

Student Cognitive Correlation of Concern for the Surrounding Natural Environment

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Abstract: This research aims to see the correlation and contribution between the cognitive levels of the surrounding natural environment in students in class XI at Private High School of Immanuel Medan. This research was conducted on all class XI students consisting of 3 classes, with a population of 120 people and a sample of 93 students. This type of research is descriptive research with correlation techniques. The sampling technique was carried out by random sampling. The research instruments used were cognitive tests of the surrounding natural environment, distribution of awareness questionnaires for the surrounding natural environment, observation sheets and interviews. The research results show that the correlation value formed from the cognitive level of the surrounding natural environment with concern for the surrounding natural environment is 0.289 (low) with a contribution of 11.81% and regression analysis shows the regression equation $\hat{Y} = 1 + 1.5091x$. From the calculation results, t_{count} is $12.78 > t_{table} 2.78$. This indicates that H_a is accepted and H_0 is rejected, in other words there is a significant correlation between students' cognitive level and the surrounding natural environment and concern for the surrounding natural environment at Private High School of Immanuel Medan.

Keywords: Cognitive; Private High School of Immanuel Medan; Surrounding natural environment

Introduction

The presence of waste is one of the problems faced by society. The existence of waste is undesirable if it is related to factors of cleanliness, health, comfort and beauty (Dewi, 2021; Hasibuan, 2016; Ikhsan et al., 2020). Piles of rubbish that disturb the health and beauty of the environment are a type of pollution that can be classified as social environmental degradation (Bintarto, 1997; Harpito et al., 2021; Syahputra, 2021).

Global issues regarding the environment are something that is very often heard nowadays, where a lot of environmental damage occurs due to illegal logging and excessive use of natural resources without sustainable conservation, increasing global warming, and decreasing the quality of natural ecosystems (Hasanah et al., 2020; Narut et al., 2019; Simarmata et al., 2018). This is caused by a lack of cognitive and concern for the environment. As a result, the environment experiences damage which also poses a threat to the

world community, for example floods, landslides, pollution, exhaustion of water sources (Azmi et al., 2017).

Concern for the environment is influenced by environmental cognition (Praminingsih et al., 2021; Rezkita et al., 2018). It is hoped that this can be a correct reference in preserving nature and solving the environmental problems it faces. One of the behaviors that needs to be developed for the nation's young generation is behavior that cares about the environment and is responsible for environmental damage problems that occur in the environment (Pratiwi et al., 2020; Wanabuliandari et al., 2017).

The environmental problems that occur today, both from the global environment and the national scope, mostly originate from human behavior (Nur, 2019; Stevanus, 2019). A journal on the environment written by (Halder, 2012) said that in the last forty years there has been international recognition that challenges related to environmental degradation and sustainable

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development have important implications related to education and schools. Which means that the living environment has a big influence on the achievement of educational goals.

The efforts that have been made by the Ministry of the Environment to address the importance of environmental education through direct schools are the Adiwiyata School. Environmental education is an effort to change behavior and attitudes carried out by the community which aims to increase people's knowledge, skills and awareness about environmental values and issues for the benefit of the current and next generations (Aripin, 2017; Sulisty, 2018; Therik et al., 2021). Students as an educational subject have a role in maintaining, preserving and solving environmental problems. So students must be educated to know, be aware and believe that this education will have an impact on increasing cognitive and skills and will help in forming positive attitudes and behavior (Ardianti et al., 2017).

Environmental problems related to understanding, attitudes and behavior are subjective, because each student has a different environmental cognitive level. Students' perceptions of existing environmental conditions will also differ according to their understanding and awareness. At this time, Indonesia needs people who are aware of the environment, namely people who understand and implement attitudes and behavior that care about the environment and apply the principles of ecology and environmental ethics (Darmawan et al., 2018; Faizah, 2020; Purwanto, 2018).

Some research results regarding the relationship between environmental cognitive and environmental caring attitudes include: Sirait (2015) found that there is a significant relationship between students' cognitive level and environmental loving behavior, meaning that the higher the environmental cognitive value, the higher the environmental loving behavior value student. On the other hand, the lower the cognitive value of the environment, the lower the students' environmental loving behavior will be. Azhar et al. (2016) found that there is a positive relationship which is quite significant and close to significant between environmental cognition and attitudes towards preserving the environment. If the cognitive value of the environment increases, the attitude value of preserving the environment will also increase. On the other hand, if the cognitive value of the environment decreases, the attitude value of preserving the environment will also decrease.

