Using Index Card Match in Developing Vocabulary of the Eighth-Grade Students in Junior High School

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Abstract
Vocabulary forms the essential basis for students' language proficiency, supporting their growth in reading, writing, speaking, and listening. A well-developed vocabulary not only improves comprehension but also enables effective communication in both oral and written contexts. This research aims to evaluate the impact of Index Card Match method on the vocabulary development of eighth-grade students of *Sekolah Menengah Pertama* (SMP) Negeri 9 Palu, highlighting the importance of vocabulary in English learning and the need for interactive and effective teaching methods to develop students' vocabulary skills. A quasi-experimental design was employed, involving an experimental group taught using Index Card Match and a control group receiving conventional method. A sample of 64 students was selected through cluster random sampling from total population of 352 eighth-grade students, ensuring representativeness. This research utilized a set of 10 multiple choice questions and 10 matching items as instruments, which has been validated through evaluation and testing to ensure reliability. The findings indicated that the mean pre-test score for the experimental group was 47.81, compared to 49.22 for the control group. In contrast, the post-test mean score for the experimental group rose to 69.69, while the control group scored 42.03. The Mann-Whitney U test was employed due to the non-normal distribution of the data, revealing a significant difference between the two groups ($p < 0.05$). In short, this indicates that the Index Card Match method positively impacts vocabulary development, accentuating its academic and pedagogical significance in improving students' language skills.

Keywords: teaching, vocabulary, index card match

INTRODUCTION

Vocabulary serves as a fundamental foundation for students, underpinning their development in reading, writing, speaking and listening skills. A robust vocabulary not only enhances comprehension but also facilitates effective communication in both spoken and written forms. as Langenberg (2000) states, "Vocabulary is a vital aspect of literacy development". This assertion underscores the importance of vocabulary in enabling students to articulate their thoughts and engage with texts meaningfully. The process of vocabulary development involves understanding word meanings, spelling, pronunciation, and the ability to apply words accurately in context. This skill is essential for grasping subject matter effectively and improving everyday communication, which is crucial for academic success and future competencies. In learning English context, particularly at the junior high school level, the Merdeka Curriculum emphasizes the importance of developing students' abilities to communicate in English across various contexts. However, observation at SMP Negeri 9 Palu reveal that eight-grade students continue to struggle with vocabulary development, as evidenced by test results showing their vocabulary skills at a medium level. Insufficient vocabulary hampers students' ability to communicate effectively, both orally and in writing, adversely affecting their learning experiences and academic performance.

To address these challenges, employing effective teaching method is essential for vocabulary development. The researchers have chosen to implement the Index Card Match method, which is recognized for its effectiveness in teaching English vocabulary. This method allows teachers to introduce new words while making the learning experience enjoyable for students. Research by Fengyu (2023) indicates that balanced approach integrating traditional methods, contextualized learning, technology-assisted strategies, and multimodal techniques, such as the Index Card Match method, is indispensable for developing students' vocabulary application skills in real-life contexts.

The Index Card Method is a cooperative learning method where students collaborate to match question and answer cards. This approach fosters interaction and knowledge sharing, making learning more engaging and enjoyable. Slavin (2005) emphasizes that cooperative methods improve academic performance through active participation, while Kagan (2009) notes that such structures enhance understanding and retention. Due to its adaptability, the Index Card Match method allows it to effectively support various learning materials and contribute to better learning outcomes. A study by Ariani & Setianingsih (2018) demonstrated that the utilizing of Index Card Match method significantly increased students' vocabulary mastery. The post-test results indicated a marked enhancement in participants' vocabulary knowledge following the treatment. These findings suggest that the Index Card Match method is successful in developing students' learning skills. Therefore, the researchers are interested in applying this method to develop vocabulary development among students at SMP Negeri 9 Palu.

Vocabulary is essential in all contexts, as it encompasses knowledge and understanding of words and their meanings. Burns (2010) asserts that vocabulary represents the collection of words utilized by an individual, group, or profession. Mastering vocabulary is vital for acquiring the four language skills: listening, speaking, reading, and writing. Without a solid vocabulary, acquiring these skills becomes impossible. Qizi & Iroda (2024) highlight that vocabulary is fundamental to effective communication and learning in any language, critical for understanding, reading, and writing, which are essential for academic success across various subjects. Widiastuti & AL-Qibtiyah (2023) emphasize that vocabulary is a key component of learning English.

