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APPLICATION OF *ECOLITERACY* IN IMPROVING STUDENTS' *GREEN BEHAVIOR* IN ELEMENTARY SCHOOLS

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ABSTRACT

The implementation of ecoliteracy in elementary schools is an important strategy in shaping students' green behavior from an early age as part of character education and ecological awareness. This study aims to describe the application of ecoliteracy in improving students' green behavior at SD Negeri Gumpang 01, a school that has won the Adiwiyata School award at the Central Java Province level. The method used was descriptive qualitative research with a naturalistic approach, involving the principal, teachers, and students as research subjects. Data collection was conducted through in-depth interviews, observation, and documentation, with interactive analysis techniques and triangulation of sources and methods to ensure data validity. The results showed that the implementation of ecoliteracy was carried out through integration in the local wisdom-based curriculum, project-based learning, extracurricular activities, collaboration with parents and communities, and utilization of media and technology. This strategy clearly encourages increased student self-awareness, changes in attitudes and habits, and a growing sense of social responsibility for the environment. The implementation of ecoliteracy not only increases students' understanding of the importance of protecting the ecosystem, but also internalizes ecological values into daily life. Thus, learning integrated with environmental values can form a sustainable school culture. The implementation of ecoliteracy not only improves students' understanding of the importance of maintaining the ecosystem, but also internalizes ecological values into daily life. Thus, learning integrated with environmental values can form a sustainable school culture and strengthen the character of environmental care in elementary school students.

Keywords: *Ecoliteracy; Green Behavior; Elementary School*

INTRODUCTION

Ecoliteracy is the ability to understand, appreciate, and act in accordance with ecological principles, which include knowledge, attitudes, and skills in protecting the environment (Ong et al., 2020). Indicators of ecoliteracy include students' understanding of ecosystem concepts and the 3Rs, concern and empathy for living things, and concrete skills such as sorting waste, conserving energy, and participating in reforestation (Liu & Tobias, 2024). The implementation of ecoliteracy in elementary schools can be realized through project-based learning programs, outdoor studies, eco-

pedagogy strategies, and environmentally friendly school policies that have been proven to increase students' awareness and skills in protecting the environment (Tan & Yeoh, 2025). In the context of national policy, the Adiwiyata School program is a systematic effort to integrate environmental values into the curriculum, school management, and school culture, with the aim of shaping environmentally conscious character while improving students' ecoliteracy (Kurniasari, 2019; Pratiwi & Muharam, 2022).Ecoliteracy is closely related to environmentally friendly behavior because good ecological knowledge will foster awareness and caring attitudes (affective), which are then manifested in concrete actions to protect the environment (psychomotor), such as reducing plastic waste, saving energy, and maintaining school cleanliness (Cibin et al., 2025; Ulfah & Arifudin, 2021).

Ecoliteracy is a fundamental element in shaping environmental awareness and behavior in students from an early age. At the elementary school level, the cultivation of environmental awareness values is not only part of character strengthening, but also a foundation in shaping sustainable positive behavior in everyday life. Effective basic education does not only emphasize cognitive aspects, but is also oriented towards the formation of attitudes and values of life, including ecological awareness (Ratnah et al., 2025; Salmela-aro, et al., 2016). The implementation of ecoliteracy at the elementary school level has proven effective in increasing students' awareness and skills in protecting the environment. In its implementation, students in grades 4 to 6 at SD 1 Purwosari showed the ability to identify and solve environmental problems at school, as well as showing empathy for plants and responsibility in keeping the environment clean (Azdkia, et al 2024; Indrawan, et al 2022).

