STRENGTHENING ENVIRONMENTAL CARE CHARACTER THROUGH PROJECT-BASED LEARNING IN PANCASILA EDUCATION IN ELEMENTARY SCHOOLS

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ABSTRACT

This study aims to enhance students' environmental care attitudes through the implementation of the Project-Based Learning (PBL) model in Pancasila Education for fifth-grade students at State Elementary School 29/VII Lubuk Sayak. The research employed a classroom action research approach using the Kemmis and McTaggart model, conducted in two cycles, each consisting of planning, action implementation, observation, and reflection stages. The research subjects comprised 19 students. Data were collected through observations, an environmental care attitude questionnaire, and documentation. Data analysis was carried out using descriptive quantitative and qualitative methods. The results indicate a significant improvement in students' environmental care attitudes. In the pre-cycle stage, the percentage of mastery of environmental care attitudes was 35%, categorized as low. After the implementation of Project-Based Learning in Cycle I, the mastery percentage increased to 70%, categorized as fairly good. Furthermore, in Cycle II, the mastery percentage reached 95%, categorized as very good. This improvement was accompanied by increased student learning activities and teacher teaching activities, which reached 92.5% in Cycle II. These findings demonstrate that the Project-Based Learning model is effective in enhancing elementary school students' environmental care attitudes through contextual, collaborative, and character-oriented learning. Therefore, Project-Based Learning can be considered an alternative instructional model in Pancasila Education to strengthen environmental care character in accordance with the values of the Pancasila Student Profile.

Keywords: Project-Based Learning; environmental care attitude; Pancasila Education; elementary school

A. Introduction

Environmental degradation has emerged as one of the most critical global challenges of the twenty-first century, affecting ecological balance, public health, and the sustainability of human life. Problems such as increasing waste production, environmental pollution, excessive use of natural resources, and declining ecological awareness demonstrate that environmental issues are not solely technical or structural in nature. Rather, they are deeply rooted in human attitudes, values, and behavior (Sumarmi et al., 2024). Consequently, efforts to address environmental problems must also focus on cultivating environmental awareness and responsible character, particularly through education (Fang, Hassan, & LePage, 2023).

Education plays a fundamental role in shaping students' values, attitudes, and behaviors toward the environment. Primary education, in particular, serves as a crucial stage for character formation, as habits and moral orientations developed at an early age tend to persist into adulthood. Instilling environmental care during the elementary school years is therefore essential for fostering a generation that is conscious of sustainability and capable of responding to environmental challenges responsibly. Schools are not only institutions for academic learning but also social spaces where students learn to practice values through daily actions and interactions (Baierl, Paul, & Bogner, 2025).

In the Indonesian educational context, the cultivation of environmental care character is closely aligned with the objectives of Pancasila Education, which aims to develop students into morally grounded, socially responsible, and civic-minded individuals (Riyanto et al., 2023). Pancasila Education emphasizes the internalization of national values such as responsibility, mutual cooperation, and respect for the common good. Environmental care can be understood as a concrete manifestation of these values, as it reflects students' sense of responsibility toward their surroundings and their commitment to maintaining harmony between humans and nature. Moreover,

strengthening environmental character is consistent with the vision of the Profile of Pancasila Students, which highlights holistic character development alongside academic competence (Arent, Sumarmi, Utomo, & Ruja, 2020).

Despite these objectives, classroom practices in primary schools often reveal a gap between the ideals of Pancasila Education and their implementation. Learning activities frequently emphasize the transmission of knowledge and memorization of concepts, while opportunities for students to actively experience and practice values in real-life contexts remain limited (Nurmala, Astiti, Fitri, & Wuryandani, 2025). As a result, character education, including environmental care, tends to be treated as an abstract concept rather than a lived experience. This condition may hinder the development of students' environmental awareness and prevent values from being translated into consistent behavior (Ardoin, Bowers, & Gaillard, 2020).

