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Environmental Awareness: Analysis of Junior High School Students

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ABSTRACT

This study aimed to analyze students' environmental awareness of Junior High School Students. The research was conducted by descriptive study with the research subjects consisted of 107 students grade IX. The environmental awareness measured consisted of three factors which are cognitive, emotional and behaviour. The data were obtained using a valid and reliable instrument consisted of 18 questionnaire statements. Data was then analyzed and compared within two variables which are gender (male and female) and science cognitive score (high and low achiever) by using simple statistical analysis and Mann-Whitney test. The result showed that first, students' environmental awareness is categorized as medium to good. Second, there is no significant difference between male and female. However, female students showed slightly higher environmental awareness than the male. Third, there is no significant difference between high and low achiever. However, high achiever students gained slightly higher score in their environmental awareness.

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Introduction

Humans and nature are two inseparable things that depends each other. Conserving nature is actually conserving our own future. However, many people do not understand this concept and tend to pollute nature rather than conserve it. Human activities are the first factors mediates environmental problem. It contributes 81.3% threats to environmental problem (Cardinale et al., 2012; Goudie & Viles, 2013). A range of studies have highlighted the urgent need for environmental awareness in the face of increasing environmental degradation (Parra et al., 2020; Si et al., 2022; Zeng et al., 2023). This awareness is particularly crucial among the youth to promote sustainable societies (Parra et al., 2020).

Environmental education is seen as a key tool in developing this awareness, with a focus on understanding the impact of human activities on the environment (Badoni, 2017; Praimee et al., 2023). The variables influencing natural mindfulness incorporate the esteem of common assets and the environment, information of natural preservation, mindfulness of natural preservation news, natural assurance demonstrate, and cooperation in natural preservation exercises (Praimee et al., 2023).

Exposure (Braun & Dierkes, 2017; Whitburn et al., 2019) and time spent (Barrable & Booth, 2020; Braun & Dierkes, 2017; Kleespies et al., 2020; Larson et al., 2019) in nature significantly enhance students' environmental awareness by providing knowledge and fostering a connection to nature. The attributes of the natural setting, such as its novelty, beauty, and naturalness, play a crucial role in enhancing learning outcomes (Dale et al., 2020). Students who feel a strong connection to nature tend to have higher environmental awareness (Harris, 2021).

Beside the exposure and time spent in nature, type of activity implemented in nature also give an impact to the development of students' environmental awareness. It gives positive reinforcement about the natural world and positive images in student's mind (Harris, 2021; Talebpour et al., 2020). Practical engagement let students develop practical skill and sense of personal responsibility for the environment (Melnyk & Podorozhnyi, 2023; Suryawati et al., 2020). Students need to understand their dependence on the environment and develop a value system that includes nature. Apart from learning method used, influence of educator plays a significant role in shaping students' environmental attitudes by organizing and leading educational activities that promote environmental knowledge and responsible behavior.

There are three individual factors of environmental environment, which are cognitive, emotional and behaviour factors (Novotný et al., 2021). The cognitive factor represents the thinking, analyzing and searching for information regarding environmental problems. It includes information and knowledge about environmental problems, interest in this information and its availability and completeness. The second factor is emotional factor. It represents an emotional response to environmental problems. Specifically, how a person experiences events related to environmental problems, attitudes, experiences and emotions that evoke environmental problems and ability process them. The last factor is behavioral factor. This factor represents an immediate behavioral responses: how a person reacts to environmental problems at the behavioral level, whether they are willing to do something concrete or just passively monitor the problem. Thus, the willingness of an indiivdual to participate in solving environmental problems in a practical and concrete way, the willingness to speak out in public in order to protect environment, or the determination to join an environment related community or group (Novotný et al., 2021).

Method

This is descriptive research that aims to describe the actual condition (Cresswell, 2012) of junior high school students' environmental awareness without any intervention. This research was conducted in 107 participants from IX grade of junior high school students (53 male, 54 female). Data on students' environmental awareness were obtained from a valid and reliable test in the form of 17 statements using likert scale. The questionnaire containing three factors of environmental awareness which are cognitive, emotional and behaviour (Novotný et al., 2021).

