

Digital Jumbled Letters Activities for Enhancing Students' Vocabulary Mastery

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Abstract

The low level of vocabulary mastery among students at Junior High School State 3 Gadingrejo, especially in terms of spelling, understanding, and retention, served as the impetus for this study. Therefore, the purpose of this study was to ascertain how the Digital Jumbled Letters technique affected the vocabulary knowledge of year 7 students at Junior High School State 3 Gadingrejo.

This study used a non-equivalent control group design and a quasi-experimental methodology. The experimental class and the control class, each with thirty students, made up the sample. Multiple-choice exams that have already undergone validity and reliability testing were used to collect data for this investigation. With the aid of SPSS, descriptive statistics and hypothesis testing were used to analyse the collected data.

According to the research findings, the experimental class's mean score (77.03) increased more than the control class's (63.70), and the independent sample t-test results reveal that the p-value of 0.013 is less than 0.05 as a result, H_a is accepted and H_0 is rejected. Thus, it can be said that Junior High School State 3 Gadingrejo students' vocabulary development is much enhanced by the use of Digital Jumbled Letters.

Keywords: digital jumbled letters, vocabulary mastery, quasi-experimental.

Abstrak

Rendahnya tingkat penguasaan kosakata di kalangan siswa SMP khususnya di SMP Negeri 3 Gadingrejo, terutama dalam hal ejaan, pemahaman dan daya ingat, menjadi latar belakang dilakukannya penelitian ini. Oleh karena itu, tujuan penelitian ini adalah untuk mengetahui bagaimana Teknik Digital Jumbled Letters mempengaruhi pengetahuan kosakata siswa kelas 7 di SMP Negeri 3 Gadingrejo.

Penelitian ini menggunakan desain non-equivalent control group dan metodologi kuasi-experimental. Sampel penelitian terdiri dari dua kelas yang di setiap kelasnya berjumlah 30 siswa. Ujian pilihan ganda yang telah melalui uji validitas dan reliabilitas digunakan untuk mengumpulkan data dalam penelitian ini. Dengan bantuan SPSS, analisis data dilakukan menggunakan statistik deskriptif dan pengujian hipotesis.

Berdasarkan temuan penelitian, nilai rata-rata kelas eksperimen (77.03) meningkat lebih tinggi dari pada kelas kontrol (63.70), dan hasil independent sample t-test menunjukkan bahwa nilai p sebesar 0.013 lebih kecil dari 0.05, oleh karena itu, alternatif hipotesis diterima dan nol hipotesis ditolak. Dengan demikian, dapat disimpulkan bahwa pengembangan kosakata siswa SMP Negeri 3 Gadingrejo meningkat secara signifikan melalui penggunaan Digital Jumbled Letters.

Kata Kunci: digital jumbled letters, vocabulary mastery, quasi-experimental

I. INTRODUCTION

The primary language of communication and a significant worldwide language, particularly in the field of education, is English. Strong English language competency enables students to access global knowledge resource and communicate in international contexts (Alrajafi, 2021). Early English proficiency is crucial since, despite being taught from primary school through college, English is still considered a foreign language in Indonesia.

Four Language skills such as listening, speaking, writing and reading are demanded of students studying English. Vocabulary proficiency affects the knowledge of these four interconnected skills (Nation, 2022). Students' ability to comprehend a text, communicate ideas, and actively engage in communication is based on their vocabulary (Roche & Harrington, 2020, in Huijun, 2020). Thus, one of the most important aspects of learning English as a second language is mastering vocabulary.

Nation (2022) emphasizes that vocabulary mastery is not only related to the meaning of words, but also encompasses the form, meaning, and use of words in the appropriate context. Students with a limited vocabulary will have difficulty understanding course material and expressing their ideas effectively (Alhazmi, 2022). Furthermore, vocabulary learning is most effective when introduced at an early age and carried out through engaging and meaningful activities (Dewi, Hermawati, & Vonti, 2022).

However, conditions at Junior High School State 3 Gadingrejo indicate that seventh-grade students' vocabulary mastery remains low. Based on the results of a preliminary survey, students have difficulty spelling English words, understanding the meanings of new vocabulary, and recalling vocabulary they have

already learned. Low interest in reading is also one of the reasons why students' vocabulary mastery remains very limited. On the other hand, the teaching methods used are still conventional, making vocabulary learning seem uninteresting and causing students to tend to be passive.

Technological advancements have opened up significant opportunities for the use of digital media in creating more interactive learning experiences. One technique that can be applied is Digital Jumbled Letters, an activity in which students arrange random letters into meaningful words using the digital platform Canva. The activity helps students practice spelling accuracy, recognize word forms, understand meanings, and improve their memory through a fun activity (Nation, 2022). The use of digital media has also been shown to increase student motivation and active participation in learning (Yunianti et al., 2025).