According to Gulo, (2022) reported that the application of the Project Based Learning model improved the cognitive, affective, and psychomotor aspects of fifth grade students' ecoliteracy in waste management. The group investigation approach based on outdoor study improves aspects of students' knowledge, attitudes, and skills in waste management (Yusuf & Fajri, 2022). The importance of education for sustainable development (ESD) in instilling ecoliteracy values in elementary school students (Laksono & Sari, 2023). Environmental school policies have a positive and significant effect on students' ecological literacy, with a contribution of 43.5% (Indrawan et al., 2022; Yonanda, et al., 2022)

Green behavior in elementary school students can be improved through various learning strategies and school policies.Yonanda, et al (2023) showed that the introduction of green behavior through ecoliteracy in elementary school children in Kampung Naga Traditional Village is effective in shaping environmental care behavior. Romadhona et al., (2023) found that teacher strategies in ecopedagogy learning, such as making slogans, habituation to bring drinking bottles, and processing organic waste, were effective in shaping students' green behavior. Zulfa, et al., (2025) emphasized the

importance of synergy between individual, environmental, and behavioral factors in the formation of pro-environmental behavior in elementary school students. Sadikin, et al., (2024) reported that students' understanding of the types of waste and the 3R concept is still low, indicating the need for increased environmental education. Sholikhah, et al., (2023) found that the values of students' environmentally friendly mindset and behavior tend to be realized only in the school environment, emphasizing the importance of sustainable habit formation.

The Adiwiyata School Program exists as one of the government's systematic efforts to establish a school culture that cares about and cultivates the environment. This program encourages the integration of environmental values into the curriculum, management of facilities and infrastructure, waste reduction, energy efficiency, and active involvement of all school members (Ministry of Environment and Forestry [KLHK], 2023). One of the expected achievements of Adiwiyata implementation is the formation of green behavior, namely the behavior of students who reflect awareness and responsibility for the environment as well as increasing student ecoliteracy as a basis for understanding the principles of ecosystems and their applications in life (Rachman & Pribadi, 2020). However, the effectiveness of this program in the field still faces challenges. Many schools only carry out intensive environmental care activities ahead of the Adiwiyata evaluation process by the Environmental Agency (DLH), and do not continue the program sustainably (Boggs et al., 2024). Factors such as weak school commitment, inconsistent program implementation, and the lack of a culture of sustainability are major obstacles to achieving the program's long-term goals (Marmoah, et al., 2022) .

The latest data shows that out of the total schools in Sukoharjo District, only 16 schools managed to achieve the Adiwiyata School award at the Central Java Province level in 2023 (Sukoharjo District Government, 2023). At the provincial level, there are 2,128 Adiwiyata schools or about 6.7% of all schools in Central Java (Media Indonesia, 2024). Meanwhile, nationally, only around 28,000 schools are part of the Adiwiyata program out of more than 300,000 schools in Indonesia (KLHK, 2024). This figure shows that the majority of schools in Indonesia are not yet part of the program that aims to shape the character of environmental care systemically. This condition confirms the importance of strengthening the ecoliteracy approach in environmental education programs in schools, especially at the elementary school level. Based on initial observations at SD Negeri Gumpang 01, which has won the Adiwiyata award at the provincial level, there are a number of environmental management practices that are quite good. However, the extent to which these practices have an impact on increasing students' ecoliteracy and green behavior still requires an in-depth study through a scientific approach.

At SD Negeri Gumpang 01, the implementation of the Adiwiyata program has encouraged environmentally friendly behavior through various student activities and school policies oriented towards environmental preservation. Students are accustomed to sorting organic and inorganic waste, bringing their own drinking bottles and food containers, conserving electricity and water, and participating in greening activities and school garden management. A simple waste bank program is also run as a means of teaching the economic value of waste while instilling awareness of the importance of recycling. These practices demonstrate the school's efforts to foster ecoliteracy, which is the ability to understand, behave, and act in accordance with ecological principles that encompass cognitive, affective, and psychomotor aspects. The indicators can be seen from the students' understanding of the 3R concept, their attitude of caring for environmental cleanliness, and their practical skills in preserving nature (Debasu & Yitayew, 2024). The implementation of ecoliteracy at SD Negeri Gumpang 01 is realized through project-based learning, outdoor study, eco-pedagogy strategies, and environmentally friendly school policies in line with the Adiwiyata objectives, namely to shape environmentally conscious characters while increasing students' ecoliteracy (Rachman & Pribadi, 2020). The relationship between ecoliteracy and environmentally friendly behavior is very close, because good ecological knowledge will foster awareness and caring attitudes which are then manifested in actions.