Preliminary observations conducted in Grade V of State Elementary School 29/VII Lubuk Sayak, Sarolangun Regency, indicate that students' environmental care attitudes were relatively low prior to the intervention. This situation was reflected in everyday behaviors such as littering, neglecting classroom cleaning duties, wasting water, and showing limited responsibility for maintaining school facilities. Although students possessed basic knowledge about cleanliness and environmental protection, this knowledge was not consistently reflected in their actions. These findings suggest that conventional instructional approaches may be insufficient for fostering meaningful character development and highlight the need for more contextual and participatory learning models.

One instructional approach that holds promise in addressing this challenge is Project Based Learning (PjBL). Project Based Learning emphasizes student-centered learning through engagement in authentic, meaningful projects that address real-world problems. By involving students in planning, implementing, and reflecting on projects, PjBL encourages active participation, collaboration, critical thinking, and responsibility. In the context of environmental education, PjBL allows students to directly

engage with environmental issues in their immediate surroundings, thereby fostering a deeper sense of ownership and care (Wibowo et al., 2024).

Through Project Based Learning, students are not merely passive recipients of information but active agents in the learning process (Kokotsaki, Menzies, & Wiggins, 2016a). They learn to identify problems, work collaboratively with peers, make decisions, and take responsibility for the outcomes of their work. These processes are highly relevant to character education, as they promote values such as discipline, cooperation, empathy, and environmental responsibility. When integrated into Pancasila Education, PjBL provides a concrete avenue for translating abstract values into observable behavior, thereby strengthening the alignment between learning objectives and character outcomes (Hidayah & Khunaivi, 2022).

Previous studies have demonstrated that Project Based Learning can enhance students' engagement, motivation, and academic achievement (Al-Abdullatif & Gameil, 2021; Al-Bahadli, Al-Obaydi, & Pikhart, 2023; Ou & Lin, 2023; Safei & Salmah, 2022). However, much of the existing research has focused primarily on cognitive learning outcomes or subject-specific competencies. Research that explicitly examines the role of Project Based Learning in strengthening environmental care character**,** particularly within the framework of Pancasila Education at the primary school level, remains relatively limited. Furthermore, studies employing classroom action research to systematically document changes in students' attitudes and behaviors over multiple learning cycles are still scarce.

Addressing this gap, the present study seeks to explore how Project Based Learning can be utilized to strengthen environmental care character among elementary school students through Pancasila Education. By employing a classroom action research design, this study not only evaluates learning outcomes but also examines the process of change in students' attitudes and behaviors across learning cycles. The focus on environmental care as a character dimension provides a nuanced understanding of how instructional strategies can contribute to holistic student development.

This study aims to improve students' environmental care attitudes through the implementation of Project Based Learning in Pancasila Education at the primary school level. The findings are expected to contribute theoretically to the discourse on character-based learning and environmentally oriented education, as well as practically to offer teachers an effective, contextual, and meaningful instructional alternative for strengthening environmental care character in elementary schools.

B. Method

This study employed a Classroom Action Research (CAR) design to strengthen students' environmental care character through the implementation of Project Based Learning (PjBL) in Pancasila Education. Classroom Action Research was selected because it emphasizes reflective and cyclical improvement of instructional practices within authentic classroom contexts. This design is particularly appropriate for character education research, as changes in students' attitudes and behaviors are best observed through continuous engagement and reflection rather than through one-time measurement (Kemmis, McTaggart, & Nixon, 2014).

The research was conducted at State Elementary School 29/VII Lubuk Sayak, Sarolangun Regency, Indonesia, involving a Grade V classroom. All students in the class participated in the study, representing diverse academic abilities and social backgrounds commonly found in public elementary schools (Creswell & Guetterman, 2018). The research setting was selected based on preliminary observations indicating low levels of environmental care behavior, such as lack of discipline in maintaining classroom cleanliness, improper waste disposal, and limited responsibility toward shared school facilities (Fraenkel, Wallen, & Hyun, 2011). The classroom teacher collaborated with the researcher throughout the research process, particularly during the implementation and reflection stages (Kemmis et al., 2014). The instructional intervention integrated Project Based Learning into Pancasila Education by focusing on environmental care issues closely related to students' daily school experiences. Learning activities were designed to actively involve students

