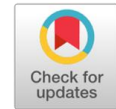


Research Article

Students' pro-environmental behavior and environmental learning outcomes based on green consumerism



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ABSTRACT

Green consumerism has been considered as one of promising movement in maintaining the environmental quality. This research aimed to describe the students' pro-environmental behavior (PEB) as considerable as there learning outcome based on green consumerism. This survey research was conducted in State Junior High School 1 of South Tambun, Bekasi, West Java on July-August 2018. The sampling technique used was simple random sampling with 256 students. The subject was divided into two groups: 128 students from seventh grade who had not received environmental learning materials and 128 students from eighth grade who had received environmental learning materials. The data analysis used in this study was an independent t-test. The results of the t-test showed that there was no significant difference of PEB achievement between the two groups. In addition, not with standing that the average of the students' environmental learning outcomes was 72.76, but there was as high as 78.60% of students' achievement was classified below the standard value. Thus, teachers should evaluate the environmental materials used. It is expected that Biology subjects on environmental material can accommodate green consumerism concepts.



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INTRODUCTION

Waste in the environment is one of the environmental problems that are of concern to the community. The school environment is one of the environments of concern because many school canteens are not yet environmentally friendly. Students are important subjects in research about the school environment because it has a role in protecting the environment, students who have good achievements are usually associated with their perception in protecting the environment (Cheng, Wong, Wearing, & McDonald, 2017; Choudri et al., 2017; Sandilos, Rimm-Kaufman, & Cohen, 2017). In addition to the garbage scattered in the environment, the management is still very minimal. A lot of households don't care about garbage from their household. Their

vegetables and food ingredients are usually left to rot and are not cleaned in the right way (McCarthy & Liu, 2017).

In addition to waste problems, there are other problems in the environmental field. One of them is environmental damage that adversely affects living things (Burrascano et al., 2016; Margono, Potapov, Turubanova, Stolle, & Hansen, 2014). This is of concern given that forests are the center of natural resources. The destruction of this forest cannot be avoided. One simple effort that might be made so that the forest does not continue to be cut down by saving paper, for example, does not use products made of wood and starts to switch to recycled wood and so on. All of the various efforts made by each person can be outlined in various policies implemented by the government and wood processing companies to find alternatives to make paper production cleaner and more environmentally friendly (Akenji, 2014; Silva, Pavan, Oliveira, & Ometto, 2015).

Environmental problems in Indonesia can be overcome one of them through learning in school. It is proven that students can make a craft to reduce plastic waste (Ichsan & Mulyani, 2018; McCarthy & Liu, 2017). Various forms of activities can be carried out so that students understand the importance of the environment for survival in the future. These problems can, in general, be overcome if students understand the concept of green consumerism. Green Consumerism encompasses all activities that are essentially a person's commitment to consuming environmentally friendly products (Haws, Winterich, & Naylor, 2014; Lekakos, Vlachos, & Koritos, 2014; Moisaner, 2007). Some activities related to green consumerism such as turning off lights during sleep, using public transportation that is environmentally friendly, minimizing plastics and many others.

This pro-environmental behavior (PEB) is very closely related to green consumerism. Pro-environmental behavior is a behavior that is formed from habits carried out by someone towards the environment. This behavior depends on many very complex aspects, such as making policies on environmentally friendly products, income, and time efficiency (Ertz, Karakas, & Sarigöllü, 2016). This study does not discuss pro-environmental behavior from a broader aspect, we focus on the discussion of PEB and green consumerism in terms of learning in schools.

Learning about green consumerism can be conveyed in Biology learning about environmental material in the 7th semester of even semester. The role of learning in this material is very important because it is a time that is considered appropriate to convey green consumerism concepts. Material about green consumerism can be conveyed with various learning media such as books, learning videos, websites and so on. Now, learning the environment at any time does not have to come to class (Gündüz, Alemdağ, Yaşar, & Erdem, 2016; Nissim, Weissbluth, Scott-Webber, & Amar, 2016; Snake-Beings, 2017).

