



Project of Ecobricks in Social Studies for The Environment-Caring Character of Students

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Abstract: This study aims to analyze the increased caring character of the student environment that acquires learning by using the project-based learning model of Ecobricks in social sciences learning. The research methods used quasi-experimental with nonequivalent pretest and posttest control group designs. The instruments used in the research were the questionnaire pretest and posttest. The student population of class VII 1 as a control class and class VII 5 as an experimental class was determined through descriptive analysis assisted by descriptive statistics to describe the initial and final characters of the experimental and control class students. Research results showed that using the project-based learning model of Ecobricks in Social Sciences lessons to develop the values of creativity and innovation can better enhance the character of caring for the student's environment than learning by using multi-design PowerPoint media. Based on pretest and posttest results, the increased care character of the student environment in the experimental class is enhanced to the "middle" category.

Article History

Received: 10-08-2023
Revised: 12-09-2023
Accepted: 26-09-2023
Published: 17-10-2023

Key Words:

Social Sciences Learning;
Project of Ecobrick; Care
for the Environment;
Student Character.

How to Cite: Azizah, N., Supriatna, N., & Sundawa, D. (2023). Project of Ecobricks in Social Studies for The Environment-Caring Character of Students. *Jurnal Paedagogy*, 10(4), 955-963. doi:<https://doi.org/10.33394/jp.v10i4.9013>



<https://doi.org/10.33394/jp.v10i4.9013>

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Introduction

Education has a strategic position in enhancing the best of human assets and efforts to understand the Indonesian state's beliefs by figuring out the not unusual well-being and cleanliness of the state. The authorities, formulated in the law of the Republic of Indonesia No. 20 of 2003, Article 1 on the countrywide schooling system, state that a technique is accomplished deliberately through teachers and students to create an environment of mastering and a studying procedure so that scholars can expand their capability, which results in the formation of attitudes, the improvement of intelligence or highbrow capability, as well as the development of abilities (Sujana, 2019).

The assignment in the international field of education is constantly growing, forcing teachers to put together students to face present tendencies. The economic revolutions of 4.0 and 5.0 have had a massive effect on various components of existence and resulted in disruptions of eras and innovations, including within the world of schooling (Aziz, 2009). Thus, learning activities in the classroom today have been demanded to provide results that can make students understand the information available and analyze it so that they can play an active role in constructing the knowledge they have by adapting to the conditions and situations that exist in society. So, the existing IPS learning activities become one way to develop the social life of students that is generally made experience (Brophy & Alleman, 2009; Hoppitt, Boogert, & Laland, 2010). IPS learning has the role of social planning to be able to change and improve the future of society's lives. (Barr, 1997).



Curriculum Merdeka learning, in which character education is the principle aspect applied to learning nowadays, is also consistent with the goals of IPS, according to NCSS (2010), where IPS knowledge is gained to make students precise citizens in society and broaden their abilities. Twenty-first-century abilities include creativity and innovation, essential questioning and problem-solving, conversation, and collaboration. So, in step with Sapriya (2014:12), the intention of IPS training at the school stage is to put together students as residents who grasp knowledge, competencies, attitudes, and values that can be used because of the potential to solve personal issues or social problems as well as the ability to choose and take part in diverse activities of the network if you want to be good residents.

Apprehend the development of modernization to fulfill customers with wholesale products that should be paid for with environmental degradation (Supriatna, 2018). Schools need to prepare college students to deal with social problems by shaping a committed and effective citizen attitude and making them ready for social lifestyles. (Iglesias, Aceituno, & Isabel, 2017). As a good way to address the problem of environmental damage that occurs, the development of the character of a community that cares about the environment could be very critical. One application to deal with the environmental troubles that occur, especially in the subject of garbage, is the management of plastic waste into innovative products. The formation of people within the younger generation is supported through a curriculum based on cultural schooling and the individual of the nation, according to Thomas Lickona (in Muslich, 2011). This calls for activities that could expand students' analytical capabilities with the aid of combining current materials so that the introduction of ecobricks initiatives may be one of the initiatives that may be the answer to the troubles confronted and increase students' concern for the environment.

