



# Ecological Intelligence: Analysis of Elementary School Teacher Education Students' Understanding of the Concept of Ecoliteracy in Social Studies Learning

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**Abstract.** The background to this research is the low level of understanding of the concept of Ecoliteracy among Elementary School Teacher Education students in understanding the environment as a learning material for elementary school social studies. The aim of this research is to analyze the understanding of the concept of ecoliteracy of elementary school teacher education students in the concept of ecological intelligence. The method used in this research is descriptive research which aims to analyze phenomena, events or research objects without testing a particular hypothesis. The instrument used in this research is a questionnaire test for students which refers to indicators of concept understanding analysis, namely: 1) Concept Decomposition, 2) Argument Evaluation, 3) Concept Linkage, and 4) Case Study Analysis. The sample for this research was 195 elementary school teacher education students in semester 2. The average result of understanding the concept of ecoliteracy was 42.85%. Based on the results of several indicators of understanding the concept of ecoliteracy for elementary school teacher education students, it can be concluded that elementary school teacher education students still cannot fully understand it. regarding the Concept of Ecoliteracy. Judging from the average results obtained, it is still lacking.

**Keywords:** Ecoliteracy, Elementary School Teacher Education students.

## 1 Introduction

Ecoliteracy is a concept that must be understood by humans which is related to social-emotional intelligence to recognize nature as part of their lives. Ecoliteracy also teaches how to understand oneself as part of nature [1], [2]. Ecoliteracy not only trains how to understand the state of nature as part of itself but furthermore how humans can behave, behave, based on ecology. [1], [3].

Ecology is a study that studies the interactions of living things with their ecosystem. Therefore, every individual must realize ecological intelligence regarding the knowledge, awareness and skills of living in harmony with natural sustainability [3], [4]. Its history, during the preliterate era, humans actually understood the concept of ecology, where at that time humans were required to hunt wild animals in their environment to fulfill their hunger to survive, in the process humans realized that if they

could not preserve nature, then Hunted animals will gradually disappear, resulting in a change in mindset that encourages humans to survive. Over time, during the Food Production era, humans were able to select the results of their hunt and make these animals into livestock. Entering agricultural life, humans have been able to grow crops and let animals such as snakes, rats and others act as links in the food chain in an effort to eradicate plants from invading pests. Looking at history, ecological intelligence has actually been embedded since humans were born into this world [5].

The challenges faced by modern humans are very complex, where humans do not only rely on ecological intelligence, but also on how to implement ecology in technological development and very rapid industrial growth in various sectors, as well as social issues related to the environment which can become obstacles in understanding ecology. for students. The environment and its various problems cannot be separated from social problems which are interconnected with each other [6], [7].

Students' understanding of ecological intelligence can vary depending on their level of education, their background, and the specific course or context in which they participate [8], [9]. Ecological intelligence, in a general context, refers to the ability of individuals or communities to understand, appreciate, and interact with the natural environment in a sustainable manner [10], [11], [12].

Students are one of the social groups that are vulnerable to being affected by global issues related to ecological intelligence. Apart from that, students are also a benchmark for success, but they are also faced with two very complex choices, where students are required to be intellectuals who can providing changes regarding the environment with concepts obtained in the world of lectures, on the other hand, students are faced with environmental problems that are the same as other social problems, therefore students' understanding of environmental intelligence needs to be applied in various courses taught by each [4], [13].

Students' understanding of ecological intelligence needs to be increased in active learning, student experience in the field and student participation in projects related to the environment, apart from that, awareness of ecological intelligence can provide a very important basis for making positive decisions in protecting and preserving the environment and providing solutions to developing environmental problems [9], [14], [15]. From these views, it can be concluded that students' understanding of ecological intelligence is reflected in several indicators of understanding ecological intelligence, including: 1) Concept Explanation, 2) Argument Evaluation, 3) Connecting Concepts, and 4) Case Study Analysis

Paying attention to the studies that have been carried out, research on students' understanding of ecological intelligence. This research aims to obtain information regarding students' ability to understand the concept of ecoliteracy in school teacher education, especially efforts to assess students' ecological intelligence. This study has implications for ideal learning practices regarding ecological awareness that supports education for sustainable development.

## 2. Method

The method used in this research is descriptive research. Descriptive research aims to analyze phenomena, events or research objects without testing certain hypotheses. The main aim of this research is to provide a clear and detailed description of the analytical understanding of the concept of ecoliteracy for school teacher education students [16], [17].

Steps taken in constructing the instrument used in analyzing the understanding of the concept of ecoliteracy of elementary school teacher education students. The instrument used in this research is a questionnaire test for students which refers to indicators of concept understanding analysis, namely: 1) Concept Decomposition, 2) Argument Evaluation, 3) Concept Linkage, and 4) Study Case Analysis. The questions are designed to present questions related to the problem of students' understanding of the concept of dealing with ecoliteracy. Every problem that arises becomes a stimulus for every indicator of concept understanding, the instruments designed have been validated by experts and the use of language has been adapted to the student's mindset [16].

The next step is to give the test to 195 Elementary School Teacher Education students in the 2nd semester in the 2022-2023 academic year, to be precise in March 2023. The students who become participants are students who teach the Ecoliteracy course in elementary schools, making it easier for researchers to collect research results and tests. carried out offline and carried out according to the student's convenience while working.

