Indonesian Journal of Islamic Education

IndonesianJournalofIslamicEducation
Volume 1 (4) 726– 734 December 2024
ISSN: In Process
The article is published with Open Access at: https://journal.maalahliyah.sch.id/index.php/ijie/index

The Application of Project-Based Learning Methods to Clean Living Materials and Caring for the Environment can Increase Awareness of Environmental Cleanliness of 2nd Grade Students of SDN 100702 Napa

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Abstract
This study aims to analyze the effectiveness of the application of the Project-Based Learning (PBL) method in increasing the awareness of second grade students of SDN 100702 Napa towards environmental cleanliness. PBL is a learning method that encourages students to actively learn through real projects that are relevant to daily life. This study uses a quantitative and qualitative approach with data collection techniques in the form of observation, interviews, and tests before and after the application of the PBL method. The results of the study show that the PBL method is able to increase students' understanding of the importance of living clean and caring for the environment. Students become more active in keeping the school clean, disposing of garbage in its place, and participating in various cleaning activities. In addition, they also show an increased attitude of responsibility in caring for the environment, both at school and at home. Several projects carried out, such as making hygiene posters, environmental care campaigns, and direct practice of cleaning the school environment, help students understand the concept of cleanliness more deeply. The conclusion of this study shows that the application of the PBL method is effective in instilling the values of cleanliness and environmental concern from an early age. With this approach, students not only understand the material theoretically, but are also able to apply it in everyday life. Therefore, the PBL method can be an innovative and effective learning strategy in Islamic Religious Education to increase students' environmental awareness.
Keywords: Project-Based Learning, environmental cleanliness, student awareness, Islamic Religious Education, elementary school.

INTRODUCTION

This study aims to analyze the effectiveness of the Project-Based Learning (PBL) method in increasing the awareness of grade II elementary school students on environmental cleanliness. PBL is a project-based learning method that allows students to learn through direct experience and the completion of tasks relevant to daily life (Kurniawan, 2021). Thus, students not only gain a theoretical understanding of the importance of living clean and caring for the environment, but are also encouraged to apply them directly in their daily lives.

Awareness of environmental cleanliness is an important aspect that needs to be instilled from an early age. A clean environment not only reflects good habits, but also has a significant

impact on the health and well-being of students. However, in practice, there are still many students who do not care about the cleanliness of the school environment. Therefore, more innovative learning methods are needed to improve understanding and good habits in maintaining cleanliness.

According to research conducted by Sari & Nugroho (2022), project-based learning methods have been proven to increase student involvement and form positive habits in maintaining a clean school environment. Students who learn through real projects are more likely to understand concepts that are taught well because they experience the process firsthand. It also strengthens their awareness of the importance of cleanliness and its impact on daily life.

In addition to improving understanding, this study also aims to identify the extent to which the PBL method can increase students' active participation in maintaining the cleanliness of the classroom, school, and surrounding environment. In traditional learning models, students tend to only passively accept material without actually applying it. With the PBL method, students are invited to think critically, work together, and find real solutions to hygiene problems in their environment.

A project-based approach is believed to be able to provide a more meaningful learning experience, especially in building ecological awareness from an early age (Putri et al., 2023). When students are actively involved in environmental cleanliness projects, they not only gain new insights but also develop a responsible attitude towards the surrounding environment. This is important in shaping the character of students who care about the environment in the long term.

In this study, the PBL method was applied through various activities such as making hygiene posters, environmental care campaigns, and direct practice in cleaning the school environment. This activity is designed so that students not only understand the concept of cleanliness but also feel the real benefits of a clean and healthy environment. With this approach, it is easier for students to internalize the values of cleanliness and apply them in their daily lives.

In addition to improving students' understanding and participation, this study also evaluates the impact of PBL on their attitudes and habits. Students involved in hygiene projects show increased awareness of the importance of keeping the environment clean. They began to get used to throwing garbage in its place, cleaning the classroom regularly, and inviting their friends to take part in keeping the school clean.

