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Environmental literacy profile of senior high school in Mowewe Southeast Sulawesi

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ABSTRACT

Lack of awareness and human responsibility is one of the factors that have a major impact on increasing environmental problems. The purpose of this study was to describe the environmental literacy skills of class XI students of senior high school 1 Mowewe. The method used is a descriptive method with a quantitative approach. This research was conducted in the odd semester 2021/2022 academic year (September until November), at SMAN 1 Mowewe (Southeast Sulawesi, the subjects in this study were 50 students of class XI senior high school 1 Mowewe. The questionnaire was used to measure students' environmental literacy. The data were analyzed using descriptive analysis. The results showed that the indicator of knowledge was worth 59.78, the attitude indicator of students' attitudes was worth 69.18, the ability of cognitive skills to the environment was worth 74.52, and student behavior towards the environment had a value of 67.86. Based on the results of the study, it can be concluded that the environmental literacy ability of students at senior high school 1 Mowewe, namely the knowledge indicator has a value of 59.78 with a fairly good category, students' attitudes have a value of 69.18 with a good category. category, the ability of cognitive skills to the environment has a value of 74.52 with a good category, and student behavior towards the environment has a value of 67.86 with a good category.

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Introduction

The issue of environmental damage such as climate change, which is increasingly regarded as a threat by countries, has become a hot topic in the study of International Relations in the contemporary era. (Adityo Nugroho, 2018; Sayyidati, 2017). The environmental damage that arises as a result of climate change, the extinction of natural resources, to environmental damage caused by human activities (A. Nugroho, 2018). According to Karimzadegan & Meiboudia, (2012) environmental protection has become a global concern due to increasingly disturbing environmental conditions. Several countries have made efforts to prevent natural disasters and climate change, submitted them to the United Nations (UN), and discussed environmental issues from a global perspective at the Stockholm International Conference 1972.

One of the efforts to develop environmental literacy skills can be done through formal education. Guimaraes-iosif & Reis, (2009) explained that the formal education system, especially schools, can create elements that support environmental skills such as knowledge, skills, attitudes, and behaviors. Moreover, Srbinovski & Stanišić, (2020) reveal that environmental literacy is understood as a great achievement in environmental education.

Considering that environmental education is not a special subject in Indonesia, it is necessary to integrate the content of environmental education into these subjects. According to (Srbinovski & Stanišić, 2020) emphasizing the basics of environmental literacy through science subjects. Kusumaningrum, B., & Wijayanto, (2020) states that all human activities are closely related to nature. In short, science can be the basis for the development of environmental literacy. Environmental literacy is a person's understanding of everything related to the environment including knowing existing problems and being able to find solutions to overcome a problem in the surrounding environment (Rahman & Nasri, 2018). The term environmental literacy is also defined as the ability to understand and interpret environmental conditions and take appropriate steps to improve, maintain and improve the quality of the environment (Tuncer, Tekkaya., Sungur., Cakiroglu., Ertepinar., & Kaplowitz, 2009)

Cantrell & Hughes, (2008) explain that education is not only related to the curriculum but also includes learning outcomes and post-learning skills. Learning is one of the means to getting an education. Salah satunya adalah pendidikan lingkungan. Correspondingly Roberta & Brien, (2007) states that knowledge is said to be able to awaken awareness of many things. The environment is important for the eyes of the world because the positive effect of environmental protection has real consequences in itself. Research results Igbokwe, (2016) shows that the student's environmental literacy is generally low, only 29.3% of students meet the environmental literacy assessment standards and the remaining 70.7% are still below the standards. Research conducted by Nasution, (2016) in Class X High School Students in Samboja in Biology Learning, states that the environmental literacy of high school students in schools A and B in Samboja has a moderate level of environmental literacy. Research results Suryawati., Suzanti., Zulfarina., Putriana., & Febrianti, (2020) state that the ability of junior high school students to identify, analyze problems, and make planning actions in the practice of solving environmental problems is still low, so efforts need to be made to improve students' environmental literacy.

Efforts to integrate environmental literacy into Indonesian education are already underway, and several schools in Indonesia, such as South Tangerang City, have been involved in environmental education planning with the Indonesia Education Promotion Foundation (IEPF) and the Japan International Cooperation Agency (JICA) in planning environmental education curricula. Namun in its development still uses competency standards such as KTSP Content Standards and is not based on the Core Competencies of the 2013 Curriculum (Herlanti, 2016).

Based on this, efforts to empower environmental literacy in the learning process in Indonesia are carried out optimally. The results of research by Suryawati., Suzanti., Zulfarina., Putriana., & Febrianti, (2020) stated that students' ability to identify, analyze and plan problems is one solution to environmental problems. Based on these problems, efforts are needed to empower students' environmental literacy. Thus the purpose of this study is to describe the environmental literacy skills of class X students of SMA Negeri 1 Mowewe, one way to use environmental education to foster environmental literacy is to provide a questionnaire containing elements of environmental literacy.

