

Students' Awareness Level of Environmental Management Research Results Made Into Environmental Education Learning Posters

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ABSTRACT

Student awareness of campus environmental management plays an important role in supporting a clean, healthy, and sustainable environment. This study aims to analyze students' awareness levels and examine the feasibility of learning posters for Environmental Education courses. A qualitative descriptive approach with a survey method was applied using stratified random sampling. Data were collected from 65 students using a four-level Likert scale questionnaire. The results showed that the average awareness score was 3.37 (good category) and the awareness index reached 84.29% (high category). Based on these findings, a learning poster was developed and validated. Material and media expert validations obtained scores of 90.25% and 90.50%, indicating that the poster is highly feasible as a learning medium.

INTRODUCTION

The wrong human perspective on the environment has led to a condition called "*Unsustainable For Development*" , a situation where human life tends to exploit the environment more than maintaining natural resources (Saputra, 2017). According to Geller, (2016) the emergence of environmental problems, one of which is the lack of awareness, morals and good human behavior. Government Regulation Number 22 of 2021 states that the environment is a spatial unit with all objects, powers, circumstances and all living things including humans and their behavior that affect nature itself, the survival and welfare of humans and other living environments. The main environmental problems today are water pollution due to industrial waste, air pollution in urban areas, the addition of conservation areas, and the decline in the quality of biodiversity (Putri, R. A., & Hadi. S, 2022). Environmental damage raises public awareness to protect the environment.

Environmental awareness has spread around the world in recent times (Sueb, 2020). In-depth knowledge of environmental management raises awareness of every organization to maintain environmental cleanliness. Awareness to maintain environmental cleanliness is an action or attitude directed to understand the importance of a healthy and clean environment. In line with the research "(Sugiarto, 2020) that awareness of the environment can be seen through a person's behavior, actions and participation in conditions where a person feels free from pressure. Campus environmental management is one of the important indicators in realizing a clean, healthy, and sustainable campus. Students as the largest population in the university environment play a strategic role in maintaining environmental sustainability. Especially Biology Education students, who are equipped with knowledge about the environment, are expected to have better environmental awareness.

However, there are still behaviors that do not care about the environment, such as littering, the use of single-use plastics, the low use of recycling facilities, and the lack of participation in green campus programs. Students' environmental awareness is a key factor in creating a sustainable campus (Arifin, Z., & Prasetyo. E, 2023). This shows the need for comprehensive research on the level of student awareness of campus environmental management. In addition, the results of this research are very relevant to be used in learning, especially in the Environmental Education Course (PLH). In this study, the level of student awareness will be analyzed to find out the extent of student contributions in the management of the campus environment. One form of presentation of the results of this research is an environmental education poster which is expected to be effective and easy to understand by students. Therefore, this study not only reveals the level of student awareness of environmental management but also processes research findings into learning poster materials that can be used in learning Environmental Education courses as a medium of information, discussion, and environmental campaigns on campus.

LITERATURE REVIEW

Environmental Awareness

Environmental awareness refers to an individual's understanding, attitude, and responsibility toward environmental sustainability. According to Notoatmodjo (2014), awareness is formed through three main components: knowledge, attitudes, and actions. Knowledge serves as the foundation for shaping positive attitudes, which are then reflected in environmentally responsible behavior. Without sufficient knowledge, individuals tend to show low concern for environmental preservation.

UNESCO (2017) explains that environmental awareness is the result of integration between conceptual understanding, environmental values, and willingness to engage in concrete actions to protect nature. This indicates that awareness must be manifested through real participation in environmental programs. OECD (2018) also emphasizes that environmental knowledge is a major factor in shaping environmental responsibility because understanding environmental issues and their impacts influences individual behavior.

Research by Syah and Fitriyani (2014) shows that individuals with good environmental understanding tend to develop positive attitudes toward environmental management. Widodo and Nurhayati (2020) further confirm that students who possess high environmental literacy demonstrate stronger concern for campus cleanliness and sustainability. Therefore, environmental awareness among university students plays an essential role in supporting sustainable development.

