



## Eco-literacy and sustainable citizenship: The role of the school environment in shaping responsible environmental behavior

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**Abstract:** The goal of this project is to apply eco-literacy through sustainable practices in schools that are not part of the Adiwiyata school program. This study combines analytical description techniques with a qualitative methodology. There are 1154 pupils enrolled at SMA Negeri 19 Medan, where this study was carried out. The study conducted at SMA Negeri 19 Medan yielded findings that initially encountered resistance from both students and teachers on the ongoing adoption of eco-literacy in the classroom. However, because of the advantages that the program provided, students and teachers who had initially objected to it began to respond favorably to it in the second year of its implementation. Thus, it can be concluded that ecoliteracy which was implemented through continuous habituation at SMA Negeri 19 Medan was declared successful even though initially this school was not included in the Adiwiyata school.

**Keywords:** Eco-Literacy, Sustainable Citizenship, Responsible Environmental Behavior

### Introduction

Based on the 2020 population census findings, it was determined that Indonesia had a land area of 1.9 million Km<sup>2</sup> and a population of 270.20 million people (Maulana, et al, 2021). It is undoubtedly impossible to ignore its intricacy and the unfavorable consequences that will result given the region's size and dense population. Today's most persistent issue is environmental contamination, which frequently happens in local communities and is brought on by a lack of public understanding and concern for the environment. Waste pollution is one instance of how the public is aware of it today. As of right now, the amount of garbage produced is out of proportion to the typical level of society in Indonesia (Izharyah et al., 2020). In light of the data acquired from the current SIPSN (National Waste Management Information System) of the Ministry of Environment and Forestry of the Republic of Indonesia, in 2022 the total waste in Indonesia will reach 18,500,00 tons of waste. This number is very high and it is estimated that the amount of waste products in Indonesia will continue to increase

until it reaches 80-100 million tonnes. This is of course very educational, so as a form of prevention it is necessary to foster awareness in the community from an early age through the application of eco-literacy in the school environment.

Every year the environmental situation in Indonesia is increasingly showing significant symptoms through increasingly widespread environmental problems. The environmental problems that occur can be classified into national, local, regional, and global environmental problems (Wulandari, 2019). The negative effects resulting from environmental damage are many and varied, such as air pollution, damage to river and sea air ecosystems, as well as damage to the agricultural sector caused by mining (Harris, 2016). Furthermore, there are also effects that cause natural disasters, such as floods which cause a lot of damage, which can result in loss of human life, damage to the environment of the community where they live, damage to a person's psychology which is experienced by especially those who are victims of disasters (Caruso & Miller, 2015; Cas, Frankenberg, Suriastini, & Thomas,

2014; Gillespie et al., 2009). Lack of knowledge about the environment and lack of awareness to maintain environmental cleanliness, especially littering, which all occurs due to the lack of available facilities (Mardiana, Berthanila, Marthalena, & Rasyid, 2019).

One very significant item that may be utilized as material to consider maintaining environmental conditions is an attitude of concern for the environment. This compassionate outlook also affects a person's intention to safeguard and maintain their surroundings. According to research findings, the primary factor influencing real behavior in environmental protection is intention (Wang et al., 2019). An attitude of environmental concern is one that consistently strives to foresee environmental harm and creates initiatives to mitigate existing harm (Purwati, 2017).

An ecological crisis arises in society as a result of a lack of knowledge and awareness about environmental protection, particularly in urban areas. The reasons behind today's environmental issues are solely due to the attitude of citizens who create threats to their own lives (Siagian et al., 2023; Yusuf, Sanusi, Maimun, et al., 2020). Because to raise awareness among people about how important it is to protect and preserve the environment, it is a very important task and must be implemented immediately to protect the environment (Elmy & Winarso, 2019).

To shape the attitudes and behavior of society and the environment, therefore, the starting point in the formation process begins with each individual who is required to have a sense of awareness of the state of their environment and not only have awareness but can also be used as a pioneer in being able to protect and manage environment (Erhabor & Don, 2016). Making the environment healthy is the responsibility of all citizens without selecting and choosing who will do it (Asshiddiqie, 2009). Instilling environmentally caring behavior in society must start from childhood, and this must begin in the family environment and then be reinforced in the school environment. It can be seen from the research results that currently the most successful and most influential school environment in forming relationships between students' nationalities is the Adiwiyata school (Yusuf et al., 2020; Yusuf, Sanusi, Maimun, et al., 2020). However, the habits that are applied to Adiwiyata schools should also be applied to other schools even though these schools are not Adiwiyata schools.