in identifying environmental problems, planning solutions collaboratively, and implementing concrete actions. Through project-based tasks, students were encouraged to take responsibility, cooperate with peers, and reflect on the relevance of their actions to Pancasila values (Kokotsaki, Menzies, & Wiggins, 2016b). This approach aimed to bridge the gap between students' cognitive understanding of values and their practical application in everyday behavior. The research was implemented through two action cycles, each consisting of planning, action, observation, and reflection stages. Prior to Cycle I, an initial observation was conducted to identify students' baseline environmental care behaviors and to inform instructional planning. Cycle I focused on introducing Project Based Learning and engaging students in simple environmental projects. Reflection at the end of this cycle revealed challenges related to student participation and the depth of reflection activities. These findings were used to refine instructional strategies in Cycle II, which emphasized clearer task distribution, improved collaboration, and more structured reflection to enhance students' environmental awareness (Elliott, 2015). Data were collected using multiple techniques to ensure comprehensive analysis and data triangulation. Observation sheets were used as the primary instrument to assess students' environmental care behaviors during learning activities, focusing on indicators such as discipline, responsibility, cooperation, and care for school facilities. Field notes were used to document classroom interactions and notable behavioral changes, while supporting documentation, including lesson plans and students' project outputs, was collected to strengthen data credibility. Data analysis combined descriptive quantitative and qualitative approaches. Observation data were converted into percentage scores to describe changes in students' environmental care character across research cycles, while qualitative data were analyzed thematically to identify patterns of behavioral development. The effectiveness of the intervention was determined based on observable improvements in students' environmental care behaviors and increased consistency in responsible

actions across the learning cycles (Cohen, Manion, & Morrison, 2017).

C.Results and Discussion

This section presents the results of the classroom action research aimed at improving Grade V students' environmental care attitudes through the implementation of Project Based Learning (PjBL) in Pancasila Education. The findings are described based on systematic observations conducted during the pre-cycle, Cycle I, and Cycle II**,** focusing on changes in students' mastery levels of environmental care attitudes as well as improvements in the quality of learning activities. Data were collected through structured observations, attitude questionnaires, and learning documentation, providing a comprehensive empirical picture of the learning process and its outcomes (Elliott, 2015).

During the pre-cycle stage, the results of the initial observation indicated that students' environmental care attitudes were generally categorized as low. Out of a total of 19 students, only 8 students (35%) met the criteria for mastery, while 11 students (65%) had not yet achieved mastery. This condition suggests that the majority of students had not consistently demonstrated environmentally responsible behaviors in their daily school activities. Observed behaviors included improper waste disposal, limited awareness of classroom cleanliness, and low responsibility toward shared school facilities.

Furthermore, observations during the pre-cycle revealed that most students tended to be passive and relied heavily on teacher instructions when engaging in activities related to environmental cleanliness. Independent initiative to maintain the classroom environment was minimal. These findings indicate that environmental care values had not yet been deeply internalized by students, even though such values had been introduced conceptually through Pancasila Education.

A summary of students' environmental care attitude mastery during the pre-cycle stage is presented in Table 1.

Table 1. Students' Environmental Care Attitude Mastery in the Pre-Cycle Stage

Description	Number of Students	Percentage
Mastery Achieved	8	35%
Not Yet Mastery	11	65%
Total	19	100%
Category		Low

The results of the pre-cycle stage served as the basis for implementing instructional improvements through the application of Project Based Learning. This learning model was introduced in Cycle I by emphasizing students' active involvement in project-based activities directly related to environmental issues within the classroom and school environment. In Cycle I, students participated in group discussions, project planning, and the implementation of simple projects focused on maintaining cleanliness and environmental order.

Observational results from Cycle I indicated an improvement in students' environmental care attitudes compared to the pre-cycle stage. The number of students achieving mastery increased to 13 students (70%), while 6 students (30%) remained in the non-mastery category. Overall, students' environmental care attitudes in Cycle I were categorized as fairly good. This improvement suggests that the implementation of Project Based Learning began to positively influence students' behaviors, particularly in terms of cooperation and group responsibility.