Students cannot read, speak, listen, and write without comprehending word meanings. Vocabulary encompasses various definitions, as Mittal and Tathore (2015) describe it as the fundamental tool of language that facilities smooth communication among individuals. Thus, vocabulary can be viewed as the lexicon of a language, including both individual words and multi-word phrases that convey specific meanings.

The Index Card Match method is an educational method that employs cards designed to match questions with answers. Students work in pairs, with one student holding a question card and the other holding a matching answer card. The objective is for students to identify the correct pair and read the questions and answers aloud in front of the class. This method aims to make learning more engaging, motivating, and interactive, helping students remain active and avoid boredom during the learning process (Haslinda, 2020). The Index Card Match method is particularly effective for developing vocabulary. According to Kusnandar & Rachmawati (2024), the Index Card Match method is an efficient and enjoyable way of engaging students in vocabulary learning. This activity involves students collaborating in pairs to match cards containing questions and answers related to vocabulary. The method addresses various elements of vocabulary, including meaning, spelling, and word usage, prompting students to study actively and fostering their resourcefulness and creativity. It also provides an enjoyable way to review previously taught material.

Research conducted by Ayu & Evie (2021) assessed the impact of the Index Card Match strategy on student vocabulary mastery. The research concluded that the Index Card Match concept can serve as an effective strategy for teaching vocabulary, encouraging students to be more active and engaged throughout the learning process. Silberman (2006) describe the Index Card Match strategy as an active and enjoyable method for retaining material, including vocabulary. By employing this strategy, students can more easily remember word meanings and improve their spelling. This assertion is supported by Afandi et al. (2013), who affirm that this strategy can foster an engaging and enjoyable learning environment, thereby enhancing students' vocabulary mastery.

The implementation of the Index Card Match method involves several key steps. Based on Kusnandar & Rachmawati (2024), the procedure includes: 1). The teacher introduces the vocabulary words, explaining their meanings and usage, 2). Students participate in the matching activity, finding partners for their cards, 3). After the matching activity, the teacher reviews the answers with the class, providing immediate feedback to reinforce learning, and 4). Students discuss their experiences and thoughts about the activity, allowing them to reflect on their learning process.

Ariani & Setianingsih (2018) propose additional steps, including preparing index cards with vocabulary words and definitions, splitting students into experimental and control groups, and promoting interaction through matching activities. Tobing (2018) outlines a similar approach, emphasizing the importance of collaboration and engagement in the matching process. In this research, the researchers adapted the procedure from Tobing (2018) by adding steps that encourage students to create their own cards. This adaptation aims to foster deeper engagement, creativity, and collaboration among students.

The Index Card Match method offers several significant advantages in the learning process. According to Hasibuan (2018), it creates a joyful atmosphere, making students happier during the learning experience. The material presented becomes more interesting and captures students' attention effectively, contributing to an active and enjoyable learning environment. This can enhance learning achievements and help

students reach higher levels of mastery. Additionally, assessment can be conducted by both observers and learners, providing opportunities for deeper reflection and evaluation. Discussions and presentations arising from this method can reinforce students' understanding of previously covered topics while introducing new concepts.

However, the Index Card Match method also presents disadvantages, as identified by Afandi et al. (2013). One of the main disadvantages is that it requires a significant length of time for students to complete all assignments and presentations, which can extend lesson durations. Teachers must also invest considerable time in preparation to ensure smooth activity execution. This method relies on students' ability to collaborate effectively, and the lively classroom atmosphere can lead to increased noise levels, potentially disturbing other classes. While it is most effective in larger classes, it may not yield the same results in smaller groups.

Despite the existing research on vocabulary development and cooperative learning methods, there remains a gap in research specifically addressing the challenges faced by eighth-grade students at SMP Negeri 9 Palu. This research aims to fill that gap by implementing the Index Card Match method, particularly focusing on the innovative aspect of students creating their own cards. This adaptation is significant as it encourages deeper engagement and creativity, which are crucial for effective vocabulary acquisition.

