

The Effectiveness of Project-Based Teaching Material Development Training to Improve Teachers' Understanding in the Implementation of the Merdeka Curriculum

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Abstract

Background: The Merdeka Curriculum provides freedom for teachers to choose flexible learning methods, including the use of project-based learning (PjBL). However, many teachers still face difficulties in designing project-based teaching materials that are in accordance with this curriculum.

Aims: This research aims to empower Indonesian teachers in Bengkulu through project-based teaching material development training, which can improve their skills in implementing the Independent Curriculum.

Methods: This service activity involved lectures, discussions, and demonstrations to 20 teachers who are members of MGMP Indonesian at SMP-MTs Bengkulu. The training is focused on the development of project-based teaching materials and their application in learning.

Results: The majority of participants gave a very positive response, reaching 94.4%. Only 5.6% of participants were in a position of Doubt, and none expressed Disagree or strongly disagree. showed that the participants considered the training approach to be very relevant to the need to be able to improve understanding and skills in compiling project-based teaching materials.

Conclusion: This training succeeded in empowering Indonesian teachers in Bengkulu, strengthening the implementation of the Independent Curriculum, and improving the quality of project-based learning in schools.

A. Introduction

Indonesian language teaching in the Merdeka Curriculum era has undergone significant changes (Putri & Aliyyah, 2024). The curriculum offers flexible learning that allows students to dig deeper into concepts and improve their competencies (Khoirurija, 2022). Teachers have the freedom to choose learning tools and methods, as well as develop projects, to enhance the quality of education. It also provides flexibility for educational institutions to design more contextualized and meaningful learning for students. This flexibility is essential for creating an innovative, creative, and holistic learning environment (Harefa, 2024; Tunas & Pangkey, 2024). With the Merdeka Curriculum, students are expected to develop the courage to learn and think critically. Learning activities are tailored to students' achievements and needs, making the learning process more flexible.

The teacher acts as a facilitator who encourages students to actively develop their knowledge and skills, rather than being the main source of knowledge. According to Noptario et al. (2024). Teachers function as

mentors who help students learn independently and responsibly in creating a learning environment that encourages critical thinking, collaboration, and problem solving through project-based learning. Therefore, the role of teachers in preparing teaching materials is very important. The teaching materials used must reflect real-life situations and be relevant to students' needs, so that the learning process becomes more effective and enjoyable. [Romero Alonso et al. \(2023\)](#) adds that Teachers as facilitators have an important role in education by enhancing student engagement and academic success. Effective facilitation involves providing timely feedback, additional materials, and supportive interactions. The teacher's ability to create a positive learning environment affects students' motivation, participation, and retention in the learning process.

One approach that aligns with the principles of the Merdeka Curriculum is Project-Based Learning (PjBL). According to [Chen & Chan \(2021\)](#) and [Loyens et al. \(2023\)](#), PjBL has proven effective in encouraging increased creativity in problem-solving, which includes the ability to identify, find solutions, and critically evaluate these solutions. PjBL can be applied in language education by creating an active, experiential learning environment and encouraging collaboration to improve language skills through hands-on application and interaction. This approach enables students to learn actively through real-world problem-solving and cooperation. Project-based learning also encourages the development of critical thinking skills, creativity, and communication and collaboration. According to [Quinapallo-Quintana & Baldeón-Zambrano \(2024\)](#), [Günzel & Brehm \(2024\)](#), [Zhao \(2024\)](#), and [Zhang & Wu \(2023\)](#), PjBL is a teaching method that focuses on active learning through project completion, which is based on learning experiences and academic achievement, and encourages engagement, critical thinking, collaboration, and creativity. Therefore, this approach becomes an effective strategy to improve the quality of Indonesian language learning in the classroom.

However, the implementation of project-based learning does not always run optimally in every classroom. Many teachers face difficulties in understanding the basic principles of this approach and how to integrate it into Indonesian language teaching. According to [Marangio & Cooper \(2022\)](#), many new teachers lack experience and training in PjBL during their education, so they tend to rely on traditional methods. Similarly, pre-service teachers often repeat old methods due to a lack of understanding of innovative approaches.