Furthermore, students' involvement in hygiene projects also improves their ability to work together and communicate. In activities such as environmental campaigns, students learn to convey messages in an effective and persuasive way. They also develop social skills that are useful in daily life, such as sharing tasks, discussing, and solving problems collectively.

This research is expected to contribute to the world of education, especially in developing more effective learning strategies in the field of Islamic Religious Education. Project-based learning not only helps students understand the values of cleanliness in Islam but also instills awareness that maintaining cleanliness is part of worship. With the right approach, religious education can be more relevant and easily applied in daily life.

In Islamic teachings, cleanliness is part of faith, as mentioned in the hadith of the Prophet Muhammad PBUH which states that "cleanliness is part of faith" (HR. Muslim). Therefore, the application of the PBL method in Islamic Religious Education learning can be an effective means in shaping the character of students who are more concerned about cleanliness as part of their worship.

In addition to providing benefits for students, the results of this research can also be a reference for teachers in designing more innovative learning methods. If the PBL method proves to be effective in increasing students' hygiene awareness, then this approach can be applied in a variety of other subjects. For example, in science lessons, PBL can be used to teach the concepts of recycling and waste utilization.

On the other hand, the implementation of PBL can also be a solution for schools in improving the overall cleanliness of the environment. By involving students in cleanliness projects, schools can create a culture of sustainable environmental care. This is not just a temporary program, but it can become a growing habit among students, teachers, and other education personnel.

With this research, it is hoped that schools and educators will be more aware of the importance of more interactive and real-experience learning methods. The PBL method offers an

approach that is not only effective in delivering subject matter, but also shapes the character of students who are responsible, critical, and socially caring.

In conclusion, the PBL method has proven to be effective in increasing students' awareness of environmental cleanliness. Through various projects carried out, students can better understand the importance of clean living and apply it in their daily lives. Therefore, the PBL method can be an innovative and relevant learning strategy to be applied in education, especially in shaping the character of students who care about cleanliness and the environment.

METHODS

This study uses quantitative and qualitative approaches to analyze the effectiveness of the Project-Based Learning (PBL) method in increasing the awareness of grade II elementary school students on environmental cleanliness. The quantitative approach was used to measure changes in students' understanding through the results of the evaluation before and after the application of the PBL method, while the qualitative approach was used to analyze student responses and the obstacles faced in the application of this method.

The data sources in this study consist of primary data and secondary data. Primary data was obtained directly from the results of observation of learning activities in the classroom, interviews with teachers and students, and evaluation results in the form of tests before and after the application of the PBL method. Observations were made to see the extent to which students were active in environmental cleanliness projects as well as how they responded to this method.

Interviews with teachers aim to understand the obstacles and advantages in implementing PBL in the classroom. Teachers as facilitators have an important role in directing students so that this method can be applied effectively. In addition, interviews with students were conducted to find out their understanding before and after participating in the cleanliness project, as well as how the PBL method affected their attitude towards environmental cleanliness.

Meanwhile, secondary data was obtained from various literature, research journals, textbooks, and education policy documents relevant to the application of PBL methods and environmental education at the elementary school level. The literature used in this study dates from 2020 onwards to ensure that the research is based on the latest studies on innovative learning methods and their impact on student awareness.

The data obtained were analyzed using qualitative and quantitative descriptive analysis techniques. At the qualitative analysis stage, data from observation and interviews are analyzed through three main steps, namely data reduction, data presentation, and conclusion drawn. Data reduction was carried out by sorting out relevant information from observation and interview results, then presented in the form of a descriptive narrative to describe student response patterns and obstacles faced in the application of the PBL method.

Furthermore, in quantitative analysis, data from the results of student evaluations before and after the application of the PBL method were analyzed using a descriptive statistical method. The average scores of the pre-test and the final test (post-test) were compared to measure the improvement of students' understanding of environmental cleanliness. In this way, the effectiveness of the PBL method can be objectively tested based on student learning outcomes.

In addition, the percentage of student involvement in cleaning projects was also analyzed to find out the extent to which this method increased their participation in maintaining school cleanliness. Student participation can be measured through the number of students who are active in activities, such as making hygiene posters, environmental campaigns, and real actions in cleaning the school environment.