METHOD

The method used in this study is a descriptive method with a survey. The sample used in this study were 256 students who had done simple random sampling, which consisted of 128 grade 7 students and 128 grade 8 students. When the research was in July-August 2018 located at State Junior High School 1 of South Tambun, Bekasi, West Java. Data analysis used in this study is normality test using the Kolmogorov Smirnov test and homogeneity test using the F test. Then hypothesis used independent t-test with a 95% confidence level.

The instrument grid used in this study is quoted from Kaiser & Wilson (2004) a little modification, because the sentence on the instrument is adjusted to the characteristics of the sample used. The number of items used in the instrument is 15 items that are valid and reliable. Little modification is done in the context of the use of words on the instrument to match the sample used. This is done to better suit the level of understanding of junior high school students. More details can be seen in Table 1.

Table 1. An aspect of pro-environmental behavior instruments.

No	Aspect	Item
1	Energy Conservation	1,2
2	Transportation	3,4*
3	Waste Avoidance	5,6
4	Consumerism	7,8,9*,10*
5	Recycling	11,12
6	Vicarious, Social Behavior	13,14,15

*: negative item

This study contains the research hypothesis as follows: H_0 : There is no difference in scores on students' pro-environmental behavior between grade 7 and grade 8; and H_1 : There is the difference in scores on students' pro-environmental behavior between grade 7 and grade 8.

RESULT AND DISCUSSION

The results of calculating the average PEB score between class 7 and class 8 show results that are not much different. The average PEB score of the 7th-grade students is at 63.35 and 8th grade at 64.17. The following is a graph of the average PEB score of 7th and 8th-grade junior high school students at 64.17 with a score range of 0-100. More clear results can be seen in the [Figure 1](#).

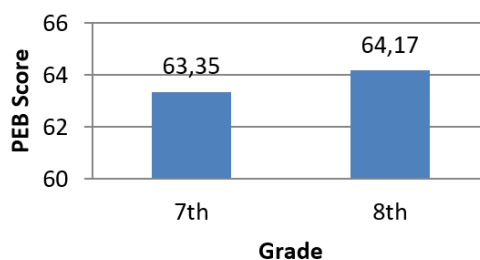


Figure 1. The average score of pro-environmental behavior for junior high school students is 7th and 8th grade

The average score between grade class 7 and class 8 was carried out by the comparison test. The comparative test is done to see how significant the difference in scores between class 7 and class 8. The results of the t-test can be seen in [Table 2](#).

Table 2. The results of t-test scores of pro-environmental behavior Students between grades 7 and grade 8

T	df	Sig.	Mean Difference
-.621	254	.535	-.82266

Meanwhile, to strengthen the argument, a descriptive data comparison was carried out by the students' daily test scores in Biology learning on environmental material is taken from 131 students from 4 classes at grade 8. The average results of the learning outcomes were 72.76. The details of the results of learning the environmental material can be seen in [Figure 2](#).

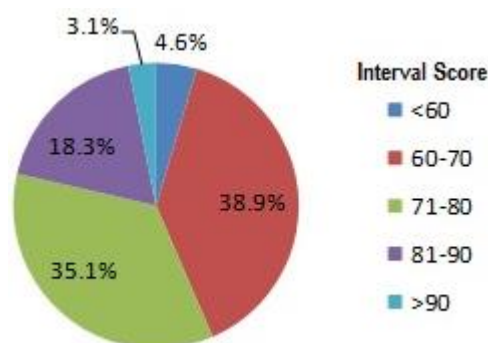


Figure 2. Percentage of students' environment learning outcomes

The results of the normality test show that the data are normally distributed, and the homogeneity test shows that the data is homogeneous. Based on the t-test it is known that the value of $\text{sig} > 0.05$, this results in the acceptance of H_0 . Scientifically, it can be interpreted that there is no difference in PEB scores in 7th and 8th-grade students. This shows that environment learning that has been obtained by 8th-grade students does not significantly influence the improvement of students' PEB. This is reinforced by data that shows that student learning outcomes in environmental material still tend to be many below the standard score (standard score for environment learning outcomes is 81). The percentage of students whose learning outcomes are still below standard score is 78.6%.

