

Assessing Environmental Awareness and Attitudes in Higher Education: A Comparison between Environmental and Non-Environmental Discipline

Arinda Eka Lidiastuti¹, Wilda Purnawati^{2*}

¹Jurusan Biologi, Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Negeri Malang, Malang, Indonesia

^{2*}Tadris Biologi, Fakultas Tarbiyah dan Ilmu Pendidikan, Institut Agama Islam Negeri Kerinci, Kerinci, Indonesia

*Corresponding author: wildapurnawati97@email

ABSTRACT. This article aims to describe environmental awareness and behaviour in biology students and to compare the level of environmental awareness and behaviour among students who take environmental courses to those who do not. The research was on biology college students' environmental awareness and attitude. The sample was 50 using purposive sampling. The research approach was quantitative descriptive. The study was recommended to describe environmental awareness and attitude. The study was also done to determine the level of awareness and environmental behaviour of Biology college students. Researchers employed the Environmental Awareness Test and the Environmental Attitude Scale, created by Dr. Haseen Taj and Dr. K Yeshodara, to gauge participants' levels of environmental awareness. According to the Unpaired T-Test analysis findings, there is a difference in the attitudes and levels of environmental awareness between environmental students and non-environmental students. The p-values for environmental and environmental awareness are 0.049 and 0.024, respectively, less than 0.05. Furthermore, this study paves the way for future research to investigate the underlying factors influencing environmental awareness and attitudes.

Keywords: *Assessing, environmental awareness, environmental attitude, Higher Education*

ABSTRAK. Tujuan dari artikel ini adalah untuk menggambarkan kesadaran lingkungan dan perilaku lingkungan pada mahasiswa biologi, serta untuk mengetahui pengaruh tingkat kesadaran dan perilaku lingkungan di antara mahasiswa yang mengambil mata kuliah lingkungan dibandingkan dengan mahasiswa yang tidak mengambil mata kuliah. Penelitian ini melibatkan kesadaran lingkungan dan sikap mahasiswa biologi. Sampel sejumlah 50 menggunakan teknik sampling purposive. Pendekatan penelitian adalah deskriptif. Penelitian ini direkomendasikan untuk menggambarkan kesadaran dan sikap lingkungan. Penelitian ini juga dilakukan untuk menentukan tingkat kesadaran dan perilaku lingkungan siswa biologi. Skala Kesadaran Lingkungan yang dikembangkan oleh Dr. K. Yeshodara untuk mengevaluasi tingkat kesadaran lingkungan Skala yang digunakan tes kesadaran lingkungan dan Skala sikap lingkungan yang dikembangkan oleh dr. Haseen Taj yang digunakan peneliti. Hasil analisis oleh Unpaired T-Test adalah nilai p kesadaran lingkungan adalah 0,049 dan nilai p Kesadaran Lingkungan adalah 0.024 kurang dari 0,05, itu berarti ada perbedaan antara siswa lingkungan dan non-pelajar lingkungan terhadap kesadaran lingkungan dan sikap lingkungan. Selain itu, studi ini membuka jalan bagi upaya penelitian masa depan untuk menyelidiki faktor-faktor yang mendasari yang mempengaruhi kesadaran dan sikap lingkungan.

Kata Kunci: lingkungan, kesadaran lingkungan, sikap peduli lingkungan

INTRODUCTION

Numerous environmental issues lead to environmental degradation due to the pursuit of a higher standard of living (Sau et al., 2016). As time goes on, the earth's biological, physical, and As time passes, the earth's biological, physical, and chemical capacities diminish, commonly known as environmental degradation. According to Omoogun et al. (2016), environmental challenges lead to environmental degradation. *Environmental problems* are a world problem that requires good handling. Environmental problems include water pollution and environmental exploration, including agricultural, industrial, and plastic waste (Niankara & Zoungrana, 2020). In addition, environmental problems are caused by humans, one of which can affect the loss of biodiversity (Yustina et al., 2011). The loss of biodiversity is a problem that requires awareness and good behaviour towards the environment to protect it. Environmental problems that occur in the form of pollution and environmental damage. One of the environmental damage is mining. The negative impact of mining can be irregular damage to the former mining surface, loss of fertile soil layer, and residual extraction (tailings), which affects soil reactions and composition (Arham et al., 2023). According to Law Number 32 of 2009 on environmental protection and management, *environmental damage* is any direct or indirect alteration to the physical, chemical, and biological environment that goes beyond typical environmental harm. Daily necessities of life make it difficult for people to consider long-term environmental values explicitly (Vlek & Steg, 2018).