Before being used to measure students' environmental awareness, the questions were validated by two expert lecturers, one expert science teacher, and then tested for readability, validity, and reliability and tested in the field. Based on the results of the instrument trials,

it was found that the questions could be understood by students and, all questions were valid, and had very high reliability (83,4). This shows that the questions can be used to test students' environmental awareness. Valid instruments were then used to measure students' environmental awareness. Research data then analyzed by descriptive statistics and Mann-Whitney test to check whether the results were significantly different for gender (male and female); and science cognitive achivement aspect (high ≥ 70 and low <70). Statements of test instruments are presented in in Table 1.

Table 1. Statements of test instrument

?	Symbol	Type	Statement
Cognitive	C-1	+	I require more data around the impacts of human exercises on the environment.
	C-2	+	The utilize of chemicals in farming is destructive to the environment.
	C-3	+	In Indonesia, natural instruction and childhood are not adequate.
	C-4	-	Natural instruction and childhood exercises are as it were valuable for children.
Emotional	E-1	+	I am disillusioned that individuals are not fascinated by the environment.
	E-2	+	The future of the environment makes me worry.
	E-3	+	Individuals who contaminate the environment make me irritated.
	E-4	-	I am irritated at the activities of organizations battling to secure the environment.
	E-5	+	I am angry thinking of pollution that harm plants and animals.
	E-6	+	I am frustrated thinking of environmental pollution caused by industries.
	E-7	+	Idea of the government doing nothing in assisting control environmental pollution makes me angry.
	E-8	+	I am concerned about coutries involved in nuclear testing.
Behaviour	B-1	+	I generally use resources such as water and electricity infrequently.
	B-2	+	I avoid using products from companies that are known to pollute the environment.
	B-3	+	I buy certified organic products.
	B-4	+	In daily life, I buy recyclable packaged products.
	B-5	+	When I buy two similar products, I tend to choose the one that has negative impact on the environment.

The scales that were applied in the survey is Likert-type scales (Jamieson, 2004). Likert-type scales assume the linierity of strength/intensity of experience, ranging from strongly disagree to strongly agree, and makes the assumption that attitudes can be measured (Nee & Yunus, 2020). Likert scale ranging from 1 to 4 (1- Strongly disagree, 2- Disagree, 3- Agree, and 4-Strongly Agree) for positive statements, while the opposite is true for negative statements (1- Strongly agree, 2- Agree, 3- Disagree, and 4-Strongly Disagree) is used to determine their perceptions.

Results and Discussion

Data of students' environmental awareness is analyzed for each factor (cognitive, emotional and behaviour) based on two variables which are gender and science cognitive achievement. Information of number and percentage of both variables are given in Table 2. There are 107 students participated in this research. Percentage of each gender is 50,5% for male and 49,5%. Science cognitive level of students are defined into two classes which are high achiever (gain score >70) and low achiever (gain score <70) with percentage 39,3% and 61,7% respectively.

Table 2. Information about students heterogenity

Variable	Category	Frequency	Percent
Gender	Male	54	50.5
	Female	53	49.5

Variable	Category	Frequency	Percent
	Total	107	100
Science Cognitive Achievement	High Achiever	42	39.3
	Low Achiever	65	61.7
	Total	107	100

Overall result of students' environmental awareness is presented in table 3. It shows a medium to high mean except for statement C-2 and B-5 that are categorised as low. Statement C-2 implicates that in cognitive factor, issue regarding the harm of chemical use in agriculture needs to be concerned most. Meanwhile for statement B-5, this statement emphasize habituation to purcase eco-friendly product. For the other issue need also to be enhanced seriously to gain higher environmental awareness.

Nature-based learning effective to increase students' environmental awareness. It is because nature-based environmental education provides activity that could enhance students' connectedness to nature and environmental knowledge (Braun & Dierkes, 2017; Mullenbach et al., 2019).

