

**THE CORRELATION BETWEEN ENVIROMENTAL KNOWLEDGE AND  
ENVIROMENTAL CARE ATTITUDE ON BIOLOGICAL EDUCATION  
STUDENTS IN STATE UNIVERSITY OF JAKARTA**

***Hubungan antara Pengetahuan Lingkungan dengan Sikap Peduli Lingkungan  
Mahasiswa Pendidikan Biologi Universitas Negeri Jakarta***

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**Abstract:** *The environment plays an important role in human life. Knowledge of the environment can affect the attitude of caring for the environment. This study aims to determine the correlation between environmental knowledge and environmental care attitude students of Biology Education Study Program, UNJ. This research was conducted at State University of Jakarta on February 2022. The total samples used were 70 students, taken by Simple Random Sampling. The method used is a quantitative method with a correlational study. Statistical hypothesis test through Linearity test and Pearson Correlation test. It is known that there is a positive relationship between environmental knowledge and environmental care attitude with correlation coefficient in high category. The relationship that formed is a positive relationship, so the higher the student's environmental knowledge, the better the environmental care attitude. Further research needs to be done in order to find other variables that are suspected to have a relationship to student's knowledge of the environment with an environmental care attitude so that student's knowledge and student's environmental care attitude can be increased. The application of the good environmental care attitude of UNJ Biology Education students also needs to be appreciated by the University. With awards related to students' caring attitude towards the environment, it can bring up environmental care attitudes for other students.*

*Keywords: student, environmental care attitude, environmental knowledge*

## **INTRODUCTION**

The environment plays an important role in human life. As stated by Akhadi (2014), that humans are never separated from threats that come from the surrounding environment, which can be in the form of disease outbreaks or natural phenomena such as climate change. Living things around us are closely related either neutrally or passively to humans. Without humans, plants, animals, and other living things can continue their lives. We need to realize that it is humans who need other living things for their survival (Sitorus, 2021). Environmental problems are problems that need to be solved by all parties, by developing responsibility for environmental problems (Putrawan, 2020).

The most environmental problems in Jakarta include air pollution and landfills. The Central Bureau of Statistics recorded that the average concentration of dissolved particles in the air in November 2016 from the Glodok observation station (Jakarta) entered an unhealthy level, namely 340.23 g/m<sup>3</sup> which has a serious impact on health. Jakarta Bay water has also been subjected to a severe pollution load, and the water is highly polluted. The activity of the green mussel catalase enzyme that lives in Muara Angke, Jakarta Bay is significantly higher than in Banten Beach (Rudsi, 2021). Environmental pollution causes the entry of substances that are detrimental to the environment and affect the use of resources (Suryanda, 2021).

The knowledge of someone whose education level is only up to junior high school will certainly be different from the knowledge of someone who has a higher level of education. According to Notoadmojo (2012), someone who has a higher level of education, his knowledge will also be higher so that he is able to apply the knowledge gained in his daily life, one of which is knowledge about the environment.

According to the Law of the Republic of Indonesia No. 20 of 2003 and RI Law no. 12 of 2012, Higher education is the highest level in formal education organized by universities with students being students. That is, students are assumed to have a high level of knowledge. Students become subjects in society who must contribute to climate change prevention (Sigit, 2021). Education about the environment is closely related to Biology. Knowledge about the environment of students with a Biology background is expected to be higher than other majors.

The environment for humans is a very important element, because the environment is not only a place for humans to move, but the environment also plays a very important role in supporting various human activities. The attitude of human behavior will determine the good and bad conditions of an environment. On the other hand, how humans treat the environment will affect the quality of human life itself (Hamzah, 2013).

Knowledge of the environment can affect attitudes. The higher the level of knowledge and environmental concern possessed by a person, the higher the ecological attitude possessed by that person compared to those who do not have knowledge and concern for the environment (Julina, 2013).

The attitude of caring for the environment is influenced by environmental knowledge. This is expected to be a true reference in preserving nature and solving environmental problems it faces. One of the attitudes that need to be developed for

students is an attitude of caring for the environment and being responsible for the problem of environmental damage that occurs in the environment (Ardianti, 2017).

