
STUDY OF ENVIRONMENTAL-BASED SCHOOL MODEL IN VILLAGE AROUND PROTECTED VILLAGE AREAS (CASE STUDY: BARUSARI VILLAGE, INDONESIA)

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ABSTRACT:

Darajat Protection Forest has been changed due to deforestation triggered by increased population growth and socio-economic activities of people living in villages around the forest area. The socio-economic activities of the forest community, making protected forest land converted to horticultural agricultural land, which has increased forest destruction leading to an increase in natural disasters. In addition, the management of the forest area has not received the attention of all parties, especially the people who live in the forest area do not prioritize environmental management and conservation efforts.

Efforts to raise awareness about the environment must start early, both at home and at school, and implemented in everyday life. Schools are an effective place for changing the behavior of young people to care and love the environment, and to actively participate in preserving the environment in forest areas. Based on this, the model of environment-based school management (Green School) in schools in the forest area with multistakeholder collaboration can be an alternative solution in improving environmental attitudes through learning and habituation and considering environmental aspects in life. The strategy is implemented through the development of an environment-based

curriculum, development of extracurricular activity, management of environmental-friendly supporting facilities and environment-based school management.

Based on the results of program evaluation through with non-parametric statistical analysis (Wilcoxon Test), it was found that there was a positive influence given by the environment-based school program (Green School) on the management of the school environment, and pro-environmental hygiene behaviour of students at the Darajat Protected Forest Area elementary school. The benefit of this research is knowing the success of the program and as a recommendation that the "Green School" program can be effectively developed in locations with similar criteria.

KEYWORDS: Behaviour, Deforestation, Environmental-Based School Model, Protected Forest Area, School Curriculum, School Management,

INTRODUCTION:

Deforestation activities in the Darajat Protected Forest Area occur continuously. This is triggered by population growth and socio-economic activities of people who live around forest areas. The conversion of protected forest areas into horticultural agriculture on critical land with a high slope that occurs massively in the upper watersheds can have an impact on increasing forest damage, environmental

pollution, and natural disasters. Various existing environmental problems certainly cannot be separated from how humans relate to their environment (Syafi'ie, 2014).

The management of the environment around forest area needs attention from all parties. 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 (Mihardja, 2009). Community participation, support from district / sub-district / village governments, universities and non-government organizations in the rehabilitation and conservation of forest areas is still lacking and not optimal. In addition, people who live in forest areas do not care about environmental management and sustainability efforts.

Efforts for environmental awareness must be instilled early on both in the home and at school, and implemented in daily life. In this era, environment is considered as an education model which is designed to increase public awareness relate to environment crisis. 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 (Mihardja, 2009). Elementary School students in Indonesia only get 53.33-80% of learning subjects that discuss about the environment. Of the total number of students who take part in the learning process, only 50-60% of students effectively practice the material provided (Warju dkk., 2017).

Schools are an effective forum for changing the behavior of young people to care for and love the environment, and to actively participate in preserving the forest environment. Compared to adults, children are often more receptive to new ideas and can more easily change their behavior and/or develop

new long-term behaviors as a result of increased knowledge and facilitated practices. Depending on the culture, children and youth, may question existing practices in the household and become agents of change within their families and communities (School and Health, 2019). Since 2017, Elementary Barusari 1 and Barusari 4, Garut Regency have implemented an environment-based School Model (Green school) through multistakeholder cooperation as an effort to increase environmental awareness of forest communities which was carried out early on. The Green Cultured School model is a school that systematically develops programs to implement environmental values in all school activities.

Philosophically, the application of the Green School concept in the learning curriculum is a strategy to preserve nature, so that the school environment and the environment around the school become clean, healthy, beautiful and green by plants (Syafi'ie, 2014). In other words, green schools are the school's real effort to save the environment. The strategy implemented is through the development of an environment-based curriculum, increasing the capacity of educators, developing extracurricular fields, managing environmentally friendly supporting facilities and environment-based school management. Based on Thomson and Hoffman (2002), the environmental education goal is concerned with awareness, knowledge, attitudes, skills and participation, and has as its aim responsible environmental behavior to preserve a sustainable environment. Based on the evaluation results in the third year of the program, through the mixed-method analysis obtained positive results provided by the "Green School" program on the management of the school environment, pro-environment behavior and hygiene behavior of students in

the Darajat Protected Forest Area elementary school.

