The Use of Digital Flashcards to Improve Ninth-Grade Students' English Vocabulary Mastery at MTs Madani Pao-Pao

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ABSTRACT

This articel aims to test the effect of Digital Flashcards in enriching the vocabulary of ninth-grade students at MTs Madani Pao-Pao. Using a quasi- experimental design, the study involved two groups of participants: an experimental class and control class, each consisting of 25 students. Through a purposive sampling technique, students were divided into these groups based on their initial test (pre-test) results. Data were collected by administering both a pre-test and a post-test to all participants. In the initial stage, the test results showed that the experimental class had an average score of 55.00, while the control class had a higher average, at 79.40. However, after the learning intervention, the average post-test score of the experimental class jumped significantly to 84.60, surpassing the control class's average of only 76.80. A t-test conducted using SPSS 24 confirmed that this difference was statistically significant (the calculated t-value of 3.007 > the critical t-value of 2.010). This result strongly proves that the Digital Flashcards method had a positive impact on improving students' vocabulary acquisition, leading to the rejection of the null hypothesis. Based on the research findings, it can be concluded that digital flashcard media can be applied as a learning tool for students. This medium has been proven effective in improving the vocabulary mastery of ninth-grade students at MTs Madani Pao-Pao. It is suggested that the effectiveness of digital flashcards be tested at a higher proficiency level or developed for other language skills.

Keywords: *Digital flashcards, vocabulary mastery, English learning, quasi- experimental.*

1) INTRODUCTION

Vocabulary plays a crucial role in developing English proficiency, as it supports reading, listening, speaking, and writing skills. Students with limited vocabulary often struggle with communication and comprehension. Preliminary observations at MTs Madani Pao-Pao revealed that many ninth-grade students experienced difficulties in vocabulary recall, pronunciation, and motivation during learning. The monotonous learning strategies used in class contributed to students' boredom and reduced engagement.

Preliminary research conducted in July 2025 at MTs Madani Pao-Pao revealed that many students struggle with vocabulary and pronunciation. A lack of variation in learning strategies often causes

children to feel bored. Boredom naturally has a negative effect on learning motivation. Many students feel disinterested or bored when learning vocabulary, especially if the teaching method used is monotonous. This lack of motivation makes it difficult for students to retain vocabulary in their long-term memory. Therefore, a diverse strategy is needed to provide new and enjoyable learning experiences for children. Consistency in teaching strategies plays a vital role in achieving learning objectives.

According to Aniza et al. (2021), the use of games in vocabulary teaching can create a fun, challenging, and engaging learning environment, which helps generate students' interest in the learning process. After several reviews, one engaging and suitable vocabulary learning method is the use of flashcard games.

Freeman (2000:1) states: "Language teaching methods are the coherent relationship between actions and thoughts in language teaching." "Actions are techniques, thoughts are principles." This statement not only refers to teaching methods but also the overall mindset and practice that emphasize the alignment between technique and principle in language instruction. It is explained that, in order to achieve teaching objectives properly, there must be harmony between the chosen techniques and the principles applied.

One of the main problems in vocabulary learning is that students often feel bored when required to memorize words. Therefore, it is necessary to create an engaging and meaningful learning environment to help students master vocabulary more effectively. To address this issue, the researcher chooses digital flashcards as a teaching strategy to improve students' vocabulary.

Nugroho et al. (2012) define flashcards as practical learning media that can be used by teachers and students in learning activities. This is in line with Ramdhani and Wulan (2012), who stated that learning effectiveness can be increased through the use of instructional media in the teaching and learning process.

Flashcards are effective learning cards that have two sides: one side contains an image, text, or symbol, and the other side contains a definition, title, or explanation to help students remember or guide them toward content related to the image. Most children are visual learners, and bright-colored graphics are great tools for teaching them.

In response to the issues mentioned above, the researcher selects digital flashcards as learning aids to improve students' vocabulary. This strategy will be implemented at MTs Madani Pao-Pao. According to Sumbertada (2022); Rahmawati & Dahlina (2024), digital flashcards can significantly enhance students' English vocabulary. Therefore, the researcher is interested in conducting an experimental study entitled: "The use of digital flashcards to improve the ninth-grade student's english vocabulary mastery at MTs madani Pao-Pao".