The results of these two analysis methods will be used to draw conclusions regarding the extent to which the Project-Based Learning method can increase students' awareness of environmental cleanliness. In addition, this study will also provide an overview of the advantages and challenges in the application of the PBL method in the elementary school environment.

Based on the results of the analysis, this study is expected to provide recommendations for educators in developing more effective learning strategies. If the PBL method is proven to be able to increase students' understanding and participation in maintaining a clean environment, then this approach can be applied more widely in various other subjects to create more interactive and

meaningful learning.

Thus, this research not only contributes to improving the quality of learning in elementary schools, but also encourages the formation of the character of students who are more concerned about cleanliness and the environment from an early age. Through the application of the right learning methods, students can understand that maintaining cleanliness is not just an obligation at school, but is also an important part of daily life.

RESULTS

The results of this study show that the application of the Project-Based Learning (PBL) method in learning clean living materials and caring for the environment has a positive impact on the awareness of grade II students of SDN 100702 Napa. Observations during the learning process show that students are more active in various cleaning project activities, such as making educational posters, community service work cleaning classrooms, and campaigns to maintain the cleanliness of the school environment. This activity makes students better understand the concept of hygiene not only in theory, but also in daily practice.

Before the implementation of the PBL method, many students still did not understand the importance of environmental cleanliness. This can be seen from their habit of often throwing garbage carelessly and are not active in maintaining the cleanliness of the classroom. However, after the PBL method was applied, students showed significant changes, both in terms of understanding and behavior.

The data from the evaluation of students' understanding of environmental cleanliness materials was collected through a pre-test before the application of the PBL method and a post-test after the application of the PBL method. The results of the pre-test showed that only 45% of students were able to answer questions correctly related to environmental cleanliness and its impact on health. However, after project-based learning, post-test results showed a significant improvement in comprehension, with 85% of students answering correctly.

In addition to cognitive comprehension, this study also observed changes in student behavior. Before the implementation of the PBL method, there were still many students who did not dispose of garbage in its place and did not care about classroom cleanliness. After the cleanliness project was carried out, the number of students who actively threw garbage in place increased by 70%. In addition, more than 80% of students began to show concern for environmental cleanliness by inviting and reminding their friends to always maintain cleanliness.

From the results of the evaluation, it can be seen that there is an increase in students' understanding of environmental cleanliness in all indicators. This increased understanding shows that the PBL method provides a more effective learning experience compared to conventional learning methods. This proves that direct involvement in cleanliness projects is able to shape students' mindset regarding the importance of protecting the environment.

In addition to cognitive understanding, this study also measured changes in student behavior through observation and interviews with teachers and students. After the PBL method was applied, students became more disciplined in maintaining cleanliness, such as throwing garbage in its place, cleaning the classroom regularly, and actively reminding their friends to maintain a clean environment.

The most prominent behavioral changes were seen in students' habits in reminding friends to keep clean. Before PBL was implemented, only about 20% of students actively reminded their friends, but after the implementation of this method, the figure increased to 80%. This shows that the PBL method not only has an impact on individual awareness, but also encourages the formation of a culture of mutual cooperation among students.

Observations also showed that students were more enthusiastic about participating in cleaning projects compared to regular learning methods. They are more motivated to participate in real-life activities related to the learning material. This proves that a project-based approach can increase student engagement in the learning process.

The teachers involved in the study stated that the PBL method was more effective in attracting students' attention and making them better understand the importance of

environmental cleanliness compared to the lecture method. With real projects, students will more easily understand the impact of environmental cleanliness on their own health and comfort.

Interviews with some students also showed that they felt more responsible for cleanliness after participating in project-based activities. Some students even began to implement clean living habits at home and invited their family members to care more about the environment. This shows that the impact of the PBL method is not only limited to the school environment, but can also affect students' habits outside of school.

Thus, it can be concluded that Project-Based Learning (PBL) has proven to be effective in increasing students' understanding and awareness of environmental cleanliness. In addition to improving theoretical understanding, this method also forms positive behaviors that can continue in daily life. Therefore, the application of the PBL method is recommended to continue to be used in learning, especially on materials that require direct involvement of students in real life.

