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The Model of Environmental Education Management in Indonesia through Extracurricular Activity

Tumisem T. Mihardja

ABSTRACT: *Indonesia government realizes that the formula of an effective environment policy is based on scientific information. This research mainly discusses how to develop the model of environmental education management and how to manage it in order to be continued and applicable. In the formal education in Indonesia, extracurricular activity aims to support the understanding material where the implementing done out of the class. The type of extracurricular which has direct relationship with environment is Scout Movement. The application of environmental education model through the Scout Movement activity can enhance the conservation of forest by doing reforesting. This activity is done by applying some steps there are: introduction, collection and selection of seeds, breeding, and plantation. The Scout Movement activity, however, becomes one of the education activities which is suitable for getting experience, keeping and preventing environment, and the last doing conservation. The result also shows that the application this model which is followed by a direct action to rehabilitate the damaged area is able to broaden and develop conservation area continuously in its region around the school.*
KEY WORDS: *the model of preservation, environmental education, extra curricular activity, and the Scout movement in Indonesia.*

Introduction

The activity of human being in Indonesia in utilizing natural resources, both waterways and forest, often ignores the rule. It causes the decrease of environment quality and the damage of natural resources. This damage is getting increased because of the pollution which comes from industry activities around the area. The environment destruction has an effect on: (1) the change of environment and social

Dr. Tumisem T. Mihardja is a Lecturer at the Faculty of Education and Teacher Training UMP (Muhammadiyah University of Purwokerto); and Head of Institute for Research and Community Developement in UMP, Jalan Raya Dukuhwaluh, PO Box 202, Purwokerto 53182, Central Java, Indonesia. She can be reached at: umiump@yahoo.com

economy around the beach and forest; (2) the change of social-economy around the beach from the fisherman to be fish-pond fisherman and the producer of *gula kelapa* or sugar made from coconut-pal sap; and (3) the change of environment caused by pollution from industrial activity: mangrove tree mortality is quite good and fishes contains pollutant (Soemarwoto, 2001; and Vaquette, 2001).

Accordingly, N. Salim in his research (2005) showed that the environment in the South Sea of Java and brackish contained dissolved metal level approximately Cu = 17.21 ppm, Pb = 14.33 ppm, Cd = 11.45 ppm, and hydrocarbon = 35.31%. The dissolved metal level in water would be accumulated to the result of caught fish. In doing so, Tumisem T. Mihardja and P. Endar (2004) showed that there were many kinds of fishes from South Sea of Java and brackish contained Cd = 1.5 ppm; Cu = 21,80 ppm; and Pb = 9,8 ppm. In crustacea contained Cu = 60.38 ppm. This pollution directly causes the decrease of the quality of caught fish. Meanwhile, Tumisem T. Mihardja (2007) also said that the pollution happened in South Sea caused the decreased of caught fish 8.72% from 1995 – 2000.

The damage of coastal and mangrove forest in the South Sea of Java comes from illegal logging, rearing pond, residence, pollution and sedimentation. These causes the change of vegetation structure from the structure which is dominated by mangrove becomes structure dominated by tidal shrub or *Acanthus Ebracteatus* and mangrove tree or *Nipa Fruticans;* the change of vegetation growth; and the decrement of vegetation from 21.090 ha into around 8.000 ha. The change of mangrove forest is caused by rearing pond which is done by many newcomers. Hence, Tumisem T. Mihardja (2001) said that the amount of newcomer increased 1.8% per year.

Government regulation which covers environment management has been completely ruled, but the government itself and the citizens tend to ignore it. There is a board which handles environment management in every area in Indonesia, yet the damage of environment happens continuously. The idea of sustainable development in Indonesia stated in the conference in Rio de Janeiro in 1992 is only a symbol and it cannot overcome environment damage (Soemarwoto, 2001).

Indonesia government realizes that the formula of an effective environment policy is based on scientific information. Meanwhile the scientific information got from many locations is still inaccurate. It is because the government has not carried out an attitude scale judgment for every person and has not carried out an activity to manage the environment. One of the programs carried out by Indonesia government in short and long term is by including environmental education through formal education system accompanied by direct action toward the prevention of environment damage.