Private High School of Immanuel Medan is a school that essentially participates in maintaining a clean environment. This can be seen from the facilities and infrastructure provided by the school to maintain a clean environment. Next to the school there is a river, and in

front of the school there is a residential area. This shows that the condition of the environment outside the school greatly influences the environment inside the school.

Based on the results of observations carried out at Private High School of Immanuel Medan, it was found that there were still students scribbling on tables, chairs and school walls using pens, bringing food from the canteen into the classroom and using desk drawers as rubbish dumps, not carrying out picket duties. classes, dirty and smelly student bathrooms and food wrappers scattered in front of the bathroom. This attitude of throwing rubbish carelessly seems to have become a habit.

This problem must be overcome by instilling the cognitive and attitude to continue to love the environment. As people become more cognitive about the environment and related issues, they will become more aware of the environment and its problems. Thus, they are more motivated to act towards the environment in a more responsible way. Instilling environmental awareness values in every student through lessons and by building environmentally caring attitudes is the main thing (Aminrad et al., 2013).

Method

The population in this study were all class XI students at Private High School of Immanuel Medan with a total of 93 people consisting of 3 classes. The samples for this research were classes XI MIPA 1, XI MIPA 2, and XI MIPA 3, consisting of 93 students. The instruments in this research were an environmental cognitive test, an attitude questionnaire regarding concern for the surrounding natural environment, an observation sheet, and an interview sheet. This type of research is correlational research which aims to find out whether there is a correlation and if there is, how close the correlation is.

The data analysis technique used is the product moment correlation technique which is used to find the correlation between the independent variable (X) and the dependent variable (Y). Correlation analysis between variables was carried out in this research, namely cognitive correlation with concern for the surrounding natural environment.

Result and Discussion

Research Result

Student Environmental Cognitive Level

Based on environmental cognitive level test data obtained from research results with a total of 93 respondents, the average (X) = 48.73 and standard deviation (SD) = 16.51 were obtained. The frequency

distribution of students' environmental cognitive levels can be seen in the Table 1.

Table 1. Frequency Distribution of Students' Cognitive Levels Regarding Concern for the Surrounding Natural Environment

| Class | Value Interval | Frequency |
|-------|----------------|-----------|
| 1 | 0 - 10 | 0 |
| 2 | 20-30 | 3 |
| 3 | 21-30 | 4 |
| 4 | 31-40 | 8 |
| 5 | 41-50 | 7 |
| 6 | 51-60 | 11 |
| 7 | 61-70 | 17 |
| 8 | 71-80 | 21 |
| 9 | 81-90 | 22 |
| 10 | 91-100 | 0 |
| Total | | 93 |

Environmental Concern for the Surrounding Nature

From the data obtained in research with 93 respondents, the average (\bar{x}) = 87.33 and standard deviation (SD) = 6.38 were obtained. The frequency distribution of concern for the surrounding natural environment can be seen in the table 2.

Table 2. Frequency Distribution of Environmental Concern Attitudes

| Class | Value Interval | Frequency |
|-------|----------------|-----------|
| 1 | 60-63 | 0 |
| 2 | 64-67 | 3 |
| 3 | 68-71 | 4 |
| 4 | 72-75 | 8 |
| 5 | 76-79 | 7 |
| 6 | 80-83 | 11 |
| 7 | 84-87 | 17 |
| 8 | 88-91 | 21 |
| 9 | 92-95 | 22 |
| 10 | 96-99 | 0 |
| Total | | 93 |

Regression Equation Test, and Linear Regression Significance

For the linearity of the regression equation, obtained $F_{count} = 1.32$, then consulted with F_{table} at $\alpha = 0.05$ with dk numerator = 13 and dk denominator = 78, obtained $F_{table} = 3.61$. So we get $F_{count} < F_{table}$, namely $1.32 < 3.61$, so it can be concluded that the regression equation $y = 1.5091x + 1$ is linear.

Next, for the significance of the regression, by consulting F_{count} with F_{table} at $\alpha = 0.05$ with dk in the numerator = 1 and dk in the denominator = 92, we get $F_{table} = 2.78$ so we get $F_{count} > F_{table}$, namely $12.78 > 2.78$, which means the regression of X and Y is real (meaningful). For more details, the regression equation can be seen in the Figure 1.