Campus Environmental Management

Campus environmental management refers to systematic efforts to maintain cleanliness, sustainability, and ecological balance in university environments. According to Alshuwaikhat and Abubakar (2008), sustainable campus management integrates waste management, energy efficiency, land use planning, and water conservation. These elements are necessary to ensure long-term environmental sustainability.

Nasoetion (2011) identifies green campus indicators including waste management, land utilization, energy efficiency, and water resource management. Effective campus environmental management requires collaboration among academic communities, especially students as the largest campus population.

However, environmental problems such as littering, excessive use of single-use plastics, low recycling participation, and weak involvement in green campus programs remain common. Arifin and Prasetyo (2023) state that students' environmental awareness significantly influences environmental behavior in higher education institutions. Students who lack awareness tend to show low participation in environmental conservation activities.

Therefore, strengthening student awareness is essential for improving campus environmental management and supporting sustainable campus policies.

Environmental Education in Higher Education

Environmental Education (EE) aims to develop environmental knowledge, attitudes, and responsible behavior among learners. According to Sueb (2020), environmental education encourages students to adopt sustainable lifestyles and environmental ethics. Through structured learning, students are guided to understand environmental problems and participate in solutions.

Environmental Education courses (PLH) serve as formal platforms for delivering environmental concepts and promoting environmental responsibility. According to Nurwidodo et al. (2020), environmental education programs can improve students' environmental literacy and participation in conservation activities.

OECD (2018) also emphasizes that environmental education contributes to shaping environmentally responsible citizens who are able to respond to global environmental challenges. Therefore, integrating research findings into Environmental Education learning materials can enhance students' understanding and strengthen their commitment to environmental protection.

Learning Media and Learning Posters

Learning media play a crucial role in supporting effective teaching and learning processes. Arsyad (2017) states that visual media increase students' attention, understanding, and memory of learning materials. Posters are considered effective because they present information concisely, visually, and attractively.

Daryanto (2016) explains that visual learning materials should be clear, concise, and easy to understand. Hamalik (2011) emphasizes that good learning media help students understand materials in a more concrete and meaningful way.

Putri and Hadi (2022) highlight that research results integrated into learning media increase material relevance because they reflect real conditions experienced by students. Arsyad (2020) further explains that posters can function as both instructional tools and campaign media.

Thus, transforming research findings into learning posters is appropriate for Environmental Education courses. Posters not only convey information but also strengthen environmental values and motivate students to participate in environmental conservation.

Student Participation in Environmental Programs

Student participation is an important indicator of environmental awareness. Participation reflects the implementation of environmental knowledge and attitudes in real actions. According to Keraf (2018), true environmental awareness is not only reflected in understanding but also in active involvement in environmental activities.

Yusoff et al. (2020) state that students who are actively involved in environmental programs have higher awareness levels than those who are not involved. Participation in activities such as campus cleaning programs, waste management, and environmental campaigns contributes to sustainable campus development.

Research by Gabriella and Sugiarto (2020) also shows that students' involvement in environmental activities strengthens their environmental responsibility. Therefore, participation becomes a key factor in evaluating the effectiveness of environmental education programs.

Conceptual Framework

Based on the literature review, student environmental awareness is influenced by environmental knowledge, attitudes, and participation in campus environmental management. High awareness is reflected in students' understanding of environmental concepts, positive attitudes toward sustainability, and active involvement in environmental programs.

The results of student awareness analysis are then transformed into learning posters for Environmental Education courses. These posters serve as learning media that communicate research findings and reinforce environmental values.

Thus, this study integrates environmental awareness measurement with learning media development to enhance the effectiveness of Environmental Education. The conceptual framework of this research connects environmental awareness, student participation, and learning poster development as a strategy for supporting sustainable campus environments.

