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To cite this article: R Febriani *et al* 2020 *J. Phys.: Conf. Ser.* **1563** 012062

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Adiwiyata School: An environmental care program as an effort to develop Indonesian students' ecological literacy

R Febriani¹, U Farihah¹, N E A Nasution¹

¹Department of Biology Education, Education and Teacher Training Faculty,
State Islamic Institute of Jember, Indonesia

E-mail: rikafebriani1230@gmail.com

Abstract. In line with the increase of complexity in environmental problems as a result of over-exploitation, it is necessary to care for the environmental program. Ecological literacy education needs to be realized in the programs of environmental care. This study aims to determine the importance of Adiwiyata school program in an effort to improve students' ecological literacy. The method used in this research is qualitative descriptive with interview, observation and documentation as data collection techniques. Ecological literacy is a collective action which needs togetherness to produce a positive impact to the environment. The application of ecological literacy at schools requires awareness from all teachers, students and other school community. Adiwiyata program in SMAN 5 Jember, Indonesia can increase students' ecological literacy by establishing a caring attitude and environment on students. This is evidenced by the behaviour of students who dispose of waste in place, sort out the types of garbage, recycling of waste, making hydroponics plants are free of pesticides, and composting. It can be concluded that in environmental care program (Adiwiyata) is one way to improve the literacy of students in the school about ecology by observing the effectiveness of Adiwiyata program.

1. Introduction

Sometimes, the important of environmental conservation is often overlooked by most of humans. Therefore, it causes a less maintenance of the environment. As happened lately, environmental damage is widespread and worrying about the future of mankind. The environmental damage has touched the fundamental aspects as the impact of an error in looking at the relationship between humans and the environment [1]. Hence, environmentally conscious character education needs to be taught from an early age on children.

Ecological literacy changes public perspective and introduce to the public about the importance of global ecological consciousness. According to Keraf, ecological literacy is an understanding which states that people have understood the importance of environment. People who have reached the stage eco-literacy is someone who truly understands and realizes the importance of maintaining, caring for and preserving the environment as their home and the interaction between living things. Managing



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human lifestyle patterns and on the basis of consciousness, so that the pattern of human lifestyle will be balanced with the environment [2].

Hamzah said that environmental awareness is a manifestation of an individual's mental attitude which is reflected in his behavior [3]. According to Tadkiroatun Musfiroh in Sulistyowati, behavioural and mental attitude can be called character. Characters can be interpreted as a temperament, personality and character of the person which is formed from the internalisation of the various virtues which are used as the basis of the perspective being, acting and thinking [4].

In a broader sense, the character of individual environmental care is not entirely comes from innate instinct and talent, but also the result of an educational process. Misguiding a person can form one's character about environment. Since environmental care is a good character, therefore it should be moulded to each individual, so that each individual can internalising its character in all action and behaviour. Meanwhile, we already understood that the character is not merely as an innate talents of the individual, but also it is the result of human and environment formation in where one's lived, stayed, and raised. Academically, one of the effective ways to establish these good characters is by nocturing them through "education". Education makes it possible to form a human character as expected [5].

From the research of Rahmadiani et al, it is showed that there were differences in ecological literacy of high school students of non-Adiwiyata and Adiwiyata on two aspects, namely the environmental knowledge and the attitude of caring the environment, and there is no difference in one aspect the skills to prevent damage to the environment [6]. Students who have a low ecological literacy, tend to litter. This shows the lack of concern for the environment. One's effort to improve ecological literacy of students is the environmental education program. If one's knowledge about the environment increases, the attitude and caring environment will also increase. This is expected to reduce environmental damage. Indonesia has developed environmental education program, Adiwiyata program, which the implementation is based on a joint decision between the Minister of the Environment and the Minister of National Education in 2006 [7].

Environmental education in school is applied through Adiwiyata program which aims to realize the cultural school environment which is not only physical, but also the attitude of the school community in caring about the environment. Based on the results of previous studies conducted by Iswari and Waluyo, high school students' environmental knowledge of Adiwiyata school is higher than students of non-Adiwiyata. Moreover, environmentally conscious attitudes of high school students with student Adiwiyata and non-Adiwiyata included in both categories [8]. This suggests that Adiwiyata programs that have been implemented in several schools in Indonesia have contributed to the increasing of studens' ecological literacy.