2) METHODS

Research Method

In this study, the researcher used a quasi-experimental design with a non- equivalent control group. The research subjects were divided into two groups: an experimental group and a control group. The experimental group received special treatment using digital flashcard media, while the control group received treatment using teacher-directed methods.

This study consists of two variables: the dependent variable and the independent variable. The independent variable is digital flashcard media, while the dependent variable is vocabulary. According to Gay et al. (2019), the research design is described as follows:

Tabel 3.1: *Research Design*

	Group	Pre-test	Treatment	Post-test
(R)	Experiment	Y1	Digital Flashcards	Y2
(R)	Control	Y1	Teacher Method	Y2

Gay et al (2019)

Population And Sampel

a. Population

Shukla (2020) explains that a population is the complete collection of units relevant to a study and serves as the basis for generalizing the research findings. In this case, the population in this study is all class IX students at MT's Madani Pao-Pao for the 2024/2025 academic year, consisting of classes IXA 25 and IXB 25, with a total of 50 students

b. Sample

According to Sugiyono (2011), a sample is a part of the total population and the characteristics possessed by that population. This definition is often used in research because it is simple yet comprehensive. Essentially, Sugiyono emphasizes that a sample is not just a small portion of the population, but must represent the characteristics of that population. The goal is for the research results obtained from the sample to be generalized or applicable to the entire population.

This study used a purposive sampling technique, meaning that students were specifically selected based on certain criteria, rather than by random methods. As noted by Hossan et al. (2023), the criterion in this study was the results of the pre-test.

1. Research Instrument

According to Arikunto (2013), research instruments are tools selected and used by researchers in the process of collecting information. The instrument used by the researcher to collect data was a multiple-choice test consisting of 20 questions, requiring students to answer by marking an X on the correct answer, each having four options (a, b, c, and d). This test was used as both the pre-test and post-test instrument, with a test duration of 60 minutes.

2. Data Collecting Procedures

After determining the research sample, the next important thing is the research tools. A tool is a test created to measure product conformity testing intervals. There are four instruments, namely, pre-treatment, post-treatment, and vocabulary tests given.

a. Giving Pre-test

Before being given treatment, students were given a pretest which did not use flashcards as media, but before that the researcher provided material to students on the topic of vocabulary on common

nouns and verbs. So that students could take the passing test, this pre-test meeting was only held once, and it was done offline using a question sheet. The purpose of this pre-test was to measure the amount of vocabulary before knowing students' needs.

b. Treatment

After carrying out the pre-test, the researcher then provided treatment to the class that had the lowest results. Treatment was carried out in five meetings.

c. Post Test

After all treatments have been carried out well, the final stage is the post-test. The post-test is carried out the same as the pre-test, where the aim is to see significant differences before and after using flashcards media, whether the research product is effective or not.

3) RESULTS AND DISCUSSION

English Learning Media

English learning media refers to various learning materials and resources designed to help people learn English. These resources can include books, textbooks, workbooks, audio recordings, video tutorials, online courses, mobile apps, language learning websites, and interactive language software. English learning media typically covers various aspects of language learning such as grammar, vocabulary, pronunciation, listening comprehension, speaking practice, reading comprehension, and writing skills. Learning media also includes instructional components consisting of messages, people, equipment, or objects. Over time, along with advancements in knowledge and technology, learning media has developed significantly. This development has led to the emergence of various types and forms of learning media, which continue to evolve with ongoing progress in both fields.

As a result, the classification or category of learning media refers to any tool or resource used to transfer information in the teaching and learning process (Marpaung & Siagian, 2016). With learning media, it is expected that the knowledge being taught can reach the individuals involved in the teaching and learning process so that they can understand and internalize it. Learning media also includes learning components consisting of messages, people, equipment, or objects. Along with the development of science and technology, learning media has experienced significant progress. This progress has led to the emergence of various types and forms of learning media, which continue to

develop along with advances in both fields. Therefore, classifications or categories of learning media emerged, known as the classification of learning media (Latuheru, 1988, p. 14). A media is said to be educational if it can convey messages in the learning process. The use of media is very important because learning activities cannot be carried out without media. Media is flexible because it can be used at all educational levels and for various types of learning activities. Learning media plays an important role in helping students acquire new concepts, skills, and competencies (Arsyad, 2005, p. 3).

