

Ethnoecology as the Method to Build Environmental Care Character through Adiwiyata School Program

Farida Istianah, Julianto, Suryanti

Department of Elementary Teacher Education
Universitas Negeri Surabaya
Surabaya, Indonesia
faridaistianah@unesa.ac.id

Abstract—One of solutions to overcome the damage to nature was to conduct an ethnoecological approach as implemented in Adiwiyata program to shape the students' environmental care character. This research employed descriptive study with a qualitative approach. The purpose of this study was to describe the application of character values to environmental care through the implementation of ethnoecology in the Adiwiyata program and its constraints in an elementary school. Data collection techniques as documentation, observation, and interviews were used in this research. The results of this study illustrated that the application of character values care for the environment ran well but it was still in the acceptance stage of the phenomenon. In addition, there are several obstacles, including school building renovation, the lack of teacher's role, and limited time.

Keywords—ethnoecology; Adiwiyata; environmental care; character

I. INTRODUCTION

Ecosystem changes constantly. This is due to the influence of interaction and adaptation between humans and nature with their culture and social environment [1]. Cultural development that impacts on ecosystem changing will be seen in the natural environment phenomena that occur around us.

One of the study that examines the relationship between humans as objects and their environment is ethnoecology. Ethnoecology is a branch of study that learns the how society uses ecology and lives in harmony with its natural and social environment. Community life generally depends on nature, thus it supposed to be familiar to nature hence they can observe nature and its characteristics, and understand how to direct it [2].

Ethnoecology is a scientific field that discusses the relationship between humans, living space, and human activities on earth according to Hilmanto [2]. Ethnoecology is an adaptation of geography which in broad scope that takes a specific field to focus on phenomena that occur in the space of human activity.

In the study between human and natural environment, the Ecological Approach is used as it examines and analyzes an ecological phenomenon focused on the connection between humans and the natural environment. Residential, agricultural, urban, industrial and other areas are the examples of ecological

ecosystems that are created from the interactions between humans and their environment [3].

This is relevant with Virginia D. Nazarea arguing that ethnoecology is appeared as the new way to see relationship between humans and the environment through the environmental awareness behaviour. However, Indonesia nowadays turns to an alarming stage in which natural damage continues in Indonesia. Not only the damage that is caused by natural activities, but also the damage caused by human activities. The concrete evidence according to the East Java Regional Disaster Management Agency (BPBD) throughout 2017, East Java experienced 382 natural disasters in 38 cities.

Various problems that occur and relate to the natural environment issue ought to be immediately sought for a solution thus the adverse effects might affect lower for human's life in the future. The government has overcome the problem on behalf of Environmental Protection and Management No. 32 year 2009 article 1 subsection 2 that describes an effort to preserve and manage the environment so as to avoid environmental damage and pollution, in order to make public understand how to preserve and prevent environmental damage.

Regarding the problem of the increasingly worrisome environment, an action is needed to make the damaged environment better. In order to anticipate, the national development directed to implement a concept of sustainable development or eco-friendly development concept. One of the elements in the eco-friendly development concept is environmental education.

As one of the government effort, educate people in the early age about the importance of the natural living environment through education. Here, the government undergo a naturalistic approach to students' daily activities in order to be successful implemented and directly applied by students in their daily lives.

Based on the Law of the Republic of Indonesia No. 20 of 2003 stated the definition of education. In conclusion, education is a planned and systematic effort to reach an effective teaching and learning process thus students are able to develop their potentials in various subjects including intelligence, personality, religious spirituality, self-control, noble character, and valuable skills for the country and nation.

In *Global Sustainable Communities Handbook: Green Design Technologies and Economics*, Indonesia comprises the short-term to long-term environmental management plans which one of the long-term plans is an environmental education which denotes to increase public environmental awareness and support the long-term sustainability.