The relationship between ecoliteracy and environmentally friendly behavior is very close, because good ecological knowledge will foster awareness and caring attitudes which are then manifested in concrete actions, such as reducing plastic waste, saving energy, and maintaining school cleanliness (Rida Nurfarida, et al, 2022; Sungur, et al, 2025).Thus, the higher the level of ecoliteracy among students at SD Negeri Gumpang 01, the greater the opportunity for consistent and sustainable green behavior to develop, both at school and in everyday life.

Based on the description above, it is important to conduct further research on strengthening green behavior through the ecoliteracy approach in elementary school students, especially in the context of implementing the Adiwiyata School program as implemented in SD Negeri Gumpang 01. Therefore, researchers are interested in exploring the application of ecoliteracy in improving students' green behavior in elementary schools.

RESEARCH METHODE

This study uses descriptive qualitative research methods, qualitative research starts from an inductive mindset based on objective and participatory observations of social symptoms (phenomena) (Sugiyono, 2019). Sugiyono, (2019) explain that qualitative research aims to understand the root of human problems and the social environment in depth. The purpose of this study is to provide an overview of the application of

ecoliteracy in improving students' green behavior in elementary schools. According to Sugiyono, (2019) this qualitative research describes and examines related phenomena and research subjects comprehensively both individually and in groups. This qualitative research is also called a naturalistic setting because it is done naturally. This research explores the activities of teachers and students in implementing the application of ecoliteracy in improving students' green behavior in elementary schools.

The subjects of this study were the principal, teachers, and students of Gumpang 01 Public Elementary School, while the object of the study was the application of ecoliteracy in improving students' environmentally friendly behavior, because this school applies the principles of ecoliteracy to strengthen the formation of environmentally conscious character. Data collection techniques were carried out through interviews, observations, and direct documentation in the field. Interviews were conducted with one principal, two teachers, and three students, resulting in a total of six informants who provided information about the implementation of ecoliteracy at the school. Observations were conducted to see the actual practice of environmentally friendly behavior, the implementation of the Adiwiyata program, and the integration of ecoliteracy in learning, while documentation in the form of photos of activities, school records, and environmental policy documents were used as supporting data. Data analysis used the Miles & Huberman interactive model, which included data reduction, data presentation, and conclusion drawing and verification with data validity tested through source triangulation (principal, teachers, students) and method triangulation (interviews, observation, documentation).

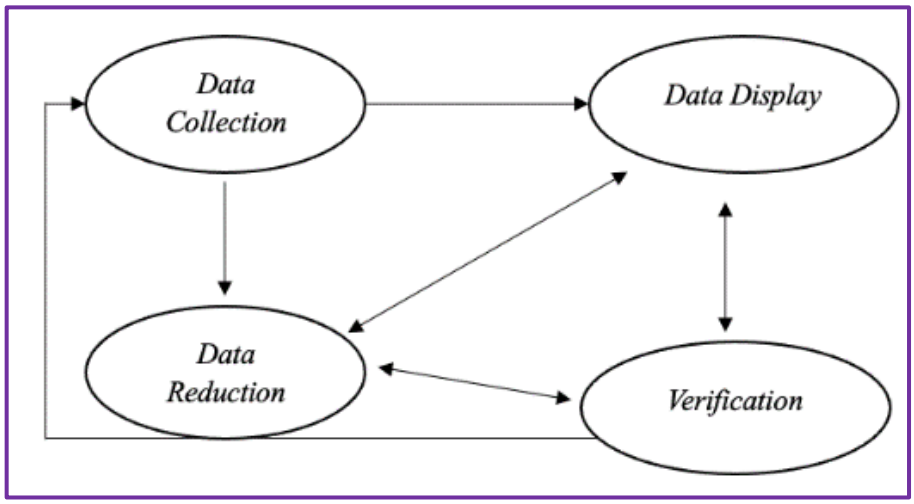

Figure 1. Data Analysis Components

Data analysis used in relation to this research is using interactive analysis techniques (Sugiyono, 2019). Data validity used is by source triangulation and method triangulation. Source triangulation is class teachers and students, while method triangulation is done by collecting observation and documentation data related to various applications of