METHODS

Research design

The type of research used is descriptive research with a quantitative approach. A descriptive method does not require a control class or experimentation because it can be interpreted as a method that does not provide processing, manipulation, or modification of the sample used. The collected data were analyzed and described to explain the conditions faced by the study subjects.

Population and Sample

This research was conducted from September to November 2021. Due to the COVID-19 pandemic, this study was conducted online by providing questionnaires to research subjects. This research was conducted at senior high school Negeri 1 Mowewe, East Kolaka Regency, Southeast Sulawesi, Indonesia. The high school that is used as a research location is only the high school that has a science class. This is because the test that will be given is an environmental literacy test that is modified with biology subject matter. The materials used are environmental pollution materials.

The population in this study were students of senior high school 1 Mowewe. From each school, two classes were taken, of which the class used was class XI majoring in science. This research was conducted in the 2021/2022 school year. This is because the learning material used is environmental pollution material, where this material is class XI material in high school. The sample in this study is all students in the classroom who have been selected to be given an environmental literacy questionnaire.

Instruments

The instrument used for data collection is a questionnaire. Questionnaires to measure students' knowledge, skills, attitudes, and behaviors are adopted (Dunlap, Van Liere, et al., 2000; Milfont & Duckitt, 2010). For more in-depth information on questionnaires compiled according to environmental literacy, indicators can be seen in Table 1.

Table 1.
Student Environmental Literacy Indicators

Environmental Literacy Indicators	Environmental Literacy Sub Indicators
Knowledge	New ecological paradigm
	personal responsibility
	Environmental issues
	Attitude/attention
	Motivation
Attitude	New worldview
	Environmental sensitivity
Cognitive abilities	Identify the problem
	Problem analysis
Behavior	Economical
	Environmental management
	Cajolery

Source: (Dunlap, Van Liere, et al., 2000; Milfont & Duckitt, 2010)

Operational definitions are intended to avoid misunderstandings and differences in interpretation regarding the terms in the title of this study. Following the title of this study, namely "Analysis of Environmental Literacy Ability of senior high school Negeri 1 Mowewe", the operational definition that needs to be explained is:

1) Environmental literacy

Awareness and concern for the environment are called environmental literacy. According to NAAEE (2011) states that environmental literacy consists of four domains, namely: Knowledge, cognitive skills, Attitudes, and Behavior. In this study, researchers measured environmental literacy outcomes by measuring these domains. In the realm of knowledge measured by 10 items, cognitive skills are measured by 5 items, attitudes are measured by 10 items, and behavior is measured by 10 items. So

that the level of literacy of the student environment is known. In this study, researchers adopted student environmental literacy questions from (Dunlap, Liere, et al., 2000; Milfont & Duckitt, 2010)
2) Environmental pollution lesson. The learning of environmental pollution is known based on observations made by researchers. These observations include lesson plans, learning processes, and learning evaluations. Thus the results of this study will be able to see the ability of students' environmental literacy.

Procedure

In this study, several steps were taken to analyze the environmental literacy of students. The research flow is used as a reference or guideline for the research agenda to be carried out, thus allowing researchers to conduct their research in a structured manner and complete their research on time. The first step is to identify the problem. At the specific stage of the problem, you should be able to understand the issue under investigation so that the issue under investigation does not arise from the issue investigated during the analysis and design stage. The second step is the study of literature. At this stage the researcher studies and understands the theories that guide and reference from various books, magazines, and even the Internet, complementing the treasury of concepts and theories. The third step is data collection, which is an important phase of the process. The method used is to disseminate questionnaires to answer questions about factors affecting the level of knowledge about the environment and study environmental literacy in several students representing research fields, applications, and research topics. The fourth step is the analysis of data based on the findings, which infers the results from the data obtained.

Data Analysis Techniques

The results of student environmental literacy are analyzed using the following formula:

$$Indicator = \sum \frac{respondent's\ answer\ score}{maximum\ score}\ x\ 100$$

Then the results are converted into environmental literacy criteria as shown in Table 2.

Table 2.
Student Environmental Literacy Criteria Score

Value	Criterion
1-20	Not so good
21-40	Bad
41-60	Pretty good
61-80	Healthy
81-100	Very good

RESULTS AND DISCUSSION

The following are presented the results of the data analysis of the student's environmental literacy profile (Figure 1).

Based on Figure 1, students' knowledge related to the environment has a score of 59.78 a fairly good category. According to Salı, G., Körükçü, Ö., & Akyol, (2015) Environmental knowledge is knowledge in the form of information that a person has related to the field of nature and ecology. In this study, the aspect of knowledge assessed is knowledge of the new ecological paradigm which includes problems that occur in the environment and personal responsibility to the environment.