METHODOLOGY

Types of Research

This research is a type of qualitative research with a descriptive approach. Qualitative research is a type of research that aims to understand the meaning, process, and experience of a phenomenon in depth from the perspective of the subject being studied. The focus is not on numbers or statistics, but on words, stories, behaviors, and social contexts. The descriptive approach aims to describe the condition, characteristics, or level of a variable as it is, which is related to the level of student awareness of campus management by using *a stratified random sampling* technique, which is a probability sampling technique in which a large population is first divided into homogeneous subgroups (strata/batch), then samples are randomly selected from each batch. In this study, the students who were sampled, namely the class of 2025, amounted to 65 students who were randomized and came from classes A, B and C.

A. Place and Time of Research

This research was carried out at the FKIP campus of Khairun University, which was conducted for two months, starting in November and December 2025.

B. Research Subject

The subject of this research is a student of the Biology Education Study Program, FKIP Khairun University, class of 2025, Classes A.B and C.

C. Population and Sample

The population in this study is all Biology Education students of the class of 2025 which totals 90 students, and the research sample is 65 students who are randomized respondents from three classes.

D. Data Collection Techniques

The data collection technique in this study is through questionnaires and documentation. Questionnaire

1. Questionnaires are written instruments given to respondents to measure students' perceptions, attitudes, and levels of awareness of the environment. The Likert scale is used to quantitatively assess the intensity of responses with a choice of answers based on the following rating scale:

1 = strongly disagree

2 = Disagree

3 = Agree

4 = Strongly Agree

The statement is based on awareness indicators which include: knowledge about environmental management through waste management and knowledge indicators about student participation in campus environmental management. The limitation of this research is in the validation of material experts and media experts who validate student awareness questionnaires about environmental management and the validation of posters that will be used in learning PLH courses.

2. Documentation

Documentation techniques are used to collect data in the form of photos of research activities, and official documents that support research such as research survey photos, photos of waste conditions and photos of environmental conditions on campus.

Data Analysis Techniques

1. Research Questionnaire Data

The survey data from the research results were analyzed statistically descriptively (percentage), using the formula according to Sugiyono (2017):

$$P(s) = \frac{f}{N} \times 100 \%$$

Description:

P = percentage

f = frequency/number of respondents in a given category

N = total respondents

Table 1. Average score range and category

Score Range	Category
3,51-4,00	Excellent
2,51-3,50	Good
1,76-2,50	Enough
1,00-1,75	Less

2. Student Awareness Index

The awareness index is measured using the formula according (Sugiyono, 2017).

$$\text{Indeks Kesadaran} = \frac{\sum \text{Total Skor Seluruh Responden}}{\sum \text{Skor Maksimal Seluruh Responden}} \times 100\%$$

The categorization of students' level of awareness of environmental management is based on the range of scores and Likert categories (1-5).

Table 2 Environmental awareness categories

Score Range	Category
1.00 – 1.80	Very Low
1.81 – 2.60	Low
2.61 – 3.40	Moderate/Fair
3.41 – 4.20	Height
4.21 – 5.00	Very High

3. Poster Rating

Rating scale:

1 = Not Good; 2 = Poor; 3 = Good; 4 = Excellent

Eligibility criteria: (1 = Not Eligible, 2 = Less Eligible, 3 = Eligible, 4 = Very Eligible)

1.00 – 1.75 = Not Eligible

1.76 – 2.50 = Less Eligible

2.51 – 3.25 = Eligible

3.26 – 4.00 = Very Worthy

RESEARCH RESULT

Results of Student Awareness Level Analysis

This study involved 65 students with a questionnaire instrument of 30 statements, using a 4-point Likert scale, so that the total number of answers was $65 \times 30 = 1,950$ answers, with an assessment scale of 1 = Strongly Disagree (STS), 2 = Disagree (TS), 3 = Agree (S), and 4 = Strongly Agree (SS) which is outlined in the form of a student awareness index of the FKIP Biology Education Study Program Khairun University on environmental management.

a. Recapitulation of Scores and Percentage of Student Awareness Questionnaire Answers

The recapitulation of the score and percentage of the answer to the student awareness questionnaire is presented through the following table 3.

