
A Study on Environmental Care Attitudes and Responsibilities in Science Learning among Elementary School Students

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Abstract

This study was motivated by the low level of students' environmental awareness and responsibility, the suboptimal implementation of school regulations, limited facilities, and minimal socialization at SD Negeri 28 Peusangan. The study aimed to describe the implementation of school programs in developing students' environmental awareness and responsibility in Science Learning. This study employed a qualitative approach and was conducted at SD Negeri 28 Peusangan. Key informants consisted of teachers, students (Grades III and VI), and the principal. Data were collected through structured interviews, and were validated using source triangulation and member checking. Data analysis was carried out using qualitative descriptive methods, namely data reduction, data presentation and conclusions. The results showed that the program implementation was carried out systematically and hierarchically, supported by strong collaboration among school leadership policies, teacher mentoring, and active student participation. Students' attitude transformation evolved from reactive compliance in lower grades to intrinsic awareness and proactive leadership in higher grades. The development strategies focused on integrating values through developmentally oriented habituation, combining role modeling with the provision of tangible facilities, and evolving from reward-based approaches to full trust and project-based responsibility in Science Learning. The core strategy was positioning students as agents of change, enabling responsibility to grow from a sense of ownership of the school environment.

Keywords: Implementation, Environmental Care, Responsibility, Elementary School, Character Education, Science Learning.

1. Introduction

Environmental issues such as climate change, pollution, and biodiversity loss have become major global challenges that require immediate attention. Education plays a crucial role in developing students' awareness, attitudes, and responsibilities toward environmental sustainability from an early age. Education is essential in shaping values, attitudes, and behaviors that support sustainable development. Therefore, integrating environmental education into elementary science learning is fundamental in building environmentally responsible citizens. Elementary school students are at a critical stage of character and attitude formation. At this level, students begin to develop habits and values that influence their behavior in later life. Tilbury (2015) states that "early environmental education helps learners develop long-term commitment to environmental protection." Science learning provides an effective medium for introducing environmental concepts because it is closely related to natural phenomena and daily life experiences. Science learning in elementary schools is not only aimed at developing students' understanding of scientific concepts, but also at shaping their attitudes and responsibilities toward the environment. Through science lessons, students learn about living organisms, ecosystems, natural resources, and environmental changes that occur in daily life. Science education should help students connect scientific knowledge with real-world issues. Therefore, science learning serves as a fundamental platform for fostering environmental care and responsible behavior.

Current environmental problems have reached a global scale and have a significant impact on human life, especially plastic waste. Many people still lack awareness of environmental cleanliness. This will ultimately result in a decline in environmental quality (Likia, 2024). This indicates a decline in environmental quality that is an integral part of community life (Rahayu, 2023). The school environment is an important part that not only functions as a place for the teaching and learning process but also as a space for character formation for students (Ismail, 2021). Environmental education is a crucial factor in successful environmental management and also serves as a means of producing human resources capable of implementing the principles of sustainable development (Widaningsih, 2010). Clean, healthy, and comfortable schools will have a positive impact on students' physical and psychological development (Nurfirdaus & Sutisna, 2021). This aligns with the goals of basic education, which focus not only on cognitive achievement but also on developing students' attitudes, character, and social skills (Nadila & Alam, 2024). The importance of caring as a form and manifestation of social sensitivity provides students with the necessary tools to enter the social environment and shape their personalities as members of society who can take responsibility for preserving nature for the sustainability of community life (Gunadi et al., 2020).

However, in practice, elementary schools, especially in Peusangan District, still face many challenges related to efforts to foster environmental awareness and responsibility in students. First, students' awareness and responsibility for the school environment are still relatively low. A common phenomenon is students' lack of concern for classroom and yard cleanliness, such as

littering, not participating in community service activities, and tending to delegate responsibility for cleanliness solely to janitors or teachers. This situation indicates that awareness of the importance of maintaining environmental cleanliness has not yet been fully instilled in students. Inadequate facilities certainly impact student participation in maintaining cleanliness, as they lack the necessary support to cultivate this behavior (Jannati, 2021). Lack of outreach to students about the importance of cleanliness and environmental awareness is also a contributing factor.

