

Ecoliteracy in Utilizing Plastic Waste to Ecobrick Through Project Based Learning on Social Studies Learning

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Abstract. This research is motivated by researchers concern for the environment, class VIII A SMP Negeri 45 Bandung is a problem in this study. Researchers take action by observing to increase awareness of the environment In social studies learning is required to interact directly with social studies learning resources as well as understanding ecoliteracy, a teacher can develop through the assignment of ecobricks in utilizing plastic waste. The task can be a solution to solve environmental problems with knowledge. Through ecobrick, it is more active to find answers to environmental problems using attractive and effective learning models. The method used in this research is classroom action research (CAR). The method used is the classroom action research (CAR) method using the Lewin design according to Elliot which is carried out in each cycle, namely the problem identification stage, field checking, action planning, observation and reflection. The data source of this research is the result of the ecobrick assignment. This research was conducted through three cycles: the first cycle the percentage obtained was included in the less category. Then in the second cycle an increase so that the percentage obtained falls into the sufficient category. Then in the third cycle experienced a significant increase included in both categories. Therefore, this model-based learning model is appropriate for students to use.

Keywords: Ecobrick, Ecoliteracy, Project Based Learning.

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A. INTRODUCTION

Nature is currently very dependent on us, if we take care of nature, then on the contrary nature will have a variety of positive impacts for us. And vice versa, if we do not take care of nature properly, the result that we can get is that the natural environment will have a variety of negative impacts such as the example of the increasing number of individuals who are less conscious in protecting the environment. Yet the role of the environment is very important for now and in the future.

In daily life, students can not be separated from the habit of consuming packaging products that are usually wrapped in plastic material. As stated by Supriatna (2018: 3) that people consume goods not always based on needs but also desires. Students do need food intake through snacks at school, but choosing to use plastic packaging that carries risks to health and the environment is not the right choice, because there are other alternatives such as using bowls, plates, glasses that are safer for food.

They do not realize that the habit of consuming drinks and food that is usually packaged by plastic contributes to a number of plastic wastes that are difficult to decompose naturally and endanger the survival of marine life when the garbage is carried up to the sea through rivers. Pollution of the sea by the plastic debris also can affect human health because a number of plastic particles will move to the human body through the consumption of seafood, drinking water and air (Vethaak & Leslie, 2016, p. 6,825). Not only that, a number of plastic waste is not uncommon seen scattered at some point locations around schools such as in classrooms, class terraces, around trash cans and courtyards because of the students' habit of littering can cause plastic waste to become a den of DHF viruses that are harmful to health. The next problem, students still have not accustomed themselves to sorting out garbage before throwing it into the trash so that rubbish is difficult to manage properly. The lack of awareness of students can be caused by issues related to

environmental problems especially regarding the problem of plastic waste which is rarely integrated in classroom learning.

Based on some of these problems, the researchers felt it was necessary to develop an academic movement in order to form young people who were aware of the impact of every action taken on the preservation of nature or to borrow the term Capra, namely to form young people who are "ecologically literate" (Capra, 1999, p. 2) as human beings who understand the basic principles of ecology and are able to realize them in everyday life in the community. Ecoliteracy in managing plastic waste is considered to be an appropriate competency to be developed in students as one of the efforts that is able to overcome these environmental problems. As for the development of students' ability to manage plastic waste, it can be done by making ecobricks that are useful and have a sustainable nature.

Low awareness and concern about the natural environment is evident, such as the example of people littering that cause floods and other disasters, not paying attention to the surrounding natural environment, forcing personal interests to destroy nature such as consuming food or using plastic as packaging and others, developments that occur and make forests or green areas hard to find, and so on. So is the low school environment that makes plastic waste very easy to find. These observations are indicators of ecoliteracy. There are 5 ecoliteracy indicators according to Goleman:

According to Goleman (2012, pp. 10-11), there are 5 indicators of ecoliterate that are combined from emotional, social and ecological intelligence, namely:

Ecoliterate also presents five key practices of the inyeigration of emotional, sosicial, and ecological intelligence :

- a. Developing empathy for all forms of live (developing empathy for all forms of life)
- b. Embracing sustainability as a community practice (developing a sustainable life)
- c. Making the invisible visible (making the invisible visible)
- d. Anticipating unintended consequences (anticipating unwanted impacts)

- e. Understanding how nature sustains life (understanding how nature sustains life).