Table 3. Recapitulation of the score and percentage of the questionnaire answer

Score	Category	Frequency	Percentage (%)
1	Strongly Disagree	12	0,62
2	Disagree	137	7,03
3	Agree	915	46,92
4	Strongly agree	886	45,44
	Total	1.950	100

Based on the recapitulation table of scores and percentage of respondents' answers, it is known that out of 1,950 respondent answers (students), most students responded positively to statements related to environmental management of the FKIP UNKHAIR campus. The category, frequency and percentage of the questionnaire can also be seen in the following diagram.

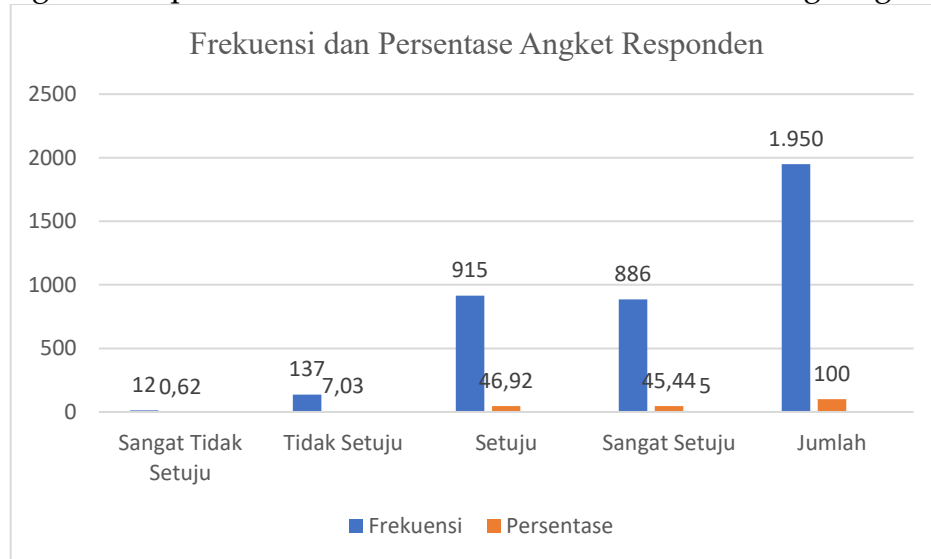


Figure 1. Category, frequency and percentage of respondent questionnaires

Based on figure 1, showing that the Strongly Disagree answer (score 1) obtained a percentage value of 0.62%, it can be said that only a small percentage of students have a very negative view of environmental management issues. This indicates that rejection of environmental conservation efforts in the campus environment is almost unfounded. The Disagree Answer (score 2) has a percentage value of 7.03%, indicating that there are still few students who do not fully support or do not have optimal environmental awareness. Meanwhile, the Yes answer (score 3) dominated with a percentage of 46.92%, which indicates that most students have understood and agreed on the importance of environmental management on campus. Furthermore, the Strongly Agree answer (score 4) obtained a percentage of 45.44%, which reflects a very strong level of support from students for environmental management efforts on campus. This high percentage shows that students not only understand the concept of environmental management, but also have a very positive attitude and support its implementation.

Overall, the accumulation of Agree and Strongly Agree answers reached 92.36%, which confirms that the level of student awareness of campus environmental management is in the high category.

c. Student Awareness Index

Based on the results of the calculation, the Student Awareness Index was obtained at 84.29%, in the High category, with an index value of 0–25% (Very Low), 26–50% (Low), 51–75% (Adequate) and 76–100% (High). The index value of 84.29% is in the range of 76–100%, so it is included in the High category. This shows that the level of student awareness of campus environmental management is relatively high.

This high awareness index indicates that students have a good understanding of the importance of campus environmental management, as well as showing a positive attitude and strong support for various environmental conservation efforts. The value of the awareness index that has not reached 100% shows that there is still room for improvement, especially in the aspect of implementing real behavior in the field.

