

Ecoliteracy Awareness of Elementary School Students in Waste Management

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Abstract. Waste management can be completed if humans have a sense of responsibility for the environment, an understanding of environmental conservation is called ecological intelligence (Ecoliteracy). The purpose of this study was to describe the ecoliteracy awareness of elementary school students in waste management. This study used the descriptive qualitative method. This study uses several data collection techniques including, questionnaires (questionnaires), interviews (interviews), and documentation. The participants in this study were five 3rd grade teachers and 26 3rd grade elementary school students. Documentation was conducted by analyzing two books concerning waste management. Data processing is done by analyzing the results of data collection and then describing to get a picture of the awareness of elementary school students in waste management. The results of the study show that: 1) from the interviews, it is known that the teacher has instilled an awareness of ecoliteracy in learning or outside of learning, but has never practiced recycling; 2) the results of the questionnaire show that students already have good knowledge of waste management, but their application is still lacking, and 3) the results of the documentation show that in the 3rd-grade books there are already quite complete waste management materials, but there are no student worksheets for making recycling projects. Ecoliteracy awareness of elementary school students in waste management needs to be continuously instilled to form a generation that has environmental intelligence.

Keywords: Ecoliteracy, Waste Management, Primary School, Ecological Intelligence, Environment Conservation

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INTRODUCTION ~ Environmental problems are global problems. One of the environmental problems is the presence of waste. A report released by the World Bank in June 2013, entitled "What a Waste, A Global Review of Solid Waste Management" reminds that the total solid waste generated worldwide reaches around 1.3 billion tons per year. In Indonesia, which has a population of about 230 million people, it also has a very large waste problem. The Minister of Environment and Forestry revealed that it is estimated that in 2019 waste in Indonesia will reach 68 million tons. Of the amount of waste, only 10-15% is recycled, and the remaining 60-70% is

dumped in the TPA (Final Disposal Site) (Sarwosih, n.d.).

Given the environmental conditions that are increasingly damaged, awareness of protecting and understanding the environment is very important. Environmental understanding needs to be familiarized from an early age. According to Muhaimin in (Sarwosih, nd) indications in several cases, there are still many school environments that are not clean, student participation in environmental activities is still low, lack of awareness of students in forming good environmental behavior, wasteful living behavior in the use of natural resources, apathy on the preservation of the environment around students, and so on.

Ek, Kilic, Ogdum, Duzgun and Seker (2009) recommend environmental training especially at an early age and then supporting practical behaviors to raise today's children as tomorrow's adults with environmental awareness, knowledge and skills. Interests and attitudes towards the environment learned in school will bring desired behavior changes in the future. Early intervention in environmental training will help children to become aware of environmental problems and take over the role of communicator to their families and then to the community about environmental threats. Schools are expected to be the core institutions of facilitators in shaping the attitudes of students who care about the environment. So the teacher is tasked with educating students in protecting the environment in everyday life. (Karlina et al., n.d.) Understanding of the environment is also called Environmental Intelligence or called Ecoliteracy. Capra (2007) defines ecoliteracy as understanding the principles of ecosystems and using these principles to build sustainable communities. According to Daniel Goleman, ecological intelligence is a comprehensive understanding that aims to create awareness about how human activities affect ecosystems and to promote buying behavior that will lead to sustainable living (Pat Brereton, n.d.). Ecological intelligence combines these cognitive skills with empathy for all life. Ecological intelligence is also seen as our ability to adapt to our ecological niche (Daniel Goleman 2009: 44, 253).

Ecological intelligence is also seen in the form of understanding and elaborating human relationships with all elements and other living things. Ecological

intelligence is as deep as empathy and concern for the environment, as well as a critical way of thinking about what is happening in the environment as a result of human activities (Daniel Goleman 2009). Jung (2010) describes ecological intelligence as empathy and deep concern for the environment and a critical way of thinking about what happens in the environment as a result of our treatment. Ecological Intelligence is related to the cognitive and affective areas of the brain (Sterling, 2009; Shumba, 2011). Ecological Intelligence is a collective human consciousness and binding competence (Sterling, 2009). According to Nana Supriatna, Ecological Intelligence describes a person's ability or capacity to take actions related to ecological aspects, namely nature conservation (Nana Supriatna, n.d.). Stone (2005) states that ecological intelligence does not only develop through mastery of subject matter but also through a learning process in making connections between the head, hands, and heart (David W. Orr, n.d.). Ecoliteracy is defined as a situation where people are enlightened about the importance of the environment (Keraf 2014, p. 127) in (Tamam, 2016). Lappano (2011), wrote that ecoliteracy is a pedagogic process based on local wisdom and directly requires participation from the community. According to Coss 2015, Ecoliteracy is not only a content of textbooks and curricula, but a message and hope from educators who are trying hard to change their pedagogic influence on the problems of today's critical ecological needs. Ecoliteracy is a movement to increase one's awareness, knowledge, attitudes, skills, and sensitivity to the natural environment, that the environment needs to be protected, managed, and used

appropriately for the present and the future.

