

## The Effectiveness of Adiwiyata Programme in Enhancing Environmental Awareness Among Students at SMP Negeri 27 Makassar

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### Abstract

**Background:** *The Adiwiyata school programme aims to foster a sense of responsibility among the school community regarding environmental protection and management through good school governance. This study aims to examine the effectiveness of the Adiwiyata programme in fostering environmental awareness among students at SMP Negeri 27 Makassar as contribution towards achieving the Sustainable Development Goals. Unlike previous studies, which generally employed a qualitative descriptive approach, this study utilised a quantitative approach to obtain more measurable empirical evidence regarding the causal relationship between the programme and students' attitudes.* **Methodology:** *The research methodology employed a quantitative approach using linear regression analysis and the coefficient of determination test. Sampling was conducted using purposive sampling. Instruments used included questionnaires, observation sheets, and documentation to measure programme implementation and students' environmentally conscious behaviour.* **Findings:** *The study indicate that the implementation of the Adiwiyata programme and students' environmentally conscious attitudes fall into the 'very good' category, carried out in a participatory manner involving the entire school community and relevant partners. The coefficient of determination value of 0.681 indicates that the Adiwiyata programme has a strong influence on students' environmentally conscious behaviour, whilst 31.9% is influenced by other factors outside scope of this study.* **Contributions:** *This study serve as a source of literature and measurable empirical evidence regarding the impact of the Adiwiyata programme on students' environmental awareness, integrating cognitive, affective and behavioural dimensions. In practical terms, this study can serve as a reference for other schools wishing to implement similar programmes.*

**Keywords:** *Adiwiyata Programme; Environmental Awareness; Environmental Management; Student Attitudes; Sustainable Development*



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## INTRODUCTION

The issue of sustainable environmental awareness has become an increasingly urgent global concern as the impacts of climate change, environmental degradation and the uncontrolled exploitation of natural resources intensify. Within the framework of the Sustainable Development Goals (SDGs), education plays a key role in building public awareness and capacity to address these challenges. This aligns with Goal 4, “Quality Education”, which emphasises the importance of education that is not only focused on cognitive aspects but also shapes character and fosters environmental awareness through the Education for Sustainable Development (ESD) approach (Adrianto et al., 2021; Darmayani et al., 2021b; Handayani et al., 2020; Yusal et al., 2019c).

The ESD programme promotes the integration of sustainability values into the learning process so that students are able to make decisions that are responsible towards the environment, the economy, and society. One form of ESD implementation is realised through the Adiwiyata Programme, which aims to create environmentally conscious schools and foster environmentally friendly behaviour among the school community. This programme focuses not only on school policies but also on the active participation of students in protecting and conserving the environment. The Adiwiyata Programme has been incorporated into Minister of the Environment Regulation No. 02 of 2009 (Darmayani et al., 2021a; Peraturan Menteri Lingkungan Hidup RI, 2013; Yusal et al., 2025).

The Adiwiyata school programme plays a strategic role in increasing awareness of the environment. With these objectives and roles, the Adiwiyata programme's contribution to shaping an environmentally conscious character is highly likely to be realised. The Adiwiyata school programme has four aspects in its implementation, including environmentally-friendly policies, an environmentally-based school curriculum, participatory activities, and environmentally-friendly management of supporting facilities. These aspects play a role in conditioning the school environment to encourage environmentally-conscious behaviour among students and other school members (Aprianto et al., 2023; Yusal et al., 2019b).

The objective of the adiwiyata programme is to foster responsible school communities in environmental protection and management efforts through good school governance to support sustainable development (Environmental Ministerial Regulation of the Indonesian Republic, 2013). The adiwiyata programme has been implemented in public schools, including primary schools, junior high schools, senior high schools and vocational schools in every province in Indonesia. Primary school students, as future assets of development, need to be given top priority in receiving environmental education (Sunarti et al., 2017; Rudisaberi et al., 2022).