According to Tikka P, et al. in their journal “*Effects of Educational Background on Students’ Attitudes, Activity Levels, and Knowledge Concerning Environment*”, believed that the background of education achieved by attitude, the number of activities linked up to environment, and the environment knowledge on natural related issues. However, early Environmental Education from the Elementary level is supposed to raise the students’ awareness of natural environment [4].

Education is one of the methods to instill human concern for the natural environment since early age. Education, integrated with school curriculum aims to increase the sense of natural environment concern as environmental care education. Through environmental education, students are expected to learn how to manage the natural environment and become the capable human resources that carry out the principles of eco-friendly development concept.

In environmental care education, it is a must that students’ understanding by means of the learning contextual concepts. The learning process reviews the concept and links it to the phenomena that occur around students. This helps students understand the relationship between the real-world theory and situations. Also, it motivates students to find the relation between the students’ prior knowledge and its application through daily activities then observe the potential of the surrounding environment, especially the living environment. In addition, developing a community that has environmental care character values is likely to be more effective through environmental care education at schools.

In elementary school learning process, it needs an ecological approach that students are able to associate the lessons conveyed in the classroom are linked to students’ actual activities. Therefore, the relevant program to ethnoecology that is included in the school curriculum is Adiwiyata program. This is the government program that aims to appreciate schools for carrying out environmental care education.

According to the research from Richard Tucker and Parisa Izadpanahi in their journal, it was stated that children whose schools are designed to involve them in environmental sustainable activities are able to build their environmental care attitude. Thus, it is recommended that environmental care activities can be developed in order to allow children to be actively engaged, for example in Adiwiyata program.

An environmental care education programs, called Adiwiyata program is a program launched by the Ministry of Environment in 2006 as a follow-up to the MoU between the State Minister of Environment and the Minister of National Education held on June 3, 2005. Adiwiyata program which is implemented at schools, it is expected to be able to grow several characters one that is related to the environment, one of which is Environmental Care.

Adiwiyata is a word derived from Sanskrit. ‘Adi’ means good and perfect, while ‘Wiyata’ means a place to get knowledge and norms. Hence, ‘Adiwiyata’ means a good and perfect place to obtain knowledge and norms, to create a living welfare and the ideal sustainable development. The aim of the Adiwiyata program is to bring school community who are responsible for environmental protection and management through well-administered school.

Adiwiyata program at school is expected to be able to nurture several characters related to the environment, one of which is Environmental Care. Character education in schools is a basic for elementary schools. Character education aims to provide students with the skills to have the essential ability to become community who utilize the knowledge prudently for themselves, society, and environment. Here, elementary school is the basic stage of character education development in the formal education level thus an effective character education model is required.

Thomas Lickona as cited in Gunawan [5] said that character education is a study that has the purpose of forming and developing the students’ personality through character learning. Based on the ethical character learning, the result illustrates good behavior, honesty, discipline, hard work, respect others, be responsible, and so on.

In the other hand, according to Ramli as cited in Gunawan [5], character education has the same goal as moral and ethical education. The purpose of character education is to develop and shape the students’ personality to be an excellent human beings. In general, social values are influenced by the culture of a particular society. In essence, character education implemented in Indonesia is a value learning, namely education that is derived from the nobility of the Indonesian culture to foster the personality of the young generation.

Value learning is an effort that aims to help students recognize, be aware, and implement the appropriate values as an individual and as community members. Meanwhile, character education is one of the programs to train students to become well-personalised human beings.

School, as an educational institution also issues the change makers society, is responsible to provide well education system to the students. Education is a process to change the students’ identity to be more advanced. This character building is one of the school’s responsibilities as an educational institution.

To maintain human behavior to live in with nature, education is the tool so that humans can understand the value of the surrounding ecosystem and environment. Education is also important to prevent the nature destruction and restore the damaged-nature. As in elementary school level, students are able to learn about environmental care education from the early age through character education [6].