Some examples of popular English learning media include:

a. Textbooks: These are comprehensive guides covering a wide range of language skills and include explanations, examples and exercises.
b. Audio and Video: These resources include native speaker recordings, dialogue, podcasts, and videos to help improve hearing and pronunciation.
c. Online courses and language learning platforms: These platforms offer interactive lessons, quizzes and exercises tailored to individual needs and often provide opportunities to interact with teachers or other learners.
d. Mobile Apps: There are many English learning apps that offer vocabulary, grammar lessons, and interactive games that make learning fun and interesting.
e. Language Learning Websites: Websites dedicated to learning English offer a variety of resources such as grammar explanations, word lists, reading materials, and interactive exercises.
f. Language Exchange Platform: These platforms connect language learners with native English speakers via audio or video chat.
g. English Podcasts and YouTube Channel: These resources provide engaging and authentic content such as interviews, discussions and storytelling to improve listening comprehension and vocabulary.
h. Language learning software: Some software offers interactive lessons, speech recognition features, and personalized suggestions to make language learning easier.

According to Khadijah (2015:23), media can also do the same. When mass media are used for individuals, they perform three main functions of large groups or groups, namely: interest or action, information and instruction. Based on the various opinions expressed above, it is concluded that

carrying out the function of motivation through the learning environment carried out by drama or entertainment techniques, the results are expected to arouse interest and make students or listeners act. The word media is the plural form of the word medium. Usually obtained as an intermediary or introduction to communication from sender to receiver.

Digital Flashcard

Before discussing the term flash memory card, it is important to first understand its definition. In general, the concept of a flash memory card can be divided into two parts. The first part is the definition of a memory card in terms of language, and the second part is the definition of a memory card in terms of terminology. The following is an explanation of both parts.

Linguistically, the term flashcard comes from English. According to the Cambridge Dictionary as cited by Akbar (2022:14), flashcards are cards containing words or pictures that help students learn. Flashcards are also referred to as reminder cards or cards that appear instantly. When interpreted word for word, the term flash card can be divided into two words—flash and card. The word flash in Indonesian means "light" or "lightning," while the word card means "a card."

Meanwhile, according to the Great Dictionary of the Indonesian Language (KBBI), a word card is defined as a thick sheet of paper that is not too large, rectangular in shape, and used for various purposes (somewhat similar to a ticket). In addition, Akbar (2022:14) also explains that the word "kilat" (flash) is associated with something very fast, of short duration, and happening in the blink of an eye. Based on the understanding of these two words, the English term flash card can be equated with the Indonesian term kartu kilat ("flash card"). In this article, the term flashcards is replaced with flash card.

A simple example is a business card where a card contains information about a particular person. It's the same with other cards, both identity cards (KTP) and student cards (KTM). However, these two cards cannot be used as a learning environment in class exercises or self-study, as Cancela et al. Doman en Ulah (2022) states that flash cards (flash cards) are educational media in the form of picture cards with letters. The pictures on the card are a series of messages accompanying the description of each picture. Based on several definitions of flashcards, it can be concluded that flashcards

are rectangular sheets of paper that contain information in the form of letters, numbers, words, sentences, symbols or simple pictures, consisting of two pages, written by students and teachers. Flashcards are used as tool to find out, know, remember and teach some of the information contained therein. The information provided on index cards is usually linked from one card to another. The size of the flash card can be adjusted to the needs and desires of the flash card maker or user.

In addition, the size of the pocket card depends on the number of students and the size of the place where the pocket card is offered. What is known about index cards is that they are rectangular in shape. In the development of technology, flash cards are not only available in paper form, but also in digital form. Digital flash cards are electronic learning tools that replace traditional physical flash cards that are often used as memory aids. They are designed to help users learn and remember information in an interactive and effective way. Digital flash cards are usually available as an app or online platform that can be accessed via a computer, smartphone or tablet. They offer a variety of features that enrich the learning experience, such as the ability to create, organize, and edit your own flashcards, share and download existing flashcards, and track learning progress. The advantages of digital memory cards are their flexibility and accessibility. Users can take their card collection anywhere, using it to study on the go or while waiting.