Realising an environmentally-friendly school is a systematic commitment of the school to develop programmes to internalise environmental values into all school activities. The physical appearance of the school is neatly arranged so that it becomes a learning vehicle for the entire school community to be wise and behave in an environmentally-friendly manner. A conducive school environment is essential for

creating a comfortable and high-quality learning process (Malik et al., 2022; Yusal & Carding, 2020).

Schools that implement the Adiwiyata programme act as agents in fostering a culture of environmental awareness and care among the school community. Through the Adiwiyata programme, everyone is required to receive education, training, guidance and take responsibility for the environment. This is also based on the provisions of Article 65 paragraph (2) of Law No. 32 of 2009 concerning Environmental Protection and Management. Through the Adiwiyata programme, Indonesian society can excel in the field of the environment (Silaban & Yuliani, 2017; Safrizal et al., 2020; Yusal & Jilung, 2022).

Caring for the environment is an exemplary attitude that aims to achieve harmony, compatibility, and balance between humans and the environment (Yusal et al., 2019a). Previous studies have not been able to capture the long-term impact of the Adiwiyata programme on pupils' actual behaviour in their daily lives. This study, however, has examined the tangible impact of the Adiwiyata programme on pupils' behaviour in their daily lives. Furthermore, several previous studies still employed a simple quantitative descriptive approach, and thus were unable to explore in depth the process of internalising environmental values among students. This study differs in that it has employed a complex quantitative analytical approach capable of comprehensively examining the process of internalising environmental values among students.

Research on the Adiwiyata programme has been widely conducted within the context of environmental education in Indonesia, particularly in assessing the implementation of environmentally conscious school policies (Rahmawati & Ira, 2015). Most studies have focused solely on the general implementation of the Adiwiyata programme without measuring changes in students' environmental awareness as an outcome. However, the primary objective of the programme is to foster environmentally conscious character and behaviour in students, rather than merely achieving administrative targets. Studies examining the effectiveness of the Adiwiyata programme often employ a qualitative descriptive approach, thereby failing to provide robust empirical evidence regarding the causal relationship between the programme and improvements in students' attitudes. Consequently, a quantitative approach is required to measure the level of effectiveness in a more objective and measurable manner.

Environmental awareness can also be described as activities that constantly strive to prevent damage to the environment or surrounding nature by developing efforts to repair damage that has already occurred. As human beings, everyone must protect the environment and strive to repair environmental damage. With people who care about the environment, current environmental problems will not increase (Herman et al., 2022; Yusal et al., 2025; Yusal et al., 2019b). Environmental awareness can also start with ourselves. In light of this, research is required to assess the extent to which the Adiwiyata programme is effective in fostering environmental awareness among pupils at SMP Negeri 27 Makassar, as part of a contribution towards achieving global sustainable development goals.

This study can serve as a source of literature providing measurable empirical evidence regarding the impact of the Adiwiyata programme on students'

environmental awareness, integrating cognitive, affective and behavioural dimensions. This study offers a more comprehensive approach to examining changes in students' attitudes, thereby serving as a reference for future research aiming to develop a more holistic model for evaluating environmental education. In practical terms, the results of this study are expected to serve as evaluation material for schools, particularly State Junior High School 27 Makassar, in optimising the implementation of the Adiwiyata programme so that it has a greater impact on the character development of students. The findings of this study can also serve as a reference for other schools wishing to implement or develop similar programmes, taking into account the factors proven to influence the success of the programme.

## **METHOD**

### **Place and Time of Research**

This research was conducted at SMP Negeri 27 Makassar, located at BTN Hartaco Indah Blok. II A No. 2, AMD 15/16 Daeng Tata Street, Parang Tambung, Kec. Tamalate, Makassar City, South Sulawesi. This research took place from March to May 2025.

### **Research Design**

The research approach used in this study was quantitative. This study used a quantitative approach to determine the extent of the influence of variable X on variable Y using a coefficient of determination test. Quantitative analysis uses numerical data generated from calculations and measurements, which are processed and analysed according to specific statistical criteria. The research design used in this study is a survey research design. A survey research design is useful for asking many respondents about their beliefs, opinions, characteristics, and behaviours that have occurred or are currently occurring. In a survey, information is collected from respondents (Yusal et al., 2022). The survey method asks questions for research on self-reported beliefs or behaviours. The questions become more specific when respondents provide answers to those questions with the desired variables.