A school in East Java province which has implemented Adiwiyata program is SMAN 5 Jember. This school became the school Independent Adiwiyata at National Level in 2009 and 2010. After being Adiwiyata school, SMAN 5 Jember Indonesia, kept trying to instill character values integrated to environmental awareness both in order and subjects in school. This study aims to understand the importance of the program as an effort to develop Adiwiyata as ecological literacy of students at SMAN 5 Jember, Indonesia and inspire school administrators to realize a caring school and cultured environment.

2. Method

This study uses descriptive qualitative research approach. Qualitative descriptive approach is to run the entire incident and symptoms, the facts in systematic and accurate information on the properties of the population [9]. The focus of this research is the implementation of environmental care program at school (Adiwiyata) as an effort to improve students' ecological literacy. The subjects in this research

were determined by using purposive technique. The subjects in this research were the Head of SMAN 5 Jember Indonesia, Vice Principal, Teacher, Student, and Hygiene officers. The research was conducted on October 12th, 2019 until November 9th, 2019.

The research location was at State Senior High School 5 of Jember, precisely in Watermelon street, 4, Glisat, Baratan, Patrang, Jember, East Java, Indonesia. The procedure of collecting the data is by observation, interviews, and documentation. This study uses interactive models in analyzing the data, which by: data reduction, data presentation, and conclusion (verification). Testing the validity of the data in this study using triangulation and triangulation techniques.

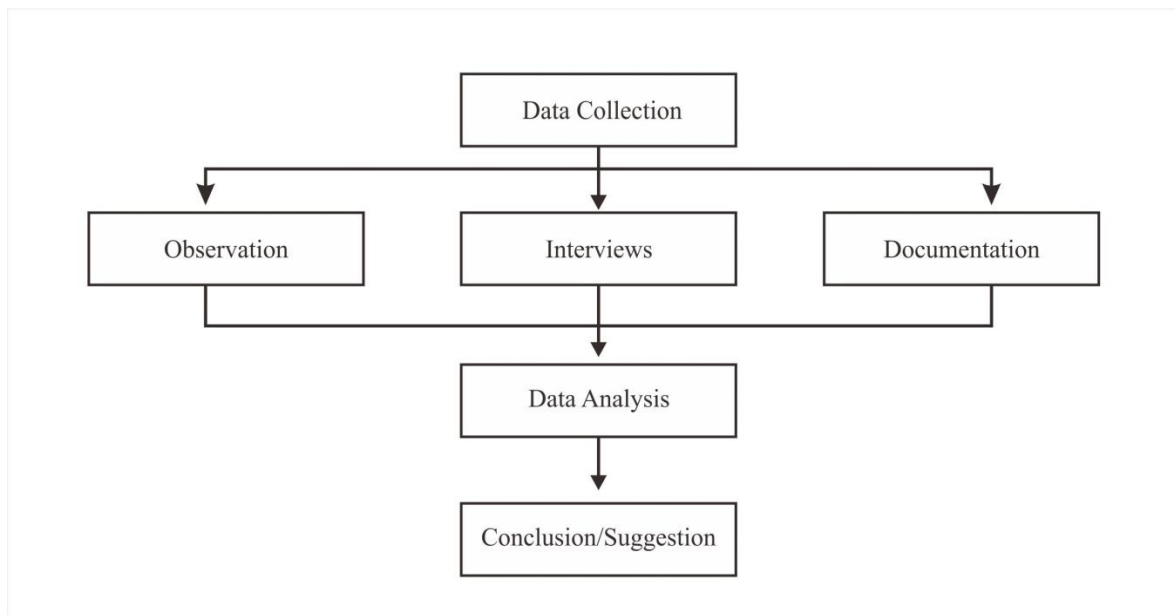


Figure 1. Research Method Diagram

3. Research Result

Data from studies in SMA Negeri 5 Jember, Indonesia about the implementation of school environment care program (Adiwiyata) as an effort to develop students' ecological literacy, namely:

3.1. School policy for environmental knowledge.

Vision SMAN 5 Jember, Indonesia is improving the achievement and the quality of education which is based on faith and piety. The mission is: Improving the quality of students' education by the guidance of the community, Channeling talents and interests of students and develop noble personality, a quality on organizing school management, participation, independent and environment, Empowering all the resources of the school and the community, Generating a work-ship with all parties in harmony.