All parties must play a role in facing environmental problems, not only in the ranks of government and scientists but also at all levels of society, including education. Government efforts to deal with environmental problems have been reasonable (Liu & Tao, 2020). One of the government's efforts in dealing with environmental problems is to incorporate elements of environmental learning to students. Environmental education is also offered not only in schools but also in universities. All levels of education

have been given environmental knowledge. This is because education plays an important role in environmental sustainability. Environmental problems are a significant concern for global problems. The current environmental damage is caused by the lack of awareness and behaviour good for the environment (Viswanathan, 2016). Environmental damage is defined as any action that modifies the physical or biological aspects of the environment, either directly or indirectly, to the point where the environment is no longer sustainable growth (Mitlin, 1992).

People have progressively realised the effects of the natural environment (Geng et al., 2016). Environmental psychology environmental functions social and environmental behaviour, including attitudes, intentions, norms, behavioural controls, environmental awareness, and environmental behaviour that have received considerable attention (Å & Mo, 2007). Environmental awareness for the community is essential in maintaining and preserving awareness that leads to environmentally sound behaviour. It includes three groups: practical knowledge about valuable issues, environmental attitudes, and environmentally sound behaviour. Environmental education plays a strategic and vital role in increasing public awareness and improving attitudes towards environmental issues (Sciences, 2019).

Several studies have shown that low caring and behaviour towards the environment can cause the environment to be damaged (Arslan, 2012). Environmental concerns are awareness of environmental problems and active involvement in environmental matters (Özgür et al., 2018). Communities with low environmental awareness do not care about environmental sustainability. A small example of an environmental concern that is starting to be ignored is to dispose of improper waste (Vásquez et al., 2023). Environmental awareness is related to environmental behaviour. Low environmental behaviour will cause adverse effects on the environment (Yustina et al., 2011). Therefore, education has an essential role in solving environmental problems—Instil good attitudes towards the environment and good environmental

awareness for each individual to protect the environment.

More access to environmental education is needed between urban and rural areas. Rural students may have different resources or educational programs than urban students, limiting their environmental awareness and participation. Although many countries have ecological education policies, their implementation often needs to be improved due to budget constraints, cultural resistance, or different educational priorities. Effective implementation of solid policies requires clear strategies and adequate support.

Based on the problem description, the need for environmental education for human progress is very important. Education can be a barrier to adverse effects on the environment, which adversely affects daily life (Sadik & Sadik, 2014). Environmental education is essential in preventing environmental problems and creating a healthy environment (Tan, 2014). Environmental education is essential for graduates and will play an active role in protecting the environment and engaging in environmentally friendly behaviour by making informed decisions and good environmental behaviour (Raman, 2016). Therefore, this study aims to describe the awareness and behaviour of the environment and to know the influence of the level of awareness and environmental behaviour on Biology.

METHODS

Research Design

This research is quantitative descriptive research, namely research conducted by not giving treatment, manipulation, or alteration to independent variables but describing a condition as it is. The description uses size, number or frequency, which is then analysed using the Regreanalysedatistical test.

Time and Location

This research was conducted in the even semester of the academic year 2019/2020 at one university in Indonesia.

Population and Sample

The population of this study is Biology students at one university in East Java, Indonesia. The

sample from this study is students from the environment department and non-environment department Biology. The sampling technique is done by purposive sample, which is a method of intentionally determining the research area with 50 respondents consisting of 25 students from the environment department and 25 from the non-environment department. Fifty students consisted of 12 male students and 38 female students.