Ecoliteracy aims to make everyone ecologically literate (aware of the importance of protecting the environment). Ecoliteracy needs to be developed in students. Ecoliteracy fertilization is expected to make the next generation more environmentally literate and make environmental awareness a character that needs to be maintained. Ecoliteracy can be applied through things that look small, but have a big impact, one of which is in terms of waste management.

Ecoliteracy aims to build a community that agrees on how to understand conceptual ecology in educational practice. The application of ecoliteracy at the elementary school level is important because children at the elementary school level are still in a basic stage and are easier to be conditioned to be more sensitive to their environment. Goleman et al. (2012), explained that there are five socio-emotional aspects in the development of ecoliteracy, namely 1) developing empathy for all forms of life, 2) embracing sustainability as a group practice, 3) making the invisible visible, 4) anticipating unwanted consequences, and 5) understand how nature sustains life. (Goleman et al., 2012).

The Center of Ecoliteracy in the United States has developed a set of core competencies to help young people develop and live in sustainable societies. These competencies are the competence aspect of knowledge (head), competence aspect of attitude (heart), competence aspect of skill (hand) and competence of spiritual aspect (spirit).

The ecoliteracy indicators that can be used in this study concerning the waste issue are developed in three aspects which are adaptations of (Riyan Rosal Yosma Oktapyanto, n.d.) namely indicators of knowledge, attitude and performance aspects. In the knowledge aspect, the indicators are: 1) having the ability to approach problems and situations based on a systems perspective, 2) understanding basic ecological principles, 3) thinking critically by solving problems creatively and applying knowledge to new situations, 4) assessing impacts and ethical effects of human-generated technology and their actions, and 5) envisioning the long-term consequences of decision-making. In the attitude aspect, the indicators are: 1) feeling caring, empathetic, respecting fellow humans and living creatures, 2) observing deeply and appreciating various perspectives, 3) working with other people who have different backgrounds, motivations, and intentions, and 4) committed to equality, fairness, inclusivity and respect for all people. In the performance aspect, the indicators are: 1) creating and using tools, objects, and procedures needed by sustainable communities, 2) turning beliefs into practical and effective actions, and applying ecological knowledge to ecological design practices, and 3) assessing and adjust energy and resource use. These indicators can be developed according to learning needs. The instruments that can be used are also adjusted to the three aspects being assessed. Instruments on the knowledge aspect can be made in the form of tests. Instruments on the aspect of attitude can be made in the form of self-assessment. Instruments on performance aspects can

be made in the form of observation sheets.

Ecoliteracy in learning is very important for students to foster environmental awareness, increase a sense of responsibility to protect the environment and promote harmonious behavior between humans and the environment. Ecoliteracy can prepare students to be environmentally literate, and to become future citizens who play an active role in protecting the environment through making right decisions and taking environmentally friendly actions (UNESCO-UNEP, 1991).

The current condition of students' ecoliteracy is still said to be low. As the results of a survey conducted by the author to 30 teachers in West Java, it was found that 66.67% of teachers are not familiar with the term ecoliteracy, 60.7% of schools have not implemented segregation of waste types, only 47.8% of students dispose of waste in its place. , only 30.4% of teachers have ever taught waste recycling, and only 41.6% of students bring drinking bottles to school in order to minimize bottled water waste. The data shows that students' awareness is still low about the importance of maintaining the environment, which is dominated by waste management problems. Small trash that looks trivial will become big if many people don't realize the threat of the garbage. In fact, protecting the environment from the presence of waste is a human responsibility. Without awareness to protect the environment, the environment will be damaged quickly, life will not be balanced. If ecoliteracy awareness is not applied early on, humans will get used to being indifferent

to the environment, not feeling responsible for the environment and will act without thinking about the consequences in the future. Like the disasters that are happening today, we cannot close our eyes that everything that happens is always related to what humans did in the past. Based on the description of the problems above, researchers are interested in raising the issue of ecoliteracy awareness in learning in elementary schools.