The attitude of caring for the environment in everyday life in society is defined as a person's reaction to his environment, without damaging the environment. Environmental care attitudes express general attitudes towards environmental quality which are manifested in their willingness to state actions that can improve and maintain environmental quality in every behavior related to the environment (Sue, 2003).

The Minister of the Environment, Balthasar Kambuaya in 2013 set several universities as pilot universities for green campuses. The expected goal of this program is to create awareness and concern for all campus residents towards environmental problems. The policy taken by the government is to invite the academic community, including students, to take an active role. As students, especially students of biology education, it is necessary to have an attitude of caring for the environment to participate in supporting this program. Students have an important role in protecting the environment around the campus (Azrai, 2019).

Based on research conducted by Armanda (2019), efforts are still needed to maximize the development of students' environmental care attitudes. If the attitude of caring for the environment can be expressed through actions, students who care about the environment will always preserve the environment. According to Aminrad (2013), if people have more knowledge about the environment and related issues, they will be more concerned about the environment and its problems.

The motivation to act towards the environment in a more responsible manner and build an attitude of caring for the environment is also higher. Considering that environmental knowledge is very important, and is expected to minimize the development of environmental damaging agents. In accordance with the statement of Pe'er (2007), the low level of environmental knowledge is a factor that influences a person to ignore the implications of everyday behavior on the environment. Low environmental knowledge causes a person to lack information that is the basis for behavior that does not damage the environment.

Based on the problems above, it is necessary to conduct research to determine the relationship between knowledge knowledge and environmental care attitudes of students of Biology Education, State University of Jakarta.

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## **METHOD**

The research method used is quantitative with correlational studies. The target population in this study were all students of the State University of Jakarta. The affordable population in this study were students of Biology Education class 2018-2021 at the State University of Jakarta. The number of samples in this study amounted to 70 people. The number of samples obtained using the Taro Yumane formula. The sampling technique used was simple random sampling. This technique selects samples randomly so that each sample has an equal chance of being selected.

### **Data Analysis Techniques**

Data from research results from 70 students of the Biology Education Study Program, State University of Jakarta (UNJ) in the form of the value of knowledge about the environment and the value of caring for the environment. Data was obtained by using a knowledge and attitude test instrument through Google Forms. Description of the data as follows :

#### **a. Knowledge of Environment**

Based on the data received, there are 40 students (57%) who have a good level of knowledge, 26 people (37%) who have a sufficient level of knowledge, and 4 people (6%) who have a low level of knowledge.

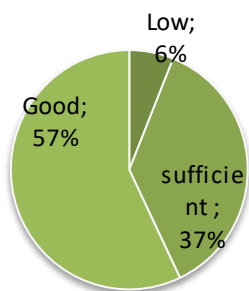


Figure 1. Knowledge Score of Biology Education Students, State University of Jakarta

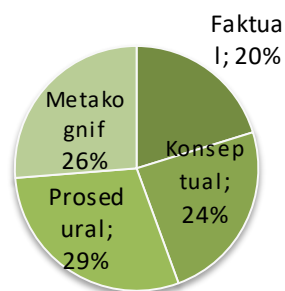


Figure 2. Score of Knowledge Dimensions of Biology Education Students, State University of Jakarta

Based on the data received, the percentage of knowledge scores can also be described based on four dimensions. The four dimensions of knowledge are factual, conceptual, procedural and metacognitive. The dimension with the highest percentage is procedural at 29%, the metacognitive dimension has a percentage of 26%, the conceptual dimension has a percentage of 24% and the factual dimension has the lowest percentage of 20%. The diagram of the acquisition of the environmental knowledge dimension score can be seen in Figure 2.

b. Environmental Care

Based on the data obtained, there are 61 people (87%) who have good environmental care attitudes, 9 people (13%) who have sufficient environmental care attitudes. The diagram of the acquisition of environmental care attitudes scores can be seen in Figure 3.