This situation illustrates the gap between the demands of the curriculum and teachers' readiness to implement it. This gap is important to address immediately because it can have a direct impact on the quality of learning and student learning outcomes. When teachers are not ready or have not fully grasped the approach mandated in the curriculum, such as project-based learning, the learning process tends to become a mere formality, failing to achieve the primary learning goal: to form active, creative, and independent students. Therefore, interventions are needed in the form of guidance that focuses on direct application. Providing professional development opportunities to teachers focusing on PjBL can improve their understanding and confidence. A systematically designed teacher training program is a relevant solution to address this issue. Through the training, teachers are guided to understand the concept of project-based learning and apply it in Indonesian language teaching, so that they can not only create curriculum-compliant teaching materials but also inspire students to learn more actively and independently.

Based on this background, this community service activity aims to empower Indonesian language teachers who are members of the *Musyawarah Guru Mata Pelajaran* (MGMP) of Indonesian Language Teachers of SMP-MTs in Bengkulu City through training in developing project-based teaching materials. This training is also expected to increase teachers' confidence and creativity in managing the learning process.

Although the Merdeka Curriculum has been implemented in various schools, many Indonesian language teachers who are members of the *Musyawarah Guru Mata Pelajaran* (MGMP) of Junior High School-MTs Indonesian Language Teachers in Bengkulu City still lack a thorough understanding of the concept of project-based learning. Their understanding is often still theoretical, without the practical skills needed to apply it in the classroom. As a result, the learning process has not fully supported the holistic development of students' competencies.

One of the main challenges faced by Indonesian language teachers is designing teaching materials that align with the principles of project-based learning. Many teachers still use conventional teaching material formats that are less effective in motivating student engagement and creativity. However, the Merdeka Curriculum encourages teachers to create learning experiences that are both fun and challenging, and relevant to students' daily lives. This suggests the need for intervention to address the gap. Additionally, some teachers struggle to connect the project theme with the established learning objectives. They have not fully

developed, integrated, and meaningful learning activities according to students' characteristics. As a result, the projects implemented are often only considered as complements and do not have a significant impact on students' competency achievement. Therefore, guidance is needed to help teachers design structured and relevant projects.

The limited understanding, skills, and learning resources among Indonesian language teachers have caused the implementation of the Merdeka Curriculum to be less than optimal. This impact is not only felt by teachers, but also by students, who should be the main focus in active learning. Without adequate support and training, teachers will struggle to implement the transformative learning approach outlined in the curriculum. Therefore, an empowerment program is needed that can directly address the needs and challenges faced by teachers in the field.

Several previous service activities have been conducted about project-based learning. The service [Rusman et al. \(2024\)](#) entitled "Training for Making Teaching Modules Based on Project-Based Learning (PjBL) for SMPIT Anak Soleh Mataram Teachers" focused on training teachers at SMPIT Anak Soleh Mataram to develop PjBL-based learning modules. Meanwhile, this service aims to empower Indonesian language teachers in planning and developing project-based teaching materials. Devotion [Tapung \(2024\)](#) "Workshop on the Implementation of Project-Based Learning Based Independent Curriculum Teaching Tools for Vocational Teachers throughout Manggarai Regency" is a workshop in Manggarai Regency that aims to empower vocational teachers with skills in implementing PjBL effectively. In this workshop, teachers were taught how to design, implement, and evaluate project-based activities. [Lubis et al. \(2022\)](#) "Project-Based Learning Model Training for Teachers", focuses on PJBL training for teachers from various subjects and the application of PJBL in general, without reference to the Merdeka Curriculum. Meanwhile, empowering Indonesian language teachers emphasizes the development of project-based teaching materials for Indonesian language teaching in implementing the Merdeka Curriculum. [Tusi Fatimah et al. \(2024\)](#) "Training on Teaching Module Development with Project-Based Learning and STEAM-H at Adiwiyata School MIS Handapherang," which focused on developing teaching modules that combine project-based learning with STEAM-H (Science, Technology, Engineering, Art, Mathematics, and Health). The aim was to improve teachers' skills in creating teaching materials that integrate these elements in an applicable manner. Meanwhile, this training focuses on developing Indonesian teaching materials using a project-based approach to implement the Merdeka Curriculum, introducing creative and innovative methods for developing these materials.