Several previous researchers have also raised the issue of ecoliteracy. Faiqoh, Purwanto, Indrowati, in 2019 conducted a research entitled "Characteristics of Learning Media Development to Strengthen Ecoliteracy of High School Students in the Industrial Revolution Era 4.0". This study aims to study the characteristics of the development of learning media to strengthen students' ecoliteracy. The research used the R&D method. The results of the study indicate the fact that learning media that need to be developed are made in the form of digital learning to support school facilities and are equipped with special materials for the ecosystem (Faiqoh et al., 2019).

Other researchers who raised the issue of ecoliteracy include Sucia, Purwanto, and Suchyanto in 2018, with the research title "The Effect of Learning and Ecoliteracy Models on Students' Environmental Problem-Solving Ability". The purpose of this study was to determine whether there is a learning model and ecoliteracy on the ability to solve environmental problems. This study uses an experimental method with a 2 X 2 factorial design. The results show that there is no significant interaction between the learning model and

ecoliteracy on the students' environmental problem solving abilities; there is a significant problem between students, which is significant between students whose learning process uses project-based learning and problem-based learning; no one is able to solve the non-significant environmental problems of students between students who have high and low ecoliteracy (Sucia et al., 2018).

Furthermore, there is a study conducted by Setyaningrum in 2020 with the research title "Education-Oriented Ecoliteracy Learning Practices for Sustainable Development in West Surabaya City State Elementary Schools". The purpose of this study is to provide an overview of educational-oriented ecoliteracy learning practices for sustainable development in public elementary schools in the western part of Surabaya City. This type of research uses descriptive quantitative research, with a survey method. Sampling in this study used the Two Stage Cluster Sampling Technique, and the research sample amounted to 63 teachers. Data collection techniques using questionnaires. The results of the research as a whole were tabulated and percentages with the results of educational practice-oriented ecoliteracy for sustainable development in public elementary schools, namely in the fairly good category. (Setyaningrum, n.d.)

From various previous research data, it is known that awareness of ecoliteracy is said to always increase with the existence of innovations in learning that are associated with ecoliteracy aspects. However, studies on ecoliteracy are still limited, so it is necessary to continue to

research from various aspects so that the development of learning in improving ecoliteracy becomes more varied. Ecoliteracy is still said to be foreign to teachers because learning is still oriented to intellectual intelligence and has not touched environmental intelligence.

METHOD

This research use descriptive qualitative approach. Data was collected through interviews, questionnaires and documentation. The participants in this study were five teachers for interviews and 26 grade III students in West Java to fill out a questionnaire. Documentation is done by analyzing the material on waste management in two student textbooks.

The data obtained is then analyzed and described so as to get a picture of the ecoliteracy awareness of elementary school students in waste management.

RESULTS

Master-Instilled Ecoliteracy Awareness

Based on interviews with five teachers, it was found that in general, ecoliteracy awareness has been instilled, but has not been carried out optimally.

"I have never heard of the term ecoliteracy, but there is a lesson in waste management. There has never been a recycling practice so far, it's just a theory." (S N, N1, Teacher K3).

"Ecoliteracy is a kind of environmental education, right? If the classroom is dirty before studying, I always instruct students to look at the floor and pick up the trash. If they study in a dirty class, they themselves are uncomfortable." (A A, N2, K3 teacher).

"The material about garbage in grade 3 does exist. The material is up to separation and recycling. I often remind students not to throw garbage carelessly. If you don't find a trash can, it's better to put it in your pocket first." (L L, N3, Teacher K3).

"Of course in schools an attitude of loving the environment is instilled, one of which is that every Friday there is a Clean Operation. Students who don't like it are recorded by the class president so that all

students want to clean up." (NP, N4, Teacher K3).

"I just heard the term ecoliteracy, so far it has been applied indirectly. There are already two trash cans, organic and inorganic, many students have brought drinking bottles, there is also a picket distribution. I think it's all about loving the environment, although there are still students who litter. I was reminded already, maybe I'm not used to it yet." (D T, n5, Teacher K3).