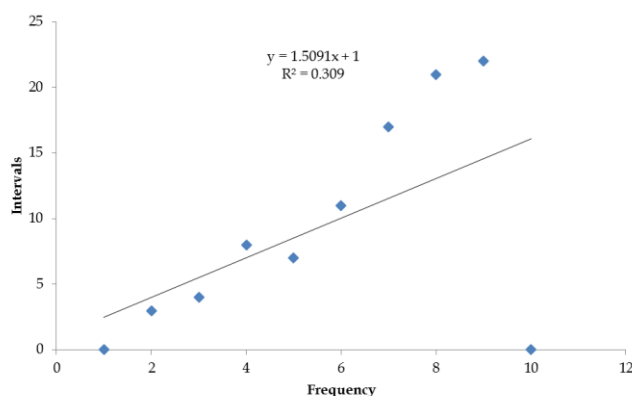


Figure 1. Cognitive level regression equation diagram on concern for the surrounding natural environment

From Figure 1 above, it can be seen that the regression equation is on the line $\hat{Y} = 1 + 1.5091$ which has a coefficient of determination (R^2) of 0.1069. So the equation \hat{Y} interprets \hat{Y} as a function of X, meaning that if \hat{Y} is the cognitive level and X is concern for the surrounding natural environment, then the attitude value (\hat{Y}) depends on the cognitive level (X).

The results of the normality test using the Lilliefors test obtained $L_{count} < L_{table}$, namely $0.0187 < 0.0639$ and $0.0578 < 0.0639$, so it can be concluded that the data on variables X and Y are normally distributed. The results of the Homogeneity test using the Bartlett test obtained $X^2_{count} < X^2_{table}$ or $59.123 < 153.612$, thus it was concluded that the data were homogeneous. Correlation Coefficient Test Results obtained $r_{xy} = 0.289$. Because $r_{count} = 0.289 > r_{table} = 0.188$, there is a correlation, but the relationship is low. So it can be concluded that there is a relationship between students' cognitive level and concern for the surrounding natural environment among students at Private High School of Immanuel Medan.

Based on the results of calculations in Hypothesis Testing, it was obtained that t_{count} was $3.823 > t_{table} 1.773$ so it could be concluded that the alternative hypothesis (H_a) in this study could be accepted while rejecting the null hypothesis (H_0) in other words there was a significant correlation between the cognitive level and concern for the surrounding natural environment in Private High School of Immanuel Medan.

Observation Data on Surrounding Environmental Concern

Observations were carried out by observers directly on all samples, namely classes XI MIPA 1, XI MIPA 2, and XI MIPA 3. Observations were carried out on class XI students at Private High School of Immanuel Medan to determine environmental concern for the natural surroundings. Based on the results of observations of environmental concern for the natural surroundings, the average percentage value obtained according to the

observation sheet for which the scoring rubric has been determined can be seen in Table 3.

Table 3. Observation Results Concern for the Surrounding Environment

| Statement | Value Range | Information |
|-----------|-------------|-------------|
| 1 | 87.16 | Very good |
| 2 | 33.24 | Not enough |
| 3 | 50.22 | Enough |
| 4 | 37.81 | Not enough |
| 5 | 48.00 | Not enough |
| 6 | 62.00 | Good |
| 7 | 38.00 | Not enough |
| 8 | 65.00 | Good |
| 9 | 91.70 | Very good |
| 10 | 91.70 | Very good |

Data from Interviews Concern for the Surrounding Environment

From the results of interviews with respondents at Private High School of Immanuel Medan, it turns out that there are several factors that can influence the cognitive level and awareness of the surrounding environment, including infrastructure and sanctions from the school to students. Where the facilities and infrastructure provided by the school are adequate but are not used as well as possible by students, then the school does not give sanctions or warnings to students if they do not care about the surrounding environment, for example if they do not carry out class pickets, clean Fridays so that they are environmentally conscious students are still relatively low.

Discussion

The Relationship between Cognitive Levels and Concern for the Surrounding Natural Environment

The cognitive level of concern for the surrounding natural environment has a low correlation with concern for the surrounding environment in class XI of Private High School of Immanuel Medan. With a large correlation coefficient (r_{xy}) of 0.289. This relationship is included in the low category. This can be seen from the average cognitive level value regarding concern for the surrounding natural environment. Students who have a high cognitive value towards caring for the surrounding natural environment will have good awareness of the surrounding natural environment. Vice versa, students who have a low cognitive value of the surrounding natural environment have a low level of concern for the surrounding natural environment.