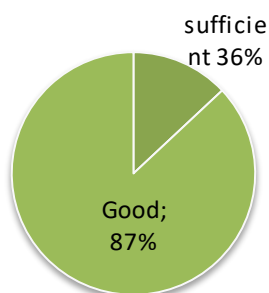


Figure 3. Score of Environmental Care Attitudes for Biology Education Students, State University of Jakarta

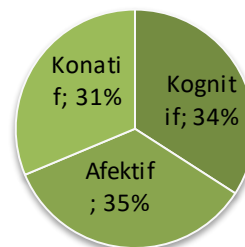


Figure 4. Score Dimensional Attitude of Biology Education Students, State University of Jakarta

Based on the data obtained, the percentage of attitude scores can also be described based on three dimensions. The three dimensions of knowledge are affective, cognitive and conative. The dimension with the percentage is the affective dimension which has the highest percentage of 34.6%, the cognitive dimension of 34.1%, and the conative dimension which has the lowest percentage of 31.3%. The diagram of the acquisition of the environmental care attitude dimension score can be seen in Figure 4.

### **Data Analysis Prerequisite Test**

#### a. Normality test

Normality testing was carried out using the Komogorov-Smirnov test at = 0.05 with the SPSS 24.0 program. Based on the normality test of the value of knowledge about the environment and the attitude of caring for the environment, the students of Biology Education UNJ obtained a significance value ( $p$ ) = 0.200. This shows that the significance value ( $p$ ) > 0.05 is  $0.200 > 0.05$ , which means accept  $H_0$ . This shows that the data of knowledge about the environment and attitudes of caring for the environment are normally distributed.

#### b. Homogeneity Test

Homogeneity testing was carried out using the Bartlett test through the SPSS 24.0.0 program with = 0.05. The results obtained are the significance value of 0.133. This shows that the significance value is greater than 0.05, which means that  $H_0$  is accepted. This shows that the data has the same or homogeneous variance

### **Hypothesis test**

Hypothesis testing was carried out after the prerequisite tests were carried out on the data obtained. Hypothesis testing was carried out using a simple linear regression test and a correlation test using the Pearson Product Moment . formula Based on the calculation of the linearity test, the significance value ( $p$ ) is greater than , namely ) =  $0.834 > 0.05$ , which means the form of a linear relationship between the two variables. These results indicate that there is a linear relationship between the environmental knowledge variable and the environmental care attitude, which means that every increase in the environmental knowledge variable ( $X$ ) will also cause an increase in the environmental care attitude variable ( $Y$ ).

Calculation of the correlation coefficient and the coefficient of determination is done using the Pearson Product Moment formula. Based on the results of calculations using the SPSS 24.00 program, a significance value ( $p$ ) is smaller than , which is  $0.001 < 0.05$  which indicates that there is a significant relationship between the variable knowledge of the environment ( $X$ ) and the attitude of caring for the environment ( $Y$ ).

Based on the calculation, the correlation coefficient ( $r_{xy}$ ) of 0.768 shows that the relationship between environmental knowledge and environmental care attitudes in Biology Education students has a low correlation. The result of the coefficient of determination is 0.5898 . This can be interpreted that knowledge contributes 58.98% to the attitude of caring for the environment.

## RESULT AND DISCUSSION

The results of this study indicate that there is a relationship between environmental knowledge and environmental care attitudes in students of Biology Education, State University of Jakarta. The relationship formed is a positive relationship between the two variables, which means that if environmental knowledge is getting better, then the attitude of caring for the environment will be better. Based on this, it can be proven that one's knowledge is very closely related to the formation of attitudes in that person.

The formation of attitudes will form an opinion that will give birth to decisions in personal matters such as how we can protect the environment. Environmental pollution is a problem that cannot be underestimated by us. As responsible Indonesian citizens, we need to preserve our environment so that life after us can still enjoy the diversity of flora and fauna that exist. Concern for the environment will arise when someone has understood the importance of the environment for life (Azrai, 2018)

Having knowledge is definitely better than not having it. Knowledge of a good environment will be reflected in daily attitudes and habits. This is because someone who has knowledge will be more selective in doing everything. This opinion is also supported by Walgito (2010), attitude is closely related to one's level of knowledge where one's attitude towards an object shows one's knowledge of the object in question, for example, the environment.

