# IMPROVING STUDENTS' ARABIC VOCABULARY AT MTSN BATU THROUGH A PROJECT-BASED AND MIND MAPPING APPROACH

**Rahmadani [1]\*, Slamet Daroini [2], Mamluatu Solihah[3]**
[123] UIN Maulana Malik Ibrahim Malang, Indonesia

## Abstract

This study investigates the effectiveness of integrating the Project-Based Learning (PjBL) model with mind mapping techniques in improving students' mastery of Arabic vocabulary at MTsN Batu. Employing a quantitative approach with a quasi-experimental design, the research involved two distinct groups: an experimental class and a control class. Vocabulary assessments were conducted both prior to and following the intervention. The findings revealed that students exposed to the PjBL and mind mapping approach showed a notable increase in performance, with their average vocabulary scores rising from 50.17 (pre-test) to 81.67 (post-test). An independent samples t-test produced a p-value of 0.001, confirming a statistically significant difference between the two groups. The results indicate that the use of project-based tasks supported by visual tools like mind maps effectively enhances vocabulary acquisition. Additionally, the strategy promotes greater learner engagement, autonomy, and creativity, offering a promising alternative to traditional lecture-based instruction.

## INTRODUCTION | مقدمة

For some students, learning a foreign language is considered a challenging task. One of the main obstacles students face includes differences in sounds, writing systems, word forms, and sentence structures (Farihana and Mufidah 2024). A broad vocabulary mastery greatly facilitates students in understanding and expressing ideas in Arabic (Aidah, Hidayat, and Annisa 2023). Vocabulary plays a crucial role in language learning, as it serves as a foundation for thinking, learning, and expressing oneself about the world. Particularly when studying a second or foreign language, increasing one's vocabulary gives one unrestricted access to new material (Qomaruddin and Haq 2023).

Vocabulary (mufradat) is one of the essential components that must be mastered in learning Arabic. According to Yunisah, vocabulary mastery serves as an indicator of one's understanding of both spoken and written language (Saputra et al. 2022). Due to its significance, several experts argue that learning Arabic should begin with acquiring and mastering vocabulary, as it is a fundamental part of language elements (Rosyidi and Ni'mah 2011).

In Indonesia's education system, Arabic is taught from the elementary level to higher education (Sauri 2020). A rich and broad vocabulary allows students to express their ideas accurately and comprehensively, while also helping them to better understand the learning material (Harfiah n.d.). However, students often face challenges in mastering vocabulary,

particularly those from diverse educational backgrounds. Differences in language acquisition levels, vocabulary knowledge, and teaching methods significantly affect students' initial abilities in vocabulary mastery (Oktaviani et al. 2024). These challenges are often linked to the continued use of conventional teaching methods, such as lectures and rote memorization, which tend to lack meaningful learning experiences. Therefore, there is a strong need for innovation in instructional strategies that can enhance students' understanding more effectively.

One such strategy is the Project-Based Learning (PBL) model, which is recognized for its ability to increase students' active involvement in the learning process (Musyadad, Supriatna, and Parsa 2019). Project-Based Learning encourages students to work collaboratively on projects that are relevant to real-life contexts, providing opportunities to apply new vocabulary in meaningful situations (Agung, Anugrahana, and Ariyanti 2023). Moreover, it promotes independent and creative learning, which can lead to improved vocabulary acquisition (Nurhamidah and Nurachadijat 2023).

Project-Based Learning (PjBL) serves as an effective instructional approach that facilitates students in designing projects, accessing relevant resources, and communicating their findings, thereby enabling a more interactive and in-depth learning experience (Septianingsih et al. 2024). Within this model, the implementation of mind mapping as a final project product plays a significant role. Mind mapping assists students in organizing ideas and information in the form of visually appealing and easily comprehensible diagrams. This strategy enhances students' ability to structure information logically, visualize the interrelationships between concepts, and improve both retention and understanding of learning material. A mind map is a formidable visual aid that offers a universal key to releasing the potential of the brain. It combines a variety of cerebral abilities into a single dynamic framework, including words, pictures, numbers, logic, rhythm, color, and spatial awareness (Media 2013). This holistic approach allows learners the cognitive freedom to explore the vast and often untapped capacities of their minds. Through this method, students are not only guided to retain new information but also encouraged to engage creatively and critically in their learning process.