### **Research Variables**

Research variables are the objects of research, or the focus of the research. Research variables are divided into two types: independent variables and dependent variables. Independent variables are variables that influence or cause changes in dependent variables. The independent variable in this study is the Adiwiyata school programme. The Adiwiyata school programme is a form of recognition given by the government to formal educational institutions that are considered to have contributed to the development of environmental education (Triwiyanto, 2022).

The dependent variable is a variable that is influenced or affected by the independent variable. The dependent variable in this study is environmental awareness. Environmental awareness is an exemplary attitude that aims to achieve harmony, compatibility, and balance between humans and the environment, creating

individuals who have an attitude and take action to protect the environment. Examples of environmental awareness include:

- a) Maintaining the classroom and school environment (not littering under desks or carelessly in the classroom, not using writing instruments to scribble on classroom and school property, and carrying out classroom cleaning duties);
- b) Taking good care of plants without stepping on or damaging them (caring for plants in the school environment without picking them. Caring for plants in the school environment by not stepping on them and avoiding throwing rubbish into plant pots);
- c) Supporting the go green programme in the school environment by planting trees on Earth Day and Tree Planting Day, using recycled materials for useful crafts, and reducing the use of single-use plastics);
- d) Providing places to dispose of organic and non-organic waste (disposing of waste according to type, distinguishing between types of waste bins according to their composition, and utilising recyclable waste); and
- e) Restricting the use of clean water (conserving clean water in toilets, conserving clean water use at handwashing stations or sinks, and conserving clean water use during wudlu at mosques or prayer rooms within the school environment).

### Statistical Analysis

This study uses simple linear regression to examine whether there is a relationship between the dependent variable and the independent variable. As this study only has one independent variable, simple linear regression is used. The statistical measures used in this data analysis are on a ratio scale. To calculate this regression, the following formula by [Ariska \(2023\)](#) is used:

$$Y = \alpha + bX \dots\dots\dots (1)$$

Explanation,

Y: subject in the independent variable (dependent variable) that is predicted.

a : price of Y when X = 0 (constant price)

b: directional number or regression coefficient value, which indicates an increase or decrease in the dependent variable. If b is positive (+), there is an increase, and if it is negative (-), there is a decrease.

X: the subject in the independent variable that has a specific value. The values of a and b can be calculated using a simple formula. To obtain the values of a and b, the following formula by [Ariska \(2023\)](#) can be used,

$$a = \frac{(\sum Y)(\sum X) - (\sum X)(\sum XY)}{(n)(\sum X^2) - (\sum X)^2}$$

$$b = n \frac{(\sum XY) - (\sum X)(\sum Y)}{(n)(\sum X^2) - (\sum X)^2}$$

**RESULTS AND DISCUSSION**

The Adiwiyata programme launched at Junior High School of SMP Negeri 27 Makassar has increased the awareness and knowledge of the school community about the importance of environmental conservation. This programme can increase student involvement in school activities to create a healthy environment and avoid negative environmental impacts. This is in line with [Aprianto et al., \(2023\)](#), who states that a programme launched in a school is a collection of interdependent and interrelated expectations or goals to achieve the same objective. A programme usually covers all activities included in the same administrative unit, or interdependent and complementary goals, all of which must be carried out simultaneously or sequentially.

The results of the study based on Table 1 show that the implementation of the adiwiyata school programme is in the “very good” category. This is indicated by the average score (mean) for the Adiwiyata School Programme variable of 94.615, while the environmental awareness of students at UPT SPF SMP Negeri 27 Makassar is also in the “very good” category, as indicated by the average score (mean) for the Environmental Awareness variable of 80.769. The adiwiyata programme in the school is implemented in a participatory manner and involves the participation of the entire school community and partner agencies related to environmental management. The programme is socialised to the entire school community. The implementation of the programme is in accordance with four components, namely the development of environmentally-friendly policies, the implementation of an environmentally-friendly curriculum, participatory environmental activities, and the management of environmentally-friendly supporting facilities, which are in line with the adiwiyata guidelines ([Sitisyarah & Mustika, 2017](#); [Alang et al., 2021](#)).

