

# Environmental Literacy and Care Behavior Through Adiwiyata Program at Elementary School

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## ABSTRACT

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The dissemination of educational behaviours that enhance students' environmental literacy should be prioritised in light of the escalating environmental degradation. This research aims to (1) describe the implementation of Adiwiyata program activities; (2) describe the environmental literacy skills; (3) describe the environmental care attitude; and (4) identify the factors that support or impede the implementation of the *adiwiyata* program at a private elementary school in Bogor Regency. The qualitative descriptive study was done at a provincial-level Adiwiyata school from September 2021 to January 2022, employing qualitative descriptive methodologies. Written tests containing questions and questionnaires, interviews with instructors and students, observations, and documentation were utilized to disseminate data collection techniques. The assessment of environmental literacy is based on three indicators: (1) ecological knowledge, (2) environmental affection, and (3) behaviours. According to the findings of this study, this elementary school employs eco-friendly practices in order to attain Adiwiyata. The results of this study indicate that each indicator received a score of 75, 39.15, and 19.6 for the favourable category. The attitude of concern for the environment received a score of 76.42 in the category of excellence. These results are influenced by (1) quality environmental education, (2) student participation in environmental activities, and (3) student environmental knowledge. There are obstacles to the implementation of Adiwiyata, such as a lack of interest from school residents, an uneven distribution of environmental care, and the expense of carrying out activities. This study's findings will serve as an evaluation tool for the school's efforts to maximize Adiwiyata activities.

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## 1. INTRODUCTION

Indonesia has been confronted with persistent environmental concerns and challenges, resulting in a deterioration of environmental conditions that comprise both living and non-living components. These challenges are not limited in scope, but rather originate from the activities and behaviours

exhibited by the community as a whole. One specific locale that exemplifies this worry is West Java, which is ranked as the second province with the highest Environmental Ignorance Behaviour Index, along with two other provinces, achieving a score of 0.54 (with the highest score being 0.55). This index functions as a measure of the community's deficient ethical and moral standards in relation to their environment. The significance of the low score highlights the urgent need to address the community's attitudes and behaviours towards the environment, aiming to enhance the overall environmental quality not only in West Java but also in other regions (Putra, Dedi, & Sadiarawan, 2021). Hence, it is imperative to acknowledge the importance of these findings, as they elucidate the correlation between the community's actions and the environment's condition.

The environment is defined as everything outside of human beings related to human life. According to Effendi, the environment is everything around humans, influencing their survival and well-being with other living things, directly or indirectly. The 21st century is an era of environmental restoration based on love for the earth and its life. The incessant industrial-based development in all sectors has replaced land that should be used for environmental interests and sustainability (Celermajer et al., 2021). Furthermore, the world's prolonged environmental phenomenon has caused UNESCO to promote Environmental Education (EE) in school learning. According to Afandi, PLH is essential in increasing students' awareness, knowledge, behavior, and involvement in protecting and preserving the environment. Following this statement, Rusdina added that implementing EE from an early age is urgent. Therefore, issuing the relevant Law becomes an alertness form from the government in promoting EE in Indonesia (Gan, 2021).

Environmental problems are natural problems that occur as part of a natural process. However, environmental problems can no longer be regarded as problems that occur naturally, because humans are also a significant causal factor for environmental damage. Avatara stated that the current environmental damage stems from human behavior mistakes towards perspectives and mistakes in exploring natural resources (Costa et al., 2021). This follows what Sudarmadi stated, that one of the causes of environmental damage is a lack of public awareness of environmental management. Environmental problems can be said to be moral problems, which are related to human behavior that will determine whether the condition of an environment is good or bad. Habits of human behavior or actions interacting with the environment can affect environmental changes (Guo, Huang, & Zhang, 2019).