In addition, some apps or platforms also offer instant assessment and feedback features that allow users to assess their understanding and identify areas for improvement. There are many popular digital flashcards available in the market, such as Anki, Quizlet, and Memrise. Some of these programs also offer the ability to share flashcard sets with other users so that users can access collections of flashcards created by others and expand their knowledge. Digital memory cards have become a very popular tool among students, students and professionals who want to improve their data retention and memory skills effectively. Using digital technology, they bring the advantages of interactivity and ease of use, which make learning more interesting and effective.

1. The advantages and disadvantages of Flash Card media

   There are five advantages of digital flashcards. According to Bahrick (1984),

a. Efficiency in Repetitive Learning: the use of spaced repetition in digital flashcard applications enhances the effectiveness of learning and long-term memory retention. Learning that involves repetition at specific intervals can improve information retention.
b. Interactivity and Motivation: Digital flashcards often include interactive features such as images, sounds, and videos, which can make learning more engaging and increase students' motivation to study harder.
c. Ease of Organizing Material: Digital flashcards allow users to easily organize and categorize material, making it easier to focus on more challenging topics or those that require more attention.
d. Immediate Feedback and Self-Testing: Some digital flashcard applications provide automatic quizzes and immediate feedback. This helps students assess their understanding in real-time and identify areas that need improvement.
e. Cost-Effective: There is no need to purchase physical cards or other learning materials, as many digital flashcard applications can be downloaded and used for free or at an affordable cost.

There are five advantages of digital flashcards:

a. Dependence on Technology: The use of digital flashcard apps heavily relies on technology devices and internet connection. This can be a hindrance for those who do not have access to devices or stable internet, especially in areas with limited technological resources.
b. Lack of Physical Involvement: The fully digital learning process can reduce physical engagement, which is beneficial in strengthening conceptual understanding. Writing or using physical cards can reinforce memory, whereas digital flashcards may not provide the same physical stimulation.
c. Information Overload: Using digital flashcards in large quantities can lead to excessive and overwhelming information, which reduces the ability to absorb material in-depth.
d. Lack of Social Interaction: Social interaction is essential in the learning process. Learning with digital flashcards done independently can reduce opportunities for learning through discussion or collaboration with classmates and teachers, which typically enriches material understanding.
e. Distractions and Overuse: Digital devices can cause distractions, especially because of other apps, like social media, which can disrupt focus on learning. Additionally, excessive use of

digital flashcard apps can diminish the quality of learning and lead to dependence on technology.

2. Method of manufacture or production

When making flash cards, there are several choices that must be carefully prepared. According to Susilana and Riyana (2009:95), there are several ways to design flash cards so that they are suitable for use in learning:

a. Determine the learning objectives and content by selecting the topic you want to teach using flashcards.
b. Define the type of information that would be displayed on the front and back of the cards.
c. Choose a platform or flashcard creation tool, such as design software.
d. Use an attractive design and fonts that are easy to read, and if necessary, use images to clarify the information.

3. How to Use Flash Cards

Using digital flashcards in the classroom can be highly effective in increasing student interaction and deepening their understanding of the material. Here are several methods:

a. Spaced Repetition: Students were asked to review flashcards periodically using the spaced repetition feature in an app, which would help them remember the material more effectively.
b. Collaborative Learning: Divide students into small groups, and assign each group a set of digital flashcards containing different questions or concepts.
c. Group Q&A: Students can use flashcards to quiz each other within the group. One student shows a question from the app, and the group works together to answer it.
d. Discussion and Explanation: After answering, the group can discuss the answer together to ensure a deeper understanding of the material.
e. Creating Digital Quizzes: Create quizzes or tests based on flashcards that include multiple-choice questions.
f. Monitoring and Analysis: Monitor student responses and provide immediate feedback after the quiz is completed.

Vocabulary meaning

Vocabulary is a collection of words whose meanings can be learned when we speak or read orally and words that can be used in writing. Vocabulary is one of the keys in language skills, such as speaking, listening, and writing. This statement is in line with Laufer's (1997) view that "learning vocabulary is the essence of language learning and use." Komachali (2012) also states the same. He says, "Vocabulary is an inseparable part of any language learning process. Therefore, the richer one's vocabulary, the more it helps in English language competition." If students become richer in vocabulary, it also helps their speaking and writing skills in English. For example, writing has been proven to be a complex skill that requires mastery of the language itself, organization, and vocabulary. So, it can be said that early mastery of vocabulary is crucial to mastering English language skills, including the ability to communicate well in a foreign language. Alqahtani (2015), in his writing, states that "Vocabulary is often seen as another important tool for language learners because its absence makes it difficult to succeed in communication." In addition to communication objectives, vocabulary management also helps literacy. This is also noted by Adam and Collins (1997), who observed that "patterns of reading from previously revised vocabulary knowledge are an important source of variability in reading comprehension because it mainly influences language processing at the level of reading comprehension. Such as grammatical processing, construction diagrams, and text models".