Given the importance of this, this community service activity is designed to empower Indonesian language teachers in planning and developing project-based teaching materials in a structured manner. The main goal is to help teachers become more adaptable to curriculum changes and encourage innovation in teaching practices. This training is expected not only to improve teachers' professional competence but also to have a direct impact on the quality of students' learning experience.

B. Methods

This community service activity was conducted on Monday, February 17, 2025, and attended by 20 Indonesian language teacher participants who were members of the Indonesian Language Teacher Consultative Meeting (MGMP) at the junior high school and MTs levels in Bengkulu City. The implementation of this community service applied several methods, namely lectures, discussions, and demonstrations. Lectures were conducted to explain to teachers how to develop project-based teaching materials for implementing the Merdeka Curriculum. Discussions were held through the exchange of ideas between presenters and participants, as well as among participants, to better understand project-based teaching materials in implementing the Merdeka Curriculum. The demonstration method is carried out through direct practice of applying project-based Indonesian teaching materials in implementing the Merdeka Curriculum. This community service activity is carried out in several stages, namely: (1) preparation, (2) training and mentoring, (3) implementation and monitoring, and (4) reflection and improvement.

For analyzing the response questionnaire, use the following equation.

1. Average Score (Mean)

The average score will provide an overview of how participants rate the training as a whole. It is the simplest and most frequently used method in Likert scale data analysis.

Formula for calculating mean:

$$\text{Mean} = \frac{\sum_{i=1}^n x_i}{n}$$

Where:

x_i = the Likert scale value given by the respondents for the item to- i
 n = Number of respondents

2. Standard Deviation

Standard deviation is used to measure the variation or spread of response values. It will tell us whether the majority of participants have a uniform or widespread opinion.

Formula for calculating standard deviation:

$$\text{SD} = \sqrt{\frac{\sum_{i=1}^n (x_i - \mu)^2}{n}}$$

Where:

x_i = the Likert scale value given by the respondents for the item to- i
 μ = Average value (mean)
 n = Number of respondents

3. Frequency and Percentage

To understand the distribution of responses, we will calculate the frequency and percentage of each option on the Likert scale (1-5). This will give you an idea of how many respondents voted for each value.

Formula for calculating frequency and percentage:

Frequency = Number of responses each likert category

$$\text{Percentage} = \frac{\text{Frequencies in categories}}{\text{Total number of responses}} \times 100$$

4. Satisfaction Index

To gain an overview of the participants' satisfaction levels, we can calculate the Satisfaction Index by converting the average score of the questionnaire to a scale of 0-100.

Formula for calculating the Satisfaction Index:

$$\text{Satisfaction Index} = \frac{\sum_{i=1}^n \text{Likert score on item } i}{5 \times n} \times 100$$

Where:

The Likert score on an item is the score assigned to each item (for example, 1-5).
 n is the number of participants.

Suggested Analysis Methods:

- Average Score (Mean) to measure the central tendency or majority opinion of the participants.
- Standard Deviation (SD) to find out the variation in response.
- Frequency and Percentage to understand the distribution of response choices.
- Satisfaction Index to get an overview of participants' satisfaction with training.

This analysis is quite simple and will provide clear insights into the effectiveness of the training and the level of participant satisfaction.

C. Results and Discussion

1. Results

Define abbreviations and acronyms the first time they are used in the text, even if they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, AC, DC, and RMS need not be defined. Do not use abbreviations in the title unless it is absolutely unavoidable.

Service activities are carried out through several stages, including: (1) preparation, (2) training and mentoring, (3) implementation and supervision, and (4) evaluation and improvement.

1.1 Preparation Stage

In the first stage of this community service, the team coordinated with the partner schools, which consisted of the administrators of the Indonesian Language Teachers' Association (MGMP) of SMP-MTs throughout Bengkulu City. The purpose of this coordination was to identify the various needs and challenges faced by Indonesian language teachers, especially in their efforts to develop teaching materials based on the project approach.