One of the factors affecting environmental problems is the increasing rate of population growth as well as the development and industry, which is used as a solution to the needs of human life which has a negative impact, namely environmental pollution that occurs in chains (Sharifi & Khavarian-Garmsir, 2020). The most important thing from each individual's environmental awareness is environmental knowledge, values, willingness to act and actual behavior, which is influenced by several factors, including intention and situational elements. Environmental awareness is an important factor in increasing the sustainability of behavior or practice and focuses on knowledge about environmental problems that occur globally and strategies for dealing with environmental problems (Ahmad, Kim, Anwer, & Zhuang, 2020).

Education is important in encouraging environmental care behavior because it aims to increase a person's responsibility, competence, knowledge, skills and values that will contribute to a sustainable and environmentally friendly world. Lozano stated that highly educated person is more concerned about the environment and more motivated to engage in environmentally responsible behavior because they are more aware of the potential for harm. This follows what Julina stated, that as knowledge increases, it will impact attitudes because knowledge, attitudes and behavior are interconnected (Allari, Atout, & Hasan, 2020)

Environmental education mainly aims to create human beings with good environmental literacy skills. Environmental literacy is part of basic literacy, which is necessary so that everyone can understand and feel that they are part of the solution to environmental problems. According to Haske & Wulan, environmental literacy is individual knowledge and understanding of aspects that build the

environment, principles that occur in the environment and being able to act to maintain environmental quality, which is applied in everyday life. According to Barrett, John, & Odum, environmental literacy is an understanding of the interaction between humans and nature (Suryawati, Suzanti, Zulfarina, Putriana, & Febrianti, 2020).

Literacy is a conscious attitude toward preserving the environment so that the balance is maintained, an attitude of awareness that an environmentally literate person knows the right actions to take for the environment and how to do that. An environmentally literate individual has knowledge and understanding of environmental issues to encourage pro-environmental community behaviour (Zb & Sulman, 2022). The ability possessed by someone with an environmental perspective can understand and interpret the health of environmental systems in taking action to maintain, restore or improve health and overcome environmental problems with critical thinking (Elsawah et al., 2020). The North American Association of Environmental Education (NAAEE) defines the categories of environmental literacy as including influence, ecological knowledge, socio-political knowledge, knowledge of environmental issues, cognitive skills, and environmentally responsible behavior. The concept of environmental literacy, according to Igbokwe, consists of awareness, knowledge, attitudes, skills, and participation. According to Karimzadegan & Meiboudi, environmental literacy components consist of knowledge, cognitive skills, attitudes and behavior (Curdt-Christiansen, 2021).

Several factors influence a person's environmental literacy, including the intention to know and study environmental problems. Therefore, environmental literacy can be improved one way through education. According to (S. S. Nasution, Rochsantiningsih, & Santosa, 2016), education will provide learning experiences to solve problems by thinking critically and creatively in making decisions. Several countries make environmental literacy a subject of environmental education. Environmental education in some countries is a subject of its own (Debrah, Vidal, & Dinis, 2021). Other studies say environmental education integrates into biology, science, geography, and ecology. Integrating environmental literacy into learning subjects, the government-issued textbooks comprising knowledge, cognitive skills, attitudes and behavior. Of the four components, the knowledge aspect is more dominant than attitudes and behavior, which are rarely discussed. This also happened in Iran and Turkey (Tauro et al., 2021).

Some previous research by researchers found that environmental literacy is an individual's ability to understand environmental conditions. Therefore, they can make the right decisions based on their understanding, and the environmental conditions can be maintained, restored, and improved (Nurwaqidah, 2020; Ardoin & Bowers, 2020). Environmental literacy has been shown to play a crucial influence in shaping future generations' commitment to protecting the planet (Al-Anwari, 2014). Students who are well-educated in this area will exhibit both positive attitudes towards the environment and responsible conduct. Pupils would be more likely to take environmental concerns into their own hands if they were better able to process and apply environmental information. As a result, environmental education results in a sustainable link between environmental literacy and environmental care behaviour.

The formation of environmental literacy skills and environmental care behavior must be taught in a structured, systematic and continuous program. One of these programs is the Adiwiyata program proposed by the Ministry of Environment. In this case, the main objective of the Adiwiyata program is to create a school community responsible for protecting and managing the environment through good school governance. It is because a school is considered an institution that has duties and responsibilities in creating and strengthening the environmental care character in students (Syah, Hidayat, Yuca, Ardi, & Magistarina, 2021).