Table 1. The Result of Questionnaires for Student

Questions About Ecoliteracy Awareness	Yes	No
Feel comfortable looking at the piles of garbage scattered around	19,2%	80,8%
Feel like cleaning up if there is a pile of garbage in our environment	61,5%	38,5%
Dispose of plastic bottles everywhere	42,3%	57,7%
Letting other people throw trash in the wrong place	73,1%	26,9%
Picking up the scattered trash even though it's not our trash	57,7%	42,3%
Throwing garbage carelessly can damage nature	84,6%	15,4%
Using a bottle from home is better than buying bottled water	69,2%	30,8%
Recycling plastic bottle waste must be done to reduce waste	80,8%	19,2%
Recycling plastic bottles is only the job of the garbage collector	88,5	11,5
Recycling plastic bottles can save nature	92,3	7,7

Students' Attitude towards Ecoliteracy in Class 3 Elementary School Student Books

In the 3rd grade elementary school student's book Theme 3 Objects Around Me, the 2013 revised 2018 edition of the integrated thematic book, there are materials on waste management, namely in Sub-theme 1, namely Various Objects Around Me, Learning 4. The material is about plastic and solutions to problems. The book discusses the dangers of using plastic because it is difficult to decompose, how long it takes to decompose each type of plastic, and how to recycle to minimize plastic waste.

Another book is the Environmental Education book for Grade 3 Elementary

School which was compiled by a team from the Malang State University research institute in collaboration with the Environment Agency of East Java Province. In the book in chapter II with the subtitle Maintaining Personal Hygiene and Environmental Cleanliness, it contains a section on waste management materials including a clean house without garbage, different types of waste and ways of managing waste.

DISCUSSION

As the results of the interview, it is known that not all teachers know about ecoliteracy awareness. But actually, without realizing it, in elementary schools where resource persons teach, ecoliteracy has been applied in general.

Although it has not been really emphasized, there have been various activities in schools that have the intention of instilling a sense of responsibility towards the environment. From these interviews, each teacher has their own way of instilling ecoliteracy awareness. However, from the five interviews, no one has practiced recycling in learning. The inculcation of ecoliteracy awareness needs to be emphasized so that it is inherent in students.

Based on the questionnaire data that has been obtained, it is known that 80.8% of grade 3 elementary school students feel uncomfortable with the presence of garbage. This shows that students realize that waste is not good for the surrounding environment. Then it was found that 61.5% of students wanted to clean up trash when they saw scattered garbage. Even though it is only a desire, if ecoliteracy awareness is emphasized, it will become the character of students who really care about the environment. Furthermore, the data shows that 57.7% of students do not litter plastic bottles. This means that most of the 3rd grade students are aware of disposing of garbage in its place. However, 42.3% of students who still throw plastic bottles carelessly are said to be a problem, because 42.3% is a fairly large number. This should be a concern for teachers to continue to remind and strengthen ecoliteracy so that more students are willing to litter. Furthermore, 73.1% of students let their friends litter. This means that students still lack empathy for others because there is no initiative to reprimand for the good of that person as well. Then 57.7% of students picked up trash even though it wasn't theirs. This shows that students already have

empathy for the environment. Then the data obtained there are 84.6% of students who realize that littering can damage nature. This means that many students already know about the dangers of waste, this is a good start. Furthermore, there are 69.2% of students who think that bringing bottled water from home is better than buying bottled water. From these results, grade 3 elementary school students have begun to understand the concept of zero waste slowly. Then 80.8% realized the need for recycling plastic bottle waste. However, 88.5% of students stated that recycling plastic bottle waste was only the job of the garbage collector. From the data it is known that students do not have a sense of responsibility in recycling waste. In fact, waste management is not only the task of garbage collectors, but also a task that must be carried out by all humans. Then there are 92.3% of students realizing that recycling plastic bottle waste can save nature.

Based on the documentation of two third grade books, waste management has been included in the curriculum. This means that the government is aware of the importance of students' understanding of waste management. In the Student Book Theme 3, it has even come to a discussion to solve the waste problem. This will stimulate students to think creatively in solving waste problems around them. Likewise in the Environmental Education book, students are invited to understand the types of waste and have to throw garbage in the trash according to its type, even at home the book invites them to be consistent in sorting kitchen waste.

CONCLUSION

Based on the data obtained, it can be concluded that ecoliteracy in elementary schools has been instilled both in learning according to the curriculum, as well as in daily activities. In line with the teacher's explanation, the results of student questionnaires also show that students' understanding of waste management is said to be quite good, but in practice it is still said to be poor. It is necessary to continue to emphasize the cultivation of ecoliteracy so that students are accustomed to considering the environment as a part of life that they must protect.

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