Based on the results of coordination with the school, the community service team has designed and compiled training materials that will be delivered to the teachers. The training aims to provide a deeper understanding of various important concepts in teaching. The prepared materials include: (1) introduction and deepening of the basic principles of the Merdeka Curriculum, which will be the basis for implementing current teaching practices, (2) understanding to teachers the importance of developing teaching materials with a project-based approach to encourage students' active involvement in the learning process, and (3) providing knowledge about techniques that can be applied in developing project-based teaching materials that are following the demands and guidelines of the applicable curriculum.

The results of this coordination form a crucial basis for implementing the training at a later stage, as well as ensuring that the materials to be delivered are truly aligned with the needs and challenges faced by the teachers. With an in-depth understanding of the existing problems, the training can be designed to be more targeted and effective in providing solutions for developing teacher competence in implementing project-based teaching materials following the applicable curriculum.

1.2 Training and Mentoring Stage

In the training and mentoring sessions, the service team and Indonesian language teachers engaged in very interactive and productive activities. The activity began with the presentation of material about the Merdeka Curriculum. The service team provided an in-depth explanation of the basic principles of the curriculum and how to apply it in Indonesian language teaching. The teachers showed great interest in the various ideas shared, enthusiastically discussing and asking questions about how to apply these concepts in their daily teaching and learning activities in the classroom.

Next, the team introduced a project-based teaching approach designed to enhance student engagement in learning. Teachers were given an understanding of how to design and develop project-based teaching materials, as well as how to actively involve students in each stage of learning through relevant projects. Teachers were also allowed to share their experiences and challenges they faced in developing teaching materials, which were then discussed together in question-and-answer sessions and group discussions.

The mentoring was intensive, with the service team providing direct guidance to the teachers in designing and implementing the learning project. Teachers are guided to develop lesson plans that combine the Merdeka Curriculum with a project-based approach, which can be easily adapted to the teaching context. These training and mentoring sessions not only provided new insights to the teachers, but also strengthened the spirit of cooperation between the service team and the Indonesian language teachers. All of these activities aim to enhance the quality of Indonesian language teaching in the participating schools, with a focus on implementing more creative approaches that align with current curriculum developments. Some photos from training and mentoring.



Figure 1. (a) and (b) The Implementation of Training and Mentoring Sessions

1.3 Implementation and Monitoring Stage

After the training is completed, teachers are asked to implement the project-based learning materials they have learned in their respective classes. To ensure the success of the implementation, the community service team visited the schools to conduct direct monitoring of the materials taught. During the monitoring process, the team closely observed the classroom learning. It provided constructive feedback to the teachers to help them improve their teaching quality and application of the concepts learned.

During the visit, the team assessed how teachers applied the techniques taught in the training and the extent to which project-based materials were effectively integrated into Indonesian language learning. The feedback provided aims to support the development of teachers' teaching skills, enhance the learning process, and ensure that the methods used align with the objectives of the Merdeka Curriculum. The monitoring process is expected to provide insights that can be used to refine the project-based materials and contribute to improving the quality of education in SMP-MTs schools in Bengkulu City. Some photos from the Implementation and Monitoring stage.



Figure 2. (a) and (b) Teaching and Learning Activities

1.4 Reflection and Refinement Stage

After the implementation, a reflection session was conducted with the teachers to evaluate the teaching process that had been implemented. In this session, teachers were allowed to share their experiences, the challenges they faced, and the solutions they found when teaching using project-based materials. Additionally, the teachers discussed how the project-based approach can enhance students' engagement and understanding in Indonesian lessons.

Based on the reflection results, the community service team provided feedback and suggestions to improve the project-based learning materials. The team also provided recommendations to improve aspects of the teaching process that continue to face challenges. The results of this reflection session are expected to serve as the basis for improving the quality of teaching and refining the implementation of project-based materials in the future.

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Figure 3. (a) and (b) Process Reflection and Refinement Stage

The evaluation of this training was carried out by asking participants to complete a questionnaire containing statements related to the outcomes of developing project-based teaching materials. The results of the participants' responses to the training program are presented in the following chart.

