



## Research Article

# Environment-Friendly Education as A Solution to Against Global Warming: A Case Study at Sekolah Alam Lampung, Indonesia

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### Abstract

Educating students from an early age to have ecological awareness and not to damage the earth is one alternative to reduce global warming. The purpose of this study is to find things that need to be developed in environmentally-friendly education as a solution to global warming. The type of this research model is a descriptive qualitative study. The research was conducted at Sekolah Alam Lampung, Indonesia. Based on observations and interviews, it has been found that the school has implemented a strict learning and disciplinary curriculum. The output is expected for the students to self-managing waste and separating organic and non-organic waste bins that have been provided. The non-organic and recycled organic waste could be made into compost. They also plant and care for vegetables and trees in the green laboratory provided. The activity of the Sekolah Alam Lampung is an alternative solution to the environmental crisis regarding global warming, which is now increasingly severe and contributes conceptually to overcome the global warming, which has been a global issue.

### Keywords:

environmentally-friendly education, global warming, Lampung Nature School

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## **Introduction**

Humans utilize various resources in their environment to survive (Fauzi, 2018; Warjiyono, 2016). Various resources are utilized, namely: food consumed by humans comes from what lives and grows on land and in water, oxygen inhaled by humans from air, coal, oil, and other natural materials are utilized to produce energy or run factories. The factories produce materials that are useful for improving living standards and human well-being. The impact of human resource extraction is a residual waste (Rini, Sukaatmadja, Kt, & Giantari, 2017).

Unconsumed food is disposed of as human waste. The wastes of the daily activities are disposed of as waste. The wastes from factories produce CO and CO<sub>2</sub>. CO and CO<sub>2</sub> cause the earth's temperature to rise (Martusa, 2009). When CO and CO<sub>2</sub> accumulate in the air, it will produce a greenhouse effect on the sunlight that enters the earth (Cahyono, 2015; Sulistyono, 2016). The earth seems to be covered by the two gases. As a result, the earth feels hotter than usual, called global warming (Ramian, 2002).

Global warming is not only faced by Indonesia, but various countries feel the effects of global warming (Riyanto, 2007). The increase in the warmth that occurs impacts the future of the earth and the depletion of the ozone layer. The thin ozone layer will make the earth even hotter. The heat of the earth's layer due to the lack of treatment in maintaining and protecting the environment as well as the acts of damaging nature and the environment. One way to maintain the environment is provided by reforestation. It is necessary to gradually develop an attitude to love nature (Dal, Ozturk, Alper, Sonmez, & Cokele, 2010), especially in the field of education, because education is one of the learning processes that can change students' thinking. No matter how good the foundation is it will not be realized without education, it will be difficult to answer the problem of natural damage in the long run. Fostering the sense of caring for the environment should start early (Yulianti & Prihatin, 2014).

Educational institutions should have taken parts to overcome this problem. How small it is that can be done at school (Rahmi, Mini, & Salim, 2017). It will be easier for the students to internalize the values, and habits of preserving the environment through the education at school (Maulana, 2016). Thus, it is expected that future environmental destruction can be prevented through environmental care for future generations (Lasat et al., 2018). The current environmental crisis is not only limited to waste issues, environmental pollution, reforestation, or just nature conservation (Tompondung, Rushayati, & Aidi, 2018). However, environmental problems are parts of a view of life (worldview). In fact, it can be said that environmental problems are related to the views and attitudes of human life to see themselves (Budiman & Susilo, 2018; Yafie, 1994). A research was conducted to compare the context of science on environmental conservation

between Indonesian and Thai novice science teacher students (Nuangchalerm & El Islami, 2018a). The result showed that Thai novice science teacher students had a better score than Indonesian. The research also compared the content of science on environmental conservation between Indonesian and Thai novice science teacher students. The results show that Indonesian novice science teacher students had a better score than Thai, but no difference significant statistically (Nuangchalerm & El Islami, 2018b). The research also compared the science process of environmental conservation between Indonesian and Thai pre-service science teachers. The results show that Thai science teacher candidates had better than Indonesian science teacher candidates.