Here, character education plays an important role in the formation and development of humans’ character. A person who acquires character education will form a positive value. However, to interact with nature, character value requires an ethnoecology method, since the collaboration develops

individuals with well character values are able to interact with the nature and social environment [7].

However, the implementation of character value education through the Adiwiyata program finds the obstacles that the school tackle. These might be related to the school curriculum, school components such as principals, teachers, employees, and students, as well as the facilities and infrastructure available at the school. Based on its difficulty, the school needs to find the solution to be able to run the program well. Thus, from the solution are expected to high Adiwiyata program to shape environmental care character.

From observations and interviews conducted by the researchers on Friday 10 November 2017 in Lidah Kulon I / 464 Public Elementary School Surabaya, one of the schools that implemented the Adiwiyata program in its curriculum. It was found from the vision and the mission, stated as 'Excellent in Achievement, Discipline, Character, Science and Technology and Environmental Culture'. Based on this vision, the implementation of the Adiwiyata program has been carried out at Lidah Kulon I / 464 Public Elementary School Surabaya.

Based on the explanation, the researchers were interested to conduct a study in the application of character values of environmental care through ethnoecology which was implemented in the Adiwiyata program at Lidah Kulon I Elementary School Surabaya. Therefore, the researcher raised the title "Ethnoecology as the Method to Build Environmental Care Character through Adiwiyata Program in Lidah Kulon I / 464 Public Elementary School Surabaya".

II. METHOD

This study employed a descriptive method with a qualitative approach. This was adjusted to the formulation of the problem and the objectives of the research described earlier. By using a descriptive qualitative research approach, the writer can describe the research situation more deeply through a series of words.

This description was in form of word sequences aimed for the character values of environmental care application through ethnoecology which was implemented in Adiwiyata activities. Some basic description aspects included the character values of environmental care, activities in the Adiwiyata program, and also the ethnoecology approach [8].

This research was conducted in March to April 2018 in Lidah Kulon I / 464 Public Elementary School Surabaya, located at Jl. Raya Lidah Kulon No. 10 Surabaya. The researcher determined the location since a preliminary study was conducted within school observations and interviews to the principal and understand that the school vision as "Excellent in Achievement, Discipline, Character, Science and Technology and Environmental Culture". By observations and interviews, it was found that Lidah Kulon I / 464 Public Elementary School Surabaya implemented the Adiwiyata program in its curriculum.

Subjects as data sources chosen by researchers included the Head of Lidah Kulon I / 464 Surabaya Elementary School, two teachers at 1/464 Surabaya SDN Lidah Kulon, 2 students, 2 guardians of students' students, and 2 community leaders. The

subjects were chosen to represent each component of the school community, which the data from each representative were able to complete the data material to deepen the study of research objects called as ethnoecology as the method to instill the environmental care character through Adiwiyata program at Lidah Kulon I / 464 Public Elementary School Surabaya.

To help the researchers, guidelines were developed for observation. The observation guidelines were based on several aspects that the researchers aimed to examine. These aspects included the values of environmental care character, Adiwiyata program, and implementation of the ethnoecology approach. There were six aspects examined in this study, they were trying to prevent damage of surrounding environment, recovering the nature damage, strategies to implement environmental care values through self-development programs, availability of supporting eco-friendly infrastructure, quality improvement management and utilization of eco-friendly facilities, and implementation of ethnoecology approaches in the school environment [4].

In the interview guidelines, the researchers wanted to explore some aspects related to the topic of this research, such as the values of environmental care character, Adiwiyata program, and ethnoecology implementation in Adiwiyata activities. From these aspects the researcher developed it into several sub-aspects and familiarized the aspects to the subjects [9].

Data collection methods in this study included observation, interviews, and documentation. Here, researcher employed nonparticipant observation techniques. Nonparticipant observation was conducted as the researchers only observed the situation without getting involved in the activities. In this study, the observation included the situation and conditions in the school along with the various actions taken by the school community which consisted of the principal, teachers, students, and school employees related to the character values based on the ethnoecology approach through the implementation of the Adiwiyata program at Lidah Kulon I / 464 Public Elementary School Surabaya. The results of the data and information obtained were recorded, then to be analyzed, and concluded.