Instrument

Environmental Awareness Scale Environmental Awareness Test (EAT)

To measure the degree of environmental awareness, the researcher used the Environmental Awareness Test (EAT), which included 32 items drawn from the environmental awareness scale developed and standardised by Dr. Yeshodara (Khan, 2017). There are 5 items used in the test to measure awareness of the environment. Detailed items used in the EAT test are shown in Table 1.

Table 1. Serial items of environmental awareness

No	Environmental Awareness	Serial number of items	Total number of an item
1	Pollution	1, 5, 23, 27, 31	4
2	Biodiversity	13, 14, 17, 24, 28	5
3	Sustainable development	7, 8, 10, 16, 19	5
4.	Environmental concepts	2, 3, 4, 9, 18, 20, 21, 22, 25, 26, 30, 32	12
5.	Energy	29	1
Total			32

Calculate EAT scores can use the environmental awareness formula with the criteria in Table 2 and the criteria for environmental awareness level:

$$\text{Environmental Awareness(\%)} = \frac{\text{score obtained}}{\text{maximum score}} \times 100\%$$

Environmental Attitude Scale (TEAS)

TEAS is a scale that is used to determine environmental attitude. Teas consists of 50 statements that will be filled by conducting a checklist with statements strongly agreeing, agreeing, disagreeing, and strongly disagreeing using the Likert scale 1-4. The researcher used the environmental attitude scale developed by Dr. Haseen Taj. The method for calculating Teas scores can use the formula for environmental attitude with the criteria in Table 3.

$$\text{Environmental Attitude(\%)} = \frac{\text{score obtained}}{\text{maximum score}} \times 100\%$$

Table 3. Environmental Attitude Criteria

Average score%	Category
0-66	Low
67-133	Medium
134-200	High

Analysis Data

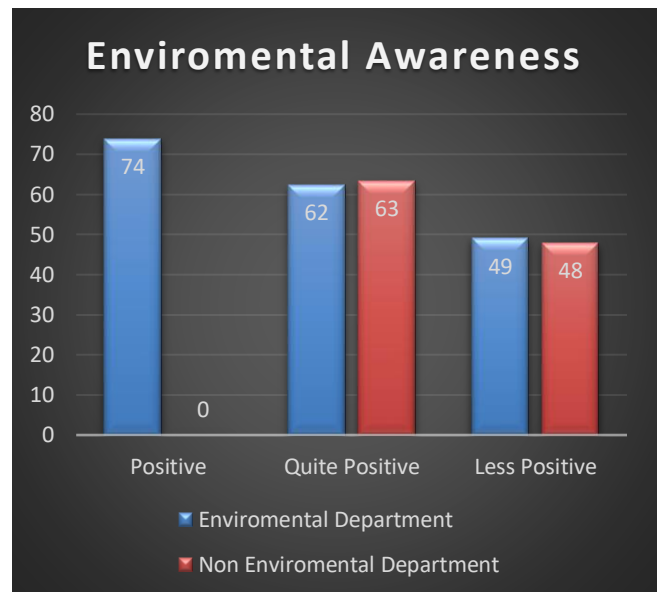
Data analysis was performed with an Unpaired T-Test. The test's assessment determines the level of environmental awareness. On the other hand, completing the Likert scale questionnaire 1-4 is how one finds out about someone's environmental attitude.

RESULT AND DISCUSSION

Environmental Awareness

A 32-item test was conducted to determine the environmental awareness level. The results of the test can be seen in Figure 2.