3.2. Implementation of environmentally based curriculum.

SMAN 5 Jember, Indonesia has applied local subject matter/lesson (Mulok) of environment-based such as organic crop cultivation (hydroponics) lesson. Producing hydroponics in SMAN 5 Jember, Indonesia can be seen at Figure 2 below.



Figure 2. Planting Pakcoy by Hydroponic

Hydroponic plant is managed by Scouts which is a compulsory extracurricular in SMAN 5 Jember, Indonesia. After harvesting, the results of this hydroponic plants will be sold to the teachers to get an economic value. Besides scout extra curricular, SMAN 5 Jember, Indonesia has another program or community which supports Adiwiyata program. They are Community of environment cares and Natural Lovers. The activities of both community are re-forestation, making compost, recycling the waste and writting scientific papers about the environment [10]. Besides the integration of environmental education in the relevant subjects, there are another program to support adiwiyata program, namely by developing local issues and global issues, for example: global warming, pollution of water, air, soil, forest fires, floods, the introduction of alternative and renewable energy, rhinoceros conservation in Ujung Kulon National Park, and others. Moreover, the school also publishes a wide range of innovative work environment, in various media, for example through wall magazines, exhibitions, websites, mass media, papers, clippings and so forth.

3.3. *Participatory-based activities.*

SMAN 5 Jember, Indonesia has a mini forest, which can be seen at Figure 3 below.



Figure 3. Forest mini SMAN 5 Jember.

Based on the observations, SMAN 5 Jember, Indonesia owns a free land and it is used as the lungs of the school (as school mini forest). Based on the teachers interview especially biology teachers, it is also used as the learning process. Such as in the outdoor learning or outside the classroom lesson, biology uses it as a place to study about biodiversity. Plants in the mini forest then identified based on the morphology and classification.

3.4. Management of environmental-friendly support system.

SMAN 5 Jember, Indonesia has implemented the creative and innovative activities, but more focused on waste management, which is by using 3R principle (Reuse, Reduce and Recycle). An example of plastics reduces movement was carried out by the Intern school organization (OSIS) and Dharma Wanita of SMAN 5 Jember by working together with a creative team leader of RW 030 PKK Pattimura, Hj Indah Wahyuni SE. They reduce the plastic waste by recycling plastic and change it into a handicraft-flower. In that event, the students are shown how to create flowers from plastic waste [11]. The activity can be seen at Figure 4 below.



Figure 4. Event in reducing plastic waste at SMAN 5 Jember

Based on observation and interviews results with SMAN 5 Jember schools' principal, teachers, and students, it can be seen that Adiwiyata program successfully affecting students' environmental awareness. There are three aspects of students' environment awareness affected by Adiwiyata program, namely: Environmental knowledges, Attitude, and behavior.

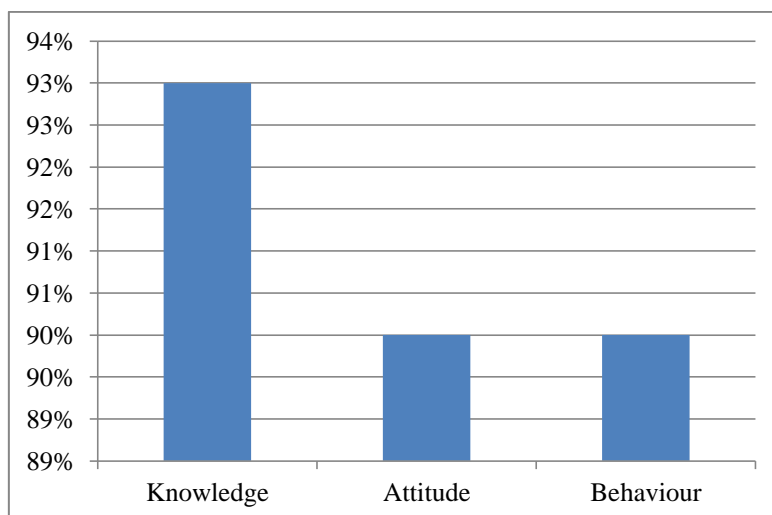


Figure 5. The three aspects of students' environment awareness affected by Adiwiyata program.