One important part in processing data was data analysis. The data analysis technique was conducted after collecting the data, then was identified in accordance to the objectives of the study. The methods in processing the data required the accordance with the problem examined. Thus, in qualitative research, data analysis techniques needed to be carried out in sequence.

Data reduction was conducted to apply themes and patterns, choosing the main aspects, summarizing, and discarding the unnecessary factors. With the reduction of data, the processing of data from observations, interviews, and documentation became more obvious. The data reduction of the data processing continued from the determination of the conceptual framework, the process of data collection, to the preparation of the report.

Presenting the data was conducted after data reduction. It summed up the data to be more coherent and understandable. In qualitative research, presenting the data was in form of a brief

description, chart, or table. The presentation of the data in qualitative research was in the form of narrative texts.

The last step in data analysis techniques was decisions or verification. The collected data in this study determined conclusion that was expected to be a new discovery and the answer to the problem.

Triangulation techniques were conducted to show the validity of the data. Triangulation source was the testing data credibility by checking and comparing between one data from the subjects and the data from others. This triangulation source was conducted to re-check and complete the information in order to meet the objectives of the interview results.

Meanwhile, triangulation technique attempted to show the validity of the data carried out by checking information from the subject with the different technique, for example by observations and documentation obtained.

III. RESULTS AND DISCUSSION

Lidah Kulon I / 464 Public Elementary School Surabaya was located in West Surabaya area with the address Jl. Raya Lidah Kulon No. 10, Lidah Kulon, Lakarsantri District, Surabaya. This school was a merger of Lidah Kulon I Public Elementary School and Lidah Kulon II Public Elementary School in 2009 with a total land area of 4,365.70 m² and the building area is 4,000 m². The school consisted of 19 classrooms, a principal room, a teacher's room, an administration room, a computer laboratory room, a library, a Health Unit, a warehouse, a multipurpose room, a security guard room, 8 women's bathrooms, 8 men's bathrooms, and a teacher's bathroom. All rooms were in good condition and proper.

Based on the results of the study, it was found that emerging environmental care character values has been carried out at Lidah Kulon I / 464 Surabaya Elementary School as declared on its school vision, 'Excellent in Achievement, Discipline, Character, Science and Technology and Environmental Culture'. The indicator of the vision related to the cultivation of the character of environmental care is excelling in caring for the environment. Based on the vision in emerging character values that was aware about the environment, the mission includes: developing a curriculum including to preserve environmental functions, prevent environmental pollution, and prevent environmental damage.

As the mission was declared, the school had made an integrated curriculum with the Adiwiyata. Lidah Kulon I / 464 Public Elementary School Surabaya was applying 2013 National Curriculum in accordance with Surabaya Education Office and integrated with Adiwiyata Curriculum which contains various methods to preserve and prevent environmental damage. The implementation of the curriculum was the Adiwiyata Program.

Jum'at Bersih or Friday Clean Activity was designed by schools for Adiwiyata program. The activity was carried out every Friday and started with morning gymnastics then followed by activities to treat school environment care. Students and teachers cleaned up the rubbish around the park, processed the land to be planted, planted some plants, provided fertilizer and watered some plants. In addition, there were also

activities that aimed to clean up the school environment such as sweeping and arranging classrooms, prayer rooms, and libraries.

Kegiatan Semut or the abbreviation from '*Sejenak Memungut*' was an activity where students needed to pick the rubbish right before they entered the classroom during the first lesson. It was the five-minute taking out any garbage in the class or around the class environment and throwing it in the trash. The activity involved students, and teachers as coordinators in the homeroom classes.