Figure 2. Result of score EAT



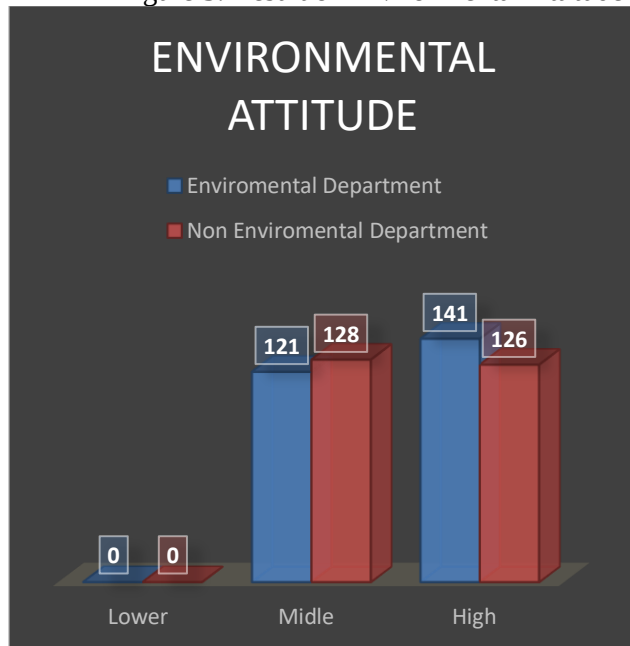
Based on Figure 2, the results of the environmental awareness value between environmental departments and non-environmental departments are known that environmental awareness has an average score of 74 with a favourable category, then a score of 62 with quite positive categories and 49 with less positive categories. In the non-environmental department, it is known to have an average score of 63 with quite positive categories and 48 with less positive categories. This shows that the level of environmental awareness in the environmental department is higher than in the non-environmental department. This follows the study (Uin et al., 2018) that shows that students who have taken environmental courses have good environmental awareness. Support factors from various parties in place with the policies made also support this. This aligns with the statement that school environmental education material positively influences students' environmental awareness levels (Pardo, 2021).

Environmental Attitude

The environmental attitude level in this study was measured using Teas, the scale used in calculating the environmental attitude on students' environmental attitude and non-environmental attitude students. The measurement uses a questionnaire with a Likert scale of 1-4 with statements strongly agree, agree,

disagree, and strongly disagree. The following are the results of the environmental attitude in Figure 3.

Figure 3. Result of Environmental Attitude



Based on Figure 3, the value of the environmental attitude in the student environmental department and non-environmental department is known. The low category on environmental attitude in environmental and non-environmental students is 0; this shows that, on average, they are in the medium and high categories. The environmental department students have an average of 121 in the medium category and non-environmental department students have an average of 128. Then, the high category of environmental attitude students has an average score of 141, while non-environmental department students have an average score of 126. This shows that the environmental attitude level of students in the environmental department has an average value of 131 in the middle category.

In contrast, for the non-environmental department, students have an average value of 127 in the middle category. In the case of the environmental department and non-environmental department, student groups have a middle category in the environmental attitude. Students who care for the environment because of their values are more likely to choose the ecological option (Crumpei et al., 2014).

Comparison between Environmental and Non-Environmental Discipline

The results of the analysis use unpaired T-tests on students who have taken environmental subjects to the environmental awareness and environmental attitude can be seen in Table 4 and Table 5. Before being tested using the Unpaired T-Test, it tested first with normality and homogeneity.

Table 4. Result of unpaired t-test Environmental Awareness

P Value =	0.049
Sig =	Significant
Mean Group 1	61 937
MeanGroup 2	52 589
Differences	9348

Table 5. Result of unpaired t-test Environmental Attitude

P Value =	0.024
Sig =	Significant
Mean Group 1	128.4
Mean Group 2	120
Differences	8.4

The environmental attitude has a p-value of 0.024 < 0.05, and the environmental awareness has a p-value of 0.049 < 0.05, according to the unpaired T-test results. This demonstrates a comparison of environmental knowledge and attitudes between students enrolled in environmental courses and those who do not. The conscious mind, or awareness, can control reason and make decisions about what is desired. An individual or society's environment encompasses all elements that impact their physical, biological, socio-psychological, socioeconomic, and cultural well-being. The capacity to understand the connection between human activity and the condition of the environment around oneself to establish a safe and healthy environment is known as environmental awareness (Ma et al., 2023).