However, the researchers found that observations in SMP 7 Depok did not optimize the pupil's cognizance of the environment. There is much rubbish inside the school room because there is no plastic rubbish baggage, ice cream packing containers, or plastic bottles that are not thrown into the garbage; there may be no message on the walls that announces "keep clean and don't throw waste apart," as well as no separation of natural and non-natural waste. Based on the outcomes of interviews with the teacher of IPS SMP 7 Depok, the motive for low pupil attention in the environment is because of the COVID-19 pandemic, where all manner of studying activities are accomplished at a distance from home. So, the low focus of college students on preserving the college surroundings decreases. The result is the habit of students who constantly throw trash anywhere. It is the way to teach students the significance of worrying about the environment by using attitudes and behaviors that care about the surroundings. Implementing character care for the environment included in the Social Sciences (IPS) subjects that play a position in shaping the individual of students, growing mindset factors and abilities values carried out via the advent of ecobrick tasks using utilizing plastic waste and plastic bottles inside the school environment in processing plastic garbage with the 3R concept (reuse, reduce, recycle) or with an approach that focuses on the empowerment of students. The version can be applied as an incentive sample, or, in other words, it is able to provide a real output for students as a process possibility in imposing the operational management of plastic garbage management. Recycle plastic waste into useful goods, and Ecobrick is an instance of implementing the 3R way of life.

Ecobrick (Imron, 2018) is a term for handling plastic rubbish that will become a brick. The phrase ecobrick comes from the phrase "eco," which means environment, and "brick," which means brick, which, if blended, usually means an environmentally pleasant brick. It is known as an alternative to conventional bricks in building construction. Ecobrick is a plastic



bottle that is solidly full of non-organic waste to make reusable construction blocks. Using ecobrick for waste management, consistent with Tanguay et al. (2010), uses ecobricks with plastic waste raw materials that take a long time to be recycled via nature. Ecobrick production activities with the use of plastic bottle waste are aimed at improving the knowledge of students about plastic waste processing by utilizing plastic waste bottles in the production of ecobrick, increasing students' awareness of the hazards of plastic waste, cultivating innovative and independent creative souls in students, and increasing their understanding that the processing of plastic garbage bottles into eco-brick products can change the value of waste to have economic value.

Character improvement that cares about the environment through ecobrick media can be completed in two ways. First, intervention is the method of proper character training, and it is then packed into the interaction of getting to know and mastering goals dependent on specific character development. Second, this customization is an attempt to get used to conducting business based totally on the values or character to be advanced (A. P. God, 2015). Therefore, one of the solutions to shaping an individual who cares about the pupil's surroundings is the selection of the right model. Teachers need to create innovative and progressive ways of gaining knowledge. The undertaking-based study of ecobricks is one of the getting-to-know models that can answer this hassle. That is possible because project-based studying of ecobricks can help inspire college students to develop an attitude of concern for the environment according to the getting-to-know dreams by developing student creativity.

Project-based learning, in line with Risa (2010), is a model of learning that includes a task inside the studying technique. The word undertaking comes from the Latin assignment, which means to reason, plan, plan. Project-based getting to know is an early step in amassing and integrating new know-how based totally on reveling in actual-existence activities. Then (Noer, 2008) argues that a challenge-based study version is a coaching interest based totally on inquiry. With this getting-to-know technique, students gain cognizance of complicated questions and troubles. Then, over time, answer questions or solve problems through a collaborative investigation process.

From exposure to the above, students build their very own understanding. The model of teaching getting to undertaking-based knowledge has a fine impact on students who lack cognizance of the environment because getting to undertaking-based knowledge has a systematic studying version that entails students developing information and skills through a real-life experience process that is designed through creativity and innovation to supply a made of their very own to be able to construct independence (autonomy) inside the pupil's soul. Ecobrick media is a progressive idea for solving the problem of waste pollution.