### **Problems of Study**

Although some researchers have proven the quality of science teachers in Indonesia, which increasingly integrates science with the environment, this has not yet been able to overcome the problem of global warming. The percentage of education based on the environment is still low compared to schools that are not based on the environment. However, environmental-based education will have an impact on global warming. It can be started by promoting environmental issues to teach the family, peers, and community. So in the future, global warming can be prevented by environment-based education.

Education has a very important role in the management and preservation of the environment and natural resources (Schools, 2012). The position of education is directed at the efforts to change the behavior of students in thinking and acting (Anwar, Saregar, Hasanah, & Widayanti, 2018; O'Brien, 2010; Saputra, Jumadi, Paramitha, & Sarah, 2019; Saregar et al., 2018; Saregar, Marlina, & Kholid, 2017). If students are endeavored to think and act wisely on the environment, the environmental goals oriented towards the environment will be achieved. Therefore, one of the things that can be done to overcome the problem of environmental damage is through education (Kılınc, Boyes, & Stanisstreet, 2011). One educational institution that has a great concern for environmental issues and specifically also wants to answer the problem of global warming is the Nature School. The purpose of the research is to describe the philosophy of science and the environmental education activities undertaken by the school to overcome global warming.

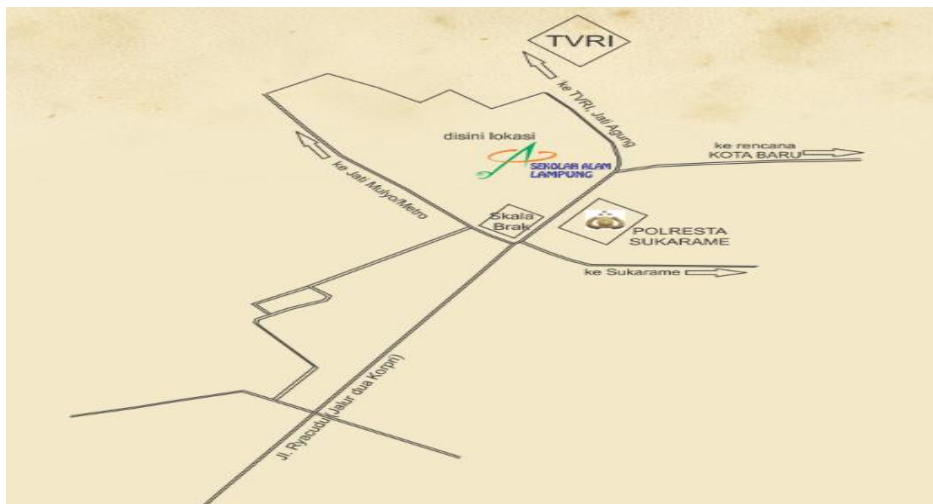
### **Method**

This research is qualitative descriptive research. Qualitative descriptive research in this study describes all the facts or symptoms that exist according to the results of the study with no manipulation.

Sekolah Alam Lampung is located on Airan St., Way Huwi, South Lampung. Administratively, the location of Sekolah Alam Lampung is located on the border between Bandar Lampung City area and South Lampung Regency. Its location is in accordance with the nature of natural schools in general, which is located in an environment that is still natural and far from the city noise.

Sekolah Alam Lampung is approximately 10 km away from the center of Bandar Lampung City. The location is quite accessible. The road to the school is fairly smooth with relatively good conditions. It can also be reached by public vehicles, both city buses (Damri) and other online public transportation services.