Environmental education in formal education system in Indonesia started in 1980s from elementary school to university level (Ganjar & Arief, 2001; and Nomura & Hendarti, 2005). In this era, environment is considered as an education model which is designed to increase public awareness relate to environment crisis. This education tries to give environment literature to someone. It means that the education is intended to develop the understanding of environment problem and the skill to overcome environment damage to individual or group. It causes

environmental education becomes an essential component from the strategy of national environment management. Gradually, environmental education in Indonesia is thought as a process of long life education. So, environmental education becomes the basic of all subjects in school. This is stated in education of population and environmental affairs. In the contrary, this education model does not run well (Nomura & Hendarti, 2005).

The curriculum of formal education from elementary to university level contains a very compact material. As a result, the supplementing and developing material related to environment seems to be impossible to implement. One of the real actions of environmental education which may be implemented is by applying in extracurricular activity. In the formal education in Indonesia, extracurricular activity aims to support the understanding material where the implementing done out of the class. The type of extracurricular which has direct relationship with environment is Scout Movement (hereafter SM) and Environmental Activists (hereafter EA). The SM activity is applied from elementary to university level, whereas EA is implemented senior high school to university level.

The SM activity is a process of education which is done outside the class. It is run nicely and interestingly because it is conducted in an open area. This type becomes one of the education activities which is suitable for getting experience, keeping and preventing environment, and the last doing conservation. The main point of this education is that environmental education starts in early year, so it can be memorized that SM is very close to environment. World Scout Bureau (2002) stated that SM, as one of non-formal education, has a good position as a model related to environment. It has been showed that the themes developed by Lord Baden Powell are respecting, loving, understanding and protecting environment. According to Lord Baden Powell, the activity conducted in open area can show how people think about natural phenomenon, use and protect it.

In 1970s, SM activity in Indonesia related to environment cleanliness and greening. This fact shows that SM is the pioneer of environment movement in Indonesia (Nomura & Hendarti, 2005). As consequence, environmental education which is given through SM activity may be used to promote environmental education and direct action to conserve environment. This activity will bore environmental activists who become motivator to anticipate and overcome the damage of environment, so it will significantly contribute to conserve environment.

Meanwhile, the SM activity in Indonesia tends to be not active and does not run continuously. It is only carried out in a certain program like ceremony and national jamboree. Thus, environmental education activity through SM becomes motivator to re-activate the SM activity.

Environmental education which is given from the lowest level of education, around 5 – 20 years, relates to forming basic attitude for children. Slamet Imam Santoso said that generally a 5 – 20 year man/women is easy to be influenced, so the personality after this age tends to be stabile and becomes a habit (Santoso, 1981). The age between 5 – 20 years is the formative years. The habit formed in formative years will not change again.

In doing so, G. Thomson and J. Hoffman define environmental education or environmental education as follows:

> […] is a process that creates awareness and understanding of the relationship between humans and their many environments-natural, man-made, cultural and technological. Environmental education is concerned with awareness, knowledge, attitudes, skills and participation, and has as its aim responsible environmental behavior. *Awareness*–to help social groups and individuals acquire an awareness and sensitivity to the total environment and its applied problems. *Knowledge*–to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems. *Attitudes*–to help social groups and individuals acquire a set of values and feelings of concern for the environment and the motivation for actively participating in environmental improvement and protection. *Skills*–to help social groups and individuals acquire the skills for identifying and solving environmental problems. *Participation*–to provide social groups and individuals with an opportunity to be actively involved at all levels in working toward resolution of environmental problems (Thomson & Hoffman, 2002).

Meanwhile, G.A. Lieberman and L.L. Hoody, in their research toward 19 schools with 450 students, revealed that environmental education which is done interdisciplinary was able to develop students' ability in certain subjects: language, mathematics, science and social (Lieberman & Hoody, 1998). Moreover, they revealed that environment based education is able to upgrade the ability to think creatively and to solve the problem through a systematic thinking and thinking system application. Environment based education is able to increase the ability to work in group, the skill to communicate, and the ability to behave politely to other people.

