



Theoretical Aspects Of Ecological Intelligence Development Of Students In Elementary Schools

Hari Ahmad Zulfikar^{✉1}, Nana Supriatna^{✉2}, Iyus Nurbaeti^{✉3}

^{1,2}Universitas Pendidikan Indonesia

✉ hazulfikar@upi.edu¹, ✉ nanasup@yahoo.com², ✉ iiyusnurbaeti@gmail.com³

Abstract. The environment is defined as a place where living things carry out their life activities. Clean and sustainable environment can sustain continuous life (sustainability). Therefore, intelligence is needed to support it, one of the intelligence that is the basis for this ecological intelligence (ecoliteracy). Every behavior or action of a person based on ecological intelligence, it does not only have an impact on himself and others, but also on other living things and the nature around where a person lives or in other terms "empathy for all forms of life". Current conditions in elementary schools have not shown students who have ecological intelligence. The development of social skills or character of students in elementary schools still focuses on human interaction. Through ecopedagogy, teachers need to link interactions between humans and the environment or nature. The purpose of writing this article is to describe some aspects of the theory of ecological intelligence development of students in elementary schools. This study uses a literature study (literature review) which produces a description of several theories in developing ecological intelligence of students in elementary schools.

Keywords: Ecological, Ecoliteracy, Ecopedagogy, Ecological Intelligence Development

INTRODUCTION ~ Environment is defined as the place where living things carry out their lives. Humans in it as part of an ecosystem. So the attitude of ownership must be embedded in humans. The environment is an important element in human life. The environment is not only used as a place for people to do activities, but the environment has an important and supportive role in a variety of human activities, so that they form an ecosystem that influences each other (Hamzah, 2013; Muhaimin, 2015).

Irwan (2014, p. 109) says that, "between organisms and the environment there is a close and reciprocal relationship, so there is no dividing wall between the environment and existing biological organisms or communities."

Meanwhile, Soemarwoto (in Hamzah, 2013) said that "human relations with the

environment are circular." That is, various human actions on the environment will have positive and negative impacts. The impact will return to humans as the culprit. So from human actions or behavior towards the environment, various problems will arise even to the global environmental crisis.

In connection with environmental phenomena, it takes a variety of intelligence that must be mastered by humans in controlling the environment as their place of residence. It is intended that the environment is maintained and sustainable. One intelligence that must be mastered by humans is ecological intelligence or also called ecoliteracy. Ecoliteracy is part of social skills developed through ecopedagogy or environmental education.



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Ecological intelligence is necessary because intelligence is not just talking aspect of knowledge but in the aspect of action we have to do and realize the man of the principles of sustainable living.

The global crisis occurs in various forms such as the changing face of the world and society becoming environmentally unfriendly or green consumers. This is a condition that must be addressed together with global commitments.

Jambeck (2015) in his 2010 study concluded that, "275 million metric tons (MT) of plastic and styrofoam waste is produced in 192 coastal countries with 4.8 to 12.7 million MT entering the ocean." Currently, Indonesia ranks second in the list of producers garbage after China.

Various synergies of the world community have been carried out in response to the global ecological crisis. At the UNCED (conference United Nations Conference on Environment and Development) in Rio de Janeiro, Brazil in June 1992, declared a global crisis, one of which was "Principle 1, human beings are at the center of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature" (The Rio Declaration, 1992).

Not a few people on this earth have extensive knowledge and understanding of the environment, including the phenomenon of cleanliness and health in the environment. However, the knowledge and understanding of the community,

especially students, is still on the cognitive aspect. While character education is seen to be responsible.

In line with the opinion of Lickona (2012) which says that character education consists of knowledge (moral knowing), affective and psychomotor (moral feeling), as well as moral and responsible actions (moral action).

Some teachers at the school said that hygiene at school was able to be overcome, some students were already skilled in disposing of trash in its place. But more than that, where does the waste runoff and what impact does it have on the students themselves, so it is necessary to develop ecological intelligence in students, especially in elementary schools.

Several studies have been conducted on ecological intelligence. Fleischer (2010) in his research concluded that students are still in the process of developing reflective and metacognitive skills, so they have not demonstrated critical skills in action regarding environmental issues. Meanwhile, (Karlina, 2017; Yunansah, 2017) in his research concluded that there was an increase in ecological intelligence in students through learning group based outdoor study, and through ecopedagogy based education.