One of the traits that must be fostered in the classroom is a concern for the well-being of the natural world (Green, 2008). The atmosphere of the classroom might also foster this worry. Kurniawan (2014) argues that a supportive school climate can help shape pupils' environmental awareness (Sanusi, 2016; Saripudin, 2017). Meanwhile, according to Deal and Paterson (2015), a school's culture is the shared norms and values that are reflected in its students', faculty's, administration's, and surrounding

community's everyday interactions (Saripudin, 2017). As mentioned in (Risminawati, 2012; Suprihatin, 2018) the Adiwiyata programme is an integral aspect of the maturation of the school's culture.

Given this context, it's important to learn more about how the Adiwiyata programme is being implemented at Elementary Schools, the students' levels of environmental literacy, and their shown commitment to environmental stewardship. Therefore, this institution is a key focus of this study because it provides unique information about the Adiwiyata program's implementation and outcomes in a single school. The purpose of this study is to shed light on the efficacy and impact of the Adiwiyata programme by analysing its implementation at the Elementary School level, with the hope that the findings would be useful in informing and guiding future implementations of the programme in settings with similar characteristics.

## 2. METHODS

The research location involved in this research is Al-Amaniyyah Elementary School, Cisarua District, Bogor Regency. This research was conducted from September 2021 to February 2022. In this case, the factors studied were the Adiwiyata program, environmental literacy skills and environmental care behaviour. Meanwhile, the research design applied was descriptive qualitative, with the population involved was 198 people, consisting of one (1) principal, seven (7) teachers, two (2) operating staff, and 188 students consisting of six (6) classes, those are class I, II, III, IV, V, and VI.

Furthermore, the samples were determined using purposive sampling, particularly based on the consideration that the data used in this research are in-depth information from those who understand this program through the enculturation process so that the programs that have been carried out are not only known but internalized. After a discussion between the researchers and the chief executive of the Adiwiyata program at Al-Amaniyyah Elementary School, it was decided that 19 students in grades IV, V, and VI were involved in this research.

Data collection techniques for implementing the Adiwiyata program at Al-Amaniyyah Elementary School included interviews, observations, and documentation. Meanwhile, the data collection techniques used for the environmental literacy skills and environmental care behavior included written tests, interviews, and observations. In this case, observations were carried out to observe the environmental conditions and situation of Al-Amaniyyah Elementary School, while the interview was conducted to confirm the data obtained from the written test. In addition, all research instruments used have been validated by the validator.

Furthermore, the data analysis techniques are inductive analysis using the following scheme.

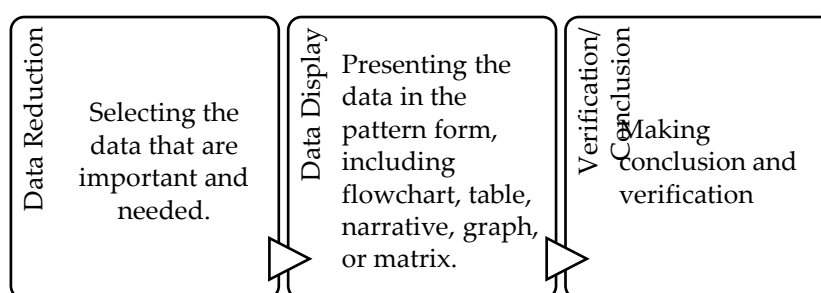


Figure 1. Data Reduction Scheme, Data Display, and Verification

## 3. FINDINGS AND DISCUSSION

This chapter provides an overview of the execution of the Adiwiyata programme at Al-Amaniyyah Elementary School, examines students' environmental literacy, and explores their environmental care behaviour. The sole educational institution in the Cisarua District that is actively

engaged in the Adiwiyata programme is Al-Amaniyyah Elementary School. In the year 2020, Al-Amaniyyah Elementary School achieved the prestigious Adiwiyata Award at the district level. Subsequently, in December 2021, Al-Amaniyyah Elementary School got the esteemed Adiwiyata Award at the province level.