This opinion aligned with Carver's (1994) view, which revealed that if someone did not master vocabulary, their reading process would be disrupted. This led to the mastery of important words when reading or expressing something. Carver stated, "Professional readers were able to tolerate little unknown words in a text without misunderstanding and were even able to infer the meaning of these words from a sufficiently rich context. However, if the proportion of unknown words was too high, comprehension would be compromised. Teaching vocabulary at the beginning of teaching English is suitable for children, especially in early childhood Simple vocabulary is easy for children to remember According to Lestari (2012), children's educational material has several characteristics, that is:
educational material has several characteristics, that is:

a. The grammar is very simple.
b. Types and completeness of words must be given because there is almost no language learning outside the classroom.

c. Vocabulary is limited, so it must be presented correctly almost no language lessons outside the classroom.
d. Students rarely hear English. For the environment, it is necessary to practice repeated pronunciation.
e. The vocabulary used is everyday language and easy to communicate.

Findings

This chapter presents the findings of a study that aimed to examine the effectiveness of digital flashcards as a method for enhancing vocabulary acquisition among eleventh-grade students at MTs Madani Pao-pao. This research describes the comparison between the students' vocabulary proficiency, as measured by a pre-test and post-test, which were administered before and after the treatment. Furthermore, this chapter details the results of the statistical analysis conducted with SPSS and concludes with an interpretation of the hypothesis testing outcomes.

1. Pre-test Result

The researcher conducted the pre-test on July 15th–16th, 2025, with the ninth- grade students of MTs Madani Pao-Pao. The pre-test results from the experimental class are as follows:

a. Pre-test Results of the Experimental Class

Tabel 4.1: *Pre-test of Experimental Class*

No	Names	Pre-test	Criteria
1.	ZD	80.00	Good
2.	HDP	75.00	Good
3.	MI	75.00	Good
4.	MG	75.00	Good
5.	KY	75.00	Good
6.	ZYAM	75.00	Good

7.	NI	70.00	Good
8.	A	70.00	Good
9.	NM	65.00	Good
10.	MQ	65.00	Good
11.	ELR	60.00	Good
12.	AI	50.00	Enough
13.	SS	50.00	Enough
14.	MHN	50.00	Enough
15.	MAN	50.00	Enough
16.	KH	45.00	Enough
17.	RS	40.00	Less
18.	MJA	40.00	Less
19.	ZD	40.00	Less
20.	NM	40.00	Less
21.	FR	40.00	Less
22.	RW	40.00	Less
23.	AF	35.00	Less
24.	AN	35.00	Less

25.	MKA	35.00	Less
Mean Score		**55.000**	**Very Less**

Based on Table 4.1, the highest pre-test score in the experimental class was 80.00, which falls under the "Good" category, and the lowest score was 35.00, categorized as "Less"; all scores can be seen in bold in Table 4.1. The result of the mean score of the pre-test in the experimental class is 55.00, which is considered "Very Less".

b. Pre-test Results of the Control class

Tabel 4.2: *Pre-test Results of the Control class*

NO	Names	Pre-test	Criteria
1.	AN	95	Very Good
2.	PR	90	Very Good
3.	RNM	90	Very Good
4.	EL	90	Very Good
5.	APZ	90	Very Good
6.	MZ	90	Very Good
7.	AI	90	Very Good
8.	AN	90	Very Good
9.	MR	85	Very Good
10.	HL	85	Very Good
11.	ANK	85	Very Good
12	AG	80	Good
13.	NH	80	Good
14.	SP	80	Good

15.	AZ	80	Good
16.	SRM	80	Good
17.	MZA	80	Good
18.	MNA	80	Good
19.	MS	80	Good
20.	AMF	80	Good
21.	AB	75	Good
22.	MR	60	Enough
23.	NA	50	Enough
24.	KS	50	Enough
25.	MI	50	Enough
Mean Score		**79.40**	**Good**

Based on the pre-test results presented in Table 4.2, the highest score in the control class was 95, which falls under the "Very Good" category, while the lowest score was 50, categorized as "Enough." All scores can be seen in bold in Table 4.2. These pre-test results indicate that the control class initially had a higher mean score of 79.40 compared to the experimental class.