So that the development of ecological intelligence is seen as important for students in elementary schools, so they have a sense of belonging to the



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environment and make themselves part of the planet earth.

In this article, the author intends to explore several theories about ecological intelligence and the development of ecological intelligence in students in elementary schools. So there is a picture or description for educators, especially in developing the intelligence of students in elementary schools. Therefore, the title of this article is "Theoretical Aspects of Developing Ecological Intelligence of Students in Elementary Schools."

METHOD

The method used in this article is the study of literature (literature review). Literature review is defined as the activity of identifying, analyzing, evaluating, summarizing data and synthesizing relevant reading or research sources (Kitchenham, 2004; Winchester, 2016).

Zed (2008) said that there are three things that are the reasons for doing a literature review, namely the problem can still be resolved through library research, literature study is needed as a preliminary study in understanding new phenomena that are developing in the field or in the community, and library data can still be relied upon in answering the research problem.

Creswell (2015) mentions five steps in literature review, namely identification of several key terms, searching for literature, evaluating and critically selecting

literature, organizing literature, and writing a literature review. Sources used in the literature review include national and international journals, research reports, books, e-books, and other document sources that are relevant to the research being raised.

RESULTS AND DISCUSSION

In this result and discussion, the researcher directly conducts a literature review and discusses it until a conclusion is reached.

CenterforEcoliteracy

The Center for Ecoliteracy was established by Fritjof Capra, physicist and thinker; Peter Buckley, former CEO of Esprit International and Environmental Philanthropist; and Zenobia Barlow, now executive director of the Center for Ecoliteracy. The Center for Ecoliteracy is located in Berkeley California precisely in an award-winning home of the David Brower Center. The house is used for environmental and social activities (www.ecoliteracy.org).

The Center for Ecoliteracy is a nonprofit foundation dedicated to education for sustainable living. Known for its pioneering work it school lunches, gardens, and integrating sustainability into K-12 curricula, the center has worked with educators from across the United States and six continents. Through its smart by nature initiative, the center supports educators advancing sustainability in food practices, building and resource use, community



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connections, and teaching and learning (Goleman, 2012).

The Center for Ecoliteracy was established with the aim that education is able to guide children to live meaningful, sustainable and healthy lives, and to be good citizens of planet earth, which includes not only their health but their communities and environment (Stone, 2015).

The development of ecological intelligence is a major challenge for 21st century education. 21st century education includes comprehensive creativity and innovative skills. Three things in learning that must be implemented are creative thinking that begins with brainstorming, problem-based learning, and applying innovation based on creative ideas (Piirto, 2011; Trilling, 2009).

Education is not only centered on knowledge but there is an emphasis on moral feelings and actions or actions (Lickona, 2012). Earth as a human home in which there are various races and cultures, so humans must collectively be able to create a sustainable and sustainable world. Thus, educators have an important role in growing and developing students' ecological intelligence.

The Center for Ecoliteracy emphasizes that important dimensions of ecological understanding are demonstrated through respect, admiration and empathy in various aspects and elements of life (Stone, 2015, p. 7).

Stone (2015, p. 9) said that, "schools can be a laboratory in learning and developing skills including ecoliteracy to act effectively, collaborate, and promote changes in a world that is interdependent." When schools dare to issue policies and act collectively, then learners will implement their leadership to transform ecological understanding into effective life.

The development of ecological intelligence in schools does not mean adding a topic or subject, but instead returns to the real basics, namely experiencing the natural world; understand how nature supports life; maintaining a healthy community; understand the places where we live, work, and study (Stone, 2015, p. 15).

In terms of food alone, the center for ecoliteracy built emphasizes its schools on a comprehensive food system (Stone, 2015, p. 21). It aims to make students know that food originates, how food is produced, what foods make the body healthy to how the food arrived at the table. So that in the target schools for ecoliteracy, students and teachers interact with food and the environment through food, gardening, cooking, and eating together in class.

Ecological Intelligence

In terminology, Ecological Intelligence or ecological intelligence comes from the words intelligence and ecology.



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Ecology is a branch of biology. Irwan (2014, p. 6) said that, "ecology is the science that studies the relationship between organisms and their environment, the study of the influence of environmental factors on living bodies, as well as the study of patterns of reciprocal relationships between living things and components of the surrounding environment."