Table 3. Summary of Environmental Awareness of Sample

?	Symbol	Answer	Mean	Mode	St. Dev
Cognitive	C-1	107	3.08	3.00	0.46
	C-2	107	2.31	2.00	0.94
	C-3	107	3.10	3.00	0.74
	C-4	107	2.91	3.00	0.92
Emotional	E-1	107	2.81	3.00	0.92
	E-2	107	3.11	3.00	0.78
	E-3	107	2.95	3.00	0.84
	E-4	107	3.10	3.00	0.86
	E-5	107	2.97	3.00	0.82
	E-6	107	2.98	3.00	0.91
	E-7	107	3.29	3.00	0.76
	E-8	107	2.95	3.00	0.99
Behaviour	B-1	107	3.16	3.00	0.79
	B-2	107	2.91	3.00	0.71
	B-3	107	3.21	3.00	0.64
	B-4	107	2.97	3.00	0.78
	B-5	107	2.70	3.00	1.14

Based on the levels of environmental awareness, population achieved high level of environmental awareness within the emotional factor. However, it is different with the cognitive and behavioral factor. It indicates a slightly worse result – moderate level of environmental awareness. This phenomenon could happen due to the lack of knowledge that students have.

Table 4. Result of Mann-Whitney Test

Variable	Category	Sig
Gender	Cognitive	0,128
	Emotional	0,252
	Behaviour	0,550
Science Cognitive Achievement	Cognitive	0,104
	Emotional	0,135
	Behaviour	0,895

Analysis of students' environmental awareness for "gender" and "science cognitive level" is done by using Mann-Whitney test as presented in table 4. This test was used to analyze the significance of differences in environmental awareness factors between different gender groups and science cognitive level group. For the gender variable, we wanted to verify the results of studies that showed no significant differences between male and female

category. The study by Novotný et al. (2021), in which no significant differences in environmental awareness factors were confirmed according to the gender of respondents. The study by Hailu (2016) also did not find statistically significant differences in environmental attitudes between group of male and female respondents.

The small different is still considered as different. As shown in figure 1, female students' environmental awareness in cognitive and behavioral category is slightly higher than male. This is in line with previous study. (Barrable & Booth, 2020) found that females have higher empathy to nature. Furthermore, (Clayton et al., 2019) also found that there is a tendency for girls to show more environmental concern or interest in protecting nature. Even though the small effect was small, but it is still higher than males. However, male students that have more exposure and time spent in nature could have higher environmental awareness (Libelo & Tracy, 2022).

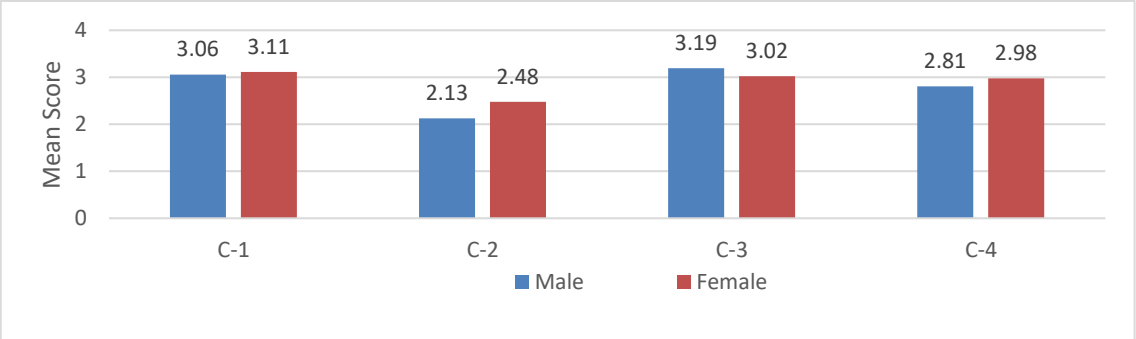

Figure 1. Students' environmental awareness based on gender variable in cognitive factor