The character value of environmental care is an attitude that strives to prevent, maintain, and develop efforts to improve the natural environment. Environmental character education is expected to instill a caring attitude in students and transform them into more discerning individuals. Self-care for the environment is a concrete manifestation of maintaining harmony between social and natural life. Nature provides a variety of human needs and is an integral part of community life (Harianti, 2017). Education can foster a caring character through education (Tresnani, 2020). Education is one means used to implement and cultivate cultural values. Culture-based education is a movement to raise public awareness and encourage continuous learning to overcome life's increasingly challenging challenges (Zafi, 2018).

Several previous studies from Yosef Firman Narut and Mikael Nardi (2019) which analyzed the environmental care attitude in grade VI Elementary School students in Ruteng City showed an average score of environmental care attitude shown by grade VI Elementary School students in Ruteng City of 77.81 with a good category. Another study from Dwi Purwanti (2017) on environmental care character education and its implementation showed that the implementation of environmental care character education consists of: integrated into each subject through existing competency standards, active learning by instilling environmental care character. Furthermore, research from Eufrasia Jeramat, et al (2019) on instilling environmental care and responsibility attitudes through science learning in elementary school students showed that the instillation of these attitudes was carried out by the principal, teachers and staff in several ways or methods, namely the exemplary method by providing examples.

Schools should have a supportive environment for learning activities. To achieve this, schools must have a culture that positively impacts the entire school community. School culture can differentiate one school from another (Permana & Ulfatin, 2018). A school culture of environmental stewardship can be incorporated into school programs, which can lead to a comfortable and healthy school. Environmental stewardship is a character trait that must be implemented in schools at every level of education. All school members must be aware of the importance of environmental stewardship and take the initiative to prevent environmental damage (Purwanti, 2017). Environmental stewardship must be instilled in students from an early age so they develop the wisdom to manage their natural resources and a sense of responsibility for the interests of future generations (Masturoh & Ridlo, 2020). If environmental stewardship can be realized through action, students will consistently care for the environment and wholeheartedly preserve it, both at

school and in their homes (Fatimah & Adawiyah, 2017). Environmental education, especially about waste management, can be instilled from an early age, especially in elementary school students.

Initial observations at the research site revealed a low level of student awareness and environmental responsibility. This is evident in several phenomena, such as students still littering the school grounds despite the provision of trash bins, although the number is still limited. Furthermore, many students still dispose of trash in desk drawers and the library area. This has become a habit among students. This phenomenon will undoubtedly impact the school environment, making it unclean and unsanitary. One negative impact is environmental damage, resulting in a decline in environmental quality (Nasution, 2016). Other negative impacts include reduced concentration among students, increased risk of disease, and adverse effects on students (Arofah & Yulita, 2021). The effects of waste include environmental diseases, such as diarrhea and skin problems (Adlika, 2020).

According to (Agustin & Wiwin, 2020), school students still frequently litter, such as under desks, on classroom floors, and on the front porch. The most waste is generated after recess. While playing in the schoolyard, they eat while playing, and discarded food and drinks are simply thrown away in the schoolyard. It's likely that their knowledge of health or environmental concerns has not yet been fully translated into their daily attitudes and behaviors. This lack of concern for the environment is caused by their level of awareness, which is still at the understanding stage and has not yet reached the stage of applying the concept of environmental sustainability in their surroundings (Marpaung et al., 2022). Based on the problems described above regarding school environmental problems, the research question is How are school programs implemented to develop environmental care and responsibility among elementary students in science learning at SD Negeri 28 Peusangan?