However, observations also revealed that the improvement was not evenly distributed among all students. Some students continued to show limited participation in project activities, especially during group discussions and task distribution. In addition, although students were involved in environmental maintenance activities, some still perceived these activities as task-oriented rather than value-driven. This indicates that the internalization of environmental care values was still at an early stage.

A summary of students' environmental care attitude mastery in Cycle I is presented in Table 2.

Table 2. Students' Environmental Care Attitude Mastery in Cycle I

Description	Number of Students	Percentage
Mastery Achieved	13	70%
Not Yet Mastery	6	30%
Total	19	100%
Category		Fairly Good

In addition to student mastery, observations of teacher and student activities during the learning process were also conducted. In Cycle I, the level of learning activity implementation reached 75%, categorized as fairly good. Teachers began to function more effectively as learning facilitators, guiding students throughout the project implementation, while students demonstrated increased engagement, although not yet optimally. Several challenges were identified at this stage, including limited time allocation for project activities and insufficient depth in learning reflection.

Based on reflections from Cycle I, instructional strategies were refined and implemented in Cycle II. These improvements included clearer task distribution within groups, strengthened student collaboration, and more structured reflection sessions at the end of learning activities. The implementation of Cycle II resulted in a substantial improvement compared to previous stages.

In Cycle II, the number of students achieving mastery in environmental care attitudes increased to 18 students (95%), while only 1 student (5%) remained in the non-mastery category. Consequently, students' environmental care attitudes in Cycle II were categorized as very good and exceeded the predetermined success indicators of the study. This improvement indicates that most students were able to consistently demonstrate environmentally responsible behaviors in both learning activities and daily school routines.

A summary of students' environmental care attitude mastery in Cycle II is presented in Table 3.

Table 3. Students' Environmental Care Attitude Mastery in Cycle II

Description	Number of Students	Percentage
Mastery Achieved	18	95%
Not Yet Mastery	1	5%

Description	Number of Students	Percentage
Total	19	100%
Category		Very Good

Observations during Cycle II revealed more tangible behavioral changes among students. Students not only completed assigned environmental maintenance tasks but also demonstrated independent initiative, such as reminding peers to dispose of waste properly, maintaining classroom order before and after lessons, and caring for school facilities without direct teacher instruction. The classroom environment appeared cleaner, more organized, and more conducive to effective learning.

Teacher and student learning activities in Cycle II also showed a significant improvement. The level of learning activity implementation increased to 92.5%, categorized as very good. Teachers managed project-based learning more effectively, while students were actively engaged in all stages of learning, including project planning, implementation, and reflection.

To provide a comprehensive overview of students' progress, a comparison of results across research stages was conducted. This comparison illustrates a consistent improvement from the pre-cycle stage through Cycle II.

Table 4. Comparison of Students' Environmental Care Attitude Mastery Across Research Stages

Stage	Students Achieving Mastery	Percentage	Category
Pre-Cycle	8	35%	Low
Cycle I	13	70%	Fairly Good
Cycle II	18	95%	Very Good

As shown in Table 4, there was a 35% increase in mastery from the pre-cycle stage to Cycle I, followed by a further 25% increase from Cycle I to Cycle II. Overall, the increase in mastery from the pre-cycle stage to Cycle II reached 60%. This trend indicates that the implemented instructional actions produced a sustained positive impact on students' environmental care attitudes.

In addition to student mastery, improvements were also observed in the quality of learning activities involving both teachers and students.

Table 5. Comparison of Teacher and Student Learning Activities

Aspect	Cycle I	Cycle II	Improvement
Teacher and Student Activities	75%	92.5%	17.5%

Overall, the results demonstrate that the implementation of Project Based Learning in Pancasila Education led to a substantial and continuous improvement in students' environmental care attitudes. The improvement was reflected not only in quantitative indicators, such as mastery percentages, but also in qualitative changes in students' behaviors related to maintaining and caring for the school environment.

This study set out to examine how the implementation of Project Based Learning (PjBL) in Pancasila Education could improve elementary school students' environmental care attitudes, particularly among Grade V students at SD Negeri 29/VII Lubuk Sayak. The findings reveal a clear and consistent improvement in students' environmental care attitudes across the pre-cycle, Cycle I, and Cycle II stages. This discussion interprets these findings by situating them within relevant educational theories, previous empirical studies, and the broader context of character education in elementary schools.