In fostering this ecoliteracy, school education should have contributed to fostering student ecoliteracy from an early age through the learning process, especially in social studies learning. The teacher plays an active role as a facilitator in educating students to understand the meaning of cleanliness in the surrounding environment, instilling an attitude of empathy for all forms of life and anticipating unexpected consequences.

In social studies learning students are also required to interact directly with social studies learning resources. Therefore, one of the ways that is expected to be able to obtain information on the meaningfulness of social studies learning in schools while honing students' understanding of ecoliteracy to empathize with the environment, especially in the cleanliness of the school environment, a teacher can develop ecoliteracy learning in the form of mastering the making of "Project Ecobrick" with utilizing used goods, plastic waste, and plastic bottles that can be found in the environment around the school. The making of the project is a means to measure the extent of students' understanding of ecoliteracy.

The role of the teacher here is that in addition to educating students the teacher must also instill awareness of the environment, by linking some examples that can be taken from the school environment. Organizing student environment in social studies learning is also able to develop in terms of aspects of skills in students.

The teacher's role can also be in the form of teaching how to manage waste properly by using it as items that can be used or slightly reduce the plastic waste in schools. Teachers can instill in students the love of the environment that can be done with student awareness about the problems that can be taken in the environment.

The problems that arise are also part of environmental education, where we will be aware of various natural resources, the function of the environment itself, which is related to the ecosystem. In this case students need to be given 5 indicators of ecoliteracy as

a reference. The teacher must also be creative and innovative in designing learning activities that relate to the surrounding natural environment.

But the fact is that in the field the researchers found that the teacher still looked a little indifferent and less creative in linking environmental problems to social studies learning. It is less meaningful for learning taught to students. The teacher should be able to connect social studies material with real life.

In social studies learning is required to interact directly with social studies learning resources as well as understanding ecoliteracy, a teacher can develop through the assignment of ecobrick in utilizing plastic waste. The task can be a solution to solve environmental problems with knowledge.

Based on these problems, the researchers formulated the research problem as follows: (a) How to plan the use of plastic waste in making ecobrick in social studies learning to improve student ecoliteracy (b) How to implement the use of plastic waste in making ecobrick in social studies learning to improve student ecoliteracy (c) How is the solution to the constraints of using plastic waste in making ecobricks as social studies learning media to improve students' ecoliteracy (d) How are the results of increasing students' ecoliteracy.

B. METHODS

The research method used in this study is Classroom Action Research often abbreviated as (PTK) or Classroom Action Research. According to Sanjaya (2009: 26) class action research can be interpreted as a process of assessing the problem of sustainability in the classroom through self-reflection in an effort to solve these problems by carrying out various planned actions in real situations and analyzing each effect of the treatment.

According to Wiriatmadja (2005, p. 13) Research on Classroom Action is how a group of teachers can organize the conditions of their own learning practices. They can try an idea of improvement in their learning practice, and see the real impact of the effort. In line with Ebbutt's opinion (in Wiriatmadja, 2005, p.12) argues that

Classroom Action Research is a systematic study of ways to improve the implementation of educational practices by a group of teachers by taking actions in learning, based on their reflection on the results of those actions.

Based on some of the definitions above, it can be concluded that Classroom Action Research (CAR) is an effort of a group of teachers to improve the implementation of educational practices by carrying out some planned actions and analyzing each effect of these actions.