2. Methods

The purpose of this study is to analyze and describe the implementation of school programs in developing students' environmental awareness and responsibility Science learning. This study uses a qualitative method, namely a research approach aimed at describing and analyzing phenomena, events, social activities, attitudes, beliefs, perceptions, thoughts of people individually or in groups (Imron, 2013). Determination of data sources in qualitative research is done purposively, that is, determined by adjusting to the research objectives or specific goals. In qualitative research, we identify participants and places with purposive sampling based on the places and people who best help us understand our central phenomenon (Creswell, 2015). The sample used consists of students, principals and teachers as respondents.

Data collection techniques use interview and observation guidelines. Interview guidelines are used as a guide during the interview to ensure that they are in accordance with the intended purpose and objectives. Based on this, in this study, in-depth individual interviews were conducted to obtain the life experiences of teachers without involving the researcher's knowledge of certain

theories. Qualitative data validity tests include credibility, transferability, dependability and confirmability tests. Data analysis was carried out using qualitative descriptive methods, namely data reduction, data presentation and conclusions (Sugiyono, 2019).

3. Result and Discussion

Based on the results of an interview with Informant 1, who stated that students' awareness of cleanliness and environmental sustainability at school is as follows:

"Third-grade students' awareness of maintaining cleanliness is quite good, especially after frequent reminders. However, more intensive practice is needed to make it a permanent habit."

Informant 1 also added in the interview:

"We implement a daily duty system with rewards for the best duty group. We also set a direct example by helping clean the classroom."

Informant 1 also stated in his interview that:

"We regularly hold class duty and Clean Fridays in the classroom. The school is also actively preparing for the Adiwiyata program."

Informant 1 also explained in his interview that:

"The level of student participation is quite high, especially with direct guidance from teachers. They enjoy making activities fun."

Informant 1 also explained in his interview:

"The collaboration has been good. The principal provides policy support, teachers act as implementers and mentors, and students are active participants."

Informant 1 also explained in his interview:

"The advantages are that students are more environmentally aware and the school becomes more beautiful. The disadvantages are that it requires consistency from all parties and greater parental support."

Based on the interview with Informant 2, the following statement was made:

"Sixth-grade students have demonstrated excellent awareness, a result of being trained in the habit since the lower grades. They have become more independent in maintaining cleanliness."

Informant 2 also explained in the interview:

"We give them full trust in managing the cleanliness of the classroom and specific areas. They are also involved in planning cleaning activities."

According to Informant 2, the following statement was made in the interview:

"Most sixth-grade students immediately reprimand their peers, and some of them even become pioneers of the 'Friends of the Environment' movement at school."

The interview with Informant 2 also discussed the ways in which teachers encourage students to care for the school environment, as follows:

"In addition to being on duty, they are involved in evaluating classroom cleanliness and tidiness. There is also a 'Clean Environment, Beautiful School' project activity that they designed themselves."

In an interview with Informant 2, he explained:

"We have a fully integrated Adiwiyata program. In addition to school duty and Clean Fridays, there's a monthly 'School Environment Day' with various educational activities."

Informant 2 also stated:

"Very high. They not only participate, but also actively initiate new environmental activities."

Informant 2 also explained:

"There's a strong synergy between the principal as facilitator, teachers as mentors, and students as the main subjects and objects of the program."

Informant 2 explained:

"The advantage is the formation of a strong and sustainable environmental culture. The disadvantage is that it requires constant innovation to keep students from getting bored and the program remains relevant."

In an interview with Student 1, he stated:

"So the school is clean, doesn't smell, and we can study comfortably."

The interview with Informant 3, the Principal of Peusangan Public Elementary School, explained the following regarding students' awareness of maintaining cleanliness and the sustainability of the school environment:

"Overall, our students' awareness is quite good and continues to improve. This is evident in the relatively clean school environment and the students' increasing concern for the beauty of the park."

Informant 3 also explained the school's policy to foster students' sense of responsibility for the school environment, as follows:

"We have a policy that integrates environmental education into the curriculum and extracurricular activities. Each student is also responsible for cleaning their classroom and certain areas of the school."