2. Learning Poster Validation Results

a. Results of Validation of Material Experts

The results of the validation of the learning poster of three subject matter experts in the form of average scores and percentages are presented through the following Table 2:

Table.4. Results of Validation of Subject Matter Experts (Percentage)

No	Aspects Assessed	Average Score	Percentage (%)	Category
1	Suitability of the material with PLH learning objectives	3,67	91,75%	Highly Worth It
2	Accuracy of environmental management concepts	3,67	91,75%	Highly Worth It
3	Compatibility of the material with the student level	3,33	83,25%	Highly Worth It
4	Completeness and depth of material	3,33	83,25%	Highly Worth It
5	Accuracy of data and research information	4,00	100%	Highly Worth It
6	Relationship of material with research results	3,67	91,75%	Highly Worth It
	Overall Average	3,61	90,25%	Highly Worth It

Based on the table of material expert validation results (Percentage), the results of the assessment of the learning posters developed based on aspects of material suitability, conceptual accuracy, and relevance to the learning objectives of Environmental Education (PLH) were obtained.

The aspect of material suitability with PLH's learning objectives obtained a percentage of 91.75% with a very feasible category. This shows that the material presented in the poster is in accordance with the learning outcomes of the PLH course and is relevant to be used as a learning medium.

The accuracy aspect of the environmental management concept also obtained a percentage of 91.75% with a very feasible category. These results indicate that the concepts presented in the poster are in accordance with scientific principles and do not cause misconceptions for students.

Furthermore, the aspect of material suitability with the level of student understanding obtained a percentage of 83.25% with a very feasible category. This shows that the material on the poster has been adapted to the characteristics and cognitive abilities of students, so that it is easy to understand.

The completeness and depth of the material obtained a percentage of 83.25% with a very decent category. The accuracy of data and research

information obtained the highest percentage, which was 100% with the category of very feasible. This shows that the data and information presented in the poster are accurate, valid, and in accordance with the results of the research conducted. The last aspect, namely the relationship of the material with the results of the research, obtained a percentage of 91.75% with a very feasible category. This shows that the learning poster has been able to represent the results of the research in an appropriate and relevant manner. Overall, the results of validation by material experts showed an average percentage value of 90.25% with a very feasible category. Thus, the learning poster developed is suitable for use without revision as a learning medium in the Environmental Education (PLH) course.

b. Media Expert Validation Results

The results of the validation of the learning poster of three subject matter experts in the form of average scores and percentages are presented through the following Table 3:

Table 5. Media Expert Validation Results

Yes	Aspects Assessed	Average Score	Percentage (%)	Category
1	Poster display design	3,67	91,75%	Highly Worth It
2	Color and typography suitability	3,33	83,25%	Highly Worth It
3	Text readability	4,00	100%	Highly Worth It
4	Clarity of information presentation	3,33	83,25%	Highly Worth It
5	Visual appeal of the poster	3,67	91,75%	Highly Worth It
6	Poster layout	3,67	91,75%	Highly Worth It
7	The suitability of posters as PLH learning media	3,67	91,75%	Highly Worth It
	Overall Average	3,62	90,50%	Highly Worth It

Based on the table of media expert validation results (Percentage), the results of the assessment of the learning posters developed were reviewed from the aspects of design, visual appearance, and their feasibility as a learning medium in the Environmental Education (PLH) course. The design aspect of the poster display obtained a percentage of 91.75% with a very decent category. The aspect of color and typography suitability obtained a percentage of 83.25% with a very decent category. The readability aspect of the text obtained the highest percentage, which was 100% with a very feasible category. The aspect of clarity of information presentation obtained a percentage of 83.25% with a very decent category. The visual attractiveness aspect of the poster obtained a percentage of 91.75% with a very decent category. These results show that the illustrations, images, and visual elements used are able to increase the attractiveness of posters

as a learning medium. The aspect of the suitability of posters as a learning medium for PLH obtained a percentage of 91.75% with a very feasible category. Overall, the results of validation by media experts showed an average percentage value of 90.25% with a very feasible category. Thus, the learning posters developed are suitable for use as learning media without revisions or with minor revisions in Environmental Education (PLH) courses.

