



# Implementation of Environmental Education in Universities: Impact on Student Knowledge and Attitudes

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**Abstract.** To improve people's knowledge, skills, and understanding of environmental values and issues for the benefit of both the present and future generations, environmental education aims to alter people's behavior and attitudes. This research aims to examine the correlation between environmental knowledge and attitudes. This research was conducted using quantitative research methods. The population in this study were all students of the Department of Civil Engineering and Planning, Universitas Negeri Makassar, consisting of 2 (two) classes with a total sample of 66 students. Collecting data in this study using instruments with knowledge and attitude variables. This study uses Simple Linear Regression. The results showed that environmental knowledge and students' environmental care attitudes positively correlated with a correlation sign of 0.2527. This correlation indicates a weak relationship between environmental knowledge and environmental care attitudes. Attitudes towards the environment can be shown by certain feelings that lead to positive or negative traits. A positive attitude is a real manifestation of the intensity of feelings that pay attention to positive things and the tendency to approach, like, and expect certain objects.

**Keywords:** Elementary School · Environmental Problems · Environmental Awareness · Sustainability Environment

## 1 Introduction

Concern for the environment is influenced by environmental knowledge. This is expected to be a true reference for preserving nature and solving environmental problems. One of the behaviors that need to be developed for the nation's young generation is environmental care behavior and responsibility for environmental damage problems that occur in the environment. Environmental problems happening today, both from the global environment and national level, are mostly sourced from human behavior. An article on the environment written by Halder said that in the last forty years, there had been international recognition that challenges related to environmental degradation and sustainable development have important implications relating to education and schools [1], which means that the environment has a major influence on the achievement of educational goals.

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Environmental education is an effort to change people's behavior and attitudes to increase people's knowledge, skills, and awareness about environmental values and issues to benefit the present and future generations. As one of the subjects of education, students have a role in maintaining, preserving, and solving environmental problems. So, students must be educated to know, realize, and believe that this education impacts increasing knowledge and skills and will help form positive attitudes and behavior.

Since every learner has a unique environmental knowledge foundation, environmental comprehension, perspective, and action are inherently subjective. Students will have varying perspectives on the state of the environment depending on their level of knowledge and awareness. Those who are environmentally conscious are in high demand right now; these are people who not only know about but also act on ecological principles and environmental ethics [2].

With environmental education that is integrated with school subjects, it is hoped that it can increase environmental knowledge and understanding of students so that they have a caring attitude towards their school environment and contribute to creating humans who are wiser towards their environment because students are the right time to instill good character traits.

Caring for the environment is very important because the good and bad conditions of an environment are also determined based on the good and bad attitudes and behavior of humans towards the environment. The environment for humans is one of the most important elements because the environment is not only a place for human activities but also has a very important role in supporting various human activities [3, 4]. With this interaction, certainly, human behavior will also influence environmental conditions. The attitude of human behavior will determine whether the condition of an environment is good or bad. Conversely, how humans treat the environment will affect the quality of life.

An attitude of caring for the environment can be formed through education in schools. By implementing the planting process, and understanding and awareness about the importance of protecting and preserving the environment in schools, it is hoped that the ability and character of students to care for the environment will be formed. Knowledge of biodiversity is one way to achieve education. The use of knowledge about biodiversity can increase knowledge so that it gives rise to innovation, one of which is the attitude of caring for the community (students) towards the environment and the importance of biodiversity values. The higher the knowledge values, the higher the public awareness of biodiversity and the environment [5].

This problem must be overcome by instilling knowledge and attitudes to love the environment. When people know more about the environment and related issues, they will become more aware of the environment and its problems [6]. Thus, they are more motivated to act towards the environment more responsibly. Incorporating the values of environmental awareness in each student through lessons and by building attitudes of caring for the environment is the main thing [7, 8].

## 2 Method

### 2.1 Research Approach

Quantitative research methodologies were used in this study. Quantitative research is a method founded on positivism that explores specific populations or samples, gathers data using research equipment, and statistically evaluates data to test predefined conclusions. Quantitative research collects data in numbers, which are then processed and analyzed to obtain information.