Environmental conditions of the school strongly support the learning process in accordance with the vision and mission that has been set. A natural nuance consisting of various trees, waters (swamps), agricultural lands, and supported by good air quality, able to be combined with the layout and shape of buildings, facilities and school infrastructure well, forming harmony. The following is the location map of the Lampung Natural School shown in Figure 1,



**Figure 1.**

*The Map of the Site*

(Source: <http://sekolahalamlampung.weebly.com/peta-lokasi.html>)

The target of this research is the school's managers, teachers, and students. The Foundation manager who participated in this research was the chairman of the foundation, Ir. Hj. Citra Persada, M. Sc and the director Hesti Kusumarini, M.T. The teachers who participated in the study were representatives of PAUD (Early Childhood Education) teachers, kindergarten, elementary school, junior high school, and senior high school teachers each consisted of two teachers.

The students who participated in the study were representatives of PAUD, elementary, Junior high school, and senior high school students each consisted of two students.

The initial step taken by the researchers was preparing all the instruments used in the research, and then the researchers observed the school's profile and the concept of natural schools. Through observation, the researchers determined the focus and the objective to be studied. Then, the researchers conducted interviews with school management, teachers, and students. The researchers analyzed the results of interviews and provided conclusions of research and recommendations for further researchers.

### **Data Collection**

Data collections used in this study were observation and interview instruments, both instruments were open-ended questions. The questions were used as assistance to guide interviews and observations so that they could be easily used to determine the goals and ensure that the topic of discussion was systematic. Researchers also used a literary review of the public document policy as an additional method of data collection. The data obtained in this study were analysed qualitatively and quantitatively. The following are the specifications for the interview and questionnaires as can be seen in Table 1 and Table 2.

**Table 1.**

#### *Specification of Questionnaire*

Questionnaire	Yes	No	Description
Adequate learning space			
The environment is suitable for the concept of Nature school			
There exist classroom activities			
There exist outdoor activities			
Adequate Facilities			

**Table 2.**

#### *Specification of Interview*

Is the location of the school easy to be reached?
What is the profile of the nature school?
What is the vision and mission of the school?
What is the concept of classroom learning in nature school?
What is the concept of outdoor learning in a natural school?
What are the activities offered to overcome global warming?
What are the facilities provided by the nature school to overcome global warming?
What about the enthusiasm of students, parents, and local community toward the existence of nature school?

## Data Analysis

Observation data were analyzed to produce descriptive data, and interview data were analyzed qualitatively descriptively. The research targets that have been interviewed were analyzed one by one and taken as a whole. In addition, the results of data analysis were adjusted to support the primary literature.

## Results and Discussion

### The Concept of Nature School

Nature school is not the name of a school, but the name of a concept of education (Murdiani & Suhendi, 2012). Nature Schools not only teach students to learn in nature, but it aims at how educators and students can learn together with nature. The saying "*Alam Takambang Menjadi Pendidik*" which is often quoted by the Nature School activists shows that not only is there still a need for humans to learn together with nature, but also a historical necessity because in principle that is the essence of human descent on earth (Tim Jurnalis Sekolah Alam Lampung, 2013).

The learning model applied by the Nature School is thematic-integralistic learning, where themes are interrelated and connected with various subjects. One theme can be explored more innovatively into a broader context based on each subject. Thematic-integralistic learning model is applied at the early to the high school level. It is not easy to link a theme with a variety of subjects unless educators have good experience in implementing during the learning process. The importance of thematic learning is supported by the founders of Sekolah Alam Indonesia (Nova, 2009). In line with the implementation of the 2013 curriculum using a thematic model, some public and private educators found it challenging to apply thematic learning models until finally the 2013 curriculum was reviewed.

The concept of Nature School can be realized as an alternative by doing "experiments till the end," of course by emphasizing learning in nature, learning with nature, learning to nature, and finally learning with nature. Everything becomes different from the models in public and private schools. The teacher is not only someone that must be imitated by the students, not only teaching the material in class, but also as a facilitator who is sensitive and understands each student well.