Based on the researcher's observations at MTsN Batu, it was found that students face considerable difficulties in vocabulary acquisition. This highlights the urgent need for innovation in the instructional models currently employed. A significant number of students struggle in the process of learning Arabic, particularly due to the conventional reliance on rote memorization in vocabulary instruction. Such methods prove inadequate for learners who have not yet developed a deep understanding of the meaning of words or their proper application in writing and communication.

Thus, the purpose of this study is to investigate how well MTsN Batu students' comprehension of Arabic language is improved by the Project-Based Learning paradigm supplemented by mind mapping. It is expected that this study will make a significant contribution to the creation of more efficient language learning strategies. In addition to making vocabulary acquisition easier, PjBL with mind mapping is supposed to increase students' motivation and level of engagement with the Arabic language learning process.

## METHOD | منهج

This study used an experimental technique and a quantitative research methodology. The main goal of the study was to find out how the independent variable (X), which was the application of mind mapping and project-based learning, affected the dependent variable (Y),

which was the vocabulary acquisition of the students. In order to assess the efficacy of Project-Based Learning with mind mapping in improving students' vocabulary acquisition, a pre-test and a post-test were administered.

The data analysis techniques included normality and homogeneity tests, which served as prerequisite tests before proceeding to hypothesis testing. The hypothesis was tested using an independent samples t-test, with the aim of determining whether there was a statistically significant difference in vocabulary improvement between the experimental group and the control group.

## Participants' Characteristics

This study was conducted at MTsN Batu. The population of this research consisted of all eighth-grade students at MTsN Batu. A population is defined as the entire group of individuals or entities to which a researcher intends to generalize the findings (Asrulla, Jailani, and Jeka 2023). In this case, there were eight classes comprising the total population. To collect data, two classes—Class VIII F and Class VIII B—were selected as the research samples. The sampling was carried out using purposive sampling, as the researcher established a specific criterion: both classes needed to have an equal average score on the vocabulary test.

Two classes were chosen by the researcher: Class VIII F, which had thirty pupils (the control group), and Class VIII B, which had thirty-one students (the experimental group). Project-Based Learning (PjBL) was the treatment given to the experimental class, whereas the control group received no treatment and carried on with traditional teaching techniques.

## Instrumentation

The instrument used in this study was a vocabulary test, which involved both a pre-test and a post-test. An instrument is a tool used to measure, observe, and document quantitative data (Pali 2000). This study employed a vocabulary test instrument consisting of 20 multiple-choice items related to the topic of professions. The questions required students to both translate vocabulary and apply it in appropriate contexts. The pre-test was administered before the treatment was given to either group. The second instrument used was the post-test, which contained the same set of 20 vocabulary questions. The post-test was designed to measure students' vocabulary acquisition after the treatment was implemented. According to (Ardiansah n.d.), a post-test is a tool used to assess specific characteristics of research participants after the application of a given intervention.

To ensure the effectiveness of the vocabulary test in accurately measuring the intended outcomes, the researcher assessed both the validity and reliability of the test items before distributing the pre-test and post-test. In this study, face validity was employed to evaluate how well the test appeared to measure the research objectives. Another crucial aspect considered before test administration was reliability, which refers to the degree of consistency with which an instrument measures what it is intended to measure.

## RESULT | نتائج

The following section presents the results of data analysis on the use of Project-Based Learning (PjBL) through mind mapping in improving students' vocabulary mastery at MTsN Batu. The analysis was conducted using the SPSS version 25 software.