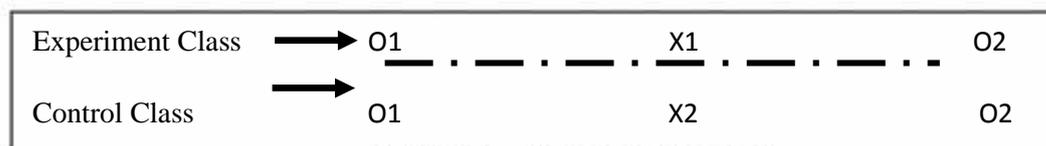
Based on the results of the survey, the objectives of the study include: (1) describing the difference between the initial and final character measurements of the character care environment of the experimental class student through the application of ecobrick learning media to the student control class through the application of PowerPoint learning media; (2) describing the differences between the final character care measurements of the student environment by applying to learn using ecobricks to students who apply learning using PowerPoint media.

Research Method

The research methods used quasi-experimental with nonequivalent pretest and posttest control group designs (Sugiyono, 2016). Quasi-experimental designs do not include the use



of random assignments. Researchers using these designs instead rely on other methods to control for (or at least reduce) threats to internal validity. In this study, 2 different groups were given pre-test and post-test forms of questionnaire to know the improvement of character cares about the environment in both groups with different treatments.



Picture 1. Design of research

The population in the study was the whole class of VII students at one of the First High Schools in Depok. The sample for the research was VII.1 as a control class with a total of 36 students and VII.5 as an experimental class with an entire 36 students. Sampling using purposive sampling techniques. Instruments used in research were the questionnaire pretest and posttest. The Questionnaire pretest aims to know whether the early character cares about the student’s environment. On the post-test, it was aimed to know the improvement of the character cares about the student environment after applying the use of the ecobrick project in IPS learning. Data analysis techniques in this study use descriptive analysis assisted by descriptive statistics to depict early and final characters caring about the environment of experimental class students and control class students. Based on pre-test and post-test results, the improved environmental care characteristics of students in the experimental class and in the control, class are classified into categories.

Results and Discussion

IPS studying is designed to improve the character care of the student environment using ecobrick studying media, which is a medium that gives new studies and may be practiced at once by the pupil. Based on the outcomes of initial research before making use of ecobrick media for experimental classes and PowerPoint media for control classes, it was recognized that there had been no big differences in the early character care of the environment between the two classes.

Table 1. Descriptive Statistics Pre-Test Character Care Environment Students

	N	Mean
Pre-Test Experiment	36	58.58
Pre-Test Control	36	44.36
Valid N (listwise)	36	

Based on the table above, the average character value concerning the student’s environment in the experimental class was 58.58 and in the control class was 44.36. The average values of the two classes showed that there were no significant differences between the experimental class and the control class. The use of different learning media between the experimental class and the control class influenced the improvement of the character care of the different student environments between the two classes. Treatment by applying learning media to both different classes influences the improvement of the character of the participant’s environment, with a difference in improvement between the experimental class and the control class. Based on the test of the hypothesis using the Mann Whitney test, it was found that Asymp.Sig. (2-tailed) 0,000 was smaller than 0.05 and stated that there was a significant difference in the outcome on the final measurement between the experimental class and the control class towards the improvement of the character cared for the environment. The test



results of the hypothesis are supported by the presence of post-test character care environments between the experimental class and the control class.

Table 2. Descriptive Statistics Post-Test Character Care Environment Students

	N	Mean
Post-Test Experiment	36	75.19
Post-Test Control	36	55.55
Valid N (listwise)	36	

Based on the above table, it is known that the final measurement average in the experimental class was 75.19, and the control class was 55.55. Treatment by applying models and learning media to two different classes has a significant impact on the improvement of the character of the participant's environment, with an enhanced difference between the experimental class and the control class. This shows a relationship between using models and learning media and improving the student's character and the environment. According to Gerlach and Ely, the media generally includes people, materials, equipment, or activities that create conditions that allow students to acquire knowledge, skills, and attitudes (Sanjaya, 2016). Risa (2010) argued that the project-based learning model is a way of teaching that allows students to use the units of daily life as their learning material. Project-based learning is an early step in gathering and integrating new knowledge based on experience in real-life activities.