Jum'at Bersih and *Kegiatan Semut* can be used as the tools to shape the students' character of environmental care since its purpose educated students the importance of learning attitudes and behaviours through activities inside and outside the school. The students' awareness to dispose of garbage in the dustbin, clean the classroom and school environment, decorate the classes and schools with plants, maintain plants in the school garden, and maintain all the cleanness of the classroom and school environment.

Adiwiyata program implemented the efforts to preserve the environment and also fix the damage that occurred before, therefore an ethnoecological approach introduced in Adiwiyata program. There are several stages in ethnoecology approach started from soil manufacture until controlling pests.

The ethnoecological approach process is an ongoing process. In this case the school is responsible to educate students in a series of processes thus participants might find out ways to preserve the environment and understand the benefits of preserving the environment through an ethnoecological approach to achieve the goal in every activity.

The ethnoecology approach implemented the strategy of character education. It contained several activity programs from the various strategies of character education implementation and various participatory-based environmental activities programs were formed. These activities were applied in school for students' daily routine and forming the students' character values.

The ethnoecological approach contained in the Adiwiyata program expected to instill students' understanding in preserving the environment. Besides, the habituation character value aspect was also developed to maintain school and class cleanliness. However, there were several concrete activities implemented in the environment caring and clean program.

The obstacle in implementing the ethnoecology approach in the Adiwiyata program at Lidah Kulon I / 464 Public Elementary School Surabaya related to the three aspects. The first was the renovation process of the school building and obstructed the school activities. The second was the teacher supervision of each working group did not run well since the teacher had other teaching responsibilities. The last was about time management to educate students about environmental care character was not optimal since the students spent more time learning in class.

Based on existing constraints, the solutions explained by the principal and the teacher were relevant according to the problem. Beside the obstacles found the ethnoecological

approach implemented in the Adiwiyata program, it also came from the application in educating environmental care character and values.

Based on the results of the research, the ethnoecological approach according to Hilmanto, it consisted of six stages. Each stage represented the process of managing an ecosystem in a particular area in an ecological view that is the result of interactions between human activities and the natural environment. The process were managing land, planting, crop rotation, fertilizing, making drainage systems, and controlling pests and diseases.

In Lidah Kulon I / 464 SDN Surabaya, the ethnoecological approach process had been carried out entirely yet in different qualities. In soil processing, the school had been well-planned since the renovations began. There was a sloping ground in front of the school which was used as a medium for planting various plants ranging from herbal, vegetables, and shady plants. Since the school was in the construction stage, students were asked to rearrange the small gardens in front of the classes.

The next was planting in which students were actively involved in every plant at school. The planting process is carried out during the *Jum'at Bersih* activity and adjusted to the relevant learning process. There were several working groups during the activity as it was tailored for learning all students in the class were involved.

There were several things taught by the teacher to students in planting process. The first was how the system in planting thus students understand the process of planting the plants. Students were also introduced to the types of plants and instill the character of loving plants, so that students are accustomed to take care of any plants in various ways such as watering plants, providing fertilizers according to the needs of each plant, controlling plant pests and diseases with eco-friendly insecticides, and also keeping the planting area clean.

The next process was crop rotation. The purpose of crop rotation to maintain soil fertility properly. In addition, it was also to ensure that the crops planted are suitable regarding the season. Since the school ground was mostly planted by decorative plantation educational facility not as agricultural land, thus this activity was not carried out well. However, the planting process is indeed carried out more during the rainy season therefore the plantation wouldn't be lack of the water supply.

After the process of planting and rotating the soil, the next process is fertilization. At Lidah Kulon I / 464 Public Elementary School Surabaya, the fertilization process was conducted two weeks after the nursery. Then the plants were planted on the sloping land and in front of the class garden. Students assisted this fertilization process during *Jum'at Bersih* activity every once a week or when the relevant learning process.