2. Post-test Results

The researcher conducted the post-test on August 19th–20th, 2025, with the ninth-grade students of MTs Madani Pao-Pao. The post-test results from both classes are as follows:

a. Post-test Results of the Experimental Class

Tabel 4.3: *Post-test of Experimental Class*

No	**Names**	**Post-test**	**Criteria**
1.	**ZD**	**100.00**	**Very Good**

2.	**HDP**	**100.00**	**Very Good**
3.	**MI**	**95.00**	**Very Good**
4.	**MG**	**95.00**	**Very Good**
5.	**KY**	**95.00**	**Very Good**
6.	**ZYAM**	**95.00**	**Very Good**
7.	**NI**	**90.00**	**Very Good**
8.	**A**	**90.00**	**Very Good**
9.	**NM**	**90.00**	**Very Good**
10.	**MQ**	**85.00**	**Very Good**
11.	**ELR**	**85.00**	**Very Good**
12.	**AI**	**85.00**	**Very Good**
13.	**SS**	**85.00**	**Very Good**
14.	**MHN**	**85.00**	**Very Good**
15.	**MAN**	**85.00**	**Very Good**
16.	**KH**	**85.00**	**Very Good**
17.	**RS**	**80.00**	**Good**
18.	**MJA**	**80.00**	**Good**
19.	**ZD**	**80.00**	**Good**
20.	**NM**	**80.00**	**Good**

21.	**FR**	**80.00**	**Good**
22.	**RW**	**75.00**	**Good**
23.	**AF**	**75.00**	**Good**
24.	**AN**	**70.00**	**Good**
25.	**MKA**	**60.00**	**Enough**
Mean Score		**84.60**	**Very Good**

Based on the post-test results in Table 4.3, the highest post-test score in the class was 100.00 with the criterion of 'Very Good', and the lowest score was 60.00 with the criterion of 'Fair'. All scores can be seen in bold in Table 4.3. The average post-test score in the experimental class was 84.60, which falls into the 'Very Good' category.

b. Post-test Results of the Control class

Tabel 4.4: *Post-test of Control Class*

NO	Names	Post-test	Criteria
1.	AN	90	Very Good
2.	PR	85	Very Good
3.	RNM	85	Very Good
4.	EL	85	Very Good
5.	APZ	85	Very Good
6.	MZ	85	Very Good
7.	AI	80	Good
8.	AN	80	Good
9.	MR	80	Good

10.	HL	80	Good
11.	ANK	80	Good
12	AG	80	Good
13.	NH	80	Good
14.	SP	80	Good
15.	AZ	80	Good
16.	SRM	80	Good
17.	MZA	80	Good
18.	MNA	75	Good
19.	MS	75	Good
20.	AMF	75	Good
21.	AB	70	Good
22.	MR	60	Enough
23.	NA	60	Enough
24.	KS	55	Enough
25.	MI	55	Enough
Mean Score		**76.80**	**Good**

Table 4.4 presented above shows the post-test results for the control class. The students achieved the highest score of 90.00, with the score criterion being very good, and the lowest score was 55.00, with the criterion of enough. The average post-test score in the control class was 76.80, which falls into the good category.

3. Comparison table of students' pre-test and post-test results

   a. Experimental Class

Tabel 4.5: *Comparison Table of Experimental Class*

No	Names	Pret-test	Post-test
1.	AN	80.00	100.00
2.	HDP	75.00	100.00
3.	MI	75.00	95.00
4.	MG	75.00	95.00
5.	KY	75.00	95.00
6.	ZYAM	75.00	95.00
7.	NI	70.00	90.00
8.	A	70.00	90.00
9.	NM	65.00	90.00
10.	MQ	65.00	85.00
11.	ELR	60.00	85.00
12.	AI	50.00	85.00
13.	SS	50.00	85.00
14.	MHN	50.00	85.00
15.	MAN	50.00	85.00
16.	KH	45.00	85.00
17.	RS	40.00	80.00