### **3.1. Implementation of Adiwiyata School**

The Adiwiyata Program is a program that aims to create schools with environmentally careful behaviour and environmentally cultured. However, Adiwiyata also has an even more specific purpose: to create a school community responsible for its environment. In its implementation, the school implements Environmentally Friendly Behavior (PRLH) based on three (3) Adiwiyata main principles (educational, participatory, and sustainable). Furthermore, based on the interviews conducted with the teacher acting as the head of the School Environmental Cadre, Al-Amaniyyah Elementary School has focused on introducing plant cultivation, waste management, and exploring the potential of existing local wisdom. In this case, there are six aspects of PRLH, and the activities carried out are:

- 1) Cleaning. There are two types of cleaning activities: daily cleaning and monthly cleaning. Picket students must conduct the activities during the daily activities according to their respective class schedules. Meanwhile, the monthly activity is for students and teachers to clean up the Ciliwung River. In this case, the cleaning program of Al-Amaniyyah Elementary School has been following Adiwiyata principles, which are sustainable.
- 2) Waste Management. In this case, the activities are recycling non-organic and organic waste. Non-organic waste is collected and sold to waste banks or made into works from used goods. Meanwhile, organic waste is turned into both solid and liquid compost. In this case, students are involved in every process. Thus, this activity follows the Adiwiyata principle, which is educative.
- 3) Planting and Maintenance of Trees/Plants. The activities carried out included planting trees on the banks of the Ciliwung River and around the Cijulang area of Kopo Village in 2019. In addition, students also carried out seeding and plant maintenance in the school garden. This program follows Adiwiyata principles, which are educative and participatory.
- 4) Water Conservation. The teacher and students made bio-pore infiltration holes in this activity. Besides that, the school also made a water reservoir because the school area still lacks water absorption. This program follows the Adiwiyata principle, which is educative.
- 5) Energy Conservation. In this activity, Al-Amaniyyah Elementary School minimized energy use by using large windows to access sunlight. In addition, slogans about saving energy can also be found around the school. The implementation of this program follows the principle of sustainability.
- 6) Innovation Potential of Natural Resources. In this case, the innovation they are proud of is the red ginger powder drink, which is self-produced under the JAMSUS brand. The main ingredients of JAMSUS are red ginger and powdered milk. Making JAMSUS follows the Adiwiyata principle, which is educative.

### **3.2 Obstacles to the Implementation of Activities at School**

As previously mentioned, Adiwiyata has three (3) main principles, and those are educative, participatory, and sustainable. However, schools experienced several obstacles in implementing this program. Based on the interviews conducted with the Head of the School Environment Cadre, the obstacles experienced included (1) a Lack of interest from fellow teachers towards the program; (2) Uneven environmental awareness; and (3) Limited facilities and infrastructure.

Various prior studies have also documented the challenges encountered by Al-Amaniyyah Elementary School in various geographical settings. Hana (2019) discovered that the insufficient level of pupils' awareness can be attributed to the habitual patterns instilled in them during their upbringing within their family and community settings. Simultaneously, the environment has a significant

influence in shaping the character of students. In accordance with the study conducted by Nurwaqidah, Suciati, and Ramli (2020), it has been observed that numerous Adiwiyata schools continue to exhibit deficiencies in terms of their facilities, encompassing both infrastructure and non-infrastructure aspects. Various strategies can be implemented to address these challenges, such as providing counselling sessions or organising seminars aimed at enhancing teachers' environmental awareness and ethical conduct inside educational institutions. To optimise the implementation of the Adiwiyata programme, educational institutions require assistance from various stakeholders within the student community. Hence, it is imperative for educational institutions to consistently implement bidirectional communication as a means to enhance public awareness and understanding.