The description that all communities are obliged to protect, manage, and preserve the surrounding environment is always referred to as environmental welfare. Citizenship is a concept that greatly influences all fields such as economics, policy, philosophy, company management and marketing, and can also be explored and developed in the field of education well (Hadjichambis & Reis, 2020). Ecoliteracy is a new concept and idea that is being implemented in building attitudes, awareness, and behavior of citizens to protect the environment. In essence, preserving,

managing, maintaining, and being responsible for the surrounding environment is part of the attitude that must exist for all citizens of the country and must be made into a personal commitment within the community (Szerszynski, 2006).

Based on the problems that have been explained along with alternative solutions that have been put forward, eco-literacy is used as a solution to various environmental problems. In this research, the alternative solution taken is eco literacy which is used as capital to provide environmental awareness and attitudes for the people of the country. Therefore, research requires testing eco-literacy on the environmental behavior of students in schools that do not implement Adiwiyata. So the problem formulation used is whether the implementation of eco-literacy has been effectively applied to students in non-Adiwiyata schools. The aim of this research is to test the application of eco-literacy to student behavior in a non-Adiwiyata school environment, namely SMA Negeri 19 Medan City.

## Method

This research uses a qualitative approach with a descriptive-analytic method. What is meant by qualitative research is research that is intended to understand the phenomena experienced by the subject directly in the field. This research also has a characteristic that contains the aim: to describe special needs by providing an understanding of the meaning and symptoms or arranging the data obtained into a layout that is easy to understand. So the method used in this research. Meanwhile, qualitative focuses more attention on studying general principles and broadcasting units of symptoms that exist in human/society life (Sugiyono, 2017). In this approach, social reality is holistic/comprehensive, complex, dynamic, and full of meaning (Creswell, 2014). Based on the opinion of Creswell (2018), qualitative research is a method to explore and understand the meaning of some individuals and groups of people who think it is caused by social or humanitarian problems.

In line with this explanation, Sugiyono (2009) explains that qualitative research methods are used to examine the condition of objects (as opposed to experiments) where the researcher is the key instrument, data collection techniques are used manually. Triangulation (combination), inductive data analysis, and qualitative research results emphasize meaning rather than generalization.

The location of this research was carried out at SMA Negeri 19 Medan which is located on Jalan Seruwai No. 1, Sei Mati, Medan Labuhan District, Medan City, North Sumatra. The data collection techniques used in this research were observation, interviews, and documentation. Next, the researcher carried out data analysis by searching systematically and compiling the data obtained from observations, interviews, field notes, and documentation by organizing the data into descriptive form and then carrying out several

components, namely: reducing data, presenting data, and searching for data (Creswell, 2014). The target of this research is to see the results of implementing eco-literacy at SMA Negeri 19 Medan, which is a school that is not an Adiwiyata school, where the implementation of eco-literacy is usually always successful in the Adiwiyata school environment.

**Result**

The results of interviews conducted by researchers with correspondents generally stated that the implementation of eco-literacy in the SMA Negeri 19 Medan environment had indeed been implemented through daily habits implemented at the school. SMA Negeri 19 Medan has 1154 students and has 34 rumbles (study groups), divided into class X with 12 classes, class XI with 10 classes, and class Based on the illustration, this large number of students will definitely have an impact on the cleanliness of the school environment, starting from a large amount of rubbish to the level of cleanliness, and the beauty of the school will be disturbed.

However, this large number of students actually has a positive impact on the school environment of SMA Negeri 19 Medan. The principal of SMA Negeri 19 Medan, at that time Mrs. Renata Nasution, made a regulation requiring each class to take turns every day to clean the school environment, and all teachers at SMA Negeri 19 Medan were also given the task of supervising and helping (Figure 1). SMA Negeri 19 Medan students carry out their duties in every corner of the school, starting from cleaning the school grounds, school bathrooms, school prayer room, and the gardens at the school.