The purpose of this study on the Green Schooled Environmental School Model is as specific research in the study area to see the effectiveness of the application of the program in influencing environmental management, pro-environment behavior of school residents, and student hygiene behavior. The benefit of this research is knowing the success of the program and as a recommendation that the "Green School" program can be effectively developed in locations with similar criteria.

METHODOLOGY:

Environmental-Based School Model:

The school model development system is implemented in two elementary schools located around the Darajat Forest area, by purposive sampling. The development of the school model was carried out for three years (2017-2019) using research and development (R & D) methods, starting with conducting a preliminary study, namely by analyzing internal

conditions, namely inventory of school resources, human resources, conditions of educators, students, school administrators, natural resources, forest resources, and the conditions of the community around the forest through social mapping, as well as external analysis, especially the analysis of stakeholders who have the opportunity to carry out partnerships in the implementation of a school-style environmental model (Rosmaladewi, 2019).

The school chosen to be the location for the environment-based school model in the Darajat protected forest area is elementary schools 1 and 4 Barusari. The standard that used in the development of green school program at Elementary School Barusari 1 and 4 are Adiwiyata school standard that consists of four component, namely: 1) Enviromental Policy, 2) Implementation of enviromentali-based curriculum, 3) participatory based enviromental activities, and 4) environmental friendly infrastructure and facility management (MoE, 2011).

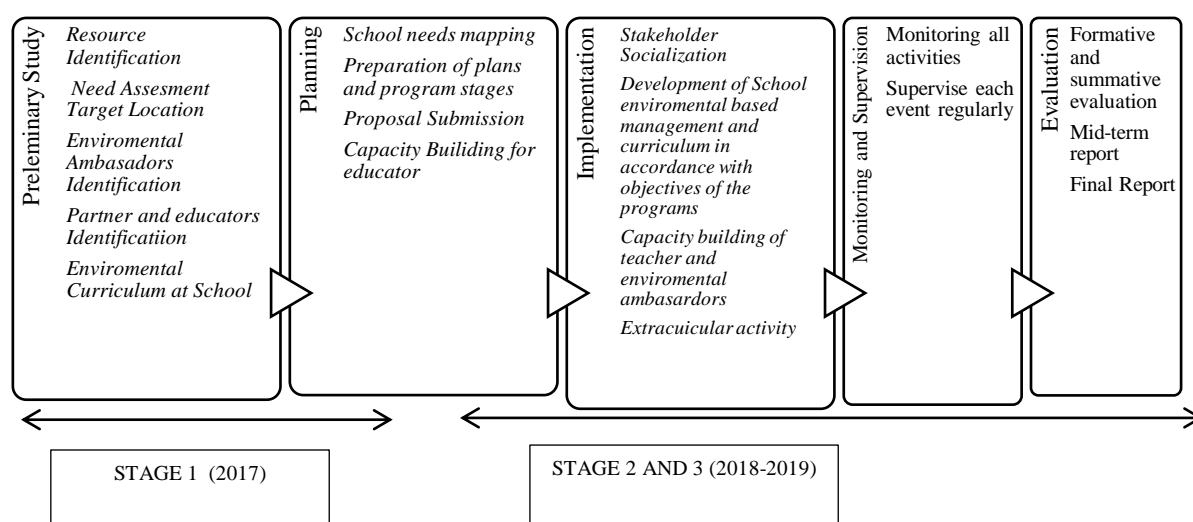


Figure 1. Stage of Enviromental-Based School Model Implementation

This program is a multi-stakeholder collaboration in community-based environmental management, namely UNINUS academics through community service

programs, the Star Energy Geothermal Darajat II, Ltd. company through the CSR Corporate Social Responsibility program and the government, namely the Garut District

Education Office. The model is implemented based on the principle of school empowerment partnership and the principle of environmental management.

Evaluation Methodology:

Evaluation of Enviromental-Based School Model design research is using one group pre-test post-test to determine the effect of Enviromental-Based School Model on a given sample. The statistical test used is paired sample t-test if the data is normal, but if the data is not normal then the Wilxocon test is used. Based on, Kolmogorov-Smirnov Normality Test on research data states that the data are not normally distributed. So, the methodology that used in this evaluation is quantitative methods with non-parametric statistical analysis (Wilxocon Test). The independent variable in the study is the Enviromental-Based School Model program and the dependent variable behavior domain (knowledge, attitudes, and practices), school support, and environmental related school facilities.