### 2.2 Population and Sample

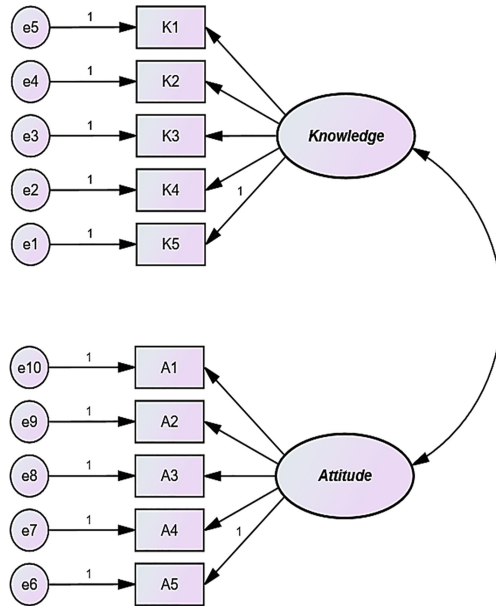
The population is the entire subject to be studied in a study [9]. The population in this study were all students of the Department of Civil Engineering and Planning, Universitas Negeri Makassar, consisting of 2 (two) classes with a total population of 66 students, and it was stated that these students had not yet acquired knowledge about environmental pollution.

Two conditions must be met in the sampling procedure: representative (can represent the characteristics of the population) and adequate size [10]. This study took a sample of 100% of the entire population, and the number of samples used was 66 students. Because the population is less than a hundred subjects, this study is a population sample study (overall) [11].

### 2.3 Data Collection Techniques

Collecting data in this study using instruments [12, 13]. The instrument in a study is a tool used to measure the observed natural or social phenomena [14]. Specifically, all of these phenomena are called research variables (Fig. 1).

Knowledge	Knowledge of environmental issues in everyday life (K1)
	Knowledge of the causes of environmental problems (K2)
	Knowledge of the impact of environmental problems (K3)
	Knowledge of solutions or alternatives to solving environmental problems (K4)
	Knowledge of human dependence on the environment (K5)
Attitude	Appreciation and concern for the environment (A1)
	Responses and thoughts on environmental issues (A2)
	Respect the opinions and views of others on the school environment (A3)
	Appreciate evidence and logical arguments against the management of the environment (A4)
	Tolerance and openness in various problems and management of the environment (A5)



**Fig. 1.** Research Model

The form questionnaire used by the researcher is closed. The instrument measurement scale uses the Likert scale model, namely a measurement scale arranged in the form of a statement and followed by 5 responses indicating levels, namely: (5) always; (4) often; (3) sometimes; (2) rarely; and (1) never.

## 2.4 Data Analysis

This data analysis aims to summarize the data in a form that is easy to understand and interpret so that the relationship between research problems can be studied and tested. The results of the environmental knowledge test and the environmental care attitude questionnaire were processed to produce overall and the total score based on indicators. Environmental knowledge and environmental care attitude data were then descriptively evaluated. A correlation analysis is used to determine whether there is a correlation and the level of correlation and the relationship between the two variables between environmental knowledge and the environmental care attitude of Universitas Negeri Makassar students. This correlation coefficient is used to measure the closeness of the relationship between environmental knowledge and environmental care attitudes. This study uses the IBM SPSS 23 Program to manage primary data from environmental knowledge and attitude variables.

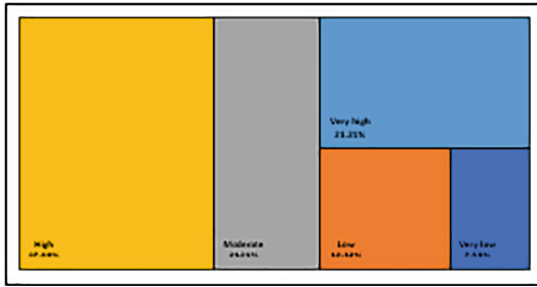


Fig. 2. Dimensions of students' environmental knowledge

### 3 Results and Discussion

#### 3.1 Environmental Knowledge

Environmental knowledge has special rights, everything is viewed from the interests of humans, but humans must also have the greatest responsibility for the environment, where this responsibility cannot be delegated to other living things (Fig. 2).