Several previous studies have shown that the Jumbled Letters technique is effective in improving students' vocabulary mastery (Nonili et al., 2020; Rachma, 2021; Nisyak et al., 2025). This technique encourages students to think critically in recognizing letters into correct words (Bahtiar, 2020). Additionally, the activity of arranging jumbled letters can help strengthen visual memory of spelling and word structure (Schmitt, 2020). However, most previous studies have relied on conventional media such as letters cards or manual activities.

In light of the aforementioned discussion, the purpose of this study is to evaluate how well seventh-grade students at Junior High School State 3 Gadingrejo use Digital Jumbled Letters to increase their vocabulary competency. It is anticipated that this study will offer a more interactive and captivating alternative digital learning technique, boosting student engagement and assisting in the development of students' English vocabulary competency.

II. METHODOLOGY

This study uses a non-equivalent control group design and a quasi-experimental method in a quantitative manner. By comparing learning outcomes between the experimental and control groups, this design was selected to ascertain the impact of employing Digital Jumbled Letters on students' vocabulary acquisition. When researchers use pre-existing groups and are unable to adequately randomize individuals, they employ a quasi-experimental design, according to Sugiyono (2021), a non-equivalent control group design comprises two groups that are given a pre-test and a post-test to gauge the efficacy of the given treatment.

During the even semester of the 2025/2026 academic year, this study was carried out at Junior High SCHOOL State 3 Gadingrejo made up the study population, and sample was made up of two classes-Class 7.7, which was the experimental class and Class 7.8, which was the control class-that were chosen using cluster sampling using a spinner. Each class had thirty pupils. While the control group utilized a traditional approach the experimental group was treated with Digital Jumbled Letters. Five sessions were used in this study: one for the pre-test, three for the treatment, and one for the post-test.

The research instrument consisted of a multiple-choice test used to measure students' vocabulary mastery of interactive material limited to action verbs. Before use, the instrument underwent validity and reliability tests to ensure its suitability. Research data were obtained from pre-test and post-test results. Subsequently, the data were analyses using descriptive statistics and prerequisite tests, including normality and homogeneity tests, followed by an independent samples t-test using SPSS to determine the effect of the Digital Jumbled Letters program in students' vocabulary mastery. According to Arikunto (2019), N-Gain analysis is used to determine the extent of improvement in students' learning outcomes by comparing pre-test and post-test scores while considering the maximum possible score. In addition, N-Gain analysis was used to determine the level of improvement in students' vocabulary skills after the intervention (Ahmed, 2025).

III. FINDINGS AND DISCUSSION

A. Research Findings

The purpose of this study is to ascertain how employing Digital Jumbled Letters affects seventh-grade pupils at Junior High School State 3 Gadingrejo's vocabulary mastery. Pre-tests and post-tests were given to the experimental and control groups in order to gather research data. While the control group employed traditional teaching methods, the experimental groups was instructed utilizing Digital Jumbled Letters.

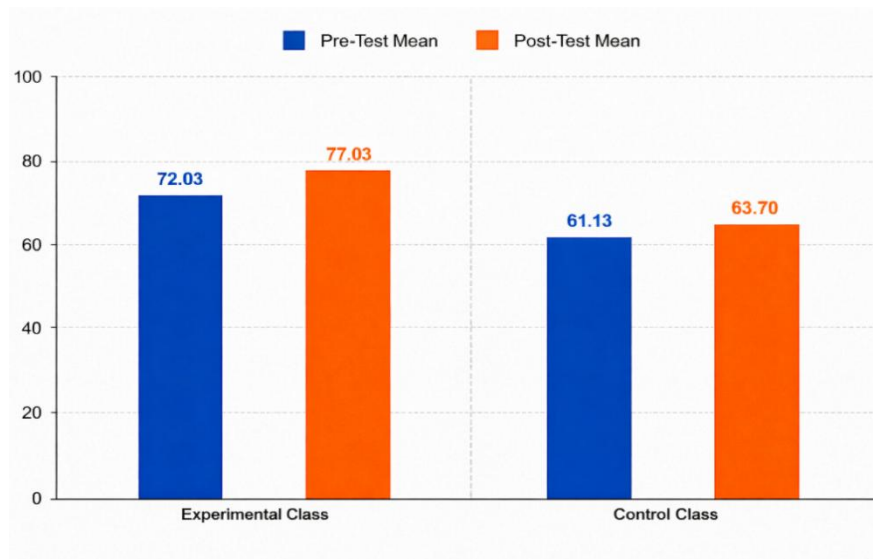


Figure 1. Mean Pre-test and Post-test Experimental and Control Class

As illustrated in Figure 1, both the experimental and control classes demonstrated improvement in their scores after the instructional process. Nevertheless, the experiment class achieved a greater increase than the control class. The mean score of the experimental class rose by 5.00 points, whereas the control class experienced an increase of only 2.57 points. These findings suggest that the implementation of Digital Jumbled Letters effectively enhanced students' vocabulary mastery. Before testing the hypothesis, the data were first examined through preliminary analyses, including normality and homogeneity tests. Subsequently, an independent sample t-test was carried to analyse the data.