Informant 3 also added that the school instills environmental values in student rules and regulations, as follows:

"Environmental values are enshrined in the school's rules and regulations, including educational sanctions for violations. Furthermore, we regularly hold outreach and campaigns through flag ceremonies and school bulletin boards."

Furthermore, in the interview, Informant 3 explained the programs the school has implemented to develop environmental awareness and responsibility in students (e.g., Adiwiyata, Clean Fridays, and class duty), as follows:

"Our flagship program is Adiwiyata, which includes class duty, Clean Fridays, the formation of environmental ambassadors, and waste bank management. We also frequently participate in environmental competitions."

Finally, in closing the interview, Informant 3 explained the following:

"Teachers are the main driving force, students are active participants, and parents provide support through the school committee, both in the form of materials and participation in activities."

"The advantages are the development of environmentally conscious character in students from an early age, a more comfortable school environment, and our school has become a reference for other schools in the environmental field."

"Internal obstacles sometimes lie in fluctuations in student motivation. External obstacles include the influence of the environment outside the school that is less concerned with cleanliness."

Based on interviews with teachers, it was revealed that environmental attitudes and responsibility among elementary school students have gradually improved through daily school activities. Teachers stated that routine programs such as classroom cleaning schedules, waste sorting, and school gardening have helped students develop a sense of care for their surroundings. These activities not only encourage students to maintain cleanliness but also foster discipline and shared responsibility. However, some teachers noted that students still need continuous guidance to consistently practice environmentally friendly behavior both inside and outside the classroom.

Furthermore, teachers emphasized the important role of learning integration in shaping students' environmental awareness. Environmental values are often incorporated into subjects such as science, social studies, and character education. Through project-based learning, group discussions, and outdoor observations, students are given opportunities to understand the impact of human activities on nature. Teachers reported that these learning strategies help students become more sensitive to environmental issues and more motivated to take part in conservation efforts at school. In addition, teachers explained that parental support and school policies greatly influence the development of students' environmental responsibility. When parents reinforce environmental practices at home, such as saving water and managing household waste, students tend to show stronger commitment at school. Teachers also highlighted the need for clear regulations, adequate facilities, and continuous monitoring from school management. With consistent collaboration among teachers, parents, and school leaders, students' environmental attitudes and sense of responsibility can be developed more effectively and sustainably.

Based on classroom and school environment observations, it was found that most students demonstrated positive environmental attitudes during daily activities. Many students actively participated in cleaning routines, such as sweeping classrooms, arranging desks, and disposing of waste in designated bins. Several students were also observed reminding their peers to keep the

classroom clean. This indicates that environmental awareness has begun to develop through habitual practices and peer influence.

Furthermore, observations showed that students were generally able to sort waste according to the types of bins provided, although some still required guidance from teachers. In several instances, students hesitated when disposing of waste, showing uncertainty about whether it should be placed in organic or non-organic bins. Teachers often intervened by giving direct explanations and examples. This suggests that continuous reinforcement and practical training are necessary to strengthen students' understanding of waste management.

In outdoor areas, such as school gardens and playgrounds, students were observed participating in environmental care activities, including watering plants, removing weeds, and maintaining garden facilities. Some classes were assigned specific garden areas to manage, which encouraged students to take ownership of their environment. However, a few students were occasionally seen neglecting their duties, especially during break time, indicating the need for closer supervision and motivation.

In addition, observations revealed that the availability of facilities and visual reminders supported students' environmental responsibility. Posters about cleanliness, handwashing stations, recycling bins, and green spaces were visible in several parts of the school. These facilities helped reinforce positive behavior and made it easier for students to practice environmentally friendly habits. Nevertheless, some facilities were found to be damaged or insufficient in number, which limited their effectiveness. Therefore, improving infrastructure and maintenance is essential to support sustainable environmental education.