DAFTAR PIKET TAMAN		
SENIN ASROY ZENCO	SELASA JAS GERHAM GULTOM	RABU EKO TAUFIQ
KAMIS IQBAL ALDIWA	JUMAT RAMOT	SABTU RYANSYAK ZULFIKAR

**Figure 1.** Picket list for teachers at SMA Negeri 19 Medan

Eco literacy, which is implemented at SMA Negeri 19 Medan, is carried out by getting used to it every day in the school environment. This habituation activity was started in 2017, where in that year Medan 19 State High School was completely renovated, and the condition of the school buildings was better than before, according to Mrs. Renata the school principal. At the start of this activity, quite a few of the students agreed, there were even people saying "We are here to learn, not to be cleaners". Even though he heard such remarks, the Principal at that time was not angry with the child who said these sentences, and habituation

activities continued to be carried out to instill an attitude of environmental concern in students at SMA Negeri 19 Medan as a habit for them later in the environmental community.

The implementation of eco-literacy lasted for one year at SMA Negeri 19 Medan and showed very good results for the school environment since then there have never been any more unpleasant words from the students of SMA Negeri 19 Medan, but now The existing students look happier, and more sincere in carrying out the eco-literacy activities that have been implemented at SMA Negeri 19 Medan. This success is inseparable from the help of the teachers who never tire of supervising and intervening and setting an example for students to keep the environment clean even though it is carried out continuously every day (Figure 2).



**Figure 2.** Students at SMA Negeri 19 Medan carrying out daily cleaning activities

Based on the results of interviews conducted by researchers with one of the students at SMA Negeri 19 Medan, currently the students at SMA Negeri 19 no longer protest the implementation of eco-literacy by making a habit of cleaning the school environment every day, this statement was conveyed by one of the high school students. Negeri 19 Medan, for the reason that these female students and other friends feel comfortable studying in a clean and beautiful school environment, and this habit also provides benefits for them to form discipline within themselves so that this can become a provision in the environment. family and in the community (Figure 2a).



**Figure 2a.** Students at SMA Negeri 19 Medan carrying out daily cleaning activities



One of the PPKn teachers at SMA Negeri 19 Medan also responded regarding the implementation of eco-literacy with the habit of cleaning the school which is carried out in the SMA Negeri 19 Medan environment on an ongoing basis. This is very beneficial for forming students' personality attitudes regarding their concern for keeping the environment clean. Even though SMA Negeri 19 Medan is not included as an Adiwiyata school, SMA Negeri 19 Medan has now succeeded in implementing an eco-literacy program through the habit of cleaning the school environment every day, so that the environment of SMA Negeri 19 Medan now looks clean, beautiful and comfortable as a place to study. students at the school (Figure 3), (Figure 3a).



**Figure 3.** Condition of SMA Negeri 19 Medan after implementing eco-literacy



**Figure 3a.** Condition of SMA Negeri 19 Medan after implementing eco-literacy

## Discussion

### *Environmental literacy*

Capra first popularized the term "eco-literacy" in his 1997 book *The Web Existence*, which emphasized ecological concepts that are crucial to all facets of existence (Muthukrishnan, 2019). All of the factors that make up an ecosystem are silenced, including the existence of life in the surroundings (Capra, 2010). "Reading" the environment and "acting" in a way that is sustainable for all human needs is the definition of eco-literacy (Muthukrishnan, 2019). Ecoliteracy, according

to Nadiroh et al., is a person's awareness of and attitude toward their surroundings (Nadiroh et al., 2019). Conversely, eco-literacy is defined by Rabiatul and Norizan as the capacity to comprehend natural systems associated with human existence, wherein the consequences of individual actions (Jiwa & Esa, 2014). From several opinions of these experts, it can be described as eco-literacy as an understanding and attitude regarding the environment related to living systems in ecosystems, including the impact on human actions.