In addition of requiring fertilizer, plantations also required water for growth. Water that was used for watering plants was collected from after-used ablution water and biopore infiltration water. Students were directly involved and understood the flow of the after-used ablution water and its

benefits while they were also involved in the process of compose the bio pore.

The last ethnoecological approach was controlling pests and plant diseases that aimed to make the plantations at school released from pests and diseases. Pest control was conducted by cutting the affected plants and spraying garlic liquid, yet this method was considered less effective.

The ethnoecology approach consisted of several steps starting from land processing, planting, land rotation, fertilization, making a drainage system, and controlling pest disease had been carried out in Lidah Kulon I / 464 Public Elementary School Surabaya and adjusted based on the school environment. Hence, this made the students easier to understand its implementation and achieving the objectives in learning environmental conservation. However, in its implementation to build the environment care character, as a broad, students were in phenomenon input stage since they already understood various activities of ethnoecological approach. Yet, they still required teacher instruction and supervision in every activity.

The series of ethnoecological processes had been included in the strategy for implementing the values of the character education, according to the Guideline of Implementing Character Education at Schools which were put forward by the Ministry of National Education. From the guideline, it showed the strategy to implement the character education at the Education Unit Level. The implementation of the character education value at schools can be carried out through various self-development programs such as scheduled activities, spontaneous activities, exemplary, and conditional. Besides self-development programs, the implementation of character values was integrated through school subjects and culture.

In the self-development program, there were various activities such as scheduled activities, spontaneous activities, exemplary, and conditional. Scheduled activities were carried out by students continuously in certain period of time, called the process of planting, fertilizing and watering plants. Spontaneous activity was an activity that was reflexed at the same time, in this case, to maintain cleanliness around the park by not throwing the garbage.

Furthermore, exemplary is an attitude shown by the principal, teacher, and also students in carrying out positive actions to be the example and role model for other schools. The principal and teacher had taken exemplary action in the school environment by arranging the working groups and teachers as the supervisor. Conditional was conducted by creating a condition that could support the implementation of character education at schools. There were trash bins in certain places at Lidah Kulon I / 464 Public Elementary School Surabaya that made it easier for school residents to dispose of trash in the exact place, well-maintained plantation, and also posters showing motivation.

School culture interpreted as an atmosphere of school life where each component interacted each other. Interactions occurred were bound by certain rules and norms applied at school. The atmosphere that was built at school related to the

ethnoecology approach to create an environment care culture in which school community are accustomed to preserve and take care of the plantations around the school. By keeping it clean and maintaining the condition of the plants in good condition based on the regular watering and fertilization schedule.

In the strategy of implementing the value of the character of education that had been implemented, there were participatory based environmental activities to maximize the awareness of environmental care character values by preserving the environment and maintaining the cleanliness of the school through a clean and taking care of environment program. These activities could be in the form of planned environmental protection and management activities for the school community and partnership with others to protect and manage the environmental issues.

Planned environmental protection and management activities for school residents might come in form of taking care the buildings and school environments, various activities such as class pickets and *Jum'at Bersih*, utilizing school facilities and land according to PPLH (Environmental Education Centre) rules employed as parks and herbal plantations, appropriate extracurricular activities with environmental values by running the working groups, innovation of school community as the goal to protect and manage the environment in the form of recycling, utilization of waste water, and saving energy, and participating in environmental action activities outside the school.

Partnerships, in the context of environmental protection and management might come in form of utilizing the human resource to improve environmental learning, according to the teacher's explanation that invites speakers to educate students about the process of planting. There was also collaboration with the circles school community, such as the parents who also got socialised about the Adiwiyata program so that the cultivation of environment care character maximized. The role of the school committee was important to build partnerships for environmental learning and environmental values, partnership was carried out as the planning process until the ongoing processes and also providing the support to improve environmental values. Here, school had provided support in terms of facilities and infrastructure to maintain the Adiwiyata program.

