The pattern of environmental education practice at schools and its impact to the level of environmental literacy of school-age student

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M S Amin[1], A Permanasari[2] and A Setiabudi[2]

[1]Lecturer of Biology Education, Hamzanwadi University, West Nusa Tenggara, Indonesia
[2]Lecturer of Chemistry Education, Indonesia University of Education, Bandung, Indonesia

Email: muhammad_syahruddinamin@yahoo.com, anna.permanasari@upi.edu, agus_setiabudi@upi.edu

Abstract. The study aims to learn the level of environment literacy of younger-age student at school level. Moreover the descriptive study was used to learn how the lesson leads to student literacy on environment. The questioner (consist of 21 statement) and class observation sheet where used to gain the data. The subjects involved were student from the primary, secondary, and higher schools (totally 124 students). They come from the highest school level at one of the city in West Java-Indonesia. Data were analyzed descriptively. The research shows that student literacy of environment were good in category in all of schools level. In primary school was overall good and categorized high with average 81,22 (lower was 80,37 and higher 82,036). In junior high school level, also overall good and categorized high with average 80,724. The another in senior high school level, also overall good and categorized high with average 79,62. However, the level of environmetal understanding is higher than application and awareness aspects. Nevertheless, the observation come from the learning shows that the learning were not done as it is expected. Based on questioner, most of student said that they learn the environment mostly from non-formal education (through the family or home education). They have knowledge about the environment from both of school and home, but the practices and action was modelled at home. The follow up study is recommended to complete the research, with the larger coverage.

1. Introduction

The greatest threat to our lives today is sustainability. Today, Global warming and climate change is not just an issue or dream but has tangible become a reality that effects on all aspects of life on earth. This condition caused by the capacity of nature to carrying life is decreased because humans fail to develop social values that friendly with nature (environment), and also their lifestyle is not harmonious with the environment. So that result the natural systems become disturbed and the balances of ecosystem become damaged, eventually interfere the lives. The easiest impact can be perceived and detected is rising sea levels, shrinkage of biodiversity, and declining public potential income [1]. Globally, the average temperature of the earth's surface is increased $0{,}85^0$ C in the last 140 years, and sea levels rise as high as 225 mm, and the concentration of carbon dioxide gas globally are the highest in 800,000 years [2].

Potential humanitarian disaster is unknown and not recognized by most people. The behavior of people is wasteful of energy, electricity, garbage and sewage throw away carelessly, burning trash or land is still a lot we meet. Attitudes and behavior like this indicate that the level of knowledge and awareness of society with regard to the environment is still low. This reality is the basis and justification to think that environmental education, outreach, and awareness to maintain the

environmental balance in the community is an important thing to do mainly to young people as perpetrators of the future life. Education is the best means to do it. Environmental education aims to form human beings who have a responsible behavior in interacting with the environment. In the application of learning, learning environment development efforts directed as well as increased knowledge, awareness, attitudes, values, and responsible behavior towards nature and environmental sustainability, is the essence of environmental literacy. Environmental education can be implemented with various patterns are formal (schools), informal and non-formal. Each pattern has its advantages and disadvantages of each, so it becomes important for researchers to get an overview of school-age children about the pattern of environmental education that they need. The question in this research is:

1. How high is the quality of the environmental literacy of school-age student in Bandung?
2. Which environmental education (formal-nonformal) are more appropriate and easier for students in Bandung to learn and understand about environment?

And the purpose of this study was to explain or describe the level of environmental literacy of school-age student, and also gather information from students related to the pattern of environmental education (formal or non-formal) that is most appropriate for them to understand the environment.

1.1. Theoritical review

1.1.1.Environmental education. The tendency of an increasingly consumerist society makes them further away from the values of the environment. Care for the environment is not considered to be a necessity and goodness for them, in other words, their environmental literacy. The lack of concern for the environment is a challenge in the order of a society and educational institutions. Environmental education is expected to educate the public and encourage young people to behave more concerned about the environments. Education a strategic education need to be developed and implemented in the school-age children. As agents of change, they need to have that kind of environment. With the knowledge and understanding of the environment, they will have to care about the environmental awareness that will culminate in behavior to preserve the environment and protect it from the changes. Environmental education is very important at this time because the world has experienced an imbalance (disequilibrium). The global trend indicates that the decline in the quality of the environment and the quality and quantity of the availability of natural resources continues. In general, there are several ways to teach environmental literacy and implement environmental education is a formal way as eco-school, informal collaboration with the family, and non-formal nature exploration, or through a course template. Education formally adopted by the curriculum, applied in schools, and is intended for learners. In this way seem rigid and theoretical, however, learners also need the right information and understanding about life management. Pauw and Petegem (2013) examine the eco-school education, they found that eco-positive schools affect on understanding the value and application of environmental values on students, although it is not yet up to affect their behavior [3]. While Tali Tal and Anat Abramovitch (2013), in his research, managed to identify at least three main activities that can be applied in environmental education in schools[4]; (1) increased environmental awareness of students through knowledge sharing with other students or prepare leaflets about the environment. (2) improving the quality of the school environment clean, create school gardens, repairing garden, or make the recycling of waste. (3) general action / social activities such as cleaning up the environment around the school or the beach. While environmental education in non-formal is education activities in the field of environment is done outside the school remain to be implemented in a structured and hierarchical. Research Saribas, Kucuk, and Ertepinar (2016) on the pattern of teaching environment for prospective elementary school teachers in Turkey found that perceptions and attitudes of pro-environment candidates for primary school teachers increased by better by learning outside the classroom, such as a visit to the exhibition of the environment, or the pattern of the course.