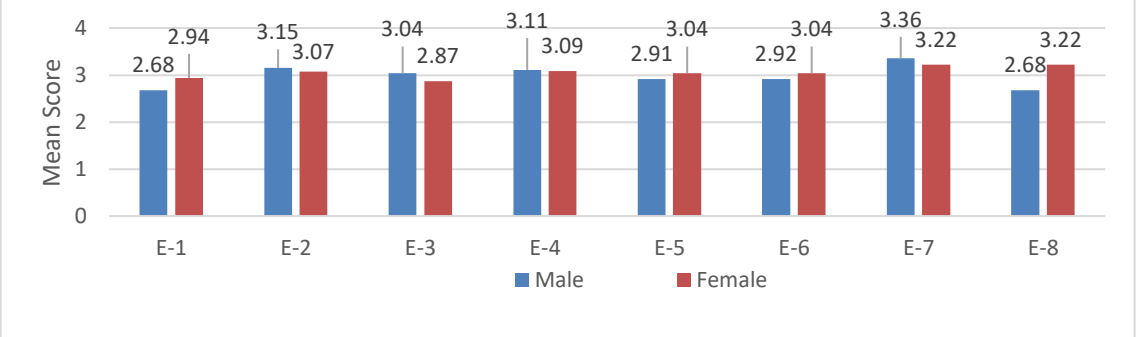

Figure 2. Students' environmental awareness based on gender variable in emotional factor

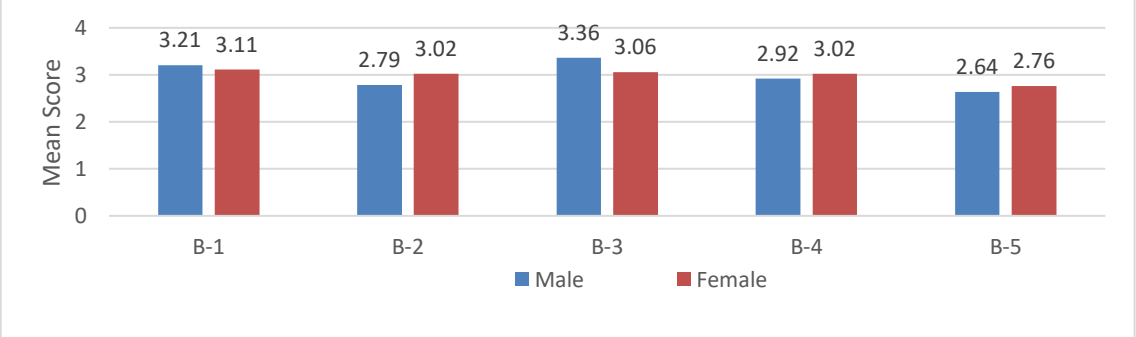

Figure 3. Students' environmental awareness based on gender variable in behavioral factor

As seen in table 4, there is also no significance different in the science cognitive achievement variable. Result of their environmental awareness tend to be the same. However, in emotional factor, high achiever shows slightly higher score than the low achiever group. Increasement of environmental knowledge will give positive influence to student's pro-environmental behavior. Even though this aspect is not the greatest mediator,

but it still gives impact to student' pro-environmental behavior (Clayton et al., 2019; Křepelková et al., 2020; Otto & Pensini, 2017). The research done by (Geiger et al., 2019; Otto & Pensini, 2017) found low relation between environmental knowledge and ecological behavior. (Otto & Pensini, 2017) explained that environmental knowledge contributes 2% of variance in ecological behavior. (Geiger et al., 2019) also reported a relatively low impact of knowledge about nature to pro-environmental behavior which is only 7% of variance. Factors that might influence environmental awareness of students tend to be the same are that students have similar socio-economic background (Libelo & Tracy, 2022; Mónus, 2019; Sukri et al., 2022).