Another term for ecoliteracy is ecological intelligence. Intelligence is the capacity to learn from experience and take effective action in dealing with the environment, while ecology is knowledge about organisms and their ecosystems (Goleman, 2010; Yusuf et al., 2022). Kostelnik et al define the term environmental awareness as a complex relationship between all living things and their environment (Kostelnik et al., 2017). Pitman and Daniels also stated the same thing, where they stated that eco-literacy seeks to introduce and improve human understanding of the importance of global ecological awareness, in creating a balance between individual needs and the earth's capacity to maintain it (Pitman & Daniels, 2016). Apart from that, Dasrita provides a definition related to environmental awareness as the knowledge that creates human empathy in carrying out actions that can support the creation of environmental sustainability (Dasrita, 2018).

From the explanations of several experts above, it can be concluded that eco-literacy is the skill of understanding the state of the surrounding environment in maintaining the balance of the natural ecosystem and having an impact on life and subsequently on the environment of that ecosystem. The ability to understand the environment can be seen in human awareness of their environment. As if he was aware that his actions of throwing rubbish carelessly could cause flooding. The habit of using plastic bags, and pipettes, and throwing away waste carelessly can have a negative effect on other living creatures (Yusuf & Fajri, 2022). So being literate and aware of the state of the environment can begin by providing knowledge about the importance of preserving the environment as well as examples of the impacts resulting from ignorance of the environment.

There are four experts who created the ecoliteracy framework, namely Orr, Capra (Center for Eoliteracy), Cutter-Mackenzie and Smith, and Wooltorton (McBride et al., 2013). As a start, Orr's framework put forward in 1992 uses the basic terms of practical ecological literacy: knowledge, concern, and competence. Broad knowledge of how humans and their communities have mutual interests in each other and natural systems, as well as how to implement sustainability. The next framework put forward by Capra in the eco-literacy center which began in 1997/2002 / 2013. There are four types of eco-literacy intelligence: 1) Head/cognitive - approach from a systems perspective, understanding

basic ecological principles, assessing impacts and effects etid of human actions, estimating the long-term negative impacts of the decisions they make; 2) Heart/emotional-feeling concern, empathy and respect for fellow humans and other living creatures, respecting various perspectives, having a commitment to equality and justice for all mankind; 3) Hands/active-creating and using tools and procedures necessary for human desires, changing beliefs into practical and effective actions, assessing and adjusting the use of energy and resources; 4) Spirit/connection - experiencing wonder and awe of nature, feeling reverence for the earth and all the creatures in it, feeling a very strong expression of deep appreciation.

The third opinion is from Cutter-Mackenzie and Smith in 2003 who stated that there are four levels of eco-literacy: 1) low knowledge and many misunderstandings about environmental problems; 2) nominal eco-literacy-recognition and use of various basic terms used to communicate about the environment, starting from the identification of environmental problems and problems related to proposed solutions; 3) functional/operational eco-literacy - understanding of the organization and function of environmental systems and interactions between humans, knowledge and skills; 4) eco-literacy that is experiencing development - a comprehensive understanding of how individuals and communities relate to each other and natural systems, and how to implement this in a sustainable manner, overall knowledge of the environmental crisis, understanding of sustainable models, able to provide a synthesis of environmental information and carry out the action as a way to direct environmental sustainability.

Fourth, in 2006, Wooltorton explained that there were six elements of eco literacy, namely as follows: 1) ecological individuals - attitudes related to the cycle of life which are based on caring and expressing love, expanding the soul and respect for others which are based on different appreciation; 2) a sense of place and active citizenship- participation in local culture, history, and shared organic associations, towards the ecosystem; 3) systems thinking and relationships - a sense of relationality, openness, and context; 4) ecological paradigm - the study of wholes, relationships, and networks, which focuses on contextual knowledge, considering quality, paying attention to processes, studying patterns; 5) educational pedagogy as an experimental, participatory and multidisciplinary approach, which focuses on the learning process; 6) reading the natural world and culture - participation in nature from an early age, perhaps with ecoliteracy as the initial learning. Ecoliteracy knowledge is to provide an understanding of the basic principles of ecology and provide an assessment of the impact of individual actions on the environment, have feelings of empathy and feelings of respect for fellow humans and living creatures, be able to assess and adjust the use of

energy and resources and finally admiration with nature.