From the results of research conducted, the cognitive level of the surrounding environment is classified as sufficient, this can be seen from the average value obtained of 48.73 which is in the 48-62 value group. From the results of the data obtained, it is known that the cognitive score interval for the surrounding

natural environment ranges from 12 to 80, where only 2 students got the highest score, namely 80, and 4 students got the lowest score, namely 11. Meanwhile, concern for the surrounding natural environment at Private High School of Immanuel Medan is in the quite good category. This can be seen in the average value for concern for the surrounding natural environment which was obtained at 88.72, which is in the 88-95 group. It can be said that the interval of environmental awareness scores for student's ranges from 91.70 to 62, where 8 students got the highest score, namely 91.70, while 4 students got the lowest score, namely 62.

The results of this research are supported by the results of observations carried out in class rubbish in desk drawers, dirty school canteens caused by students' lack of awareness of throwing rubbish in the right place, and not cooperating in carrying out class pickets.

Based on the results of interviews conducted with class XI students at Immanuel Medan Private High School, to support environmental awareness of the natural surroundings, influenced by each individual's self-awareness. Apart from that, the factors that influence concern for the surrounding natural environment are influenced by inadequate facilities and infrastructure and the absence of sanctions given by the school for not carrying out picketing and cleanliness in the classroom, resulting in a lack of environmental care among students. These factors are able to influence students' attitudes towards protecting their environment.

Even though students have been given good cognitive knowledge about the surrounding natural environment and programs that support preserving the environment, these students do not show good environmental awareness. It can be said that there is a relationship between awareness and attitudes about the surrounding natural environment while the relationship between awareness and cognition is weak, and the relationship between cognition and attitudes about the environment is weak. This explains that students with high awareness will have high environmental awareness, but it does not depend on cognitive.

Cognitive Level Contribution Regarding Concern for the Surrounding Natural Environment

The calculation results show that the contribution made by the cognitive level to awareness of the surrounding natural environment is 11.81%, which is classified as low. Based on the average environmental cognitive score, the higher the cognitive and responsive attitude will have an influence on insight in managing the surrounding natural environment, because it is supported by cognitive, as well as understanding the management of the surrounding natural environment in a clean and healthy manner, so that clean and healthy

living can be improved. is realized, then there is responsibility because we realize that a clean and healthy life is highly desired by every human being, as well as skills in managing the surrounding natural environment and an attitude that is always responsive to the surrounding natural environment as well as the desire to guide the family to always live a clean and healthy life.

This shows that the cognitive level of the surrounding natural environment has a correlation in determining concern for the surrounding natural environment. So it can be concluded that the cognitive level towards the surrounding natural environment is one of the factors that determines the attitude of concern for the surrounding natural environment. The remainder is influenced by other factors which are considered capable of influencing attitudes towards caring for the surrounding natural environment. As stated by Azwar (2015), the factors that influence attitude formation are personal experience, other people who are considered important, mass media, educational institutions or institutions, and religious institutions as well as emotional factors within oneself. Other factors that influence this, based on the results of interviews with respondents, are inadequate facilities and infrastructure (not properly maintained and used), and the absence of sanctions given by the school for not carrying out picketing and cleaning the classroom, resulting in a lack of concern for the surrounding natural environment. These factors are able to influence students' attitudes towards protecting the surrounding natural environment.

Teachers also play an important role in the success of students in caring for the surrounding natural environment, where teachers must provide good direction and guidance to students about positive things to maintain, preserve and care for the surrounding natural environment. This is supported by research by Norley et al. (2016), who said that teachers who do not care about the problems of the surrounding natural environment, who do not have sufficient cognitive and ecological culture, do not have a deep cognitive background, and are not equipped with extensive experience and skilled. Then it will fail as a model for educating students and will experience difficulties in achieving environmental education goals.

Conclusion

There is a correlation between the cognitive level of the surrounding natural environment in Class XI students at Private High School of Immanuel Medan. With a correlation coefficient (rxy) value of 0.289 which is in the low category. The contribution of the cognitive

level to awareness of the surrounding natural environment for Class X students at Private High School of Immanuel Medan is 11.81%.

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Author Contributions

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Conflicts of Interest

The authors declare no conflict of interest.

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