ecoliteracy in improving students' green behavior in elementary schools.

RESULT AND DISCUSSION

Results

Ecoliteracy and Green Behavior have a very close relationship, where in this application linkage has an important basis in shaping green behavior. In this application, students are able to understand and realize the importance of ecosystems in forming a sense of care and friendliness towards the environment. Therefore, the application of Ecoliteracy in elementary schools certainly has a variety of strategies, namely:

a. Integration in the Curriculum

Integration of local wisdom into the science curriculum presents more applicable and meaningful learning, through the introduction of locally proven principles of natural resource management. This method can be applied to intracurricular, co-curricular, and extracurricular activities, strengthening science learning and ecoliteracy. In an interview with headmaster (AD) , he explained that

"We incorporate stories about bamboo weaving techniques from the community, and then relate them to the strength of natural materials, making it easier for students to understand the concept of pressure and strength of materials in a concrete way."

Figure 2. Curriculum Integration

This strategy also strengthens aspects of cultural identity and ecological responsibility. Learning media such as pictorial books and local modules are proven to be valid and practical, strengthening students' ecoliteracy by increasing engagement, concept understanding, and environmental care attitudes. That way, the science curriculum does not only teach theory, but also forms students who are able to think critically, creatively, and have awareness and love for the environment and their local cultural wisdom is an important foundation in shaping Green Behavior.

b. Contextual and Project-Based Learning

Contextual and *project-based learning* (PjBL) is an effective strategy in implementing ecoliteracy and green behavior in primary schools. This approach allows students to understand environmental concepts through hands-on experiences that are relevant to their surrounding context. This is explained by

> *"When students are given the project of putting together a mini conservation program at school-mapping the area, designing a planting strategy, then monitoring the growth-they not only learn the concepts, but also see the tangible results of their efforts, thus growing a sense of responsibility for the environment."*

Through environmental projects designed to challenge students to solve real problems, students' understanding of ecoliteracy concepts such as sustainability, conservation, and active participation in environmental protection is significantly improved.

Figure 3. the work of students from PJBL

At SDN Gumpang 01, Project Based Learning activities in the Pancasila Student Profile Strengthening Project (P5) were implemented with the theme "Sustainable Lifestyle". This activity involves students in grades IV to VI to develop ecological awareness through real projects that focus on waste management and school greening.

Students started the activity by identifying environmental problems around the school, such as the large amount of unmanaged plastic waste and the lack of green space. Together with the teacher, they discussed and designed a project titled "Plant Pot from Plastic Waste". In small groups, students collected used bottles from home and the neighborhood, then cleaned them to turn them into creative

pots. This process involved collaborative skills, creative design, and planting ornamental plants and vegetables such as chili peppers, spinach, and tomatoes. In addition, students also created educational posters on recycling and energy saving, which were then posted in the corners of the school as a form of environmental campaign. This activity lasted for three weeks, from planning, execution, to presentation of the results. At the end of the project, the school held a “P5 Mini Project Exhibition”, where students displayed their plant pots and explained the process and the environmental message they wanted to convey.

Through this project, students not only learn science and practical skills, but also develop the values of the Pancasila Student Profile such as creativity, mutual cooperation, independence, critical reasoning, and concern for the environment. This project is clear evidence that learning can be meaningful, fun, and have a direct impact on students' positive character and habits in everyday life.