Figure 5 pictured how the three aspects of students' environment awareness are in high level after Adiwiyata program implemented in school. Students' knowledge aspect toward environment awareness get a percentage score of 93%. Most of students understand and familiar with environment awareness in their daily academic process. Teacher has been integrating environmental awareness based curriculum in teaching process, for example in Chemistry class, chemicals waste must not be disposed of carelessly because they can pollute and harmful for the environment. In biology class, environmental issues are discussed by using problem based learning model, so students can understand what are environment, and how to protect it.

Students' attitude and behavior aspect toward environment awareness get a percentage score of 90%. Those scores are highly satisfying. Adiwiyata teaches every schools members to actively protect their school environments, from biotic to abiotic. School cleanliness is extraordinary, it must be caused by the concern of all parties towards the school and their good environment awareness attitude and behavior.

4. Discussion

Based on the analysis of data, students' ecological literacy ability can be developed through Adiwiyata school program. It can be seen at SMAN 5 Jember Indonesia, where the students are increasingly literate of the environment after the implementation of the Adiwiyata program. As evidenced by the behaviour of students who dispose of waste in place, sort out the types of garbage, care for the environment by helping to recycle waste, making hydroponics plants are free of pesticides, and composting.

According Rustaman, eco-literacy rated of the three stages of the continuum, covering the nominal, functional, and operational. In nominal eco-literacy stage, some one has few understanding of environmental issues and a bit of interest and lack of action on the environment. Furthermore, in the functional stage, they can use conceptual understanding, knowledge, and thinking ability to build a plan that will be carried out with regard to environmental issues [12].

The development of ecological literacy of students can be noctured through education, which is one way to generate one's awareness of the importance of protecting the environment with the goal of sustainable human form. Ecological literacy is supported by emotional intelligence (the ability to control themselves, potential and weaknesses), intellectual, social intelligence (interact and empathize

with their fellow human beings), spiritual intelligence, and empathy to all living beings / forms of life in the ecological system.

Therefore, ecological literacy is ably supported by cognitive and behavioural-equipped empathy for all life forms. Ecological literacy (eco-literacy) is collective, need to act together to produce a positive impact on the environment. In schools also requires awareness that environmental concern is a shared responsibility among teachers, students and other school community.

The school of adiwiyata is a school which implement Adiwiyata program as the formed of Indonesian ministry of environment and aims to become knowledgeable and environment-cultured at school. School environment-cultured has an important role in providing environmental changes that occur as well as one of the places in the improvement of knowledge and abilities of students[13]. Adiwiyata program developed to train equality, justice, solidarity, openness, and conservation of the environment and natural resources on the basis of norms of life.

One of the government's efforts in environmental care character indicators in schools, among others are the sustainability of the school environment and habituation to maintain cleanliness; availability of landfills and wash one' hands; provide bathrooms and clean water; habituation energy saving; bio pores their school environment; build sewerage well; do habituation of separating organic and non-organic waste types; waste management through composting of organic waste; waste handling practices results; provision of hygiene kits; the water storage tank; and their love of clean environment program[14]. It has been applied by SMA Negeri 5 Jember, Indonesia.

The program implementation of Jember Adiwiyata in SMAN 5 Jember, indonesia includes four things: covering, environmental-friendly school policy, namely the vision, mission, goals and curriculum of the school. One mission SMAN 5 Jember, Indonesia is organized a quality school management knowledge, participatory, self-contained, and the environment. The vision, mission and objectives of the school as stated in the school curriculum already contained protection policy and environmental management. And management of environmentally friendly means of support such as provision of facilities and infrastructure for environmental issues, improvement of sanitation management and utilization of electricity, water efficiently [15]. The Ministry of Environment said that the activities of creative and innovative in the protection and management of the environment include the recycling of waste, utilization and water treatment, scientific works, energy saving and alternative energy [16]. SMAN 5 Jember, indonesia has implemented the creative and innovative activities, but more focused on waste management, namely the 3R principle (Reuse, Reduce and Recycle).

5. Conclusion and Suggestion

Based on the discussion above, it can be concluded that environmental care program (Adiwiyata) is one way to improve the literacy of students in the school about ecology by observing the effectiveness of Adiwiyata program. Adiwiyata program also successfully affecting students' environmental awareness in three aspects, they are: Environmental knowledges (93%), Attitude (90%), and behavior (90%).

Aknowledgements

The author is thankful to the anonymous referees for valuable comments and kind suggestions

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