Based on the average increase between the initial and final measurements, the increase in student care environment character in the experimental class was 16,62 compared to the control class's 11,20. Using a project-based learning model and ecobrick media, the learning process can directly implement plastic waste into valuable goods such as chairs, benches, and plant pots by applying environmental care to nature. According to the Aris (2014) framework thinking model, project-based learning started with the theory of constructivist learning, in which Jean Piaget said that learning is the process of learning by doing, or, as it can be interpreted, learning can come from experience. So the use of learning media, according to Briggs (in Sadiman, et al., 2012), includes physical tools that can present messages and stimulate students to learn quickly, accurately, and correctly. The use of project-based models through ecobrick media can support increased knowledge and skills of students creatively and innovatively with the utilization of plastic waste and used bottles into creative products such as tables, benches, and pot plants so that the character cares about the environment through the creation and achieves the national goal of the formation of good character in society. An increase in the character of caring for the environment can be seen based on the Gain average value test results.





Based on the average gain test results, it was shown that the experimental class, by applying project-based models and ecobrick media, had a gain of 0,358 and was in the middle category classification. In the control class, increased character care about the environment shows an average gain value of 0,15 with a low category classification. The increase in the experimental class is influenced by the use of creative and innovative learning models and media designed using the ecobrick project. Using the ecobrick project in the learning process, students can construct the knowledge and experiences they have had with new knowledge and experiences that they directly receive through the ecobrick project by utilizing plastic waste and plastic bottle waste in the school environment in the learning process.

Based on the results of observing the processes and activities of society's life, accompanied by the method of processing plastic waste and plastic bottle waste into a valuable product, the use of plastic waste in the school environment to become an ecobrick product can introduce to students how plastic waste that has no value can be turned into an ecobrick product that has a high value. According to Maxim, the student builds his conceptual structure based on the information, knowledge, and experience he has had during this time to build a new understanding that will continue to develop smoothly with his life experience. (Maxim,2010). Thus, it becomes a new concept and experience for students in the process of processing plastic waste and used plastic bottles into ecobrick products using plastic waste in the school environment can give change and improvement of character for the better, that is, the occurrence of increased character care for the environment.

Thus, project models and ecobrick media give students a direct view of actual conditions or circumstances. Learning through practical practice in processing plastic waste into ecobrick products allows students to think clearly as they can see the fact of plastic waste processing in the school environment into the ecobrick product without the presence of elements that add to or reduce the results of ecobrick. By directly involving students, the learning process can improve the formation of character that cares about the environment, which is the result of taste. Students can observe and analyze various problems of plastic waste pollution in their surroundings or the school environment by comparing the facts involved in the processing of plastic waste and plastic bottle waste into high-value ecobrick products so that they can solve the problems of waste and plastic waste contamination that occur by making solutions by conducting analyses based on various social aspects. Thus, through the learning process, students learn through the analysis of social and environmental problems that can form an understanding that can improve their character in caring for the environment.

According to Gea (2016), environmental behavior has several dimensions, such as recycling, which is to use, utilize, or recycle waste that has been used into new items to prevent garbage from becoming useless. According to Fien in Miyake, dkk. (2003:43), character education, which cares about the environment, can be formed and developed in one person through 1. In the field of knowledge: helping individuals, groups, and communities gain various experiences and knowledge to create and maintain a sustainable environment. In the field of awareness, help social groups and individuals gain awareness and sensitivity to the overall environment regarding questions and issues related to the environment and development. 3. In the field of behavior, help individuals, groups, and communities acquire a set of values based on feelings of concern for the environment and motivation to participate in the improvement and protection of the environment actively. Helping individuals, groups, and communities acquire skills to identify, anticipate, prevent, and solve environmental problems. In the field of participation, providing opportunities and motivations for



individuals, groups, and communities to actively engage in creating a sustainable environment. Building a character of caring for the environment in students is part of the environmental education provided through formal education in both primary and secondary schools that aims to improve students' knowledge, skills, and awareness about environmental values. Ultimately, it can encourage students to actively participate in environmental conservation and safety efforts.

Conclusion

According to research findings, using a learning model based on the Ecobrick project improves the increased caring character of the student environment in social science learning. According to pre-test and post-test data, the experimental class student environment has more caring characteristics, which are enhanced in the "middle" category.

Recommendation

The results of the above offer a variety of recommendations: (1) For teachers, a learning model based on the Ecobrick project for ecological values-based learning that increases caring for the character of the student's environment can be implemented through social science learning using more variable-value educational models that can shape student character. (2) Schools can integrate environmental values into character education so that students can act positively according to the norms in society.

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