The application of PjBL in science and social studies learning in elementary schools has proven effective in improving students' ecoliteracy and green behavior. Through contextualized and real problem-based projects, students not only understand environmental concepts, but are also actively involved in environmental conservation efforts. Therefore, the integration of PjBL in the elementary school curriculum is highly recommended to form a generation that cares and is responsible for the environment, and its local culture is a strong foundation for forming Green Behavior.

c. Extracurricular and Routine Activities

Students are invited to grow vegetables and ornamental plants using pots from waste, restore school spaces, and maintain plants regularly. The results show a higher percentage of ecological awareness including planning, responsibility, and creativity in transforming plastic waste into plant innovations that reflect environmentally friendly attitudes and skills. In addition, the ecological scout club also plays an important role in shaping students' cooperation, attitudes and scientific skills. The scouts' extracurricular activities include composter barrel and ecobrick projects, which train students to process organic and inorganic waste collaboratively. Observations showed significant improvements in the three dimensions of ecoliteracy knowledge (head), attitude (heart) and practical skills (hand) with the support of teachers, communities and consistent patterns of cooperation. In the interview, it was explained that:

"Every Friday morning, we have a gardening to plastic recycling activity where students are involved from planting to ecobricking. They not only learn science, but also experience real benefits for the environment and community."

Figure 4. Routine Activities

At SDN Gumpang 01, greening and school cleaning activities are carried out regularly as part of a culture of environmental care. Every Friday morning, all students together with teachers carry out community service activities, starting from sweeping the yard, sorting organic and inorganic waste, to cleaning the school garden. Students are also directly involved in planting ornamental plants, vegetables and live pharmacy plants in the school yard using pots from used goods. In addition, they take turns taking care of the plants by watering and fertilizing, thus creating a green, clean and beautiful school environment. This activity not only forms the habit of maintaining cleanliness, but also instills responsibility and love for nature from an early age. This kind of routine activity fosters green behavior naturally because it becomes part of the school culture that is colored by real activities. Through direct involvement in the recycling cycle, students familiarize an attitude of environmental care, making ecoliteracy a lifestyle, not just a theory.

d. Collaboration with Parents and Communities

Figure 5 Collaboration with Waste Bank Society

Collaboration between schools and parents is the main foundation in instilling ecological intelligence (ecoliteracy) and green behavior in children. This

collaboration process is carried out through the organization of ecosystem learning that actively involves parents in designing and supporting learning activities at home. This approach ensures that environmental awareness is not only developed at school, but also reinforced in daily practices at home, so that children's understanding and ecological awareness become more consistent.

Parental involvement, especially in the planting of live pharmacy plants, significantly improved children's ecoliteracy attitudes. Although time is a major constraint, direct parental involvement helps bring ecological concepts into family life, fostering discipline and environmental responsibility in children. This shows the importance of parental support as an extension of the school in developing green behavior.

"The environment at home should be a place of learning, especially related to environmental science, parents can prepare books or invite children to plant in small pots, so that children learn to care about soil and plants from an early age."

Another thing explained by adiwiyata team as VN namely:

"By inviting children to plant live pharmacy plants in their yard, parents not only introduce the concept of medicinal plants, but also instill a sense of responsibility and concern for the environment. Although time is limited, this simple form of involvement has a big impact on children's ecological attitudes and behaviors"

Close collaboration between schools and parents through simple activities such as planting live apothecary plants in the yard has proven to be very effective in strengthening children's ecoliteracy and green behavior. This kind of direct parental support instills the value of ecological responsibility and supports the transformation of concepts into concrete behaviors, making green behavior an integral part of children's daily lives.

e. Utilization of Media and Technology

Figure 6. Utilization of Used Goods

The use of media and technology in the implementation of ecoliteracy and green behavior in educational settings has shown significant results in increasing students' awareness and engagement with environmental issues. Various technological innovations such as YouTube-assisted vlogs, progressive web applications and Internet of Things (IoT) technologies have been used to create engaging and interactive learning experiences.