The research sample is part of the population to be studied (Arikunto, 2010). The sampling technique used in research on the influence of knowledge, attitudes and behavioral variables is the purposive sampling method. In the research sample selected were elementary school students 1 and 4 (72 students) who were appointed to be ambassadors for the Environmental-Based School Program. Data collection techniques were carried out by distributing pre-test and post-test questionnaires after the intervention. The questionnaire distributed during the pre-test and post-test is the same questionnaire that contains 45 questions. The question given is a statement of knowledge about environmental materials provided during the program, how their attitudes and practices in the behavior of clean and healthy life in school.

DISCUSSION AND ANALYSIS:

The Development of Enviromental-Based School Model:

The Development of Enviromental-Based School Curriculum and Management. Each country has its own definition of Green Schools. The term of Green School standars in Indonesia we know it as “Adiwiyata. Adiwiyata has meaning a right and ideal place which can obtained through all scinence, norms, and ethics and it can be basis creation of human well being toward the ideals of sustainable development (MoE, 2011). Definition of green school in Indonesia refers to Standard of Ministry of environment number 5 at 2013 that discuss about Guidelines for Adiwiyata Program.

The integration of Environmental Education in accordance with the components, standards, and implementation of “Adiwiyata schools” related to the meaning of Environmental Education is not a new subject / area of expertise on environmental material related to relevant or appropriate subjects or programs. How to integrate Environmental Education in learning activities involving formal or non-formal education start from the ability of each field / program of expertise to produce a vocational material related to environmental material. This activity is carried out so that students have competencies or professional competencies that are in accordance with their fields and that meet the requirements of sustainable development.

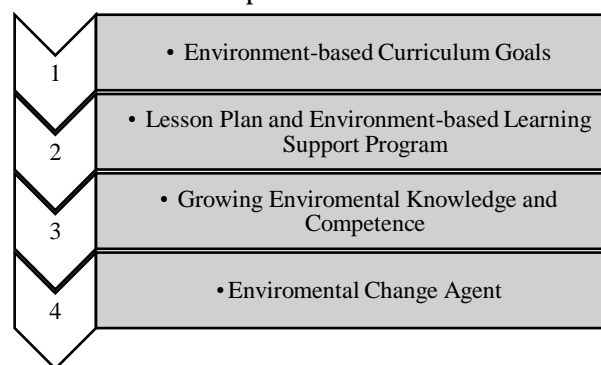


Figure 2. The Process of Implementing an Enviromental-Based Curriculum (Rosmaladewi, 2019)

Curriculum development should take into account various aspects such as child development, the development of science, the development society's needs and employments and so on. Curriculum planning should include several aspects including goals, materials, resources, learning activities and evaluation as the basis for establishing the curriculum. One of the things that are important in the curriculum development is the delivery of the contents regarding the environmental issues by incorporating environmental issues into almost all subjects (Prihantoro, 2014). Development of an environment-based curriculum, is carried out in an integrated manner with existing subjects. Teachers must be good at creating a learning process by combining the understanding and applicable learning experiences. Teachers are encouraged to carry out the learning process by leading efforts to shape the behavior of students who care about the environment through learning models that are applicable and touch everyday life. The development of the material in this model is carried out to provide students with an understanding of the environment that is associated with environmental problems in the local community. And the teacher is encouraged to carry out the learning process that leads to efforts to shape the behavior of students who care about the environment through applicable learning and touching everyday life. The process of implementing an environment-based curriculum can be seen in **Figure 2** above, if appropriately implemented can produce environmental education materials that are organized, internally consistent, and valid for each learning group. Furthermore, this can be applied to various grade levels and any content area. The most important thing is the fact that the process of implementing this curriculum can be applied by a team of professional educators who are trying to implement effective environmental education instruction for

elementary school students (Rosmaladewi, 2019)

The environmental-based school management that implemented in this model is by:

1. Arranging school environment, arranged starting with the arrangement of the classroom environment, school yard and toilets, so that the school becomes a convenient place of learning for students
2. The movement to save the environment, by saving water and electricity usage, reducing the use of plastic bags and paper
3. Planting around the school
4. Assistance for educators and students in the management of a clean and healthy school environment.

The Development of Extracurricular Activity

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 (Mihardja, 2009). How to integrate Environmental Education in curricular activities starts from analyzing the ability/sub-ability of each area of expertise/program expertise to produce a material related to the environment. This activity is carried out so that students have the competence or professional attitude in accordance with their expertise and in line with the demands of sustainable development.