1.1.2. Environmental literacy. Environmental literacy is the ability to understand the importance of protecting the environment for the present life and also the lives and generations to come. Environmental literacy is a level of knowledge, awareness, and individual behaviors associated with its environmental condition surrounding, this ability is not something abstract, but real, and can be measured with quantitative standards though [6]. Environmental literacy is essentially very easy to apply, some examples of the easiest actions related to environmental literacy can we teach and apply

that reduce the use of environmentally harmful materials such as paper, paper towels, and plastic [7]. Tuncer et al (2009) identified there are four components of the authors of environmental literacy each individual that is the attitude, knowledge, perception, and environmental concerns [8]. To provide a thorough mastery of the four components of the environmental literacy to students, then in the process, environmental education should be oriented content, inquiry, nature of science, and Science-Technology-Society [9].

2. Research Methods

This research is descriptively conducted using the survey method. The subjects of this study are of school-age students in primary and secondary level of education in Bandung, with a sample of 124 people with details based on levels that SD (55), junior (29), and SMA (40). The instruments used were a questionnaire prepared by adapting environmental literacy component of NAAEE (North American Association for Environmental Education), which combined with the formulation of soft skills and hard skills to environmental literacy education from the National Curriculum Council (NCC) English. The questionnaire consists of 21 statements that cover three categories: knowledge, awareness, and applications. Data obtained in the form of quantitative data and analyzed using descriptive statistics which then interpreted based on defined criteria.

Nilai	Interval Skor	Kategori
A	$X > \bar{X}_i + 1{,}80SB_i$	Sangat Tinggi
B	$\bar{X}_i + 0{,}60\bar{X}_i < X \leq \bar{X}_i + 1{,}80\ SB_i$	Tinggi
C	$\bar{X}_i - 0{,}60\ SB_i < X \leq \bar{X}_i + 0{,}60SB_i$	Cukup Tinggi
D	$\bar{X}_i - 1{,}80\ SB_i < X \leq \bar{X}_i - 0{,}60SB_i$	Rendah
E	$X \leq \bar{X}_i - 1{,}80SB_i$	Sangat Rendah

Keterangan:

$\bar{X}_i$ = Rerata skor ideal = ½ (skor maksimal ideal+ skor minimal ideal).

SB_i = Simpangan baku ideal = 1/6 (skor maksimal ideal –skor minimal ideal).

X = Skor Aktual.

No.	Rentang Skor	Kategori
1.	88,3 – 105	Sangat Tinggi
2.	71,5 – 88,2	Tinggi
3.	54,7 – 71,4	Cukup Tinggi
4.	37,9 – 54,6	Rendah
5.	21 – 37,8	Sangat Rendah

Figure 1. Scoring for survey method

3. Result and Discussion

Based on the results of research conducted at the three levels of education (elementary, middle, high school) that can be seen in Figure 2 showed that in general the results obtained by the average student at each level of education are in the range of 71.5 to 88.2. Based on the criteria, these results are still a relatively high category, meaning that the level of awareness of the environment (environmental literacy) school-age children including well. Achievement of environmental literacy of students at each level are described in the following diagram:

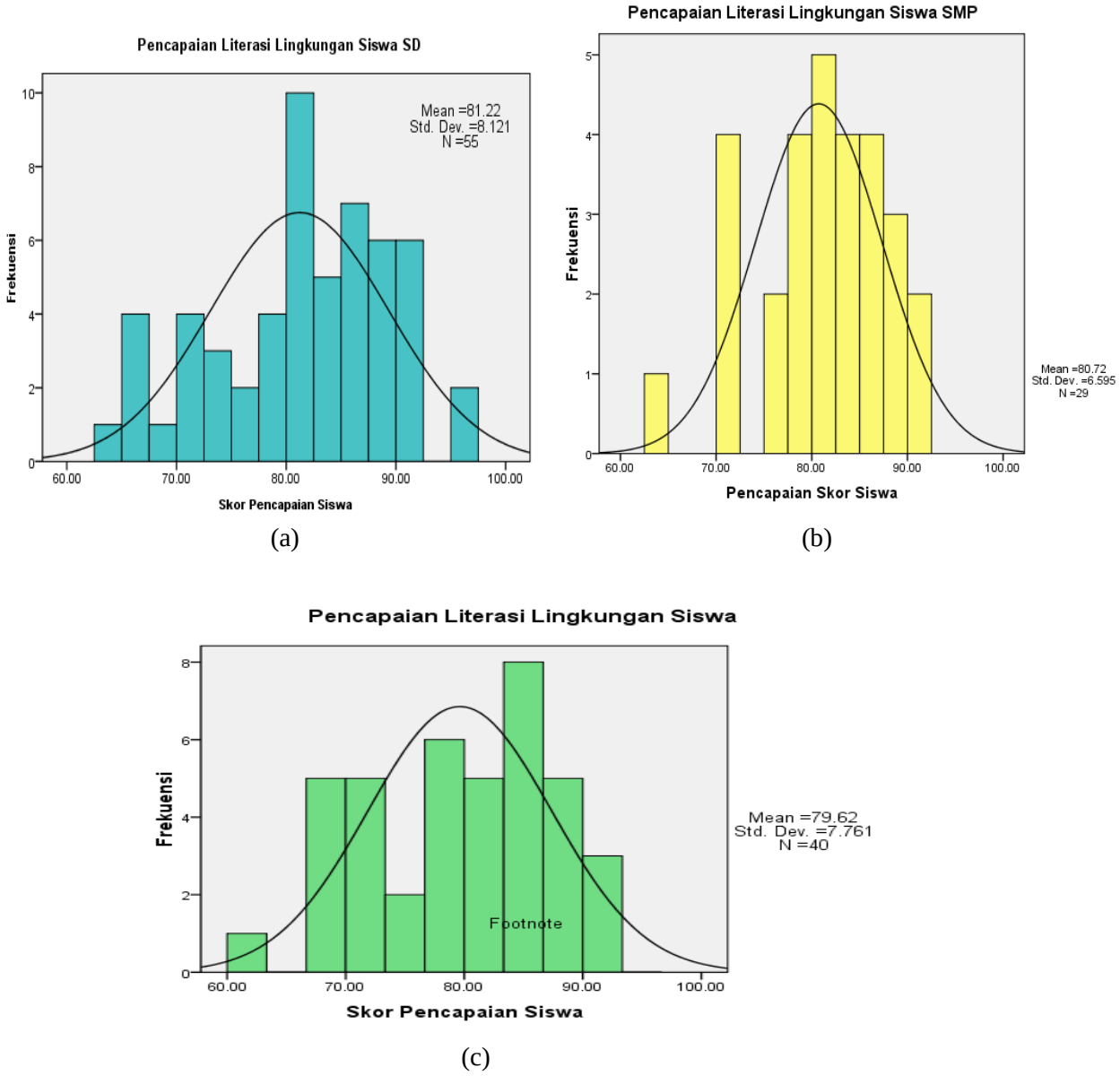

Figure 2. Environmental literacy of students in (a) Elementary school, (b) Junior High School and (c) Senior High School

While the environment associated with the pattern of teaching, student selection is in Figure 3.

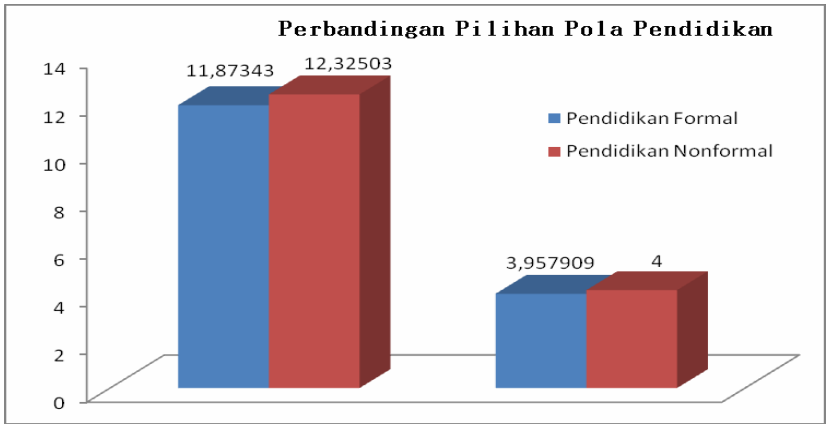

Figure 3. Environment awareness associated from formal and non formal education

Of the three aspects of environmental literacy surveyed, awareness and implementation aspects are always lower than the aspect of knowledge. This is illustrated by the statement of students where many of them are still often dispose of waste without sorting, frequent use of tissues without the number, and often let the unused power tools.Related environmental education pattern, the result is somewhat surprising in which students were more likely to be on the pattern of non-formal education in their efforts to understand the environment. Researchers speculate, this response appears due to the mechanism of non-formal learning environment emphasizes learning outside the classroom rather than in the classroom. However, students also recognize that formal education is also able to facilitate them to understand the environment.

4. Conclusion

The conclusion was the degree of environmental literacy of school level (elementary, junior, and high school) in Bandung was good. Second, the used pattern of formal and non-formal education was possible in an effort to implement environmental education to the younger-age student. The combination pattern of formal and non-formal education was also very possible to be applied in environmental education. The follow up study is recommended to complete the research, with the larger coverage.

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