**Table 1.** Descriptive Statistical Analysis Test Results

Variable	Amount of Observer	Obs. with missing data	Obs. without missing data	Min	Max	Mean	Std. deviation
Adiwiyata Programme	39	0	39	80.000	99.000	94.615	6.572
Environmental Awareness	39	0	39	75.000	90.000	80.769	5.909

Similarly, [Rante \(2024\)](#) states in his structural functional theory that society will be harmonious and balanced if social and state institutions can maintain stability. All “action” systems have four important functions in the AGIL scheme, which are necessary for the system to run properly. The four functions are:

1. Adaptation: A system must deal with critical external conditions. The system must adapt to its environment and adjust it to its needs.
2. Goal attainment: or achievement of objectives, is when the system defines and achieves its main objectives.

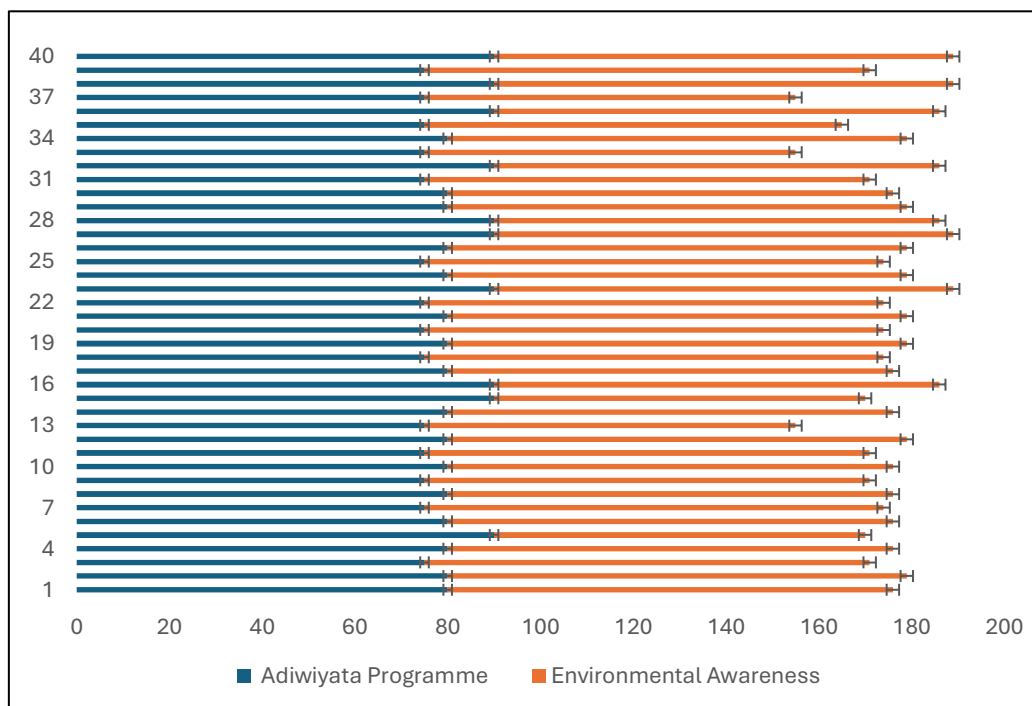
3. Integration: or regulation, is when the system regulates the parts that comprise it. In addition, the system must have the ability to regulate the relationship between the other three main functions (A, G, and L).
4. Latency (Pattern Maintenance): A system must complement, maintain, and improve individual motivation and cultural patterns that create and support motivation. This is known as perseverance. In reality, it has been shown that the knowledge about environmental awareness provided by teachers is one of the important factors in shaping environmentally conscious behaviour in students.