The program's implementation at Peusangan 28 Public Elementary School is supported by a structured, multi-level collaborative system. The principal acts as a facilitator by creating integrative policies, providing facilities such as three-type segregated trash bins, and allocating funds for training and recycling facilities. Teachers act as the driving force and field facilitators, while students are encouraged to be active implementers and program subjects. Support also comes from parents through the school committee, both in the form of materials and participation. This collaboration aligns with the concept of culture-based education expressed by Zafi (2018), where character-building movements require the synergy of all elements of the school community to overcome challenges and cultivate values. This triangular synergy (principal-teachers-students) and the involvement of external parties (such as waste collectors) form a strong systemic foundation for the program's sustainability.

The results of the study indicate that students' environmental awareness develops with grade level. Third-grade students already have basic awareness, but still require reminders and intensive practice to become consistent. Meanwhile, sixth-grade students demonstrate higher awareness, are independent, and even serve as role models for their juniors. Motivational fluctuations and inconsistencies, especially in lower grades, are major challenges. This phenomenon reinforces the

opinion of Marpaung et al. (2022) that indifference is often caused by awareness that is still at the understanding stage and has not yet reached the stage of consistent application. Therefore, the program at this school is designed in stages to gradually internalize values from extrinsic awareness (due to commands/rewards) to intrinsic (due to understanding and responsibility).

The school has implemented a progressive waste management system, starting with simple sorting (organic-inorganic) in each classroom and continuing with the operation of a waste bank independently managed by sixth-grade students. Although recycling programs, such as crafts from used goods, have not been fully routine due to time and resource constraints, student enthusiasm has been very high when the program is implemented. This strategy aligns with the implementation of environmental character education as described by Dwi Purwanti (2017), namely through integration into school activities, active learning, and self-development. The students' evolving role from simply sorting to becoming waste bank activists demonstrates the effectiveness of the project-based learning approach and the provision of real responsibility. Student involvement in environmental care is realized through structured mechanisms such as daily duty, a special "Green Guard" team in sixth grade, and active participation in the annual tree-planting program. In these activities, students' roles evolve from passive participants in lower grades to coordinators and educators for their juniors in upper grades. This approach reflects the habituation and conditioning method suggested by Eufrasia Jeramat et al. (2019), where schools not only teach theory but also provide facilities and real-life opportunities for students to practice caring and responsible attitudes. Through direct involvement, students develop a sense of belonging to their school environment.

4. Conclusion

The conclusion of this study is that the Implementation of the Program in Developing Environmentally Caring and Responsible Attitudes in science learning. This study found that environmental care and responsibility were developed through a staged and collaborative school program involving leadership support, teacher mentoring, habituation, and student participation. A notable finding is the progression from externally guided compliance among lower-grade students to self-initiated environmental leadership among upper-grade students. These findings suggest that science learning can serve as an effective space for integrating environmental character education when supported by school culture and student-centered environmental projects. The implementation of the program at SD Negeri 28 Peusangan shows a vibrant education, where the development of environmental caring and responsible characters is carried out systematically and in stages. The success of this program is rooted in a solid triangular collaboration between the principal's facilitative policies, consistent teacher mentoring, and the active role of students as driving subjects. The transformation of student attitudes is seen evolutionary along with the maturity of age and class level; from merely reactive obedience to rules in lower classes, to intrinsic awareness and proactive leadership in higher classes as demonstrated through the management of the waste bank and the Green Guard team. This proves that a collectively conditioned school environment is effective in changing the behavior of sorting waste and maintaining facilities from

merely an obligation to a self-identity and school culture. Schools are advised to strengthen role models not only from teachers but also by optimizing the role of upper-grade students as peer mentors. Given that sixth-grade students have reached a stage of intrinsic awareness, formally involving them in guiding lower-grade students in daily activities can be a more psychologically engaging strategy than simply verbal instruction from teachers.

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