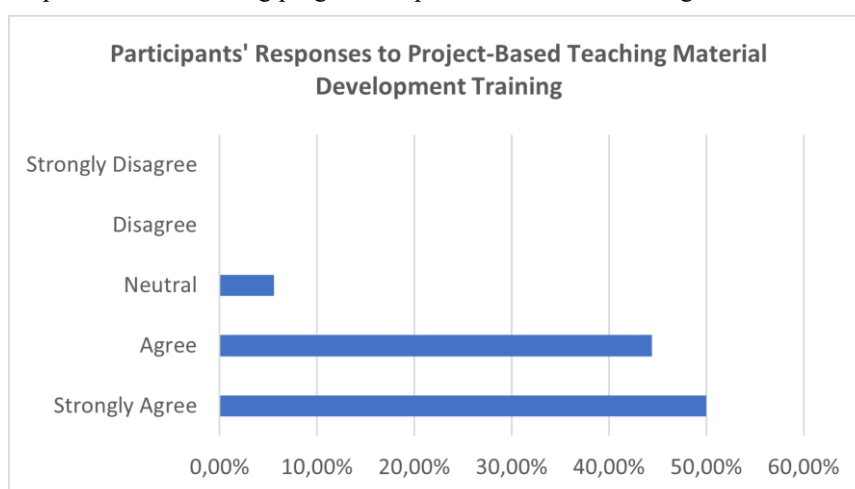


Figure 4. Project-based teaching material development questionnaire chart

Based on the diagram above, it can be concluded that the majority of participants gave very positive responses to this training. As many as 50.0% of respondents stated *Strongly Agree*, while the other 44.4% voted *Agree*. Combined, the total positive responses reached 94.4%. Only 5.6% of participants were in the *position of Doubt*, and none expressed *Disagree* or *Strongly Disagree*. This high rate of positive responses indicates that the participants consider the training approach to be highly relevant to their needs. The training is considered to be able to improve understanding and skills in compiling project-based teaching materials. The absence of negative responses is a strong indicator that the delivery of material is carried out effectively, professionally, and on target. In other words, this training not only provides valuable information but is also delivered in an engaging and easy-to-apply way. It indicates that the training has succeeded in meeting the expectations of teachers, both in terms of substance, methods, and its relationship with daily teaching practices. The very high acceptance rate also reflects a motivational drive for participants to immediately implement a project-based learning approach in their respective classrooms. Overall, these data show that training is not only appreciated but also has the potential to create a real impact in educational practices in the field.

2. Discussion

Overall, the results of the community service conducted in four stages show significant progress in empowering Indonesian language teachers in Bengkulu City. Starting from the solid preparation stage to the constructive reflection and improvement stage, each step in this process has contributed to improving teachers' skills in implementing the Merdeka Curriculum through the development of project-based learning materials.

The implications of this service are crucial for improving the quality of education, particularly in the teaching of the Indonesian language at the junior high school and MTs levels in Bengkulu City. Through

intensive training and mentoring, teachers not only gain an understanding of the Merdeka Curriculum but also develop skills in implementing a project-based learning approach that is more interactive and aligned with student needs. This approach has the potential to increase student engagement and understanding in Indonesian language lessons, which in turn can improve overall student learning outcomes.

In addition, the monitoring and reflection process conducted during this service provides an opportunity for teachers to evaluate and improve their teaching methods, thus creating a more dynamic learning environment. With constructive feedback from the service team and reflection results from the teachers, the project-based approach can be continuously improved to overcome the challenges that arise in the implementation of learning.

Some of the previous services that support are the service (Pratami et al., 2024) "Introducing Project-Based Learning Steps to the Preschool Teachers in Bandung, Indonesia", which aims to introduce practical steps for implementing PjBL to improve teacher teaching skills in early childhood education. Meanwhile, the service, "Empowering Indonesian Language Teachers through Training on Project-Based Teaching Material Development in Implementing the Merdeka Curriculum", focuses on improving teachers' skills in integrating PjBL in Indonesian Language learning. These two services have similar goals, namely improving the quality of learning through PjBL, although they differ in context and application.