Students' attitudes towards the environment are in a good category, which is 69.18. According to Rokhmah, Z., & Fauziah, (2021) attitude is the unity of opinions and beliefs about relatively fixed objects or situations, accompanied by certain feelings on which to determine the response or behavior. Cognitive skill ability has the highest score of 74.52. This is because students have the opportunity to interact directly with environmental problems that occur around them. Student behavior towards the environment has a score of 67.86 with a good category. Behavior is not formed by itself but is formed through a learning process. Knowledge of environmental issues and knowledge of various appropriate

measures to address them become one of the prerequisites for responsible behavior. Having knowledge and ability is not enough, it needs to be accompanied by a desire or desire to realize the deed in question.

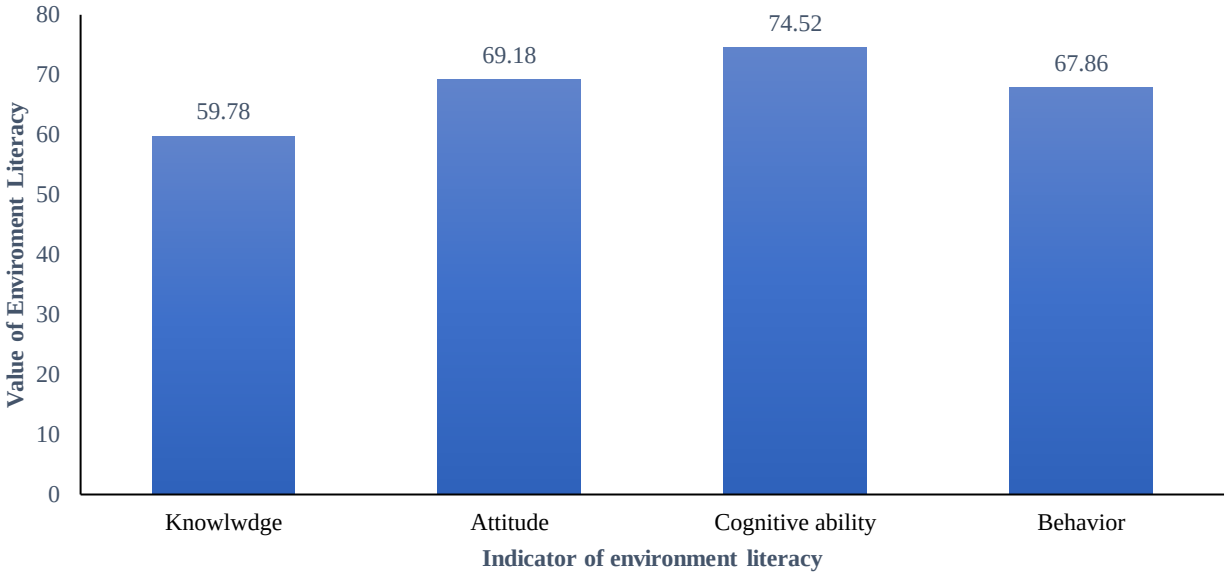

Figure 1. Graph of Student Environmental Literacy Results Based on Indicators

The desires or desires of a person himself are strongly influenced by personality factors, namely attitude, locus of control, and a sense of responsibility. Wibowo, (2009) state that individuals who have knowledge and skills and have a positive attitude towards the environment as well as towards pro-environment behavior, usually have the intention to realize responsible behavioral actions. Research results Rokhmah, Z., & Fauziah, (2021) show that the student's environmental knowledge is in the category of being quite good but the student's cognitive ability is not good enough. Attitude indicators are also related to behavioral indicators towards the environment. According to Azhar, A., Basyir, M. D., & Alfitri, (2015) attitudes and behaviors towards the environment have a positive and significant relationship, so the higher the percentage of attitudes, the higher the percentage of students' behavior towards the environment.

The results of this study indicate that the environmental literacy profile of students in the domain of cognitive skills, attitudes, and behavior towards the environment is in the good category while the knowledge domain is still in the sufficient category. This study found that students of senior high school 1 Mowewe class IX majoring in science had the highest cognitive skills compared to other environmental literacy domains. This is in line with the research results of Wulandari & Roshayanti, (2022) which states that students' skills in solving environmental problems are in the good category but attitudes towards the environment are still in the sufficient category, even though the domain of students' knowledge has been categorized as good. Other researchers also stated that the three domains of students' environmental literacy, namely knowledge, attitudes, and behavior, were in the good and positive categories even though there were still student behaviors that did not care about the environment (Yusup, 2021). Thus, further studies are needed so that the four domains of student environmental literacy are positively correlated so that the higher the level of knowledge and cognitive skills of students' environment, the higher their environmental attitudes and behavior. In addition, studies related to curriculum and learning models are needed that are able to empower students' environmental literacy.

CONCLUSION

Based on the results and discussion, it can be concluded that the environmental literacy ability of students at senior high school 1 Mowewe, namely knowledge indicators, has a value of 59.78 in a fairly good category, and student attitudes have a value of 69.18 with a good category, cognitive skills ability towards the environment has a value of 74.52 with a good category, and student behavior

towards the environment has a value of 67.86 with a good category. Further research is needed relating to efforts that can improve student environmental literacy, especially in the aspect of knowledge.

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