The research results found that the highest level of knowledge was in the high category, with a percentage of 37.88% (25 respondents). There needs to be cooperation between students and teachers to obtain good environmental knowledge. This is because knowledge cannot be transferred from a teacher to a student. Students must also interpret what has been taught by adjusting to their experiences. Without experience, one cannot form knowledge. Experience is not only interpreted as a physical experience but also as a cognitive and mental experience [15, 16].

#### 3.2 Environmental Attitude

To care for the environment is to take preventative measures to protect the natural world around you and to devise strategies to restore natural systems that have been compromised (Fig. 3).

The research results found that the highest level of environmental attitude was in a low category, with a percentage of 33.33% (22 respondents). A person's knowledge

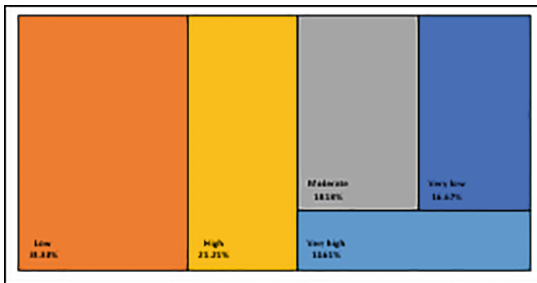


Fig. 3. Dimensions of students' environmental attitude.

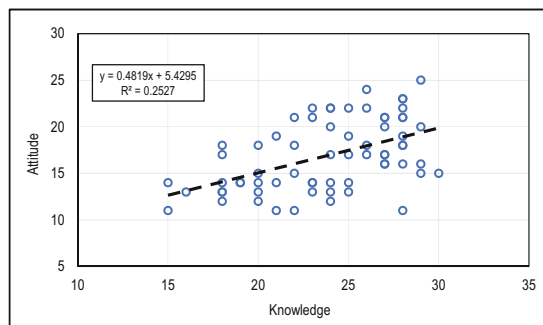
of something will indirectly affect his attitude or behavior. In this regard, Fishbein and Ajzen knowledge forms the basis for forming beliefs, and beliefs are considered for determining attitudes, while knowledge is a collection of information recorded within a person [17].

### 3.3 Correlation Analysis

Influence research determines the presence or absence of influence between two or more variables [18, 19]. So, this influence research is causal research where the first variable influences the second variable. This study uses Simple Linear Regression. Simple Linear Regression is a technique used to obtain a model of the relationship between 1 (one) dependent variable and one independent variable.

From the plot (Fig. 4), it can be seen that the regression equation is on the line  $y = 0.4819x + 5.4295$ , which has a coefficient of determination ( $R^2$ ) of 0.2527. Then the equation (y) interprets (x) as the function of X, meaning that if (y) is the level of knowledge and (x) is the attitude of caring for the environment, then the value of the attitude (y) depends on the level of environmental knowledge (x). The results showed that environmental knowledge and students' environmental care attitudes positively correlated with a correlation sign of 0.2527. This correlation indicates a weak relationship between environmental knowledge and environmental care attitudes. The weak relationship between knowledge and environmental care attitude is caused by the low value of students' environmental knowledge while having a very high environmental care attitude. Viewed from the theory, if environmental knowledge should increase, the attitude toward caring for the environment should also increase. Piaget's opinion in the theory of effective development states that cognitive development is something that cannot be separated from effective development, which means that in line with a person's cognitive development, a person's attitude will also develop so that between knowledge and attitudes a significant relationship is formed [20, 21].

Students with a low level of environmental knowledge but care about the environment in the high category can be caused by other factors, not solely because of their knowledge. Other factors that influence environmental care attitudes, according to Gifford & Sussman [22], include information about current environmental issues, gender,



**Fig. 4.** Plot Regression Equation (Relationship between Environmental Knowledge and Environmental Attitude).

age, social status of a person, nation, economy, place of residence, whether in urban or rural areas, politics, religion, experience, personality, and education.

## 4 Conclusion

Knowledge of the environment possessed by students has not been fully applied to an attitude of caring for the environment. Awareness of protecting the environment is still in the understanding stage and has not yet reached the application stage. For environmental knowledge to have a large contribution, these conditions are very dependent on the situation of delivering the material so that teachers can use media or learning tools that are more varied in conveying material related to environmental issues with the aim that students are not bored with receiving the material provided. Persuasion can be done through analyzing, synthesizing, and assessing so that confidence can be obtained.

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