The research contributes to developing vocabulary within the context of the Merdeka Curriculum and the specific school environment by providing a structured yet flexible method to vocabulary learning. By integrating recent researches and emphasizing the strengths of the Index Card Match method, this research aims to develop students' vocabulary skills, ultimately leading to better academic performance and communication abilities. In essence, the Index Card Match method presents a promising method to vocabulary development for eighth-grade students at SMP Negeri 9 Palu. By addressing the specific challenges faced by these students and incorporating innovative strategies, this research seeks to contribute to the broader field of language education and support the goals of the Merdeka Curriculum.

METHOD

This research employed a quasi-experimental research design to evaluate the effectiveness of the Index Card Match method on vocabulary development among eighth-grade students at SMP Negeri 9 Palu. The research involved two distinct groups: an experimental group that received the treatment and a control group that did not. Specifically, the experimental group underwent a pre-test, followed by the implementation of the Index Card Match method as the treatment, and concluded with a post-test. In contrast, the control group participated only in the pre-test and post-test without any intervention. This design allows for a comparative analysis of the vocabulary development between the two groups, thereby providing insights into the effectiveness of the teaching method employed.

The research population consisted of eighth-grade students from SMP Negeri 9 Palu, which comprises eleven parallel classes, each containing an equal number of students, totaling 352 students. To ensure a representative sample from this large and widely distributed population, the researchers utilized cluster random sampling. This sampling technique is practical and efficient, particularly in educational settings where classes are already established. To determine the sample for the research, the names of the classes were written on slips of paper, rolled up, and placed in a box. The box then shaken, and the first two class names that emerged were selected as the research sample.

This method of random selection minimizes bias and ensures that the chosen classes are representative of the overall population.

In this research two primary variables were analyzed: independent variable and dependent variable. The independent variable was the Index Card Match method (X), which was measured to assess the impact of the independent variable on the students' learning outcomes. The operational definition of the independent variable, the Index Card Match method, refers to a cooperative learning method that involves students matching question and answer cards to facilitate vocabulary learning. This method is designed to promote engagement, interaction, and active participation among students in developing their vocabulary skills. The dependent variable, students' vocabulary, encompasses the students' ability to understand, use, and apply vocabulary effectively in various contexts. This variable was assessed through pre-test and post-test evaluations, which measured the students' vocabulary knowledge before and after the implementation of the Index Card Match method.

The instruments used in this research consisted of two types of tests: pre-test administered prior knowledge and determine whether the Index Card Match method had a significant effect on their vocabulary development. The pre-test and post-test were designed to evaluate the same constructs, ensuring consistency in measurement. The assessment format included multiple choice items and matching items, which were adapted from a scoring rubric developed by Enjel et al. The adaptation involved the removal of one type of test item, specifically fill in the blank items, to streamline the assessment process and focus on the most relevant aspects of vocabulary mastery. The scoring system for the tests is outlined in the following table:

Table 1. Scoring System Table

No	Kind of Tests	Number of Items	Score of Items	Criteria	Total Score
1.	Multiple choice items	10	1	Correct answer	10
			0	Incorrect answer	
2.	Matching items	10	1	Correct answer	10
			0	Incorrect answer	

Adapted from Enjel et al. (2022)

The validity of the test instruments was established through evaluation and testing, ensuring that the items accurately measured the intended vocabulary constructs. Reliability was assessed using a retest method, yielding a high correlation coefficient, which indicates that the instruments produce consistent results.

The data analysis for this research was conducted using the Statistical Package for the Social Sciences (SPSS). After completing the treatment, the researchers evaluated the test results to determine the effectiveness of the Index Card Match method in developing students' vocabulary. The process began with the computation of descriptive statistics, including means, standard deviations, and frequency distributions for both the pre-test and post-test scores of the experimental and control groups, offering a general overview of vocabulary performance before and after the intervention. To determine the appropriate statistical tests, a Shapiro-Wilk normality test was performed to assess whether the data followed a normal distribution. Since the data may not have met the assumptions of normality, the researchers employed the Mann-Whitney U Ranks test, a non-parametric test suitable for comparing two independent groups when data are ordinal or not normally

distributed. This test examined whether there were significant differences in the rank order of scores between the experimental and control groups, thereby providing insights into the impact of the Index Card Match method on students' vocabulary development.