The characteristics of class action research as revealed by Kunandar (in Harisanti, 2013, p. 59) are:

- a. The existence of a PTK problem is triggered by the awareness of the educators themselves that the practices carried out so far in the classroom have problems that need to be resolved.
- b. This class action research is carried out by the educator himself, because the person who knows the problems in the class is not someone else who only sees or hears but the teacher or educator who is directly involved in the class.
- c. Research through self-reflection
The research is conducted in the classroom so this research focuses only on one class that has problems
- d. Classroom action research aims to, improve learning. Treatment is carried out in stages and continues until later the problem can be said to heal.
- e. The main characteristic of Classroom Action Research (CAR) is that it is carried out by educators who are directly involved in the class and take a number of actions aimed at improving learning or curing illness in learning. Classroom Action Research is carried out on an ongoing basis until later the disease can be said to heal.

The advantages of classroom action research as stated by Zuber Skerritt (in Wiriatmadja 2012, p.52), namely:

- a. Practical, good is not only theory but coupled with practice so that it is of practical use value
- b. Participatory and collaborative, because the researcher is not an outsider, but rather

one of the lecturer staff who works closely with colleagues or colleagues for the common good.

- c. Emancipators, because the approach is not carried out in a hierarchical path, but rather is carried out by all participants in an equal position.
- d. Interpretative, because these social initiatives designate results in the form of researchers' statements that are positivistic and are true or false to the research question, but solutions based on the views and interpretations of all subjects involved in research.

The advantage gained when the teacher conducts classroom action research is that the teacher can improve the quality of learning after conducting research, because from the research results the teacher will know the solution of the learning problems that have been experienced. Then teachers can also work with colleagues or colleagues for the common interest and improve the quality of the teaching and learning process.

C. RESULTS AND DISCUSSION

Data from observations of student attitudes were obtained during the first action to the third action in each cycle. Partner teachers and observers conduct an assessment of the instruments that have been prepared by researchers. In this study there are 5 indicators with 15 sub-indicators as a reference for the success of research in increasing the ecoliteracy of students in social studies learning that is carried out in groups.

Data obtained from the results of these observations are then converted in the form of values, namely: (1) Poor, (2) Enough, and (3) Good. The following are the details obtained from the observations carried out:

$$\text{Percentage of student ecoliteracy} = \frac{\text{Total Score}}{\text{Maximum Score}} \times 100\%$$

Average Percent Conversion

Value	Skor Presentase
Bad	0% – 33,3 %
Average	33,4% - 66,7%
Good	66,8 % - 100%

Sources : Komalasari (2011, p.156)

Based on the average conversion table above, it can be explained that 0% to 33.3% are groups whose ecoliteration abilities can be categorized as less, 33.4% to 66.7% are groups whose ecoliteration abilities can be categorized sufficiently, whereas 66.8% up to 100% are groups whose ecoliteration abilities can be categorized as good.

Based on the results of table 4.15, the changes that occur are quite significant, seen from the extent of students' ability to understand ecoliteracy that starts from the first cycle to the third cycle. In each cycle, the score obtained in each group always increases even though not so much but in each cycle always increases or the results are the same as the previous cycle. There was a significant increase from the first cycle to the second cycle, amounted to 34.82%, but from the second cycle to the third cycle only increased by 9.33%. Here is a score graph obtained by each group in understanding ecoliteracy:

Based on data from the graph above, it can be indicated that students' ecoliteracy ability in anticipating the dangers of plastic packaging continues to increase on average in each cycle. In cycle 1, an average of 40.74% or can be said to have sufficient ecoliteracy in anticipating the dangers of plastic packaging through problem-based learning. The grades obtained by students partly range from the criteria of inadequate and sufficient.

Then in cycle 2 the ecoliteracy ability of students increased by 34.82% ie from 40.74 to 75.56% or it could be categorized well. This is certainly a good development in increasing student ecoliteracy. This can be seen from the awareness of students starting to grow to take concrete actions in anticipation of the dangers of plastic packaging.