Ecology is the science of relationships between living organisms and their environment. Human ecology is about relationships between people and their environment. In human ecology, the environment is perceived as an ecosystem (Marten, 2008)

Goleman (2009) states that ecology refers to an understanding of organisms and their ecosystems, while intelligence connotes the capacity to learn from experience and act effectively to deal with our environment.

Ecological intelligence lets us apply what we learn about how human activities impinges on ecosystems to do less harm and once again to live sustainably in our niche these days the entire planet (Goleman, 2009, p. 93).

Goleman's view of ecological intelligence leads to how humans position themselves as part of an ecosystem of interdependence and sustainable living.

Marten (2008, p. 8) says that, "sustainable living is defined as meeting current needs by considering survival in the next

generation, and keeping ecosystems healthy."

Ecological design is the art that reconnects us back as sensual creatures that evolved over millions years to a beautiful world. The world does not need to be made anymore but it is revealed. Our greatest need has nothing to do with ownership of things but with heart, wisdom, gratitude, and spiritual generosity. So that these policies are part of a larger ecology that embraces the spirit, body, and mind as the beginning of ecological design (Orr, 2002).

Ecological intelligence allows us to apply an understanding of human activities that impact on the ecosystem so as not to endanger and sustainable living.

Gardner (in Goleman, 2009) said that ecological intelligence is a combination of cognitive aspects, empathy, and action for all life. As with social and emotional intelligence, which is building the ability to position themselves in the perspective of others, feel with them, and show concern.

Empathy is built on self-awareness, the more open we are to our own emotions, the more skilled we are at reading feelings (Goleman, 2000, p. 135).

Goleman (2000, p. 7) goes on to say that, "emotions are basically an impulse to act to overcome a problem that has been instilled gradually by evolution."

The ecological ability needed for sustainable survival must be collective



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intelligence, which is learned and mastered as a species, and distributed among distant networks of people (Goleman, 2009, p. 104).

Collective intelligence is social intelligence, where ecological intelligence is distributed with awareness among friends, family, companies, schools or through the whole culture which will certainly result in a conscious and sustainable improvement.

Goleman (2009) further stated that when it came to our collective ecological goals, various rules might lead to:

1. Know your impact,
2. Support improvement,
3. What part you learn.

Ecopedagogy

Ecopedagogy arises as a result of the modernism paradigm which is oriented towards preparing students as a means of production to increase capitalism in a market economic system, as well as the modernism paradigm that places humans as regulators of the earth who have power over the earth. (Supriatna, 2017, p. 46).

Ecopedagogy is defined as an academic movement to save the earth and all creatures in it and to live sustainably. In line with Kahn (2010) who argues that Ecopedagogy is interpreted as an academic movement to make students aware of individuals who have understanding, awareness and life skills.

Sutara (in Herlambang, 2018, p. 133) states that, "ecopedagogy is a type of learning based on love, participation and creativity."

Supriatna (2017, p. 45) defines ecopedagogy as a thought movement as part of critical pedagogy critical pedagogy in education from Frankfurt School thinkers in Germany with figures including Jurgen Habermas.

Kahn (2012) defines ecopedagogy a movement that combines the philosophy of teaching the critical pedagogy movement with the urgency of environmental education dedicated to the current environmental crisis.

Gadoti (in Supriatna, 2017, p. 46) said that, "ecopedagogy as a new pedagogy, serves as a concept of sustainability. to prepare students to have a sustainable way of life about the importance of independence (autonomy), justice, and better living in harmony with the balance of nature. "

Inview Gadoti's, sustainability is the opposite of anything in the form of imbalance, competition, conflict, greed, individualism , domination, oppression, destruction, and the desire for excessive mastery of matter.

Grigorov and Fleuri (in Supriatna, 2017, p. 46) said that, "ecopedagogy is defined as a movement that departs from real life problems and is based on a life perspective."



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Ecopedagogy is an academic movement and educational approach that refers to Paulo Freire (in Supriatna, 2017, p. 47) says that "educational practice is rooted in philosophy positivistic as a product of modernism has made learners uprooted from their cultural roots and deprived of the natural environment where they live and play."

Obviously it is very contrary to the concept of sustainable living, and actually leads students to lose their humanity and accelerate the destruction of planet Earth.