18.	MJA	40.00	80.00
19.	ZD	40.00	80.00
20.	NM	40.00	80.00
21.	FR	40.00	80.00
22.	RW	40.00	75.00
23.	AF	35.00	75.00
24.	AN	35.00	70.00
25.	MKA	35.00	60.00
Mean Score		**55.00**	**84.60**

Based on the comparison table of pre-test and post-test results for the experimental class above (Table 4.5), it can be observed that the bolded values, ranging from the lowest score of 35.00 to the highest score of 80.00 in the students' pre-test results, indicate an increase in the students' scores in the post-test column. Similarly, the students' mean score significantly increased from 55.00 to 84.60.

b. Control Class

Tabel 4.6: *Comparison Table of Control Class*

NO	Names	Pre-test	Post-test
1.	AF	95	95.00
2.	PR	90	85.00
3.	RNM	90	85.00
4.	EL	90	85.00
5.	APZ	90	85.00
6.	MZ	90	85.00

7.	AI	90	80.00
8.	AN	90	80.00
9.	MR	85	80.00
10.	HL	85	80.00
11.	ANK	85	80.00
12	AG	80	80.00
13.	NH	80	80.00
14.	SP	80	80.00
15.	AZ	80	80.00
16.	SRM	80	80.00
17.	MZA	80	80.00
18.	MNA	80	75.00
19.	MS	80	75.00
20.	AMF	80	75.00
21.	AB	75	70.00
22.	MR	60	60.00
23.	NA	50	60.00
24.	KS	50	55.00
25.	MI	50	55.00
Mean Score		**79.40**	**76.80**

Based on the comparison table of pre-test and post-test results for the control group (Table 4.6), the bolded values, which range from the lowest pre-test score of 50.00 to the highest of 95.00, do not show a significant increase in the post-test. In fact, the scores of each student in the control class did

not increase from the pre-test to the post-test. Additionally, the average student score only experienced a minimal increase, which was 79.40 in the pre-test and 76.80 in the post-test.

4. The SPSS calculation results
   a. Normality test of experimental class and control class

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest Treatment	.153	25	.133	.938	25	.132
Postest Treatment	.123	25	.200*	.956	25	.338
Pretest Control	.100	25	.200*	.986	25	.971
Posttest Control	.130	25	.200*	.963	25	.484

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The normality test aims to determine whether the data in a group are normally distributed. Two methods used in this test are:

a) Kolmogorov-Smirnov (K-S)
b) Shapiro-Wilk (S-W)

The significance value (Sig.) is compared with $\alpha = 0.05$:

a) If Sig. > 0.05, then the data are normally distributed.
b) If Sig. ≤ 0.05, then the data are not normally distributed.

Based on the results of the normality test presented in the table, the significance value for the Kolmogorov-Smirnov test was 0.133 for the experimental class pretest data and 0.200 for the experimental class posttest data. For the control class, the significance value for the pretest was 0.200 and for the posttest was also 0.200. All significance values in this test are above 0.05.

In addition, the Shapiro-Wilk test also showed similar results, where the significance value for the experimental class pretest was 0.132, the experimental class posttest was 0.338, the control class pretest was 0.971, and the control class posttest was 0.484. All these values are also greater than for both the experimental and control classes) are normally distributed.

b. Standard deviation score of experimental class and control class

Descriptive Statistics

	N	Mean	Std. Deviation
Pretest Treatment	25	55.00	15.877
Posttest Treatment	25	84.60	9.566
Pretest Control	25	79.40	13.096
Posttest Control	25	76.80	9.561
Valid N (listwise)	25		

Based on the analysis of the mean and standard deviation in the table, it can be concluded that the treatment group showed a much larger and more significant increase in their average scores compared to the control group.

The average score for the treatment group rose from 55.00 to 84.60, an increase of 29.60. This is a much greater change than the small decrease seen in the control group's average score, which went from 79.40 to 76.80, a decrease of only 2.60. These results provide preliminary evidence that the treatment had a substantial positive impact.

c. Hypothesis Testing

Following the normality test, it can be concluded that this research uses parametric statistical analysis. This is because all data were found to be normally distributed, and the mean and standard deviation scores for each dataset have already been obtained. Therefore, to determine whether using digital flashcards affects students' vocabulary, a t-test was conducted using SPSS.