The low level of environmental care attitudes observed during the pre-cycle stage highlights a common challenge in character education, particularly when moral and civic values are taught predominantly through conceptual or teacher-centered approaches. Although environmental care is implicitly embedded within the values of Pancasila, especially in relation to social responsibility and collective well-being, the findings suggest that students had not yet internalized these values into daily behavior. This supports the view that character education cannot rely solely on cognitive understanding, but must also involve experiential and contextual learning processes that allow students to practice values in real-life situations (Jeynes, 2019).

The initial condition found in this study aligns with previous research indicating that elementary students often demonstrate limited environmental responsibility when learning activities emphasize memorization rather than active

engagement. At the pre-cycle stage, students' behaviors—such as littering, neglecting classroom cleanliness, and lack of responsibility toward shared facilities—reflect what character education scholars describe as a value–behavior gap**,** where students may recognize desirable behaviors but fail to enact them consistently. This gap underscores the need for instructional models that bridge knowledge and action (Chuang, Tsai, & Lu, 2025).

The introduction of Project Based Learning in Cycle I marked a significant shift in the learning process. PjBL emphasizes student-centered learning, collaboration, and problem-solving through authentic projects. In this study, environmental care projects required students to actively engage with issues within their immediate school environment, thereby making learning more meaningful and relevant. The observed increase in mastery from 35% in the pre-cycle stage to 70% in Cycle I suggests that PjBL effectively initiated behavioral change by positioning students as active participants rather than passive recipients of information (Mufadilah, Anggraini, & Haryono, 2025).

However, the results from Cycle I also reveal that initial exposure to project-based learning is not sufficient to fully internalize character values. Although students showed improved engagement and cooperation, some still viewed environmental care activities as obligations rather than personal responsibilities. This finding supports constructivist learning theory, which emphasizes that meaningful learning occurs gradually as learners actively construct understanding through repeated experiences and reflection. Character development, therefore, should be seen as a process, not an immediate outcome.

The reflections conducted after Cycle I played a crucial role in refining instructional strategies for Cycle II. Improvements such as clearer task allocation, stronger teacher facilitation, and structured reflection sessions enhanced the effectiveness of PjBL implementation. These adjustments align with the notion that successful project-based learning requires careful scaffolding, especially for younger learners who are still developing self-regulation and collaborative skills.

The dramatic improvement observed in Cycle II, where mastery increased to 95%, demonstrates the cumulative impact of well-implemented PjBL on students' environmental care attitudes. At this stage, students not only completed assigned tasks but also demonstrated autonomous and spontaneous environmentally responsible behaviors**,** such as reminding peers to maintain cleanliness and organizing the classroom without teacher prompts. This shift from compliance-based behavior to self-initiated action is a critical indicator of value internalization.

From a character education perspective, this finding is particularly significant. It suggests that PjBL does more than improve observable behavior; it facilitates the internalization of values by embedding them within meaningful social interactions and real-world problem-solving contexts. This supports experiential learning theory, which posits that learning is most effective when students actively engage in concrete experiences followed by reflection and application.

The improvement in teacher and student activity levels also reinforces the effectiveness of PjBL. The increase from 75% in Cycle I to 92.5% in Cycle II indicates that both teachers and students became more adept at navigating project-based learning processes. Teachers shifted from directive instruction to facilitative guidance, while students became more confident and collaborative learners. This reciprocal improvement highlights the dynamic nature of classroom action research, where changes in teaching practices directly influence student outcomes.

Another important aspect of the findings is the alignment between PjBL and the goals of Pancasila Education. Pancasila emphasizes values such as mutual cooperation, responsibility, and respect for the environment. By engaging students in collaborative projects focused on environmental care, PjBL operationalizes these abstract values into concrete actions. This pedagogical alignment strengthens the relevance of PjBL as a model for value-based education in the Indonesian context (Melindawati, Sartono, Wuryandani, & Fatimah, 2025).