Learning approach about the environment with an extracurricular activity can get through development of school creativity in building a healthy environment by utilizing natural resources based on environmental values and ethics, habituation of students with activities related to environmental health by utilizing human resources in the school environment,

such as the implementation of clean and healthy lifestyles, caring attitude towards the environment with garbage collection movements, garbage disposal in place, energy efficiency, plastic diet, snacks healthy, green camp, and greening. The development of extracurricular fields in this model is designed to lead to the formation of student's concern for environmental preservation through activities:

1. Clean and healthy lifestyle (hygiene behaviour) training
2. Introduction to the environment around the school including the forest environment
3. Establishment of 72 environmental ambassadors as representatives of each class
4. Capacity building of environmental ambassadors through training on hygiene behavior, school sanitation, 3R waste management (Reuse, Reduce, Recycle), the use of waste into creative industries, composting, manufacturing Micro-Organisms, Biopores and Ecobrick

Support of Enviromental Related School Facility
In realizing schools that are environmentally based and cultured, facilities and infrastructure need to be supported that reflect environmental management efforts. School facility support is adjusted to the school management approach that is carried out on the model.

1. Development of existing school support facilities for environmental education. The development of existing environmental facilities is expected to increase the role of the school's environmental management team in helping to create a conducive (clean and comfortable) environment.
2. Improving the quality of environmental management within and outside the school area.
3. Saving natural resources (electricity, and water).
4. Improving the quality of school sanitation and hygiene. Quality improvement is carried

out in the sector of cleaning / waste management, making green open spaces (shade and greening), sanitation (clean water and drainage / drainage) and improving the environment of school rooms.

5. Development of a waste management system. Waste management in schools that developed in this program is management with a 3R system (Reuse, Reduce, and Recycle). Paper waste which is one of the problems of high volume waste for the school sector in this model is processed into accessories and materials for students' craft activities. Other waste that processed in this model, which is plastic bottle, is processed into plants vase and ecobricks which are used as a material for building school parks.





Figure 4. Condition of School Before and After Intervention

Evaluation of Enviromental-Based School Model:

Pro-Enviromental and Hygiene Knowledge, Attitudes, and Practices of Student
 Environmental education is expected to change the behavior and patterns of public view towards positively associated with environmental issues and foster a love for the

environment early on. Based on Notoatmodjo (2007), in the development of environmental and health education, behavior is divided into 3 domains, namely knowledge, attitudes, and practices. Environmental education is emphasized on knowledge, value or norm or attitude which aims to develop a responsible attitude toward their environment (Mihardja, 2009). The purpose of environmental education for knowledge, attitudes, and practices, namely (Prihantoro, 2014):

1. Knowledge - helps each individual to obtain a wide range of experience and a basic understanding of the environment and its problems.
2. Attitude - helps each individual to obtain a set of values and the ability to get the right choice, as well as develop a sense of environmentally sensitive and provide motivation to participate actively in the improvement and environmental protection.
3. Practices - help individuals to obtain knowledge and attitude that they have in identifying and solving environmental problems.

In this model, the knowledge that will be developed is knowledge about how students maintain personal hygiene and the environment, how students take care of the environment in which they live. By having knowledge about the environment students are expected to take a stand and apply the knowledge to solve their environmental problems in the future. To find out the results of applying the model to students' knowledge, attitudes and practices, a statistical analysis was performed using non-parametric analysis (Wilcoxon Analysis). This method is used for analyzing the difference in the mean value of knowledge, attitudes, and practices of hygiene behaviour before and after the intervention in the selected intervention group.

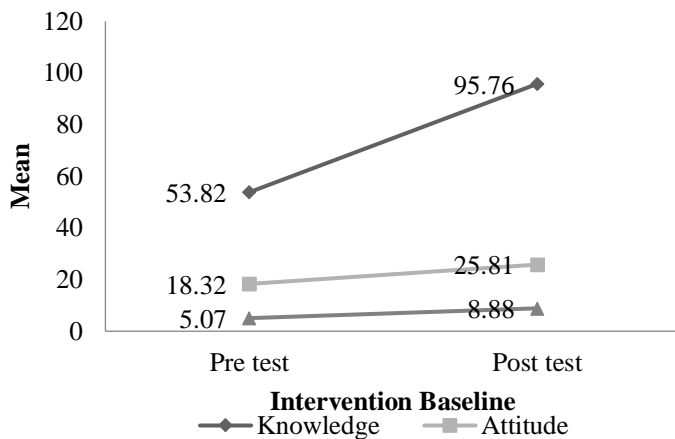


Figure 3. Mean Value of Pro-Environmental and Hygiene Knowledge, Attitudes, and Practices of Student

The results of the measurement of differences in the mean value of respondents on the variables of knowledge, attitudes, and pro-environment and hygiene practices of students for Pre-Test and Post-Test shows the results of Negative Ranks are 0 (zero). The value of 0 (zero) indicates no decrease of mean value from the value of Pre-Test to Post-Test. Based on the output in **Figure 3**, the results show that there was a significant increase in the mean value of knowledge, attitudes, and practices from pre-test to post-test, whereas in the control group no significant improvement was found.