The environment is everything that exists outside an organisation, including (1) Dead environment (abiotic), which is an environment outside an organism consisting of objects or natural

factors that do not live, such as chemicals, temperature, light, gravity, atmosphere and others, (2) the environment (biotic), namely the environment outside an organisation consisting of living organisms, such as plants, animals, and humans. Environmental education is assumed to significantly impact environmental awareness, daily lifestyle, and student behaviour. This is reinforced by the results of the study, which show that educational backgrounds affect the level of understanding and behaviour towards the environment (Apichatibutarapong, 2018). Furthermore, the key factors influence public awareness concerning the university's knowledge and daily behaviour. Some higher education institutions have recognised the importance of integrating sustainability issues about the environment into education to make the impact focused and explicit. Environmental Awareness is an effort to raise awareness so that not only know about waste, pollution, reforestation, and protection of endangered species, but it raises awareness of the human environment, especially today's youth.

Environmental awareness is related to the environmental attitude. If environmental awareness is good, the environmental attitude is good. Some factors cause environmental awareness and attitude, one of which is education. Educational factors are essential in knowing one's awareness and behaviour towards the environment. In this case, the sample used is students majoring in environment and non-environmental Biology [31]. The analysis results of students who obtained environmental subjects indicate a significant influence on the environmental attitude. This is shown by the results of the analysis in Table 5. shows $p\text{-value } 0.024 < 0.05$, which means that there is a comparison between students who have taken environmental courses with students who did not take the environmental subject to environmental attitude. Using six PPPG vocational scopes, the Swiss Contact Project (1998), based at VEDC (Vocational Education Development Centre), developed its environmental education from 1998 to 2000. It created PLH teaching materials and offered teachers various environmental training opportunities. Elementary, middle, and high school instructors work at vocational high schools. (Bozoglu, 2016). Environmental concern is a strong attitude towards preserving the environment and is defined as a global attitude with indirect effects on behaviour through behavioural intention. Based on the previous studies that suggested the link between attitudes and awareness, it is thus logical to imply that pro-

environmental attitudes in individuals can influence their awareness of their surroundings (Nor et al., 2010).

In addition to educational factors, other factors influence awareness and environmental behaviour, namely norms, pressures, and traditions transmitted by the social environment. Behaviour is proven very strong, driven by the closest environment, including family, friends, neighbors, and education. Environmental variables include the courses taken, the media sources used for information, and the regular or consistent following of environmental news. This is because students typically follow environmental issues from the media and are more likely to be from rural areas.

Figures 2 and 3 show a comparison between students who have taken majors with environmental courses and non-major students. The level of environmental awareness with a positive category is for students majoring in the environment. In contrast, students who do not take environmental subjects or majors score 63 in the positive category and 48 in the less favourable category, while in the positive category, there is no. Then, on the environmental attitude, the average value for students majoring in the environment is 141 in the high category. At the same time, those in the non-environmental department have an average score of 126 in the high category. This shows that environmental education forms the character of environmental awareness following research about environmental education forming character in students at school (Sprague et al., 2021). Although field days and water festivals are popular short-term environmental education programmes, it is well known that they are not very effective at raising awareness of environmental issues. This demonstrates the significance of environmental education and how it affects people's attitudes and understanding of the environment. The next generation must be equipped with environmental and ecological knowledge, abilities, and attitudes—acts and efforts to proactively resolve environmental issues. Constantly protecting and preserving the environment is the most significant aspect of how environmental education affects human behaviour. (Kopnina, 2012).

CONCLUSION

There is a comparison between students taking environmental courses and those not taking environmental courses on environmental awareness and attitude. This is shown by unpaired T-test

environmental awareness analysis with a p-value $0.049 < 0.05$ and unpaired analysis T-test environmental attitude 0.024, which means that there is a comparison between students who take environmental courses with students who do not take the environment towards environmental awareness and there is a comparison between students who have taken the environment with those who do not take the environmental subject to the environmental attitude. Suggestions for the next researcher are to examine the factors influencing environmental awareness and attitude.

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