The mean scores improved significantly from the pre-test to the post-test. The average score in the control group showed some improvement, rising from 52.26 to 64.84. But the

experimental group's increase from 50.17 to 81.67 was more noticeable. These findings show that students who received instruction utilizing the Project-Based Learning approach in conjunction with mind mapping improved their vocabulary mastery more. The control group, on the other hand, only marginally improved, and their average scores fell short of the minimal requirements for mastery.

**Descriptive Statistics**

|  | N | Range | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|---|
| PreTest_Kontrol | 31 | 85 | 10 | 95 | 52.26 | 20.201 |
| PostTest_Kontrol | 31 | 40 | 45 | 85 | 64.84 | 11.067 |
| PreTest_Eksperimen | 30 | 50 | 25 | 75 | 50.17 | 12.898 |
| PostTest_Eksperimen | 30 | 35 | 65 | 100 | 81.67 | 7.915 |
| Valid N (listwise) | 30 |  |  |  |  |  |

## Normality Test

To ascertain whether the data had a normal distribution, the normality test was performed. Using SPSS version 25, the Kolmogorov-Smirnov test was used in this investigation. The following criteria were used to make decisions: data is deemed normally distributed if the significance value is greater than 0.05, and not normally distributed if the significance value is less than 0.05. The following computations provide a detailed explanation of the normalcy test results:

**Tests of Normality**

|  | Kelas | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
|  |  | Statistic | df | Sig. | Statistic | df | Sig. |
| Hasil | Pre-Test_Kontrol | .102 | 31 | .200* | .980 | 31 | .816 |
|  | Post-Test_Kontrol | .102 | 31 | .200* | .967 | 31 | .442 |
|  | Pre-Test_Eks | .115 | 30 | .200* | .973 | 30 | .613 |
|  | Post-Test_Eks | .150 | 30 | .083 | .964 | 30 | .392 |

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

Based on the output of the normality test using the Kolmogorov-Smirnov method, the significance (sig.) values for the students' learning outcomes in the experimental group were 0.200 for both the pre-test and post-test. Meanwhile, the significance values for the control group were 0.200 for the pre-test and 0.083 for the post-test. Since all significance values are greater than 0.05, it can be concluded that the data are normally distributed.

## Homogeneity Test

The homogeneity test is a statistical method used to determine whether the variances among groups are equal. A group is considered homogeneous based on the following criteria:
a) If the p-value ≤ α, it indicates that the variances among the groups are not homogeneous.
b) If the p-value > α, it indicates that the variances among the groups are homogeneous.

**Test of Homogeneity of Variances**

|  |  | Levene Statistic | df1 | df2 | Sig. |
|---|---|---|---|---|---|
| hasil mufrodat | Based on Mean | 7.130 | 1 | 59 | .010 |
|  | Based on Median | 6.548 | 1 | 59 | .013 |
|  | Based on Median and with adjusted df | 6.548 | 1 | 52.752 | .013 |
|  | Based on trimmed mean | 7.166 | 1 | 59 | .010 |

According to the results, Levene's Test for Equality of Variances using the mean-based technique has a significance value (Sig) of 0.010, which is higher than 0.05. This suggests that the experimental group's and the control group's post-test data variances are equal. Consequently,

the data can be said to be homogeneous. This means that one of the (optional) presumptions for doing the independent samples t-test has been met.