Tumisem T. Mihardja (2007) shows that environmental education based mangrove ecosystem which is applied in elementary school can develop contextual learning, constructivism, active learning, inquiry and problem solving. Related to student ability development, environmental education can change student's point of view from anthropocentric to exocentric. This change will cause responsible manner and environment-friendly.

METHOD

The research location was chosen based on the completion of area. Those are sea, brackish and forest. It is found that 75% Cilacap regency is surrounded by sea and forest. This regency consists of 23 districts. Among them, there are five (5) districts which have direct border with sea. They are Kroya, Adipala, Central Cilacap, South Cilacap, and Kampung Laut. Two of those districts, Central Cilacap and Kampung Laut, have the most complete of territorial water. The transportation in Central Cilacap is quite good, whereas the transportation in Kampung Laut is a bit difficult. Both in Central Cilacap and Kampung Laut, the territorial water is categorized into three (3) types. They are sea, brackish, and forrest.

Central Cilacap district consists of five (5) sub-districts. They are Gunung Simping, Sidanegara, Donan, Lomanis, and Kutawaru. Kutawaru is the only one

sub-district which has the most complete environment. Hence, the location of research was conducted in this sub-district. The result of the first observation showed some points: the damage of forest, pollution from petroleum industry and cement, and 65.20% are elementary school graduates.

The developed environmental education model is holistic and situational, so it can contribute not only overcome one case but also help to finish other case related to students' environment. Before deciding components from a certain model, it needs to do need analysis in order to be suitable with the stated aim and to avoid a high gap. The steps of the development of environmental education model are as follow:

Table 1:
The Steps of the Development of Environmental Education Model

Steps of Development Model	Indicator of Development Model
1. Need Assesment (What is needed, What for?)	● To identify environment issue which will be discussed. ● To inventory the exist model. ● To look for the information from the community and stakeholders.
2. To assess capacity and education needs (How the model supports the aim)	● To consider the aim and to make the priority. ● To identify the education needs. ● To determine the human resources (teacher and student) and the their capacity.
3. To decide the area and program structure (How the program structure program and what expectation will be fulfilled)	● To develop the aim of the model. ● To asses the correspondence between environmental education model and other learning materials. ● To determine the format, technique, and training for the programmer. ● To develop the proper education material. ● To analyze the teaching materials. ● To develop strategy.
4. Human Resources to carry out the program (Have the teacher, material, and facility been well prepared?)	● To assess the teacher competency and training needs. ● To make a list the facility and equipment needed.
5. Evaluation (What strategy which will be developed and implemented to evaluate the program?)	● To develop strategy, technique, and criteria of evaluation

Source: Simmons *et al.* (2004)

The total of the students in experimental school taken from class III to VI were 220 students. The sampling was conducted randomly. Suharsimi Arikunto (2002) said that if the research subject is less than 100, it is better to take them all, so it is called a population research. If the research subject is more than 100, it can be done by taking 10-15% or 20-25%. Based on this theory, the samples were 80 students, which were taken from class III – VI. Each class was taken 20 students which were grouped into male and female group.

The total of students in research school got from class III – IV were 259 students which were divided into class A and B. The research sample was grouped into control and experiment class which was done randomly.

The data was analyzed descriptive qualitatively. This analysis was done internally which was carried out by all teachers and principal and externally done by all stockholders.

Research Findings

The result of analysis which was done internally shows that the materials of environmental education conducted inside the class become burden for all the teachers. It is because the teachers must give additional time to teach. On the contrary, the material and the activity of environment conservation which are done integrated with the SM activity can be easily carried out. It also can help students to understand the materials given in the class and help them to solve the problems. The materials of environmental education which are designed collaboratively with teachers from many studies are able to assist students comprehend the materials in the class. Accordingly, K. Ganjar and A. Arief stated that the integration of environmental education materials with other subjects occur because the current curriculum consists of many subjects (Ganjar & Arief, 2002). Thus, it seems impossible to add a new subject. One of the techniques to include the materials of environmental education is by integrating into one subject which is based on the current curriculum.

In the first experiment of the model, all teachers experienced difficulty in controlling and supervising the activity in conducting conservation. As a result, this model seemed impossible to be done. It happened because the area of students' movement was wider.