FINDINGS AND DISCUSSION
Findings

This research was carried out from April 24 to 9 May 2025, to evaluate the impact of the Index Card Match method on vocabulary development among eighth-grade students at SMP Negeri 9 Palu. The findings are presented in a structured manner, focusing on the pre-test and post-test results for both the experimental and control groups, as well as the statistical analysis performed to assess the impact of the instrument.

The test results comprised two components: pre-test, which assessed students' prior knowledge of vocabulary, and post-test, which evaluated the impact of the Index Card Match method on students' vocabulary development. The results are summarized in Table 1 below.

Table 2. Pre-Test and Post-Test Result of the Experimental and Control Groups

No	Initials	Group	Pre-Test	Post-Test
1	M	Experimental	45	65
2	F	Experimental	65	75
3	NH	Experimental	40	65
4	B	Experimental	45	70
5	D	Experimental	60	70
6	G	Experimental	35	60
7	E	Experimental	35	70
8	HDS	Experimental	50	65
9	C	Experimental	45	65
10	MA	Experimental	50	75
11	AP	Experimental	35	70
12	MB	Experimental	50	80
13	SP	Experimental	55	70
14	JA	Experimental	55	75
15	SA	Experimental	40	65
16	LM	Experimental	60	75
17	T	Experimental	50	65
18	RA	Experimental	45	70
19	DI	Experimental	50	65
20	J	Experimental	55	80
21	R	Experimental	70	80
22	G	Experimental	35	70
23	AK	Experimental	30	75
24	N	Experimental	30	60
25	RAC	Experimental	55	70
26	AM	Experimental	70	75
27	AL	Experimental	50	65
28	AZ	Experimental	60	75
29	FF	Experimental	45	65
30	M	Experimental	35	60

31	RK	Experimental	40	70
32	NS	Experimental	45	70
33	AR	Control	30	25
34	F	Control	70	55
35	MA	Control	40	30
36	M	Control	55	45
37	SL	Control	55	50
38	MRAD	Control	65	55
39	RY	Control	40	35
40	MRAP	Control	50	60
41	GSS	Control	40	40
42	FZ	Control	60	60
43	A	Control	45	40
44	CA	Control	30	25
45	NAN	Control	40	35
46	KPW	Control	35	30
47	GE	Control	60	45
48	DD	Control	30	25
49	FA	Control	45	30
50	JRA	Control	55	45
51	JM	Control	45	50
52	FR	Control	50	40
53	HT	Control	60	45
54	TNR	Control	55	35
55	NS	Control	40	30
56	SQ	Control	45	40
57	MFR	Control	55	40
58	EAJ	Control	40	30
59	AA	Control	70	35
60	CP	Control	60	75
61	CR	Control	40	75
62	NKK	Control	65	45
63	M	Control	50	40
64	MPB	Control	55	35

The data presented in Table 2 indicates a significant increase in vocabulary scores within the experimental group following the implementation of the Index Card Match method. The average pre-test score for the experimental group was 47.81, which increased to 69.69 in the post-test, reflecting an average improvement of 21.88 points. Notably, all students in the experimental group exhibited score improvements, underscoring the positive impact of the Index Card Match method on vocabulary development. The pre-test scores for this group ranged from 30 to 70, while the post-test scores improved to a range of 60 to 80, suggesting that the Index Card Match method effectively contributed to enhancing students' vocabulary skills.

In contrast, the control group demonstrated a decline in vocabulary scores. The average pre-test score for the control group was 49.22, which decreased to 42.03 in the post-test, indicating a reduction of 7.19 points. The highest scores in the control group were achieved by students CR and CP, both attaining 75 points, with CR improving from

40 to 75 and CP from 60 to 75. Conversely, the lowest scores were recorded by students AR, CA, and DD, whose scores fell from 30 to 25.

The comparative analysis reveals that the experimental group experienced a greater increase in vocabulary scores after implementing the Index Card Match method, with an average increase of 21.88 points, while the control group's scores decreased by 7.19 points. This stark contrast highlights the efficacy of the Index Card Match method in fostering vocabulary development among students.

To further analyze the data, descriptive statistics were computed using SPSS v.24 providing insights into the range, minimum, maximum, mean, and standard deviation of the pre-test and post-test scores for both groups. The results are summarized in the following table.