This model utilizes environmental issues in the learning process, so that students can understand and apply ecological concepts in their daily lives. In addition, the use of YouTube-assisted vlog media has also proven effective in fostering ecoliteracy attitudes in students, because they can watch learning videos that contain education and can be accessed at any time. This is explained by , curriculum school as BS that:

"Yes, students can access environmental materials interactively and at any time, which greatly supports the improvement of their ecoliteracy."

Through the above explanation, there are challenges in the implementation of this technology that also need to be considered, such as uneven technology infrastructure, lack of training for educators, and high implementation costs. Therefore, it is important for the government and educational institutions to provide adequate support so that technology can be effectively integrated in the learning process.

Thus, the use of media and technology in environmental education not only increases students' understanding of ecological issues, but also encourages them to change their behavior to be more environmentally friendly. Technology integration in ecoliteracy learning can be a strategic step in shaping a generation that cares and is responsible for environmental sustainability.

Of course in this Ecoliteracy activity, there is an impact of the application of Ecoliteracy on Green Behavior, among others, namely:

a) Self-Awareness

Ecoliteracy increases students' self-awareness of the impact of their actions on the environment. Students begin to realize the importance of maintaining the sustainability of nature and reducing their personal ecological footprint. In this case, explained by the teacher, namely:

"Yes, there is indeed an increase in self-awareness in managing waste wisely, such as sorting waste and reducing the use of plastic."

b) Changes in Attitudes and Habits

With a better understanding of the environment, students are likely to change their attitudes and habits towards more environmentally friendly behavior. In elementary schools, the application of ecoliteracy in plastic waste reduction through recycling and waste reuse activities shows positive changes

in students' attitudes towards waste management and the use of environmentally friendly materials.

> *"Yes, Mas, we are taught by teachers to protect the environment, such as spreading fish seeds and planting chili peppers, and prohibited from snacking on plastic-wrapped ice-drinking only from gallons. These little things make me a person who loves nature."*

c) Social Responsibility

Ecoliteracy also fosters students' sense of social responsibility towards the environment. The Adiwiyata program, which integrates ecoliteracy through class hygiene competitions, garbage banks, and waste management, has succeeded in increasing students' awareness to maintain cleanliness and sustainability of the school environment.

> *"All school members, teachers, students, and staff must have a sense of responsibility for the school environment, be it the social, educational, and environmental environment, which in fact must be maintained and cared for as well as possible."*

Discussion

The implementation of ecoliteracy in elementary schools has proven to be an important foundation in shaping green behavior. Various previous studies support the relationship between ecological literacy and student behavior towards the environment. According to (Sawitri, et al., (2024) environmental knowledge formed through contextualized learning can increase students' understanding of the relationship between natural components, so they tend to be more caring and responsible for the surrounding environment. This is in line with the findings of Sholeh, et al., (2021) in learning practices that integrate local values and cultural wisdom such as bamboo weaving, which not only strengthens the understanding of science concepts, but also shapes students' ecological values and cultural identity simultaneously.

Project-Based Learning model in the context of ecoliteracy is also very effective in shaping students' green behavior. This is reinforced by research by Oliveira, et al., (2025) which states that project-based learning provides hands-on experience that allows students to be actively involved in solving real problems. Activities such as school conservation projects, tree planting, and plant growth monitoring provide space for students to build critical thinking skills, collaborative, and responsible for environmental sustainability. Research conducted by Akarsu, (2025) showed that this kind of learning strategy is able to strengthen students' cognitive and social skills in the context of environmental learning.

Extracurricular activities and school environmental routines such as gardening, plastic recycling and ecobricking are hands-on practices that have proven effective in

strengthening the three dimensions of ecoliteracy knowledge (head), attitude (heart) and skills (hand). Research conducted by Nikolsky & Benítez-Burraco, (2024) found that students' involvement in action-based environmental activities increased their sense of belonging to the environment and shaped more durable conservative behaviors. This activity also shows that green behavior is not formed instantly, but through consistent repetition of activities and supported by the active role of teachers and the school community.