Table 1. Results of the Independent Sample t-Test

Variable	t(df)	p-value	Mean Difference	95% CI
Post-test Score	2.576 (58)	0.013	11.333	2.526 to 20.140

As presented in Table 1, the results of the independent sample t-test revealed a p-value (Sig. (2-tailed)) of 0.013. since the obtained value was lower than the significance level of 0.05, the null hypothesis was rejected and the alternative hypothesis was accepted. These findings indicate a significant difference in the post-test scores between the experiment and control classes. Therefore, it can be concluded that the implementation of Digital Jumbled Letters was effective in improving students' vocabulary mastery. This conclusion is further supported by the higher mean post-test score obtained by the experimental class (77.03) compared to that of the control class (63.70) the difference in the average score improvement between the two groups is presented in Figure 1.

Table 2. N-Gain Test Results

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Ngain_Score	30	0.12	1.00	0.3679	0.24163
Valid N (listwise)	30				

Based on Table 2, the average N-Gain score in the experimental class was 0.368, with a minimum value of 0.12 and a maximum value of 1.00. Based on the N-Gain classification, this value falls into the moderate category. This indicates that the use of Digital Jumbled Letters is able to accommodate a moderate improvement in students' vocabulary mastery. These results reinforce previous findings that the use of Digital Jumbled Letters not only produces statistically significant differences but also improve students' learning abilities after receiving the treatment.

B. Discussion

The Digital Jumbled Letters technique has been found to improve pupils' vocabulary mastery. Especially among seventh-grade students at Junior High School State 3 Gadingrejo, according to research findings. The hypothesis test result of 0.013 illustrates this. A significant difference between the experimental group treated with Digital Jumbled Letters and the control group utilizing traditional methods is shown by a hypothesis test value of 0.013, which is less than 0.05. Additionally, the experimental group's mean post-test score increased more than the control group. Additionally, the experimental group's results improved more than those of the group that used Digital Jumbled Letters to help students' vocabulary mastery.

Digital Jumbled Letters also provides a more interactive and engaging learning experience for students. In this activity students are asked to arrange random letters into correct words. This activity helps students practice recognizing word forms, spelling words correctly, and understanding the meaning of words. This type of learning process can make students more active in the classroom compared to simply listening to explanations. Additionally, the use of Digital Jumbled Letters can boost students' interest in learning particularly in English vocabulary acquisition. The engaging visual interface of Digital Jumbled Letters and the game-like learning atmosphere make students highly enthusiastic about participating in classroom activities. When students are interested and enjoy the learning process the material presented becomes easier to understand and remember.

The results of this research align with Nation's (2022) theory which states that vocabulary acquisition is more effective when students are directly engaged in activities focused on word form, meaning and usage. The Digital Jumbled Letters activity fulfills these three aspects because students not only arrange letters but also understand their meanings and usage within a sentence. The findings of this research also support previous research conducted by Nisyak et al. (2025), Nonili et al. (2020), and Rachma (2021) which stated that the Jumbled Letters technique is effective in improving students' vocabulary mastery. The difference is that this research uses a digital version of Jumbled Letters making the learning process more modern, engaging and aligned with current technological advancements.

Although the improvement achieved by the students has not yet reached a very high level but remains at a moderate level this is sufficient proof that the Digital Jumbled Letters technique can improve students' vocabulary mastery. The fact that the improvement remains at a moderate level may be influenced by several factors such as students' varying initial abilities and differing levels of concentration. However, Digital Jumbled Letters has proven to remain effective as a vocabulary learning technique.

In light on the preceding it can be stated that Digital Jumbled Letters is effective alternative teaching technique for improving students' vocabulary mastery particularly regarding action verbs. Digital Jumbled Letters can make the classroom learning environment more enjoyable and engaging and can also help students who struggle to understand vocabulary better.

IV. CONCLUSION

According to the research findings, seventh-grade pupils at Junior High School State 3 Gadingrejo's vocabulary proficiency is significantly impacted by the use of Digital Jumbled Letters. The average N-Gain value of 0.368 is in the moderate range, and the independent sample t-test findings reveal a p value of 0.013, which is less than 0.05. these findings show that using Digital Jumbled Letters successfully increased students' vocabulary proficiency while also producing a significant difference between the experimental and control groups.

The results of this research also reinforce several previous studies showing that the Jumbled Letters technique is an effective strategy for vocabulary learning. This research contributes by implementing this technique in the form of digital media, making the learning process more interactive, engaging, and in line with advancements in educational technology. Therefore, Digital Jumbled Letters can serve as an alternative English language learning strategy to support improve students' vocabulary mastery, particularly regarding action verbs at the Junior High School level.

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