From the result of discussion internally and externally decided that the model of environmental education is implemented through camping and hiking. Hiking is done to strengthen relationship among SM members from *Siaga* – member of the PRAMUKA (*Praja Muda Karana* or Boy Scout Movement) between 7 and 10 years – and *Pandega* – member of the PRAMUKA or Boy Scout Movement up to 18 years. These activities done only in a certain occasion related to building of manner's awareness toward environment. Hiking activity is done to practice discipline and skill to overcome hindrances and to train how to analyze environment problem faced by their community. Some teachers assumed that both hiking and camping activity are an activity model which need long and special time. They also need much money.

Considering this fact, it can not be done every time. It shows that teacher, as a SM instructor, does not understand the aims of environmental education. World Scout Bureau (2002) explained environment has an important role. It is not only as background but also as a view for training. This context is explained more by Lord Baden Powell. He said that there are many activities done in open area, like tracking and stalking. He added that SM activity can be used to train how to observe flora and fauna, like: imitating the voice and act of birds, observing many kinds of leaves and naming them, and also other activities which can be done through playing games, camping, and hiking.

Related to the result of observation to the syllabus in curriculum 2004 for Elementary School, the materials of environmental education which are developed through SM activity can clearly unite with science, mathematics, social, Indonesia language, handicraft and art, sport, and religion. This integration can be seen from the correspondence or connection of basic competence, main topic, result of study, indicators, and learning experience which must be reached through learning process from class III to VI. It can be explained as follows:

First, **Language.** The vocabulary related to forestry, ecology, story, and dialogue which are presented and expressed by students in their group help them to recognize and add their mastery of vocabulary and imagination. This activity can not only assist and cause students think abstract but also help them to make simple sentences.

Second, **Mathematics and Art.** The growth of plants or animals in environment helps students to recognize and operate number systematically. Moreover, this case will help students to enhance their skill in solving mathematics problems. Dealing with painting scenery, students are able to make a composition to paint objects found in environment. Furthermore, this activity will trigger students to express their feeling toward natural environment. Finally, it will be able to trigger students' imagination about environment esthetics.

Third, **Science.** Territorial water ecology based environmental education which is conducted outside the class make students easier to learn about living thing or human being. It includes describing their features and needs in their environment. Students can easily conclude that living thing or human being will change related to the change of natural environment, growth, and development and interrelated between living thing or human being and their environment both advantage and disadvantage. In short, in this context of learning, students understand more by conducting research and experience themselves through the phenomena found in environment.

Fourth, **Religion.** Environmental education done outside the class is considered to have good impact at religion education. Starting from recognizing the natural environment, students will have curiosity. By having curiosity, it causes students want to see more detail and be able to ask, admire, and admit God's greatness. From this context, environmental education is an awareness education which is backed up by a certain dynamics happened in the environment.

Fifth, **Social.** Territorial water ecology based environmental education train students' sensitivity in regard to environment. Individual sensitivity can cover three different environments which complete each other. Those are (1) *Social Environment:* In understanding this environment, students start by listening to other people, seeing and being receptive with the given messages. In order to keep a good communication with other people, students not only listen to other's opinion but also respond to it. It means that students interact with others; (2) *Culture Environment:* Territorial water ecology based environmental education spontaneously recognizes and learns daily life related to its culture. Cultures which can be known and learned by students through this environment are house architecture, handicraft, students' voice and accent in their communication, and tradition for working; and (3) *Natural Environment:*

Environmental education conducted outside the class is simple. It means that in the teaching learning process does not need much theory. Students can be admired with the beauty and richness of natural. They also have to face simple things, like: the breeze of wind, the drop of rain on stones, and the many types of tress.

Those statements are in the line with P. Vaquette's statement. He states that learning natural environment does not mean that it not only learns natural science but also learns other fields. Learning natural environment broadens students' point of view to get a whole education manner (Vaquette, 2001). It is because natural environment is the widest main of education. If teacher divides one subject matter related to living thing into some parts, so the learning itself is not comprehensive. On one side there are language fields, on the other side there is mathematics, social, and science. For example: in learning mathematics, teacher must use a language and social.