The service Molina-Torres (2022) "Project-Based Learning for Teacher Training in Primary Education" aims to provide training to primary school teachers on the application of Project-Based Learning (PjBL), provide empirical evidence that supports the application of PjBL in teacher training, which is relevant to this service in the context of empowering Indonesian language teachers. Both services aim to improve the quality of education through active, creative, and contextual learning approaches.

The service carried out by Muhammad Yahya et al. (2023) with the title "Training on the Development of Teaching Modules Based on the Independent Curriculum for Productive Vocational School Teachers in Makassar City" supports the service activity "Empowering Indonesian Language Teachers through Project-Based Teaching Material Development Training in Implementing the Independent Curriculum." Both trainings focus on the implementation of the Merdeka Curriculum, which gives teachers the freedom to design learning according to student needs and local contexts. The purpose of this training is to improve teachers' ability to develop teaching materials by the principles of the Merdeka Curriculum. Both emphasize an active and collaborative approach to developing students' skills through projects.

The dedication of Maryono et al. (2023) on "Training for the Development of Teaching Modules for the Merdeka Curriculum" at SD Swasta Muhammadiyah Kuala Tungkal supports the service of "Empowering Indonesian Language Teachers" with a project-based approach. Both trainings focus on adapting teaching materials to student needs, emphasizing collaboration, creativity, and developing teacher competencies to create relevant and active learning by the Merdeka Curriculum.

Although this service has made a significant contribution to empowering Indonesian language teachers through training in developing project-based teaching materials for implementing the Merdeka Curriculum, there are several limitations. The training provided has a time limit, which restricts the discussion of material and its direct application. The short time does not allow for an in-depth study of all aspects of developing project-based teaching materials, which can affect teachers' understanding and skills in creating more complex teaching materials. Additionally, the teachers who attended the training had varying levels of experience in teaching and using project-based approaches, which influenced their understanding and application of project-based teaching materials.

2.1 Implications

Project-based teaching material development training has proven to have a positive impact on improving the quality of Indonesian learning at the junior high school and MTs levels in Bengkulu City. Teachers not only acquire technical skills, but are also encouraged to implement the Independent Curriculum more creatively and contextually. As a result, students become more active, the classroom atmosphere becomes collaborative, and learning aligns with the needs of 21st-century competencies, such as critical thinking, problem-solving, and communication and cooperation.

2.2 Research Contribution

This training contributes greatly to empowering junior high and Islamic junior high school Indonesian teachers in Bengkulu City through the PJBL approach. This activity improves teachers' competence in designing teaching materials according to the Independent Curriculum, strengthens the implementation of

PjBL in the classroom, and encourages more active, collaborative, and contextual learning. Additionally, this training model is replicable and can serve as a reference for other regions facing similar challenges.

2.3 Limitations

Although the training had a positive impact, some limitations remained, such as its short duration, which limited the in-depth discussion of the material, especially its technical aspects. Differences in participants' experiences also lead to gaps in understanding PjBL. Additionally, there is no continuous mentoring system in place to monitor implementation in schools.

2.4 Suggestions

To improve the effectiveness and sustainability of the program, it is recommended that gradual follow-up training for teachers who are new to PjBL, regular mentoring and supervision in schools, the establishment of a community of practice as a forum for sharing experiences, and the implementation of long-term evaluations to assess the impact of training on the quality of learning and student learning outcomes.

D. Conclusion

The teachers attended the training with enthusiasm and active involvement throughout. During the training sessions, they enthusiastically participated in preparing project-based learning materials that could be applied in their respective classes. Overall, this community service showed significant results in empowering Indonesian language teachers at SMPN and MTsN Bengkulu City. From the careful preparation stage to the constructive reflection and refinement stage, each step in this process contributes to improving teachers' skills to implement the Merdeka Curriculum through the development of project-based learning materials.

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F. Author Contribution Statement

RK, as chair, lead author, and correspondence author, was responsible for planning, drafting, and revising the manuscript. ER, as a member, contributed to data collection, analysis, and writing the discussion section of the manuscript. YP, as a member, contributed to the data collection and methodology of the manuscript.

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