Table 3. Descriptive Statistics of Pre-Test and Post-Test

	N	Range	Minimum	Maximum	Mean	Std. Deviation
Pre Test Experiment	32	40	30	70	47.81	10.846
Post Test Experiment	32	20	60	80	69.69	5.671
Pre Test Control	32	40	30	70	49.22	11.367
Post Test Control	32	50	25	75	42.03	12.943
Valid N (listwise)	32					

The data in Table 3 illustrates that the pre-test scores of the experimental group varied between 30 and 70, yielding a mean of 47.81 and a standard deviation of 10.846. After treatment, their scores increased to 60-80, from a higher mean of 69.69 and a lower standard deviation of 5.671, indicating improved vocabulary development and more consistent results. In contrast, the control group's score decreased from a pre-test mean of 49.22 to a post-test mean of 42.03, with increased score variability, suggesting a decline in performance without the treatment.

Normality testing was conducted on the learning outcomes of group (class VIII D) using the Index Card Match method and control group (class VIII A) using conventional method. The Shapiro-Wilk test was performed using SPSS v.24 with the Shapiro-Wilk, aimed to determine regardless the data adhered to a normal distribution. Based on the criteria, the data is deemed to be normally distributed if Sig > 0.05, whereas it is classified as not normally distributed if Sig less than 0.05. The findings are displayed in the table below.

Table 4. Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Group	Statistic	df	Sig.	Statistic	df	Sig.
Learning	Pre-Test Experiment	.108	32	.200[*]	.959	32	.262
Outcomes	Post-Test Experiment	.171	32	.018	.921	32	.021
	Pre-Test Control	.135	32	.146	.954	32	.187
	Post-Test Control	.159	32	.038	.911	32	.012

The Shapiro-Wilk significance values for the pre-tests were 0.262 for the experimental group and 0.187 for the control group, both exceeding 0.05, suggesting the data are normally distributed. However, the post-test values were 0.021 for the experimental group and 0.012 for the control group, both below 0.05, showing that the

data are not normally distributed. Consequently, the researchers opted for a non-parametric test, which is appropriate when the data do not conform a normal distribution.

To assess the learning outcomes between the two independent groups, the Mann-Whitney U Ranks test was employed as a non-parametric alternative to the independent t-test. The results are presented in the following table:

Table 5. Mann-Whitney U Ranks Test Result

	Group	N	Mean Rank	Sum of Ranks
Learning	Experiment Group	32	46.81	1498.00
Outcomes	Control Group	32	18.19	582.00
	Total	64		

The Mann-Whitney test results indicate that the experimental group achieved a higher mean rank of 46.81 and a sum of ranks of 1498.00, compared to the control group's mean rank of 18.19 and sum of ranks of 582.00. This suggests that the Index Card Match method had a more positive impact on the vocabulary development of the experimental group.

Table 6. Test Statistics for Mann-Whitney U Ranks Test

Table Test Statistics[a]	
	Results
Mann-Whitney U	54.000
Wilcoxon W	582.000
Z	-6.187
Asymp. Sig. (2-tailed)	.000

a. Grouping Variable: Group

The results of the Mann-Whitney U Ranks test show a p-value of 0.000, which is less than 0.05, showing a significance difference between the experimental and control groups. This finding supports the hypothesis that the Index Card Match method positively influenced students' vocabulary development.

Discussion

The results of this research demonstrate that the Index Card Match method is effective in developing students' vocabulary, particularly in the areas of common-concrete nouns and action verbs. The findings indicate that this method significantly improved post-test scores for students in the experimental group, while the control group experienced a decline in average scores. These findings align with prior research emphasizing the benefits of interactive media such as vocabulary card games and applications in enhancing English vocabulary acquisition among elementary students (Anggraini, 2019; Arighi et al., 2020). The use of engaging, student-centered methods like Index Card Match reflects a broader trend in language education that prioritizes active learning to improve retention and motivation. One of the most compelling aspects of this research is that both groups began with nearly equal baseline scores on the pre-test. This initial parity strengthens the argument that the observed improvements in the experimental group were indeed a result of the Index Card Match method rather than differences in prior vocabulary knowledge. The fact that both groups started at similar levels allows for a more accurate assessment of the method's impact, minimizing the influence of external variables that could skew the results.