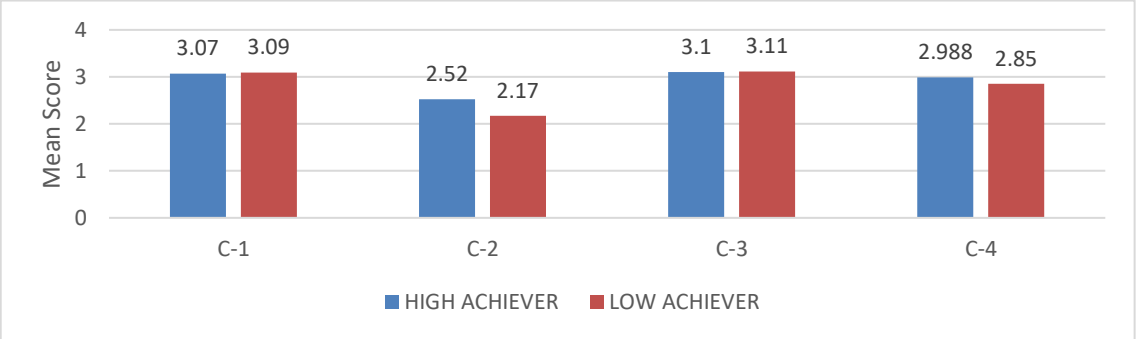

Figure 4. Students' environmental awareness based on science cognitive achievement variable in cognitive factor

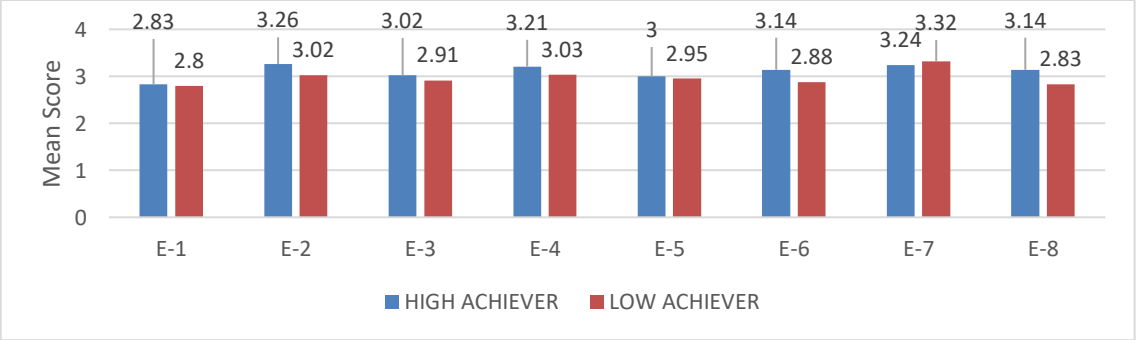

Figure 5. Students' environmental awareness based on science cognitive achievement variable in emotional factor

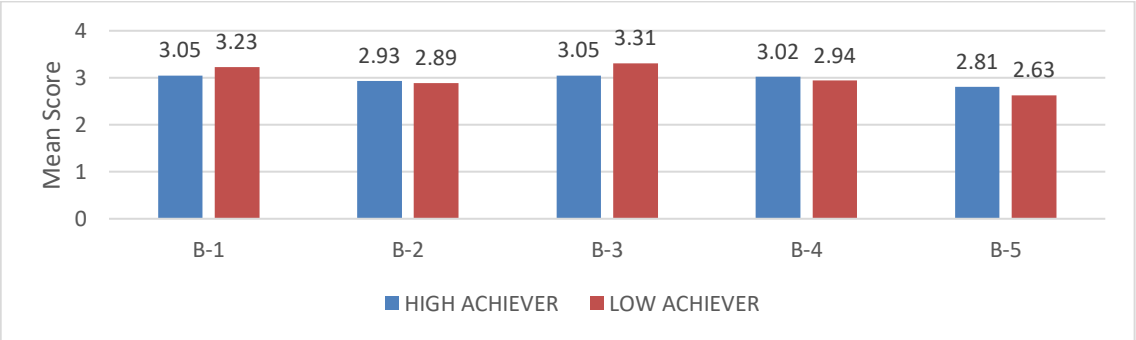

Figure 6. Students' environmental awareness based on science cognitive achievement variable in behavioral factor

Conclusion

Students' environmental awareness of students is categorized as high in almost all statements except for two statement which are C2 and E5 medium category. There is no significant difference between environmental awareness of female and male; and high and low achiever. However, female students score are slightly higher than male. The high

achiever also gained slightly higher score than low achiever students. Further research is needed to examine impact of educational and socio background of students' environmental awareness.

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