, and Rena Oktaviani Setiawan. 2023. "Integrating Digital Instructional Media in Learning Future Tense." (2017): 365–77.
- Helmie, Jauhar, and Nuraeini Susilawati. 2018. "Orai Application To Promote Autonomous Learning To English Learner." *International Journal of Emerging Technologies in Learning* 7(2): 110–17.
- Iskandar, Risda Alena, Jauhar Helmie, and Asep Saepuloh. 2024. "Using Songs Through Lingoclip Application." 12(02): 262–76.
- Hiebert, E. H., & Kamil, M. L. (2005). Teaching and learning vocabulary: Bringing Research to Practice. Routledge.
- Mayer, R. E. (2001). Multimedia learning. <https://doi.org/10.1017/cbo9781139164603>
- Nashir, M., & Laili, R. N. (2018). THE IMPLEMENTATION OF ELECTRONIC FLASHCARD TO INCREASE STUDENTS' VOCABULARY MASTERY. *Edukasi/Edukasi : Jurnal Penelitian Dan Artikel Pendidikan*, 10(2), 125–136. <https://doi.org/10.31603/edukasi.v10i2.2307>
- Quizlet. (2024). Retrieved July 21, 2024, from <https://quizlet.com>
- Serfaty, J., & Serrano, R. (2020). Examining the potential of digital flashcards to facilitate independent grammar learning. *System*, 94, 102342. <https://doi.org/10.1016/j.system.2020.102342>
- Teng, M. F. (2022). The effectiveness of multimedia input on vocabulary learning and retention. *Innovation in Language Learning and Teaching*, 17(3), 738–754. <https://doi.org/10.1080/17501229.2022.2131791>
- Ur, P. (1996). A course in Language Teaching: Practice and theory. <http://ci.nii.ac.jp/ncid/BA27561374>
- Webb, S. (2007). The effects of repetition on vocabulary knowledge. *Applied Linguistics*, 28(1), 46–65. <https://doi.org/10.1093/applin/aml048>
- Yulsardi, R.P & Ratmanida. (2021). The Effect of Digital Flashcard on Students' Vocabulary Mastery: An Experimental Research at SMPN 12 Padang. *Journal of English Language Teaching*, 10 (3): pp. 305-314, DOI: 10.24036/jeltv10i3.113806