Based on the data from Figure 1, we can see that 57% of students' environmental knowledge of Biology Education at the University of Jakarta is in the good category. Someone who has high environmental knowledge will be more aware to preserve the environment. According to Creech (2009), that high environmental knowledge can increase environmental awareness and awareness, which may lead to changes in one's behavior. Another opinion Adeolu (2014) states that students who have environmental knowledge will be more motivated to take part in environmental protection activities.

Based on the calculation of the percentage of achievement of the dimensions in Figure 2, the procedural dimension ranks first (28.8%), the second is the metacognitive dimension (25.8%), the conceptual dimension (24.6%) and is followed by the factual dimension as the lowest (20.6%).

The high procedural dimension illustrates that students know information related to environmental knowledge, such as ways to protect the environment and measures to prevent environmental pollution. This knowledge can be used in everyday life as a step to reduce unnecessary waste. Critical land reclamation and resource management are steps for sustainable development. According to Radmehr & Drake (2018) procedural knowledge explains how to do something, the steps and as a procedure in determining the right time to implement it.

The metacognitive dimension has a percentage of 25.8%. The metacognitive dimension plays an important role in remembering events and impacts that will occur in the future. A case in point is changing shifting agriculture to permanent agriculture in an effort to prevent further forest destruction. Metacognitive knowledge is important because it is knowledge based on long-term memory. According to Piaget's explanation in Siregar and Hartini (2010) who argues that knowledge is a human creation that is constructed through experience, the process of formation goes on continuously and every time there is a reconstruction by a new understanding.

The conceptual dimension has a percentage of 24.6%. The high conceptual knowledge is because students have a high level of knowledge, so they can understand the principles and relationships with the information around them. Conceptual knowledge is formed because female students have reached the level of higher education. Knowledge of the nature of greenhouse gases that can cause global warming is one example. According to Rahayu (2016), a person's level of education greatly influences his knowledge, a person with higher education will have broader knowledge as well. Higher education contributes to the formation of knowledge,



because the higher education level does not only demand to know the basic (factual) elements, but also demands other levels of knowledge after that, including conceptual.

The last dimension is the factual dimension with a percentage of 20.6%. This knowledge dimension contains more facts, terminology or terms in this case related to environmental knowledge which includes damage, types of pollution, changes, methods of preservation, types of waste and recycling processes. The notion of community, population, and ecosystem is also included in the factual dimension. The factual dimension requires the ability to remember more than higher order thinking skills. This is in accordance with the theory of Anderson and Krathwohl (2014) which explains that factual knowledge contains the basic elements that students must know if they are going to study a discipline or to solve a problem.

The indicators used in this study refer to Abdurrahman (2004) and Bloom's Taxonomy. In the process of question validity, there is one indicator that only has one valid question, namely procedural. This is a weakness in this study because the number of questions made is only small.

The level of education in a person is not only related to a person's level of knowledge related to the field of science but also has a relationship with attitudes in responding to an object. This is in accordance with the opinion of Azwar (2013) that the level of education is also one of the components of social factors that influence the increase in knowledge and the formation of a positive attitude of a person. The higher a person's level of education, it is believed that his knowledge will also increase. Increased knowledge is not only from the scientific field studied academically but knowledge in addressing an object.

Based on the data from Figure 3, we can conclude that 87% of Biology Education students at the University of Jakarta have a good environmental care attitude. This is also in line with good knowledge of the student environment.

The affective dimension is an emotion or feeling in a person on a subject. In this study, this dimension occupies the highest number, namely 35%. This component is a subjective component for a person's attitude. For some people, carrying their own shopping bags is a hassle. Without realizing it, single-use plastic that is usually used can have a bad impact on the environment. Plastic waste is waste that is difficult to recycle.

In addition, the use of single-use drinking bottles is also a contributor to plastic waste. If a person has a feeling to protect the natural environment, they will try to reduce the use of plastic. The use of a tumbler is an attitude to care for the environment. As someone who has environmental knowledge, it is better to choose something quality for ourselves and also for the environment around us.

Our emotional reaction to an object will form a positive or negative attitude towards that object. This emotional reaction is largely determined by the belief in an object, namely the belief in an object that is good or not good, useful or not useful (Zuhdi, 1995).