From the ethnoecological process included in the strategy of implementing character education values and various participatory based environmental activities, there are character-caring values that have been developed in Lidah Kulon I / 464 Public Elementary School Surabaya. The environmental value elaborated in several indicators compiled by the Ministry of National Education. In conclusion, the indicators include habituation to maintain cleanliness and preservation of the school environment, habituation to sort and dispose of garbage in the exact place, the washing of hands habit, maintaining cleanliness and cleaning the school environment, maintaining and caring for plantation, and also saving energy.

However, all the indicators were run well by the school community, especially students who are actively and enthusiastically involved. Yet the development of students' environmental care character was in receptive of the

phenomenon stage and some others were in crystallization stage, such as in the activity of disposing of garbage in its place and maintaining the cleanliness of the school environment. In achieving the goal of character education in Adiwiyata school programs was to encourage school community to be responsible as individuals in attaining to protect and manage the environment through well-administered school to support sustainable development, thus related to the application of character values to environmental care through ethnoecology method in the Adiwiyata program.

Based on the description above, this study agreed to previous research "Management of Student in Environmental Activities in School" by Snezana Stavreva Veselinovska dan Tatjana Lazarova Osogovska. It stated that students were more interested in activities in nature and directly involved in protecting environment as evidenced by the attitude of active and enthusiastic students.

Student awareness in environmental management it positively correlates with environmental care attitudes that increases in the students themselves. This is reliable with the research from Antonio Orellana-Rios, María Teresa Pozo-Llorente, and María de Fátima Poza-Vilches.

In addition, there was a scientific journal entitled "*Strategi Pembentukan Karakter Peduli Lingkungan di Sekolah Adiwiyata Mandiri*" which stated that the character of environmental care could be implemented in the Adiwiyata Program through several strategies. The result might be seen from the students' environmental care character such as throw the rubbish in the exact place, take care of the plantations at school, and save water. There was also another study entitled "*Penanaman Etika Lingkungan Melalui Sekolah Peduli dan Berbudaya Lingkungan*", uttered that the development of environmental education from an early age through school was a provision for students to realize caring and cultured attitudes in an effort to preserve the natural environment.

The application of environment care character values through the implementation of ethnoecology in the Adiwiyata program in Lidah Kulon I / 464 Public Elementary School Surabaya, found several obstacles in its implementation such as the renovation of the school building, the lack of teachers' role in supervising Adiwiyata activities, and also the limited time for students to run the Adiwiyata program. The results of the study stated that students needed to get reminded to carry out Adiwiyata program activities at the school while the teachers did not provide a comprehensive example to students, lack of cohesiveness between teachers to emerge environmental management and protection activities, and the school renovation that damages the results of management and environmental protection.

The first obstacle was that currently school buildings were in renovation. This affected some supporting infrastructure for the Adiwiyata program such as garbage banks. However, this did not dampen the enthusiasm of the school community in preserving and caring the school environment. The existence of renovations was also offset by the making of a small garden in front of the class. However, the gardens needed to get supervised by ethnoecological approach all over again.

The second obstacle was the lack of the teachers' role to supervised Adiwiyata activities. Homeroom teachers were actively involved in instilling the character of environmental care through various activities in the classroom. Yet while it came outside the classroom, the teacher did not play a maximum role even though there had been a division grouping. This gave an impact on the results of the Adiwiyata program which claimed the ethnoecological approach less greatest.

The third obstacle was limited time at school, because students mostly spent their time in the classroom while the activities that supported the implementation of the ethnoecology approach in the Adiwiyata program were mostly outside the classroom. This limited time caused the implementation of the ethnoecology approach was only conducted certain times, such as in *Jum'at Bersih* integrated with learning process. Subjects-integrated was also not well-maintain.

From these obstacles, the school has offered several solutions including to create a mapping to conduct school renovations thus rearrangements for supporting facilities and infrastructure for the Adiwiyata program were accomplished. It was expected that after the renovation, the well-arranged facilities and infrastructures might be utilized more optimal to achieve the Adiwiyata goals.