**Independent Samples T-Test**

To ascertain whether there was a statistically significant difference in the post-test scores between the control and experimental classes, an independent samples t-test was performed following the testing of the assumptions of normality and homogeneity. The pre-test and post-test findings for the control and experimental groups, along with the outcomes of the independent samples t-test, are provided by the analysis results from the SPSS 25 software as follows:

The p-value (Sig. 2-tailed) of 0.001 indicates that there is a statistically significant difference between the average learning outcomes of students in the experimental group and

**Independent Samples Tes**

| | | 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 | Equal variances assumed | 3.582 | .063 | -3.607 | 60 | .001 | -15.484 | 4.292 | -24.070 | -6.898 |
| | Equal variances not assumed | | | -3.607 | 50.675 | .001 | -15.484 | 4.292 | -24.102 | -6.865 |

those in the control group. Since the p-value is less than 0.05, it can be concluded that the treatment administered had a significant effect on students' learning outcomes. The results of the test demonstrate a significant difference in student achievement between the experimental group and the control group, with the experimental group showing a higher mean score. Therefore, it can be concluded that the intervention or instructional model implemented in the experimental group was proven to be more effective in improving students' vocabulary mastery compared to the conventional teaching method used in the control group.

## DISCUSSION | مناقشة

The results of the study indicate that there is a significant effect following the implementation of the project-based learning (PjBL) model using mind mapping on students' vocabulary mastery at MTsN Batu. Based on the data analysis, a significant difference was found between the pre-test and post-test scores in the experimental group, where the average score increased from 50.17 in the pre-test to 81.67 in the post-test. The hypothesis testing using the independent sample t-test revealed a p-value of 0.001, which is considerably lower than the significance threshold of 0.05.

This indicates that the implementation of the project-based learning model integrated with mind mapping has a statistically significant effect on students' vocabulary acquisition. It suggests that this instructional strategy not only influences the learning process positively but also yields greater improvement in vocabulary mastery compared to conventional teaching methods. The enhanced engagement and interactive nature of the PjBL approach, combined with the visual and structured benefits of mind mapping, contribute to deeper understanding and better retention of vocabulary items. Consequently, the findings support the effectiveness of innovative and student-centered learning models in enhancing language learning outcomes.

These findings indicate that project-based learning (PjBL) has a positive impact on students' Arabic language learning outcomes. This result is in line with a study conducted by Yogi Prayogo, which revealed that the use of project-based learning had a significant effect on Japanese vocabulary acquisition among eleventh-grade students at SMAN 1 Sidoarjo (Prayogo and Mintarsih n.d.). Similarly, Sri Wahyuningsih and Rini Dwi Susanti reported that PjBL had a notable influence on the English language proficiency of prospective Madrasah Ibtidaiyah teachers in the context of the Industrial Revolution 4.0. Their research highlighted that project-based learning serves as an alternative teaching model that supports the development of higher-order thinking skills (HOTS), and it encourages creativity and learner autonomy (Wahyuningsih and Susanti 2020). Another study conducted at Universitas Teknokrat Indonesia, Bandar Lampung, found that project-based learning could significantly improve students' vocabulary mastery. Nearly all measured variables in that research received positive student perceptions (Sari and Angreni 2018). In light of these supporting studies and the present findings, it can be concluded that the alternative hypothesis (Ha) is accepted.

This conclusion is based on the significant improvement observed in the vocabulary acquisition of eighth-grade students at MTsN Batu following the implementation of project-based learning. The p-value of 0.001 obtained in the experimental group is substantially lower than the significance level of 0.05, indicating that the effect is not coincidental but rather represents a genuine and statistically significant improvement. Therefore, this research emphasizes the important role of project-based learning in Arabic language education, particularly in enhancing students' vocabulary mastery. It also supports the view that such innovative and student-centered learning approaches are essential for preparing learners to face real-world language challenges.

## CONCLUSSION | خاتمة

The results of hypothesis testing indicate a statistically significant improvement in students' vocabulary mastery. Based on the independent sample t-test, the obtained p-value was 0.001, which is significantly lower than the threshold of 0.05. This confirms the acceptance of the alternative hypothesis (Ha), signifying that the implementation of project-based learning combined with mind mapping has a positive effect on improving vocabulary acquisition among students at MTsN Batu. This study is limited to vocabulary mastery and a single grade level. Future research should explore the impact of this approach on other language skills (e.g., speaking, writing) and across different educational levels.

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