Other research on eco-literacy has also been carried out by several researchers and all of the research only focuses on schools that implement the environmental school program (Adiwiyata). Eun Jeong Ju and Jae Geun Kim (Ju & Kim, 2011) who carried out research and development conducted research related to plants and the environment, and the results showed positive changes in students' attitudes toward their environment. Subsequent research by Deniz Saribas, Gaye Teksoz, and Hamide Ertepinar (Saribas et al., 2014) with the title *The Relationship Between Environmental Literacy and Self-Efficiency Believers Against Environmental Education* and the results of their research found a close relationship with their self-efficacy beliefs and their concern for environment.

### ***The need to form young citizens' environmentally caring attitudes in sustainable development***

Development and the environment are two issues that are currently trending topics in the mid-21st century. There have been many policy reports, both national and international, which emphasize the importance of the relationship between development and the environment. In 1987, the Brundtland Commission announced the "Our Common Future" report which contained efforts related to issues of economic development and environmental stability which was then referred to as a sustainable development program. In this report, sustainable development is defined as development that meets current requirements and does not reduce generalization capabilities that will meet their own needs (WCED, 1987). From the report, it can be stated that sustainable development has three important goals, namely maintaining ecological sustainability in the future, providing the satisfaction of basic human needs, and advancing equality between generations to the next.

According to Tjokrowinoto (2012: 12), environmentalists want interaction between humans and the environment in the implementation of sustainable development in sustainable development. Furthermore, the implementation of development needs to pay attention to the impact that will have on the earth and the world system in the long term. This is based on concerns about the future consequences of development implementation that exploits natural resources. So that it can be used now and in the future. In sustainable development, there are two concepts that have different focuses, namely sustainable development. Development prioritizes people, the economy, and society (Kates, Parris, and Leiserowitz, 2005). It is important to know that development is not only limited to one environment but affects other environments and can have an influence on other areas in the country, so it is necessary to build a concept of citizens who care about the environment (ecological citizenship). The concept of sustainability is

interconnected with three aspects, namely nature, the environment, and community culture (Kates, Parris, and Leiserowitz, 2005). Development that does not take into account long-term impacts can pose a threat to these three things. Because nature and the environment are sources of services to support human life.

Currently, youth are increasingly recognized as a positive group in carrying out changes in the development and peace process. They are considered important players and partners for development as stated in several statements and reports from governments, international government organizations, and non-governmental organizations. These statements refer to the importance of young people as a target group considering that almost the entire community represents almost the entire population as well as the expectations that are entrusted to them considering that young people will be the next generation of life to come (Felice and Solheim 2011).

The need for the involvement of young citizens in sustainable development plans can provide great strength for the Indonesian nation considering that in the future many countries in the world will see Indonesia as a major partner in the sustainable development process (Hsu and Perry, 2014). Therefore, it is important to shape the attitudes of young citizens during the school years because during this period it is a very easy time to shape an individual's character. Therefore, at SMA Negeri 19 Medan, it is very appropriate to implement eco-literacy through the habit of cleaning the school environment which involves students and teachers. The habit that was implemented at the beginning of its implementation received protests and unpleasant comments from the students and most of the teachers, underwent therapy after this program has been running for one year and gave very good results, in the end this habit also received positive comments from the participants. students and teachers at SMA Negeri 19 Medan, because they feel the benefits of ecoliteracy.

## Conclusion

In light of the research findings, it is imperative that eco-literacy be incorporated into the educational system from an early age, particularly in secondary schools. Ecoliteracy can be applied to all levels of education; the earlier it is done so, the better the outcomes. SMA Negeri 19 Medan is a large school that is not part of the Adiwiyata program; initially, there were issues with cleanliness in the school's environment. However, in 2017, following the school's total destruction, the current principal began implementing eco-literacy at the institution through the practice of mutual cooperation carried out by all students and expanding the existing teachers at SMAN 19. The first year of implementing this program was very difficult due to the many protests that emerged from students and several existing teachers. However, after entering the second year, this actually caused

positive reactions from students and teachers. This happens due to the benefits felt by students and teachers in the school environment. The results of this research can provide an illustration that the application of eco-literacy can also be applied in schools that are not included in Adiwiyata schools so that in the future this program must be implemented at various levels and in all schools in Indonesia so that this eco-literacy program can be implemented quickly. disseminated, and the results can be felt quickly too.

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