### 3.3 Environmental Literacy

Environmental literacy analysis was conducted using two instruments: multiple-choice and questionnaires. This study used ecological knowledge, affection towards the environment, and habits to measure the respondents' environmental literacy. The data processing results using a scale table for environmental literacy component categories show that the mean of the total score is 75, thus, it is categorized as good. Furthermore, four of the nineteen respondents obtained a very good category, thirteen obtained a good category, and two obtained a fair category.

Ecological knowledge is the basic knowledge about the environment and nature, so the question instrument contains questions about the environment around the school and basic knowledge of how living things interact and survive. Ecological knowledge is the most basic component of environmental literacy, because good actions and attitudes result from good knowledge. Based on the results of the multiple-choice questions provided to the respondents, it was found that the respondents have good ecological knowledge. This is based on integrating environmental education (EE) learning in the school environment that has been included in the school curriculum since 2016. In addition, the school policies that support environmental care activities can also increase the students' knowledge about their environment. Furthermore, the school's location, close to a river and trees, makes students increasingly interpret knowledge about the surrounding environment.

Students who learn about environmental issues and take action to improve them are more likely to do so in the future (Ellen, Wiener, & Cobb-Walgren, 1991). Steele agrees with the idea that teaching about the environment can provide kids with the fundamentals they need to thrive in a changing world. As a result, although kids have not yet developed particularly strong categorization skills, the positive effects produced from their ecological knowledge cannot be isolated from the function of culture in schools and the education they get.

Meanwhile, the data processing results obtained from a scale table for environmental literacy component categories show a score of the total score is 39.15, thus, it is categorized as good. In this case, nine out of nineteen respondents obtained a very good category, and ten obtained a good category. Affection towards the environment refers to the individuals' intentional factors that enable them to reflect on environmental problems or issues at an interpersonal level and decide whether those issues require action. After knowing the environment, the next stage is how individuals identify and analyze environmental issues around them and how they act. (Febriasari & Supriatna, 2017) supported the statement by claiming that good environmental literacy is not enough if it is looked at from its cognitive ability only support this statement.

The good results of the respondent's environmental affection indicate that students are used to positively impacting the surrounding environment. This good impact is because students often come directly to see an unhealthy environment and then take action to reduce the damage. It can be seen from student activities outside of school hours, such as cleaning the Ciliwung River, planting on vacant land, and picking up trash in the residents' environment while jogging. Activities that go directly to the field greatly influence the affection of respondents. Elementary school students absorb knowledge directly from activities. In addition, (Istianah, Ambarwati, Lailiyah, & Rahmawati, 2020) supported the statement by claiming that such activities can increase students' motivation to reapply for those

activities in everyday life. Respondents not only follow the directions from the guiding teacher, but can also interpret the activities being carried out individually. Therefore, it can be said that a good respondent's environmental affection is influenced by environmental care activities initiated by the school.

Furthermore, the data processing results using a scale table for environmental literacy component categories show the total score is 19.6, thus, it is categorized as good. In this case, nine out of nineteen respondents obtained a very good category, nine obtained a good category, and one obtained a fair category. Habit aspects in the instrument include protecting the environment, selecting environmentally friendly products, methods in protecting the environment, and discipline. Habits formed are assessed as a result of instilling environmental literacy in students. Knowledge of the environment acts as a prerequisite for forming good habits. Following Hollweg's theory, behavior that develops into habits is the final result of environmental literacy. In addition, research from (T. K. Nasution & Sinaga, 2017) revealed that the factors that influence students' low habits are students' low knowledge of the environment.

However, a low score was obtained in selecting environmentally friendly products. This is because it is difficult for respondents to access environmentally friendly products. It is also known that the people around the school are classified as underprivileged families, so they have not been touched by education to switch to environmentally friendly products. The school knows this and responds by educating students to bring their eating places and drinking bottles. In addition, plastic bowls and cups that students can utilize are also found in each class. It can be seen that the school continues to strive to shape students' habits to reduce plastic waste.

### **3.4 Environmental Care Behavior**

The data collection techniques, in this case, are questionnaires, observations, and interviews with respondents who are Al Amaniyyah Elementary School students. The use of a questionnaire instrument is to see the environmental care behavior of the students, while the observation aims to describe the actual conditions to strengthen the results obtained later and to know whether the results are true. Furthermore, the interviews conducted aim to obtain information directly from the respondents and as a complement to the data.