The cognitive dimension is a dimension with a percentage of 34%. The cognitive component is a component of belief based on one's processing, perception, and experience regarding an object (Azwar, 2005). The use of tissue seems to be a habit that is considered normal. Without realizing it, the existence of tissue becomes a vital thing, especially abroad. For example, at the beginning of the pandemic, there was a shortage of toilet paper in Europe. There was panic buying which triggered another panic buying.

Globally, WWF estimates that every day around 270,000 trees are cut down and end up in the trash. Excessive use of tissue will have a negative impact on the environment and on health. Replacing tissues with handkerchiefs is one way to preserve the environment around us.

The last dimension is conative or can be called a tendency to act. This component is the lowest component with a figure of 31%. An example of this attitude is to look at the labels of clothes when buying clothes. The clothing label contains information on the raw materials for making the clothing. Materials with good quality produce clothes that are more durable so that they can be used for a long time. Using low-quality clothing can increase the number of clothing purchases and increase fashion waste.

The conative component or tendency to act (behave) in a person is related to the attitude object. A person's behavior in certain situations and in situations facing certain stimuli is largely determined by his beliefs and feelings towards the stimulus. The tendency to behave consistently, in harmony with these beliefs and feelings forms individual attitudes (Azwar, 2005). This low dimension can be caused by the lack of consistency in the attitude of caring for the environment and the tendency to act to care for the environment is still lacking.

There are data anomalies found in the sample of this study. The level of knowledge of the sample shows a low value while having a good environmental care attitude. This can happen because there are other factors that can affect the attitude of caring for the environment in addition to environmental knowledge. In addition to knowledge, factors that influence the formation of attitudes include personal experience, culture, other people who are considered important, mass media, educational institutions or religious institutions, emotional factors in individuals. Factors that can affect the structure of attitudes are also influenced by 3 kinds of responses, namely knowledge responses, attitude responses, and behavioral responses (Azwar, 2013).

The environment is quite critical, and it can be said that the main cause of environmental damage is humans. Therefore, concern is needed to overcome environmental problems so that it will change the new environmental paradigm and raise behavioral intentions that will be used as behavior (Suryanda, 2021).

Knowledge can be acquired in the classroom during the learning process and can be applied to everyday life. Attitude is visible behavior. The attitude response is relatively persistent to react in a good or bad way to certain people or things (Muhibbin, 2011).

The use of knowledge from the knowledge of the human brain to be applied in everyday life in order to achieve optimal results is an example of applied neuroscience. The brain perceives all stimuli to be understood through nerve cells, neural circuits, and neurotransmitters. For example, when a person remembers an event in the past, the brain will respond in the same way. It all happens because for the brain it all happens in the moment.

The attitude of caring for the environment that has been formed in a person's individual will be embedded in his brain. The formation of this attitude is better done from an early age. However, it is possible that the formation of attitudes after adulthood cannot be carried out. As long as neurons can still function properly, an attitude of caring for the environment can be formed.

The provision of rewards and punishments is also considered important in the formation of attitudes. When given a reward, the brain will produce dopamine and increase neuron activity. Signals that are transferred over time along with learning can produce a good attitude, as if the brain wants a reward. On the other hand, serotonin will form anti-dopamine as learning caused by punishment (Dayan, 2002)

The result of the calculation of the correlation coefficient obtained from the calculation of the data obtained is 0.768 and shows the relationship between the two variables in the study is positively related. This means that if the knowledge of the environment is high, the attitude of caring for the environment is also high and vice versa, if the level of knowledge of the environment is low, the attitude of caring for the environment is also low. The coefficient value obtained in this study is included in the high category. The results of this study indicate that environmental knowledge contributes 58.9% in forming an attitude of caring for the environment. The contribution obtained is included in the high category. This indicates that environmental knowledge can influence in shaping an attitude of caring for the environment.

## CONCLUSION

Based on the results of the study, it was concluded that there was a relationship between knowledge about the environment and the attitude of caring for the environment for students of Biology Education, State University of Jakarta. The relationship that is formed is a positive relationship, so the higher the student's environmental knowledge, the better the attitude of caring for the environment.

## THANKS NOTE

Acknowledgments to all lecturers and friends related to this research. Thank you also to UNJ Biology Education Students who participated in conducting this research.

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