To ensure the validity of the data obtained, triangulation was carried out through observation, interviews, and evaluation tests. The results of the observations were compared with interview data from teachers and students to see the consistency of behavior change. The teacher stated that students were more enthusiastic in participating in learning activities with the PBL method compared to the conventional method.

Students also revealed that project-based learning is more enjoyable and makes them more aware of the importance of environmental cleanliness. They feel that direct involvement in cleaning activities makes them better understand the impact of their own actions on the surrounding environment.

In addition, the results of the pre-test and post-test tests are statistically analyzed to ensure that the improvement in student understanding is not a result of chance. The increase in the average score shows a positive impact of the application of the PBL method. This data is reinforced by photo and video documentation during project activities, which show changes in student behavior in maintaining the cleanliness of the school environment.

In terms of effectiveness, the PBL method has also been proven to be able to increase cooperation between students. They learn to work in groups, share tasks, and help each other in achieving common goals. This reflects how the PBL method can build important social skills for students from an early age.

In addition, the application of the PBL method in environmental hygiene materials also provides long-term benefits. Clean living habits formed during the learning process can continue to be applied by students in their daily lives. Thus, this method not only contributes to learning in school, but also in shaping the character of students.

The study also shows that students' active involvement in environment-based projects can serve as an example for the school community as a whole. When students are actively keeping clean, they can also influence other friends, including higher or lower grades, to participate in maintaining the school environment.

With the results of these findings, it can be concluded that the Project-Based Learning method has proven to be effective in increasing students' awareness of environmental cleanliness, both in terms of understanding concepts and real behavior in schools. Therefore, this approach can be a broader strategy in learning, especially for material related to real life.

Based on the results of the research, it is recommended that schools apply the PBL method more often in various subjects. That way, students not only gain theoretical understanding but also real experiences that can shape their positive character and habits.

With the support of schools and teachers, the PBL method can continue to be developed to improve the quality of learning at the elementary school level. This will not only have an impact on students' academic understanding, but also on the formation of their character in daily life.

DISCUSSION

To ensure the accuracy and validity of the data in this study, the data validation process was carried out using the triangulation method, namely by comparing the results of various data collection techniques, such as observation, interviews, evaluation tests (pre-test and post-test), and documentation. This triangulation is important to minimize bias and ensure that increased

understanding and changes in student behavior are truly due to the application of the Project-Based Learning (PBL) method.

Observations were made to see firsthand the involvement of students in environmental cleanliness projects, while interviews with teachers and students were used to obtain a subjective perspective on the effectiveness of the PBL method. In addition, the results of the pre-test and post-test were statistically analyzed to measure the improvement of student comprehension quantitatively.

In addition to triangulation of the method, validation is also carried out through expert validation, by asking for opinions from classroom teachers, principals, and education experts regarding the effectiveness of the application of the PBL method in increasing environmental cleanliness awareness. The classroom teacher provided input on the changes in student behavior from day to day, while the principal confirmed that the cleaning program had a positive impact on the overall school environment.

Based on the results of data validation, it was found that the Project-Based Learning (PBL) method had a significant positive impact on students' understanding and behavior in maintaining the cleanliness of the environment. Validation is carried out by comparing the results of observations with evaluation tests and interviews, as well as conducting simple statistical analysis of the results of the pre-test and post-test.

The validation results showed that the average score of students increased from 55 (pre-test) to 85 (post-test), with a significant level of increase of 30 points. This shows that students not only experience an improvement in the understanding of the concept of environmental cleanliness, but also in the application of clean living habits in schools.

In addition to academic improvement, the validation results also showed changes in student behavior observed through observation and interviews. Before the implementation of the PBL method, only about 30% of students actively threw garbage in its place, but after the cleanliness project was implemented, the number increased to 70%. Likewise, the students' habits in cleaning the classroom and reminding their friends to maintain cleanliness, which increased from 35% to 75% and from 20% to 80%, respectively.

From the results of interviews with teachers, it is known that the PBL method attracts more students' attention compared to the conventional method. Teachers stated that students are more enthusiastic about participating in learning because they feel directly involved in projects that have a real impact on the school environment.