Collaboration between schools, parents and communities is a strategic aspect in strengthening the implementation of ecoliteracy. Research by Brown et al., (2025) states that environmental learning that involves families can increase the transfer of ecological values from school to home. When parents are invited to grow live pharmacy plants with children, not only are ecological concepts understood, but also the value of responsibility and concern for sustainability is naturally instilled in everyday life. Parental support acts as an extension of the school, so that green behavior becomes an integral part of the child's lifestyle.

The utilization of technology and digital media in supporting ecoliteracy has opened new opportunities in learning that are more interactive and accessible. The use of educational vlogs and digital platforms has proven to be effective in increasing students' motivation to learn about environmental issues, as revealed by Brown et al., (2025) that digital media-based learning is able to increase students' learning motivation, literacy, and attitude change towards environmental conservation. Although there are still challenges in infrastructure and teacher training, the potential of technology remains a strategic tool in shaping students' ecological behavior if supported by appropriate policies.

The application of ecoliteracy in basic education has a real impact on increasing students' self-awareness of the environment. As explained by Zulfa et al., (2025), students who have a good level of ecoliteracy show higher ecological awareness, especially in daily actions such as sorting waste and reducing plastic use. This self-awareness is an important first step towards the formation of broader and sustainable ecological behavior.

Changes in students' attitudes and habits are another tangible impact of the implementation of ecoliteracy integrated in the cu by Padthar & Ketkaew, (2024)by students who are consistently involved in environmental activities show significant changes in daily behavior, such as energy saving, reuse of goods, and rejection of disposable plastic products. This shows that continuous environmental learning can transform knowledge into positive and impactful habits.

Social responsibility is an important dimension that grows through ecoliteracy. Programs such as Adiwiyata, which is widely implemented in Indonesian elementary schools, integrate environmental knowledge into school culture through hygiene

competitions, waste banks, and waste management. Research by Hijran & Adriantika, (2025) by states that community-based programs such as these encourage students to become agents of environmental change, strengthen the value of solidarity, and social responsibility. Therefore, a comprehensive and collaborative implementation of ecoliteracy in elementary schools is a key strategy in shaping a generation that is environmentally conscious and behaves green in a sustainable manner.

From the description above, it can be concluded that the implementation of ecoliteracy in elementary schools has a central role in shaping students' green behavior, through a comprehensive approach that includes curriculum integration, project-based learning, extracurricular activities, collaboration with parents, and the use of media and technology. Previous research supports that ecoliteracy increases students' awareness, attitudes and skills in protecting the environment, shaping sustainable ecological behavior, and fostering social responsibility towards nature and the community. By involving various school parties, families, and communities, ecoliteracy becomes the foundation of education that is not only cognitive, but also forms the character and culture of environmental care from an early age.

CONCLUSION

Based on the lengthy description above, it can be concluded that the implementation of ecoliteracy in elementary schools, particularly at SD Negeri Gumpang 01, plays a very important role in shaping students' green behavior. Through various strategies such as integration into a local wisdom-based curriculum, contextual learning and project-based learning, extracurricular activities and school routines, collaboration with parents and the community, and the use of media and technology, students not only gain ecological knowledge but also develop self-awareness, change their attitudes and habits, and develop a sense of social responsibility towards the environment. Various studies also reinforce that ecoliteracy can improve students' cognitive (head), affective (heart), and psychomotor (hand) aspects in preserving the environment. Thus, the comprehensive and sustainable application of ecoliteracy is an important foundation for shaping a generation that cares about the environment, behaves in an environmentally friendly manner, and is able to become agents of change in maintaining the sustainability of ecosystems in the future.

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DECLARATION

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Conflict of Interest	The authors conducted all stages of this research independently and transparently, from planning to manuscript preparation.
Additional Information	All research results and conclusions are prepared objectively and free from conflicts of interest, with the aim of enriching knowledge in the field of basic education.

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