The integration of environmental education in some fields is able to explore students' knowledge and understanding through language, mathematics, history, geography, biology, ecology, art and geometry. Accordingly, G.A. Lieberman and L.L. Hoody state that environmental based education in the field of language is able to upgrade the skill of reading and speaking, to progress students' effort to learn language, and to communicate (Lieberman & Hoody, 1998). It terms of mathematics, it can be said that mastering mathematics can enhance the understanding of mathematics concept and material, the skill how to operate mathematically, and increase their desire to learn mathematics. In the field of science, it can be reported that this field is also able to enhance the knowledge and understanding of material, concept, process, and science principles. They add that through this field, students can apply or implement it in the real world. It also can help students to progress the desire of learning science. Whereas in the field of social, it can be stated this field can increase the understanding of social material comprehensively and the skill of applying social thing to real life situation and cause the desire to learn social studies (Lieberman & Hoody, 1998).

Based on the result got from observation and discussion internally and externally shows that the model of environmental education through the SM activity focuses on students' activity. This activity has possibility for students to carry out activities lead to sensitivity done through sensing, observing, and gathering and analyzing information got from the environment. This way develops eco-pedagogy. This model approaches students to nature. The approach of students to nature leads to have sensitivity to: (1) Listening to the sound happened in the nature; (2) Smelling any kind of odors; (3) Getting along with flora and fauna; (4) Practicing how to paint; and (5) Looking for information and observing the nature in order to be able to forecast nature phenomenon.

The application of this model also motivates students to conduct experiment and explore sensing, observing, and gathering and analyzing information got from the environment. The model of environmental education through the SM activity should be designed with the theme related to many point of views and field studies in order to be easily understood and recognized by students. Concerning this model,

the theme which can be set up include animate and inanimate objects; inter dependent, natural resources and their function; positive and negative impact of natural resources function; and protecting and conserving environment. It can be done comprehensively, so some related concepts do not need to be discussed many times.

G. Thomson and J. Hoffman statement (2002) is in the line with the characteristic of non formal education in Djudju Sudjana (2004). He says that environmental education is emphasized on knowledge, value or norm or attitude which aims to develop a responsible attitude toward their environment. It includes: (1) fulfillment a certain functional needs at present and future; (2) direct application on students' daily life; (3) the model related to students' needs in environment; (4) the curriculum focuses on students' important and the potential of their area; (5) learning activities carried out in any places; (6) the material given relates to students' and society's life; (7) learning activities focus on students; and (8) utilizing any sources available in environment (Sudjana, 2004).

The application of the model is well designed in order not to be burden for students and not to disturb the mastery of national curriculum (Thomson, 2002). This model is developed by considering physic and psychic approach. Physically close means that this activity conducted around the school or students' neighborhood. Psychic means that the material is easily understood by students at their age. The material is designed based on some principles. They are: (1) starting from concrete to abstract, (2) developed from known to unknown point, and (3) starting simple to more complicated one.

The result got from observation and discussion internally and externally shows in order this model can run continuously, so the material and activities focus on forest pollution and damage. It is caused by the present environmental research focuses on negative impact of the use of natural resources and overcoming pollution. The continuously research of natural resources covers the development of the land potential by considering its environment, like the movement of land and forest or GERHAN (*Gerakan Lahan dan Hutan*). This movement is one of the efforts to anticipate the shrinkage and destruction of forest. In the past, this movement was called greening and reforesting. This activity is handled by private organization and entrepreneur; as a result it can not be done maximally.

Now, it has been built institutions in each regency which clearly manage environment namely Environment Bureau. The working area of this bureau covers city and village. Other institution which takes part in managing and anticipating the damage and decrease forest is forestry service. The development of cooperation has possibility that environmental education can be developed more based on environment crisis development around it.

Conclusion

The application of environmental education model through the Scout Movement activity can enhance the conservation of forest by doing reforesting. This activity is

done by applying some steps there are: introduction, collection and selection of seeds, breeding and plantation. The students think that this activity is challenging, enjoyable and interesting.

The impacts of the application of this model not only make the material conducted inside the class clearer but also result management of integrated area. The model of an effective and efficient environmental education management through SM activity is developed by working together between instructors from the higher school level. This instructor guidance is done by implementing a family system.

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