The form of curriculum development in the environmentally-friendly learning applied by the Nature School refers to the form of curriculum with spider webs model (i.e. a network of holistic understanding of a learned theme), semester plan (teaching plan made for one semester), weekly plan (learning plan for one week), and daily plan (almost the same as the *weekly plan*, but the difference is: in the *daily plan* the description of the learning activity is very detailed with reference to clear input and output) (Hidayati & Prihatin, 2016).

In principle, the curriculum of the Sekolah Alam Lampung aims to enable the learners to preserve nature and the environment well. Therefore, the students should have insight and perspective on ecology and ecosystems. The implementation of education at the Nature School is concentrated on efforts to address problems of environmental destruction and build a culture that is friendly to the environment.

### **Activities and Facilities of Environmental Education**

Researchers identified a number of activities and the implementation of supporting facilities for environmental education implemented by the Sekolah Alam Lampung. The following are the activities carried out there:

#### **1. No Smoking School Campaign**

In front of the gate of the Sekolah Alam Lampung, there was a large banner that read: "Free Cigarette smoke Zone." With full awareness, the Sekolah Alam Lampung teaches that in the Natural School environment, no one smokes. This campaign was attended by students, educators, and parents of students.

From observations and interviews with the director of Sekolah Alam Lampung, none of the male educators at the Sekolah Alam Lampung smoked. This culture of not smoking does not become a program and goal of the Sekolah Alam Lampung. Even when recruiting educators, there is no "no smoking" requirement applied. However, this has become a culture in the Sekolah Alam Lampung, which is in line with the insight of the environment.

This campaign is in line with the campaign of not burning waste but doing the recycling process and composting of waste with a manual system. Learners are given insight into the effects of smoke on ozone.

#### **2. Waste Bank**

Sekolah Alam Lampung has a waste bank as a place to accommodate and manage waste around the school. Every student must deposit and save waste. The waste bank is managed by a special employee who is an expert in this field. The waste bank will collect the waste from the homes of the students. The waste is separated between the waste that can be recycled to compost with plastic waste.

Every student is required to have a waste saving and whoever has the most savings will be rewarded at the end of the year. Anyone who is the most diligent and saves a lot of waste will be announced at an event attended by parents. While for educators who save waste will be given money in accordance with the volume of waste that they have saved. This is to motivate educators to sort waste in their homes and make fertilizer from compost. This is in line with Aditya's research that the accumulated waste has a negative impact on the environment, and waste must be sorted before being disposed of (Nugraha, Sutjahjo, & Amin, 2018). Making a waste bank is one of the right alternatives in overcoming the waste that impacts the environment.

### **3. Not Burning Waste Because It Damages the Ozone**

Sekolah Alam Lampung adheres to the research results of many experts in the world that one of the causes of the acceleration of the destruction of the ozone layer is daily waste-burning that continues to increase. The amount of smoke volume can pollute the air and attenuate the ozone layer. Therefore, new students are introduced by Sekolah Alam Lampung's teachers not to burn waste because the negative impacts are very dangerous for nature and human health.

The researchers' survey results found that the warning not to burn waste is quite successful in influencing students and educators. When there was an outbound activity, the researchers collected teak leaves that fell out, and the researchers burned them, and the students protested that they should not burn trash because it damaged the ozone layer. The third-grade students of elementary school up to the junior high school said so. Then when the researcher asked some students whether their mothers at home burned trash, they answered no.

The culture of not burning trash is essential because the biggest problem now in the environmental field is the depletion of the ozone layer and causing global warming.

### **4. Providing Trash Can for Class and School's Yards**

As a solution to not burning trash, the Sekolah Alam Lampung provides trash cans on almost every corner and yards, as well as every class and office. Upon entering Sekolah Alam Lampung, the visitors will see a typical scene in each classroom door, namely the existence of two trash cans, each of which is used for wet and dry waste. This provision is carried out by schools with the aim to familiarize students and teachers to dispose of their trash in their respective places. The existence of these two types of trash cans is to facilitate the sorting process, where the wet waste will be used for composting; while dry waste is saved in the Waste Bank for sale.