The criteria for accepting the research hypothesis are as follows: If the t-test value is greater than the t-table value, the research hypothesis is accepted. This indicates that the use of digital flashcards is proven to improve students' vocabulary. Conversely, if the t-test value is smaller than the t-table value, the research hypothesis is rejected. This means that using digital flashcards as a teaching medium does not improve students' vocabulary.

The following are the t-test calculation results using SPSS:

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil Tes	Equal variances assumed	.006	.941	2.884	48	.006	7.800	2.705	2.361	13.239
	Equal variances not assumed			2.884	48.000	.006	7.800	2.705	2.361	13.239

Based on the analysis of the mean and standard deviation, it can be concluded that the treatment group showed a significantly greater increase in the average score compared to the control group. The average score in the treatment group increased from 55.00 to 84.60 (an increase of 29.60), which is much larger than the small decrease in the control group's average score from 79.40 to 76.80 (a decrease of 2.60). These results provide initial evidence that the treatment had a substantial positive impact.

4) CONCLUSION

This thesis, titled "The Use of Digital Flashcards to Improve Students' English Vocabulary," is a final project designed to investigate whether using digital flashcards can enhance students' vocabulary acquisition. The research's objective would be met if the students' test scores showed improvement after the intervention (treatment).

The study utilized a quasi-experimental design with purposive sampling. The sample was divided into two groups: an experimental class and a control class. The researcher taught both classes, but only the experimental class used digital flashcards. The control class did not. This approach was used to determine if there were any changes in the students' vocabulary before and after the treatment.

The initial test results (pre-test) revealed a significant difference between the two classes. In the experimental class, only 10 out of 25 students passed according to the MTs Madani Pao-pao passing standard, with an average score of 55.00. In contrast, the control class had 21 out of 25 students pass, with an average score of 79.40. This indicated that the control group's initial vocabulary skills were much better than those of the experimental group.

The study was conducted over seven sessions, including one session for the pre-test, five treatment sessions, and one session for the post-test. After the treatment was administered, the researcher gave the students a post-test to compare their initial and final abilities.

The post-test results showed a very significant increase in the experimental class. Almost all students (24 out of 25) passed, and the class's average score jumped to 84.60. Conversely, the control class showed no significant change; the number of passing students remained the same (21 students), and their average score slightly decreased to 76.80.

Based on the researcher's findings, the significant improvement observed in the experimental class is attributed to the utilization of digital flashcards, which played a crucial role in transforming the atmosphere to be more active and engaging. Initially, students displayed shyness and required a period of adjustment; however, this condition shifted into massive enthusiasm during the learning process. Qualitatively, the researcher also observed a significant increase in the students' courage and confidence when expressing their opinions.

Despite the improvements in communication skills and confidence, initial vocabulary acquisition (meetings 1-3) was limited. Students struggled to identify word meanings, grammar, and correct pronunciation. However, a positive shift began to appear in the fourth meeting, where students gradually showed better ability to identify the grammatical parts of a word and correctly pronounce some of the new vocabulary. The researcher concluded that the teaching method was effective in helping students recognize words, practice pronunciation, and encourage them to use the vocabulary in various contexts. This finding aligns with Luthfillah and Fauzia's (2023) research, which also found digital flashcards effective in improving junior high school students' speaking skills.

This study references Pratama et al. (2020), who noted that seventh-grade junior high students have characteristics such as high curiosity and an enjoyment of group discussions. These characteristics are the main reason why digital flashcards were effective, as the method appeals to students' curiosity and supports interactive learning. Additionally, quizzes given in each session helped students practice their writing and guessing skills.

However, the study identified some limitations. First, the implementation of this method requires a considerable amount of time. Second, students tended to focus only on the vocabulary explicitly taught in the material, which limited their overall vocabulary acquisition. These same limitations were also noted in a study by Ardiansyah (2024).

Despite the limitations, the research statistically proves that using digital flashcards is effective. The hypothesis test showed that the t-count (2.884) was greater than the t-table (2.010), meaning the null hypothesis was rejected. This finding is consistent with previous studies, such as one by L. Sari

(2020), which also reported a significant increase in students' average scores after using digital flashcards.

In conclusion, the research demonstrates that digital flashcards are an effective method for improving the vocabulary of ninth-grade students at MTs Madani Pao-Pao and can be applied at various educational levels.

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