According to Notoatmodjo (2007), the increase in behavioral domains (knowledge, attitudes, and practices) that support the increase in students' behaviour is due to the existence of a supportive environment in the form of interventions that influence the process of knowledge entry into children due to reciprocal interactions that will be responded to as a form of knowledge, attitudes, and actions by every child. Changes in behavior can occur related to changes in interacting knowledge, attitudes and skills. These three things can be influenced / changed through a process of learning, training and experience, including in school-age children. How the program is carried out can be one of the reasons students find it easier to accept new material provided and

apply it in their daily lives. This is consistent with the explanation of Zoomerplag (2005), that learning and development is better and more useful if stimulated interactively. When this is done in a stimulating and enjoyable way, children will be eager to practice their new knowledge and skills.

In this program the cognitive abilities of children are trained by providing environmental learning materials through counseling and simulations so that children can directly practice the material provided. Cognitive abilities are the behaviors needed by someone who has new knowledge, or when it is needed to use the knowledge they already have. Based on the article "Developmental Psychology" written by Dr. Ernawulan Saodih M.Pd., children who are sharpened by their cognitive abilities are trained to be able to overcome the problems they face so that they can represent an object of learning into someone's mental picture in the form of symbols, responses, ideas, to considerations. The stages of activities carried out in the program are in accordance with what needs to be done to improve cognitive activities, namely remembering and thinking. In this program, children are accustomed to dealing with objects in the form of representation, namely in the form of responses and understanding. This is in the program given at the counseling stage. To develop the ability of the relationship of responses and understanding will be associated with surrounding objects in the program channeled through the simulation and practice stages. If we look at theory at Notoatmodjo (2017) about stage of knowledge, the result of the program makes children able to develop in determining cause and effect relationships so that the knowledge they have is not only at the knowing stage but can develop to the stage of understanding and analyzing.

From the results of data processing using the Wilcoxon test, the result of Asymp.Sig (2-

tailed) on the knowledge, attitude, and practice of pro-environment and hygiene behaviour students is less than <0.05 , so it can be concluded that the hypothesis from this evaluation is. This means that there are differences in the results of knowledge, attitudes, and practices of pro-environment and hygiene behaviour students for the Pre-Test and Post-Test. The differences referred to indicate the influence of the development of green school models in Elementary School 1 and 4 on the knowledge, attitudes, and practices of pro-environment and hygiene behaviour students.

The result accordance with the statement of UNICEF (2003), that one of the keys to improving behavior related to environmental and hygiene is to encourage behavior change through motivation, information and education. This is achieved by changes in educational techniques that contain lessons related to environmental and hygiene, it is an encouragement for children to improve their personal hygiene and know better about how to manage their environment. This is also in accordance with research by Shrestha and Angolkar (2014) which proves that children tend not to be aware of their own hygiene so as to increase their knowledge and practice of clean and healthy living, an intervention program effort on health education and hygiene is a very useful solution.

CONCLUSION:

Based on the condition of the school environment and the socio-economic conditions of the people who live around the forest area, a paradigm shift from schools in the forest area is needed to actively participate by developing environmental-based schools, so that forest areas can function socially, economically and ecologically. The environmental school model (Green School) through a multi-stakeholder partnership that is carried out systematically,

participatively and sustainably is one alternative that can be done in changing the behavior of young people in environmental management. The strategy is implemented through the development of an environment-based curriculum, development of extracurricular fields, management of environmentally friendly supporting facilities and environment-based school management.

Based on the results of program evaluation through with non-parametric statistical analysis (Wilcoxon Test), it was found that there was a positive influence given by the environment-based school program (Green School) on the management of the school environment, and pro-environmental hygiene behaviour of students at the Darajat Protected Forest Area elementary school. The results of this study can be a recommendation for the stakeholders involved that the model of the "Green School" program is feasible to be developed for other schools with similar criteria as an effort to increase the concern for the environment that is intended for people who are in the area around the protected forest so they can protect the environment around them.

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