The results of the study based on Table 2 and Figure 1 show the results of linear regression analysis and hypothesis testing through the t-test. Linear regression analysis was used to determine the quantitative effect of changes in the value of the adiwiyata school programme on students' environmental awareness. Hypothesis testing using the t-test was used to prove whether variable X (Adiwiyata programme) individually influenced variable Y (students' environmental awareness behaviour). The results of the linear regression analysis showed that there was a significant influence and relationship between the Adiwiyata school programme and the environmental awareness of participating students.

**Table 2.** Linear Regression Analysis Results

Source	Value	Std. error	T	Sig.
Intercept	92.391	14.801	6.242	122.382
Adiwiyata Programs	0.028	0.183	0.151	0.881

**Note:**  $p < 0.05$  indicates statistical significance



**Figure 1.** Research Variable Composition

The results of the determination test in Table 3 show an  $R^2$  value of 0.681. This proves that the influence of the adiwiyata school programme on environmentally conscious behaviour is 68.1%, with the remaining 31.9% influenced by external factors beyond the scope of this study. This indicates that the Adiwiyata programme has a strong influence on students' environmentally conscious behaviour. The remaining 31.9% is influenced by other factors such as the family environment, school culture, the media, or individual character. This is consistent with [Rante \(2024\)](#), who reported that the Adiwiyata programme has had a significant influence on students' environmentally conscious attitudes.

The hypothesis test results (Table 2) or t-test analysis of 0.020 and  $<0.05$  showed that the adiwiyata school programme had a significant effect on the environmental awareness behaviour of students at the school. The adiwiyata programme at UPT SPF SMP Negeri 27 Makassar was implemented in a participatory manner and involved the participation of the entire school community and partner agencies in environmental management. The programme was socialised to the entire school community. In line with [Sunarti et al., \(2017\)](#); [Yusal et al., \(2019\)](#); [Nugroho \(2021\)](#) The implementation of the programme was in accordance with four components, namely the development of environmentally-friendly policies, the implementation of an environmentally-friendly curriculum, participatory environmental activities, and the management of environmentally-friendly supporting facilities, which were in line with the adiwiyata guidelines.

The adiwiyata programme at UPT SPF SMP Negeri 27 Makassar has increased awareness of the environment, as demonstrated by the wise use of natural resources around the school and the avoidance of actions that damage the environment. Students who spend their days in the school environment have made a positive contribution by preserving the school's environment. Similarly, [Aprianto et al., \(2023\)](#); [Rahma \(2020\)](#) stated that one way to preserve the environment is to instil an attitude of environmental awareness in students through the role of the Adiwiyata programme in schools.

**Table 3.** Determination Coefficient Test Results

Model	R	$R^2$	Adjusted R Square	Std. Error of the Estimate
1	.825	.681	.671	5.778

The formation of environmentally conscious behaviour at UPT SPF SMP Negeri 27 Makassar is carried out not only through the integration of subjects but also by holding socialisation activities for new students or first grade students who are not yet familiar with the concept of adiwiyata schools ([Azmi & Elfyetti, 2017](#); [Harlistyarintica et al., 2017](#)). Therefore, these socialisation activities are very important to be carried out at every important event, such as during the admission of new students, as it makes it easier for them to understand the concept of the school. This is the school's first step in introducing a school programme that prioritises the formation of environmentally conscious behaviour. The same thing was reported by [Aprianto et al. \(2023\)](#); [Pratiwi et al. \(2019\)](#), who found that the Adiwiyata Programme

was effective in increasing the environmental knowledge of school members and changing their attitudes and behaviour towards the environment.

## CONCLUSION

The implementation of the adiwiyata school programme and students' environmental awareness is in the excellent category, carried out in a participatory manner and involving the participation of the entire school community and partner agencies related to environmental management. The results of the study also show a significant influence or relationship between the adiwiyata school programme and the environmental awareness of the participating students. The Adiwiyata programme is implemented in a participatory manner and involves the participation of the entire school community and partner agencies related to environmental management. This programme also increases environmental awareness, as demonstrated by the wise use of natural resources around the school and the avoidance of actions that damage the environment.

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