To confirm the statistical significance of these results, a Mann-Whitney U Ranks test was employed, given that the data did not meet the assumptions required for parametric testing. The results revealed that the mean rank for the experimental group was substantially higher than the control group's mean rank. This suggest that the vocabulary development observed in the experimental group was not random but rather a direct consequence of the treatment provided through the Index Card Match method. The statistical analysis reinforces the notion that the method is effective in fostering vocabulary growth among students. The positive outcomes of this research are consistent with previous studies that have explored the effectiveness of interactive vocabulary learning strategies. For instance, Kisman et al. (2024) found a significant increase in students' vocabulary mastery using the Index Card Match Strategy. This consistency across different studies reinforces the idea that interactive methods can lead to substantial improvements in vocabulary development.

Moreover, Nordin et al. (2024) concluded that vocabulary games, such as the Index Card Match method, are not only effective for word retention but also enhance students' motivation, peer collaboration, and cognitive involvement. These elements are crucial in fostering a positive learning environment where students feel empowered to engage with the material actively. The interactive nature of the Index Card Match method encourages students to take ownership of their learning, which can lead to deeper understanding and retention of vocabulary.

One of the most significant strengths of the Index Card Match method is its interactive and student-centered nature. This method allows students to create their own vocabulary cards, work collaboratively with peers, and participate in matching activities that reinforce their learning. The process of creating vocabulary cards encourages students to engage with the material on a deeper level. By formulating definitions, examples, and associations for each word, students are not merely memorizing, but they are actively constructing their understanding of the vocabulary. This active engagement is crucial for long-term retention and mastery new words.

Throughout the sessions, researchers observed a marked increase in students enthusiastic and engagement. Even those students who were typically passive participants in classroom activities became more involved when using the Index Card Match method. This shift in behavior illustrates the power of an active and engaging learning method to enhance not only cognitive skills but also students' emotional involvement in the learning process. The interactive nature of the method fosters a sense of community among students, as they work together to match cards and discuss vocabulary. This collaborative environment encourages peer support and motivation, which are essential components of effective learning. Despite these positive findings of this research, there are certain areas that can be improved. This research was limited to common-concrete nouns and action verbs, leaving the effectiveness of the Index Card Match method for other word types such as adjectives, idioms, or phrasal verbs has not yet been explored.

Nevertheless, these findings offer important implications for English language teachers, particularly at the junior high school levels. Methods like Index Card Match provide an enjoyable, engaging, and easy to use alternative for teaching vocabulary. Teachers can also use this method as a formative assessment tool to check students' understanding during the learning process. This aligns with Armelia et al. (2024), who noted that card-based media can significantly improve vocabulary mastery when used in a meaningful and well-planned way.

CONCLUSION

In conclusion, the research conducted at SMP Negeri 9 Palu demonstrates that the Index Card Match method significantly enhances the vocabulary development of eighth-grade students, as evidenced by the Mann-Whitney U Ranks test, which indicated that the experimental group utilizing this method achieved a higher mean rank compared to the control group, with statistically significant disparity. This finding underlines the method's effectiveness in fostering vocabulary skills while also engaging students in a more interactive and enjoyable learning experience. To further enhance vocabulary development, it is crucial for students to take initiative in their learning processes, chiefly in vocabulary acquisition and retention. Encouraging students to explore various learning strategies and resources can help them take ownership of their educational journey. Teachers are advised to incorporate the Index Card Match method into their instructional practices, as it not only promotes engagement and enjoyment but also aids in better retention and comprehension of vocabulary. Additionally, ongoing support and guidance should be provided to ensure students feel confident in using new vocabulary effectively. However, this research has certain weaknesses that should be addressed in future studies. The research was limited to common-concrete nouns and action verbs, which restricts the generalizability of the findings to other types of vocabulary. Future research should focus on the long-term effects of the Index Card Match method on vocabulary retention an application in real-life contexts, as well as its effectiveness across different age groups and language proficiency levels, thereby providing valuable insights for best practices in vocabulary instruction. By addressing these, both teachers and researchers can contribute to a more effective and engaging vocabulary learning environment.

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