DISCUSSION

Student Awareness of the Environment

The results of the study showed that the level of student awareness of campus environmental management was in the high category, with an average score of 3.37 and an awareness index of 84.29%. These findings indicate that students not only understand the concept of environmental management, but also have a positive attitude towards its implementation in the campus environment. According to Notoatmodjo (2014), environmental awareness is formed through three main components, namely knowledge, attitudes, and actions. The results of this study are in line with the findings of Syah and Fitriyani (2014) who stated that students with a good understanding of the environment tend to show a positive attitude towards environmental management. In addition, Bungin's research (2017) emphasizes that high environmental awareness is an important social capital in supporting the success of environmental programs in educational institutions.

The results of the research on the level of student awareness of campus environmental management show that the level of student awareness of campus environmental management is in the high category. This achievement indicates that in general students have a good awareness of the importance of maintaining and managing the campus environment in a sustainable manner. The high awareness index value reflects that the majority of respondents show a positive attitude towards statements related to environmental knowledge and participation in campus environmental programs. UNESCO (2017) states that environmental awareness is the result of integration between conceptual understanding, attitudes, and the willingness of individuals to engage in concrete actions to protect the environment.

According to the OECD (2018), environmental knowledge is the main foundation in shaping environmental awareness because understanding environmental issues and impacts will affect the way individuals behave and act. In line with this, Widodo and Nurhayati (2020) stated that students who have a good understanding of the environment tend to show higher concern for the cleanliness and sustainability of the campus environment. Indicators of environmental program participation also show high results. Students expressed their willingness and involvement in various environmental activities, such as maintaining campus cleanliness, participating in cleaning programs, and supporting campus policies related to environmental management. Keraf (2018) who asserts that true environmental awareness is not only reflected in knowledge, but also from active involvement in real actions. Student participation in environmental programs is a form of implementation of environmental awareness owned by students. Research by Yusoff et al. (2020)

states that students who are involved in campus environmental activities have a higher level of environmental awareness than students who are not actively involved.

Poster Eligibility

The results of this research are then used as a learning poster for the Environmental Education (PLH) course. The use of posters as a learning medium is considered effective because it is able to present information in a concise, visual, and easy-to-understand manner. Arsyad (2020) stated that visual media such as posters can increase students' attention, understanding, and memory of learning materials. In addition, Putri and Hadi (2022) emphasized that research results integrated into learning media can increase the relevance of the material to the real conditions experienced by students. According to Sanjaya (2013), the suitability of the material with the learning objectives is the main requirement so that the learning process can run effectively and in a directed manner. The aspect of the accuracy of the environmental management concept is also in the very feasible category. Sugiyono (2019) emphasized that the accuracy of concepts and accuracy of information are very important in the presentation of learning materials so that they can be scientifically accounted for. The accuracy of data and research information obtained the highest percentage, which is 100%. These results show that the data presented in the poster is actually sourced from valid research results. According to Arsyad (2017), the presentation of accurate data in learning media will increase students' confidence in the material presented. According to Daryanto (2016) stated that the material in visual media should be presented in a concise, concise, and clear manner so that it is easy for students to understand. According to Hamalik (2011), a good learning media must be able to help students understand the material in a more concrete and meaningful way.

CONCLUSIONS

Based on the results of the research and discussion, it can be concluded that:

1. The level of awareness of students of the Biology Education Study Program, Khairun University is shown through the awareness index, which is 84.29%, included in the high category. Students already have an understanding and attitude that supports the management of the campus environment, although the implementation of behavior still needs to be improved.
2. The poster display is declared suitable for use in environmental education courses. The results of validation by material experts showed an average percentage value of 90.25% with a very feasible category. The results of validation by media experts showed an average percentage value of 90.50% with a very feasible category. Thus, the learning poster has met the media feasibility criteria in terms of design, visual appearance, text readability, layout, and its function as an attractive and effective learning medium.

SUGGESTIONS

1. For Colleges

It is expected to strengthen the green campus policy and provide supporting facilities for environmental management.

2. For Students

It is expected to be more active in implementing environmentally friendly behavior in daily life

3. For the next researcher

It is recommended to examine the behavioral aspects in more depth and relate them to the real program of campus environmental management

ADVANCED RESEARCH

Each study has limitations; thus, you can describe it here and briefly provide suggestions for further research.

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