Getting the teachers involved intensely and continuity, since the success of the ethnoecology approach in the Adiwiyata program also started from the teacher directly involved and proactive around the students. If the teacher becomes more actively involved, then emerging environmental care character values will be more effective.

The last solution regarding the limited time, the school held the extracurricular activities related to the ethnoecology approach. The extracurricular activities such as scouts were applied that related to environmental management such as composting, planting of greens, and recycling.

IV. CONCLUSION

Based on the results and the discussion outlined in chapter IV, it can be concluded that 1. The application of environmental care character values through the implementation of ethnoecology in the Adiwiyata program in Lidah Kulon I / 464 Public Elementary School Surabaya begins with an ethnoecological approach that started from land management, planting, fertilization, manufactured of drainage systems, and control of disease pests had been carried out well and integrated through the strategy of implementing character values. From its strategies, there were various participatory-based environmental activities in which students can form and develop environmental care character values. Yet, emerging the

character values of these students was still in the acceptance stage of the phenomenon. The value of environmental care that might be developed such as students were able to preserve and take care of the environment in the school, students were able to maintain the cleanliness, and able to save energy in the school environment. The application of environmental care character values might become a students' habit that also might be applied at home.

The several obstacles found in applying environmental care character values through the ethnoecology approach in the Adiwiyata program at Lidah Kulon I / 464 Public Elementary School Surabaya include the renovation of school buildings, the teacher's limited role in supervising Adiwiyata activities, and also limited time for students to run Adiwiyata program.

Based on the obstacles mentioned, there were several solutions rose by the school, such as school renovation mapping thus the rearrangements might be conducted to support facilities and infrastructure for Adiwiyata program, getting all teachers involved intensely and continuity since the success of the ethnoecology approach in Adiwiyata program also began from teachers who were able to be directly and actively involved around students, and hold extracurricular activities related to the ethnoecology approach as stated in Adiwiyata program.

REFERENCES

- [1] A. Mukminin, "Strategi Pembentukan Karakter Peduli Lingkungan di Sekolah Adiwiyata Mandiri," *Ta'dib J. Islam. Educ. (Jurnal Pendidik. Islam.*, vol. 19, no. 02, pp. 227–252, 2014.
- [2] R. Hilmanto, "Etnoekologi," *Bandar Lampung Univ. Lampung*, 2010.
- [3] W. W. Clark, *Global Sustainable Communities Handbook: Green Design Technologies and Economics*. Butterworth-Heinemann, 2014.
- [4] R. Mulyana, "Penanaman etika lingkungan melalui sekolah peduli dan berbudaya lingkungan," *J. Tabularasa*, vol. 6, no. 2, pp. 175–180, 2009.
- [5] A. Orellana-Ríos, M. T. Pozo-Llorente, and M. de Fátima Poza-Vilches, "Pro-environmental attitudes and teaching practice in Secondary Schools located in natural protected areas from the perception of students: the case of Nijar Fields (Almería-Spain)," *Procedia-Social Behav. Sci.*, vol. 237, pp. 1112–1118, 2017.
- [6] P. M. Tikka, M. T. Kuitunen, and S. M. Tynys, "Effects of educational background on students' attitudes, activity levels, and knowledge concerning the environment," *J. Environ. Educ.*, vol. 31, no. 3, pp. 12–19, 2000.
- [7] R. Tucker and P. Izadpanahi, "Live green, think green: Sustainable school architecture and children's environmental attitudes and behaviors," *J. Environ. Psychol.*, vol. 51, pp. 209–216, 2017.
- [8] S. S. Veselinovska and T. L. Osogovska, "Engagement of students in environmental activities in school," *Procedia-Social Behav. Sci.*, vol. 46, pp. 5015–5020, 2012.
- [9] V. D. Nazarea, *Ethnoecology: situated knowledge/located lives*. University of Arizona Press, 1999.