The findings of this study are consistent with previous research

demonstrating the positive impact of project-based learning on students' environmental awareness and social responsibility. Numerous studies have shown that PjBL enhances students' motivation, critical thinking, and collaboration skills, which are essential for developing pro-environmental attitudes. However, this study contributes to the literature by providing empirical evidence at the elementary school level**,** particularly within the context of Pancasila Education, which remains underexplored in existing research.

Moreover, this study highlights the importance of iterative instructional cycles in character education. The significant improvement observed in Cycle II underscores the value of continuous reflection and refinement in teaching practices. Character development is not achieved through a single intervention, but through sustained and responsive instructional efforts that adapt to students' needs and learning progress.

The findings also suggest that environmental care attitudes are closely linked to students' sense of ownership and agency within the learning process. When students are given responsibility for planning and implementing projects, they are more likely to develop a sense of accountability toward their environment. This aligns with self-determination theory, which emphasizes autonomy, competence, and relatedness as key factors in motivating behavior change.

In addition, the collaborative nature of PjBL appears to strengthen social norms related to environmental care. Through group work and peer interaction, students collectively negotiate and reinforce desirable behaviors. This social dimension is particularly important in elementary education, where peer influence plays a significant role in shaping attitudes and behaviors.

Despite its strengths, this study also acknowledges certain limitations that should be considered when interpreting the results. The research was conducted in a single school with a relatively small sample size, which may limit the generalizability of the findings. Additionally, the assessment of environmental care attitudes relied primarily on questionnaires and observations, which, although validated, may still be influenced by subjective interpretation. Future

research could incorporate longitudinal designs or mixed-method approaches to further examine the sustainability of behavioral changes.

Nevertheless, the substantial improvement observed across the research cycles provides strong evidence of the effectiveness of Project Based Learning in fostering environmental care attitudes among elementary students. The findings underscore the potential of PjBL as a pedagogical approach that not only enhances academic learning but also supports the development of essential character values.

In practical terms, this study offers important implications for teachers, school administrators, and curriculum developers. Teachers are encouraged to integrate project-based activities into Pancasila Education to promote active learning and value internalization. Schools can support this approach by providing adequate resources and fostering a culture that values environmental responsibility. Curriculum developers may consider emphasizing experiential learning models that align with national character education goals.

In conclusion, the discussion of findings demonstrates that Project Based Learning serves as an effective and meaningful approach to improving students' environmental care attitudes within Pancasila Education. By engaging students in authentic, collaborative, and reflective learning experiences, PjBL facilitates the internalization of environmental values and promotes sustained behavioral change. This study contributes to the growing body of literature on character education by offering empirical evidence of how instructional design can bridge the gap between moral understanding and real-world behavior, particularly in the context of elementary education.

E. Conclusion

Based on the results of this classroom action research, it can be concluded that the implementation of *Project Based Learning* (PjBL) in Pancasila Education is effective in improving Grade V students' environmental care attitudes. The improvement occurred gradually and consistently across the research cycles. During the pre-cycle stage, students' environmental care attitudes were relatively low, with only 35% of students achieving mastery. Following the implementation of PjBL in Cycle I,

the mastery level increased to 70%. A more substantial improvement was observed in Cycle II, in which mastery reached 95%, exceeding the predetermined success indicators.

In addition to the quantitative gains, this study also revealed meaningful qualitative changes in students' behavior. In Cycle II, students demonstrated greater independence and initiative in maintaining classroom cleanliness, disposing of waste properly, and taking care of shared school facilities without continuous teacher supervision. These behavioral changes indicate that environmental care values were not merely understood at a conceptual level but had begun to be internalized and reflected in students' daily practices. Furthermore, the increased levels of teacher and student learning activities suggest that PjBL fosters a more active, collaborative, and student-centered learning environment.

Based on these findings, it is recommended that Pancasila Education teachers integrate project-based learning as a strategic approach to character education, particularly in cultivating environmental responsibility. Schools are encouraged to support the implementation of PjBL by providing adequate facilities and fostering a school culture that promotes environmental awareness. Future research is suggested to involve a broader range of schools and grade levels, as well as to employ longitudinal designs to examine the sustainability of students' environmental care attitudes over time.

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