This is in line with research conducted by Putri et al. (2023) which states that project-based learning is able to increase student involvement and responsibility in maintaining environmental cleanliness from an early age. Thus, the application of the PBL method not only has an impact on the school environment, but can also form positive character and habits in students.

From the results of the photo and video documentation during the learning process, it appears that the students are really engaged in the cleaning project with great enthusiasm. They not only follow the teacher's instructions, but also develop their own initiatives in maintaining the cleanliness of the school environment.

Some students even said that they began to implement clean living habits at home and invited their families to participate in maintaining cleanliness. These changes suggest that the PBL method can have long-term effects that go beyond the classroom.

With the results of this validation, it can be concluded that Project-Based Learning (PBL) not only improves students' academic understanding of environmental cleanliness, but also forms positive habits that can last in the long run.

Therefore, this method is recommended to be applied in other learning that requires the direct involvement of students in real life. Teachers are advised to develop real-world problem-based projects to make students more motivated and have a more meaningful learning experience.

In addition, schools can consider making the PBL method the primary approach in subjects related to environmental education. Thus, learning will be more applicable and able to create higher environmental awareness in students.

Support from schools, teachers, and parents is needed to implement this method effectively. With synergy between all parties, project-based learning outcomes can be more optimal and have a wider positive impact.

This study provides empirical evidence that learning approaches that actively involve students can improve learning effectiveness. Therefore, the PBL method needs to continue to be developed and applied in various learning contexts.

With various proven benefits, the PBL method can be an innovative strategy in the world of education, especially in forming environmental awareness among elementary school students. The success of this method can also serve as a basis for further research in the field of education and project-based curriculum development.

CONCLUSION

Based on the results of the research, it can be concluded that the application of Project-Based Learning (PBL) in learning clean living materials and caring for the environment has a significant positive impact on the awareness of 2nd grade students of SDN 100702 Napa. The main findings of this study show that the PBL method is successful in improving student understanding, changing behavior in a more positive direction, and increasing student participation and enthusiasm in learning.

The increase in student understanding can be seen from the results of the pre-test and post-test which show a significant increase in understanding the importance of environmental cleanliness. Before the implementation of the PBL method, only 45% of students were able to correctly answer questions related to environmental cleanliness, while after the implementation of this method, the number increased to 85%. This proves that the PBL method is able to help students understand the concept of environmental cleanliness more deeply compared to conventional learning methods.

In addition to increasing understanding, the PBL method also encourages positive behavior changes in students. Based on the results of observations and interviews with teachers and students, it was found that before project-based learning, only 30% of students actively threw waste in its place. However, once this method was applied, the figure increased to 70%. In addition, 80% of students began to actively remind their friends to maintain cleanliness. This shows that the PBL method not only provides theoretical understanding, but also forms positive habits in daily life.

In terms of student participation and enthusiasm, the PBL method attracts their attention more than conventional learning methods. Students become more enthusiastic about participating in learning activities because they feel directly involved in projects that have a real impact on the school environment. This active involvement makes it easier for them to understand the material being taught and increases their motivation to learn.

In terms of academic impact, this study shows that the PBL method not only helps to improve students' understanding of the concept of environmental cleanliness but also develops critical thinking, problem-solving, and teamwork skills in completing projects. Students learn through hands-on experience that makes it easier for them to remember and understand the material being taught.

In addition to academic impact, the PBL method also contributes socially by forming clean living habits from an early age, which has the potential to have a long-term impact in building a generation that cares more about the environment. Students who already have a high awareness of environmental cleanliness in school are also starting to implement the habit at home and in their communities. This suggests that project-based learning can have a wider positive effect, not only for students but also for their social environment.

With the various benefits that have been proven in this study, the Project-Based Learning method is recommended to be applied in other learning, especially on materials that demand students' active involvement in real life. Thus, this method can be one of the innovative strategies in increasing the effectiveness of learning, both from the academic aspect and the formation of students' social character. Support from teachers, schools, and parents is needed in optimizing the application of this method so that the benefits can be felt more widely and sustainably.

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