And in the third cycle the students reached their peak with an average of 84.89% which means it experienced a slight increase of only 9.33%. So it can be said that the ecoliteracy of students in anticipating the dangers of plastic packaging through problem-based learning in social studies is good.

D. CONCLUSIONS

Based on data obtained during the research process regarding ecoliteracy growth through the making of an ecobrick project in social studies learning at SMP Negeri 45 Bandung, the researchers drew conclusions from the whole series of studies. The conclusions that can be made by researchers are as follows: First, plan social studies learning by making ecobrick project to foster the ecoliteracy of students in class VIII-A of SMP Negeri 45 Bandung. Planning is based on data obtained from the results of pre-research observations. Then the researchers together with the partner teacher formulated a lesson plan (RPP) which included learning objectives related to the growth of student ecoliteracy. In addition, researchers prepare materials, media and learning methods that are appropriate to the learning objectives. At this stage the researcher together with the partner teacher designed the stages of social studies learning in making ecobrick projects made from used goods aimed at fostering student ecoliteracy. Then the researchers formulated the observation format of students' ecoliteracy assessment through the activity of making an ecobrick project used to carve the development of students' ecoliteracy in each cycle.

Second, carry out social studies learning by making an ecobrick project to foster student ecoliteracy in class VIII-A of SMP Negeri 45 Bandung. Researchers conducted 3 cycles in this study, there are 3 actions in each cycle. In the first act during the preliminary activities the researcher made a habit of the researcher and students together checking the cleanliness of the class, after that the researcher stimulated students about the material and ecoliteracy, then in this activity the researcher carried out the social studies learning process by conveying material then linked to ecoliteracy. After that the researcher informs about making an ecobrick project that will be made at the next meeting. In the second act students carry out social studies learning by carrying out activities to make ecobrick projects from used goods. In the 3rd act the students

presented the results of making an ecobrick project.

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Third, describe the obstacles and efforts to overcome the problems performance in making ecobrick projects to foster student ecoliteracy in social studies learning at SMP Negeri 45 Bandung. Constraints faced by researchers and their solutions. The implementation of this research is inseparable from the obstacles faced by researchers. The obstacles faced are:

- a. Researchers and partner teachers have difficulty in determining the right and appropriate material.
- b. Difficulties in determining learning media related to the material as well as ecoliteracy.
- c. Making students aware of the environment, not all students immediately respond well when the teacher asks students to clean the class.
- d. Students are less able to use used goods optimally, in the second and third cycles some groups still use items that are not used goods.

To overcome these problems the researchers conducted discussions with partner teachers so that the obstacles they faced could be overcome properly, here are some solutions to overcome the obstacles faced by:

- a. Choosing the right material in accordance with the SK and the ongoing BC then

associated with an understanding of ecoliteracy

- b. The use of video media and images relating to material associated with ecoliteracy
- c. Teachers must provide more stimulus and reinforcement regarding ecoliteracy so that students are more aware of protecting their environment
- d. The teacher gives an example and practices how to process used goods properly, so that students do not get confused again in using used goods.

Fourth, describe the results of growing students' ecoliteracy social studies learning through making ecobrick projects in class. This is evidenced by the increase in the percentage of ecoliteracy assessment of students continues to increase and shows progress in each cycle. In the first cycle students were categorized as "sufficient" ie 44.00% had an understanding and attitude of ecoliteracy through making ecobrick projects in social studies learning. In the second cycle the students experienced a fairly good development, this can be seen from the percentage of students who experienced an increase and was categorized as "good" ie 75.55%, students had taken the initiative to keep the class clean, then at the time of making an ecobrick project even students were able to process used goods into interesting products. In the third cycle, the percentage obtained by students continues to increase and is categorized as "good" that is 84.89%, students have understood and are aware of the condition of the surrounding environment by maintaining the cleanliness of the classroom environment, almost all students have participated in cleaning the class.

The increase can be realized through various factors, one of which is the use of various kinds of learning resources used, the application of the project based learning model that researchers use is learning activities that are able to stimulate students.

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