Building awareness to sort waste needs to be started early. Therefore, at Sekolah Alam Lampung, every student will learn how to sort waste, dispose of trash in its place, and turn to manage waste to become a blessing. If this habit has been embedded in every student, they will have a culture of not littering. If the students see adults or their friends littering, they will be scolded.

### **5. The Cooperation in Composting with Wai Hui Community**

Sekolah Alam Lampung is located in the village of Wai Hui, Jati Agung sub-district, South Lampung Regency. So it is natural that this school involves the participation of the local community in overcoming the waste problem. One of the activities carried out by students is to ask the community for trash per house, then the trash is taken to school and then divided into three types of waste, namely plastic dry waste, hard waste, and wet waste. After being sorted properly, then dry waste is saved for sale, and wet waste is managed to be used as compost.



Sekolah Alam Lampung also has extracurricular activities for composting. This program is mainly for junior high school students. Compost is made from wet waste or household waste. The manufacturing process is carried out together with the teacher and students. In the neighborhood of Sekolah Alam Lampung, there are many plants and vegetables such as corn, peanuts, beans, sweet potatoes, kale, and spinach, which are grown by students of each class. The plant needs fertilizer. Composting is intended to be used as fertilizer for plants in the School environment and to teach the students creativity to make discoveries.

## **6. Green Lab**

Since 2010 Sekolah Alam Lampung has developed 3 (three) laboratories, namely the ICT (Information and Communication Technology) Laboratory, the Biotechnology Laboratory, and the Culture Laboratory. This latter laboratory is a place for students to develop Lampung local wisdom, both regarding traditional arts and literature.

Nature School Laboratory is known as a green lab. The concept of environmentally sound education implemented by Sekolah Alam Lampung is supported by this green laboratory, as a place for research and testing of students' work in the field. A green lab is a set of facilities for teaching and learning activities that are environmentally friendly. A green lab is the result of abiotic and biotic environment engineering from the Lampung area's potential as an agricultural base which is used as a teaching and learning facility. By implementing the Nature School, it will minimize the impact of global warming. Early on, students have been introduced to loving nature and the environment, caring for the environment, and learning from nature.

Natural schools prioritize the quality of learning by applying the curriculum to the fullest. All educators and students have high enthusiasm for the environment. In addition, natural school facilities that support natural concepts make it easier to implement environment-based learning. Some of the activities described earlier can be done easily by educators and students. Even the habit of students doing smoke-free activities, not burning waste, planting plants around the environment, recycling organic waste and making non-organic waste as compost are able to affect the environment by inviting parents and families not to do activities that can damage the environment and always love the environment. Early education greatly affects the students' behavior in the future. Thus, the existence of education with the concept of nature is able to shape students into loving nature from themselves, their families, and their environment.

## **Conclusion**

Nature School's environmentally-friendly learning model is intended to overcome global warming. The learning model is carried out with a thematic-integralistic

approach through universe-based learning materials, learning to nature, learning in nature, and last learning with nature.

The development of environmentally-friendly learning curriculum applied by the Nature School to overcome global warming refers to the form of curricula with spider webs model (i.e. a network of holistic understanding of a learned theme), semester plan (a teaching plan made for learning for one semester), weekly plan (one week learning plan), and daily plan (almost the same as the weekly plan, but the difference is: in the daily plan the description of the learning activity is very detailed with reference to clear input and output). The activity is supported by the smoke-free campaign, waste bank, not burning waste, provision of trash cans, composting, reforestation, and green lab.

Environmentally-friendly learning methods in Sekolah Alam Lampung to overcome global warming is a solution to the current environmental crisis while contributing to minimizing impacts from global warming. Early on, children have been introduced to love nature and the environment, and care for the environment.

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