Gadoti (in Supriatna, 2017) views ecopedagogy as Earth Pedagogy or earth pedagogy which is the opposite of traditional pedagogy that places humans as the center (anthropocentrism), and considers that earth pedagogy as living beings.

Herlambang (2018, p. 134) said that, "ecopedagogy-based education is believed to be able to build critical awareness and develop students' character to understand their nature as humans who have relations with nature and manifest that awareness through wise behavior towards nature."

Thus, ecopedagogy will build students' literacy about the environment (environmental literacy).

The Development of Ecological Intelligence In Elementary School

Building and developing ecological intelligence of students in elementary

schools can be done through an interdisciplinary and multidisciplinary approach (Supriatna, 2017, p. 33).

Through an interdisciplinary approach, educators can use a variety of interconnected or thematic disciplines that are practically apparent in school subjects. Whereas through a multidisciplinary approach, educators can use specifically on each subject, such as on social studies or Indonesian subjects.

Social studies is one of the right subjects in developing ecological intelligence because in it there are social aspects. Whereas in Indonesian subjects, as stated by Kelvin (2017) in his research that Indonesian subjects are able to contribute to the character grower, especially in ecological intelligence, through direct interviews about the abiotic and biotic environment, through fairy tales about character reinforcement, and types type of text regarding the environment.

Supriatna (2017, p. 34) said that, "IPS is integrated, value-based, problem-based, and contextual. In the intelligence development of ecological, needed meaningful learning(meaningfull),ie learning which involves the participation of the students and beneficial for them to live a daily life.

"WhileGoleman (2009) stated that the intelligence ecological also be integrated as guided by intelligence, social intelligence, emotional intelligence, and naturalistic and place empathy in all living



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things as a positive attitude towards environmental preservation.

This is in line with Supriatna (2017) that a person's ecological intelligence is complex. This means that ecological intelligence is supported by intellectual intelligence, social intelligence, emotional intelligence, and even spiritual intelligence.

The development of ecological intelligence begins with an understanding of science or also known as cognitive aspects, which is of course knowledge of the environment and environmentally friendly life. Then the next intelligence is emotional intelligence.

Goleman (in Supriatna, 1995) says that emotional intelligence consists of 1) the ability to see the emotions of others, 2) the ability to manage emotions, 3) the ability to motivate themselves, 4) the ability to recognize others, and 5) the ability to develop interactions with others. In this case, nature is seen as beings who have emotions with all the natural phenomena that appear, so human interaction with nature must be based on emotional intelligence.

Ecological intelligence is also supported by social intelligence. Goleman (in Supriatna, 2017, p. 26) says that emotional and social intelligence describes a person's ability to understand others and empathize with others. So ecological intelligence describes the ability to understand natural systems by combining cognitive aspects

with empathy for all living things or in other words "empathy for all forms of life".

"Ecological intelligence is also based on affective aspects which include elements of emotions or feelings, awareness, and empathy." (Supriatna, 2017, p. 26).

Thus, the development of ecological intelligence of students in elementary schools must include intellectual or cognitive, affective (social and emotional) and psychomotor as well as action. Ecological intelligence in the learning process can be developed either specifically (interdisciplinary) or thematically (multidisciplinary).

Ecological competence includes aspects of knowledge and understanding of ecology in the context of education, understanding, and skills that include environmental participation in efforts to reduce environmental damage (Palmer, 1998; Goleman, 2010, & Muhaimin 2015).

Supriatna (2017) states that the ecological intelligence of students in elementary schools can be done through the academic movement in consuming food and drinks. Bring food with local products from home such as sweet potatoes that are clear to support health. Always carry mineral water in refillable bottles, and avoid snacks whose packaging has the potential to become garbage.

In two decades, the Center for Ecoliteracy has collaborated with schools to support education for sustainable living. It was found that ecoliteration that was involved



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socially and emotionally increased the involvement and achievement of teachers and students through direct learning, experience, and contextual (Goleman, 2012, p. 8).

CONCLUSION

From the analysis and synthesis carried out by researchers, it can be concluded that ecopedagogy is an academic movement that brings people to life activities that are in harmony with environmental sustainability. An intelligence that must be developed in students is ecological intelligence or ecoliteracy. Ecological intelligence formed because of the support by the intelligence (cognitive), emotional intelligence and social (affective) and psychomotor and action (action) is responsible. Ecological intelligence is very important to be developed because the demands of life must always be carried out in a sustainable.

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