The data obtained in the test is then analyzed to determine students' understanding of the concept of ecoliteracy according to existing indicators. Data processing is carried out in a descriptive statistical manner by calculating the average of each indicator. The results of the analysis will provide useful information in determining students' understanding of the concept of ecoliteracy, thereby providing insight into future educational development.

## 3. RESULT AND DISCUS

### 3.1 Results

#### Understanding the Concept of Ecoliteracy

**Table 1.** Analysis of students' understanding of the concept of ecoliteracy in elementary school teacher education

Indicator	Average
Concept breakdown	47,5
Argument evaluation	55,3
Concept attribution	33,6
Case study analysis	35,0
Average	42.85

Based on Table 1, it can be seen that more than half of elementary school teacher education students still cannot explain the concept of ecoliteracy well. It can be seen from the research results that not all students can explain the concept of ecoliteracy. This is because students' understanding of the concept of ecoliteracy varies greatly depending on the student's level of education and background. Not only that, the lack of experience of students in the field and the availability of students to take part in projects related to the environment are factors in the lack of understanding of the concept of ecoliteracy among elementary school teacher education students. In this case, research results in March 2023 showed that only 47.5% of Primary School Teacher Education students could explain the concept of Ecoliteracy.

This finding is also in line with research which shows that not all elementary school education students can evaluate arguments. However, the results of the research data show that more than half of elementary school teacher education students can evaluate arguments, which means that students have more understanding of one of the indicators of understanding the concept of ecoliteracy. In this context, the indicator in the Ecoliteracy concept with the highest average gain is Argument Evaluation. Judging from the results of the research data, the average Argument Evaluation indicator shows that 55.3% of students have been able to develop their arguments for the concept of Ecoliteracy and have at least begun to understand Ecoliteracy.

The next analysis is the Concept Association indicator. The average obtained from the research results in the concept comprehension indicator could be said to be the lowest. The average Concept Linkage indicator shows that only 33.6% of Elementary School Teacher Education Students are able to relate the concept of Ecoliteracy to everyday life. From the research results, this is caused by several causal factors. Even though the average for this indicator is the lowest, basically students have the ability to relate concepts.

On the other hand, the Case Study Analysis indicator ranks second lowest in average after the Concept Linkage indicator. This can happen because case study analysis requires a lot of direct intervention in order to be able to analyze more deeply related to ecological intelligence and to develop the ability to analyze case studies in students. However, the research results show that students' understanding of ecological intelligence still needs to be improved through active learning and student experience in the field. Therefore, the average Case Study Analysis indicator is still relatively low. Only reached 35.0%.

Based on the results of several indicators of the concept of understanding ecoliteracy for elementary school teacher education students, it can be concluded that elementary school teacher education students still cannot fully understand the concept of ecoliteracy. Judging from the average results obtained, it is still lacking.

### **3.1 Discussion**

From the results obtained in understanding the concept of collaboration for elementary school teacher education students in social studies learning, it cannot still be said to be successful because seen from the overall results it shows a score below 50%. There are many obstacles experienced by students in understanding the meaning of ecoliteracy

[18], [19]. The factors causing the low understanding of ecotitration are very diverse, students' understanding of ecotitration varies greatly because this topic involves the relationship between humans and their environment. One of them is a lack of awareness and the impact of human behavior on the ecosystem [20].

Students' understanding of ecological knowledge can vary depending on many factors, including educational programs, environmental awareness, and teaching methods used in educational institutions [21], [22], [23]. Ecoliteracy knowledge is an understanding and awareness of environmental problems as well as the ability to think holistically about the relationship between humans and the natural environment. Several factors obtained in the research process regarding students' low understanding of Ecological knowledge include Curriculum, teaching methods, environmental awareness, and environmental awareness and access to learning resources.

The curriculum is an initial design for students to be able to recognize the learning that will be delivered, with the curriculum students can understand what will be discussed in the future so that students are able to prepare in advance strategies to face future learning, especially curriculum related to ecoliteracy. The researcher's question is: Are there any lessons or programs that specifically teach the concept of ecological knowledge? If not, this could cause students to misunderstand environmental problems. Several steps can be taken, including: Enriching the curriculum with courses or programs that focus on environmental issues and ecological knowledge (24–26).

Teaching methods that are less interactive or not directly applied to real life situations can affect students' ability to understand lessons. Understanding will be better if there is an internship, field project or in-depth discussion on environmental issues. Using interactive teaching methods and actively involving students in solving environmental problems, Encouraging participation in field activities, research projects, or volunteer programs related to the environment [27], [28].

The level of environmental awareness and individual concern for environmental problems also plays an important role in understanding ecoliteracy knowledge. If students are not fully aware of the importance of protecting the environment, their understanding of ecological knowledge or ecoliteracy may be weak. Collaborative efforts from various parties such as educational institutions, students themselves, government and society are very important in achieving a better understanding of ecological knowledge. [29], [30].

### **3. Conclusion**

Students' understanding of ecological knowledge or ecoliteracy may be low because this concept is not always important in the educational curriculum. Ecoliteracy is an understanding of how humans interact with their natural environment, including an understanding of ecosystems, sustainability, and how human actions affect the environment. To increase students' understanding of ecological knowledge, it is necessary to increase awareness of the importance of environmental problems, integrate the learning of ecological knowledge into the curriculum in lectures, provide adequate resources and encourage active participation in activities related to the environment. .

Collaboration between educational institutions, government, and Learning Management systems can also help increase understanding and awareness of ecological literacy.

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