Based on the final result, the score obtained from the questionnaire instrument is 76.42, thus, it is categorized as good, in this case, eleven of the nineteen respondents obtained very good information, and eight obtained good information. Good literacy skills also influence good environmental care behavior. This is supported by (Kresnawati, 2014) research that the level of understanding of information about the environment strongly influences students' attitudes towards the environment. This in-depth understanding will raise awareness to try to be responsible and even positively impact the environment.

Furthermore, the observation results obtained that students have a routine that describes good environmental care behavior, including daily picket (Figure 2) and the values of saving energy instilled by the school. In addition, activities were often held to work together and care for plants in the school environment. The activity was coordinated directly by the head teacher of Adiwiyata implementation. Students have the initiative and awareness to take care of plants, as simple as being careful when playing ball because they do not want to damage the plants.



**Figure 1.** Implementation of Students' Environmental Care Behavior; (a) Daily Picket; (b) buying food using container; (c) waste management activities; (d) students picking garbage in the field.

The last result concerns the students' interviews related to personal knowledge and experience. Students have very good environmental care behavior. Respondents apply a clean and healthy lifestyle at school and in their houses. It started with sweeping and mopping the floor, throwing trash in its place, and washing dishes. However, each respondent assessed that the school environment and residence were still dirty.

*"I (Rf) feel that the school and my house environment are still dirty."*

*"I (Nr) feel my school environment is still dirty."*

This is due to the community's lack of counseling about environmental hygiene. If left unchecked, this attitude can be an example for children in the environment. The impact of this phenomenon is illustrated by the answers of informants who felt that not all friends at school have environmental behavior and concern. It can happen because some students still lack awareness of protecting and caring for the school environment.

*"I (Rf) clean the school and house environment. Rf hopes my friends also have the same thoughts about protecting the environment."*

*"I (Nr) want to clean up (the school environment), but if I am alone, I will be tired. I hope the school is clean, and I want my friends to think like me."*

The collected data on students' environmental care behaviour demonstrates that the school's provision of environmental literacy and the community's role in fostering student independence and responsibility in keeping the classroom and school environment clean are inextricably linked. There is a multi-step process that kids must go through in order to develop an attitude of environmental stewardship. The school provides pupils with helpful resources and encourages them to develop a concern for the world around them. The statement that attitudes, emotions, and assessments of the objects of study contribute to the development of behaviours provides support. The school also plans timely and effective events that address local environmental concerns. This is the most crucial component because, as stated by (Samani, 2012), cultivating a concern for the natural world begins with fundamental beliefs and is straightforward and simple to adopt in any given educational setting.

However, the shared task is how the community supports the school's vision and mission to create a generation that cares for and loves the environment. It cannot be denied that the factor that causes a



lack of student awareness is the lack of habituation patterns taught from childhood, especially through the family and the community environment. This is further supported by the statement from Retnowati that the family environment and society strongly influence the development of students in learning something.

#### 4 CONCLUSION

Students at Al Amaniyyah Elementary School perform admirably across all three dimensions of environmental literacy. Meanwhile, excellent ratings are obtained from the questionnaire data on the students' environmental care practises. However, the community setting where students develop their identities presents a number of obstacles. Student participation in all activities, students' preexisting knowledge, and the successful implementation of Environmental Education all contributed to the respondents' high level of environmental literacy. As a result, the pupils' practises of environmental care are likewise quite good, indicative of high levels of environmental literacy. Specifically, Al-Amaniyyah Elementary School incorporates Adiwiyata's pedagogical, participative, and long-term goals into its eco-friendly programming. Students participate in activities such as reforestation, riverbank cleanups along the Ciliwung, and the production of medicinal remedies from on-campus herb gardens. Nevertheless, there are a number of obstacles for schools to keep this activity going, including a lack of finance and an uneven distribution of knowledge about clean environment in the local population.

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