Biology learning on ecosystem/ environment material should be designed in such a way that there is an increasing effect in terms of students' PEB. The results of the study showed that there was no significant difference between grade 7 and grade 8 scores, plus learning outcomes of environmental material that was still much below the standard indicating that biology learning on environmental material had many shortcomings so evaluation must be carried out. This is because learning in the classroom does not have much impact on grade 8 students. Evaluation should involve various parties, including in this case evaluation in the form of feedback from students (Ho, MacGlashan, Littman, & Cushman, 2017; Kinay & Bagceci, 2016). Evaluation of learning can be seen in terms of learning plans, teaching materials, media used, teaching methods, or from the models used in the lesson. The teacher as the communicator must also continue to evaluate his understanding of various concepts (Owusu-Agyeman, Larbi-Siaw, Brenya, & Anyidoho, 2017; Papadouris & Constantinou, 2017; Siriwongs, 2015).

Ecosystem/environment learning in the classroom tends to only memorize environmental terms. In practice, students do not really understand and carry out environmental concepts, especially the concept of green consumerism. Teachers who explain the material also tend to ignore this aspect (Fitriani, Adisyahputra, & Komala, 2018; Istiana & Awaludin, 2018; Koutsoukos, Fragoulis, & Valkanos, 2015; Suryanda, Azrai, & Wari, 2016). In fact, if the environmental material that contains the concept of green consumerism is taught in depth in the material of the environment, it will likely increase the PEB of students. There are many fun ways that can be done in order to improve PEB students, one of them is by making an interesting media or game (Boholano, 2017; Morganti et al., 2017; Nugraini, Choo, Hin, & Hoon, 2013). In addition, learning outcomes can be improved also by the application of learning models (Khoiriyah & Husamah, 2018; Lince, 2016; Turnip, Wahyuni, & Tanjung, 2016).

The media plays a role in delivering learning material. Likewise, in this case, the teacher can actually develop a learning media that contains green consumerism material (Mao, 2014; Nugraini et al., 2013; Panno et al., 2017). The goal is certainly so that students' knowledge of the concept of green consumerism is increasing. This is because the learning media is very helpful in delivering learning material (Ichsan, Dewi, Hermawati, & Iriani, 2018; Jiang et al., 2017; Yusop & Sumari, 2013). Student knowledge can increase if these green consumerism concepts are included in this environment learning. Increased knowledge of these concepts is very important in improving learning outcomes (Derevenskaia, 2014).

Pro-Environmental Behavior can be improved in many ways. This is because PEB is a thing that can be done by giving intervention in the form of treatment (Aguilar-Salinas, Ojeda-Benitez, Cruz-Sotelo, & Castro-Rodríguez, 2017; Buzov, 2014; Ertz et al., 2016; Truelove & Gillis, 2018). Learning is the most appropriate way to change PEB students (Ichsan, Sigit, & Miarsyah, 2018; Tang, Geng, Schultz, Zhou, & Xiang, 2017). One of them is through learning tools in this case specific learning media are discussed. Learning media in addition to improving learning outcomes can also improve PEB. This can happen because the media makes it easier for students to access information about green consumerism. When they want to see more green consumerism material, this can be done wherever they want. In addition to the media, many activities can be included in order to improve students' PEB such as ecotourism (Cheng et al., 2017; Hamden & Low, 2015; Olaniyi, Akindede, & Ogunjemite, 2018; Ting & Cheng, 2017).

Environmental education is an effort in changing human behavior with the aim of developing understanding, skills, and public awareness regarding the environment so that people can care about the environment. Environmental caring behavior is very important to be owned by humans, because with caring behavior the environment will make environmental conditions to be maintained so that they can be passed on to the next generation. The environment is very suitable to be used as a learning tool because the natural environment provides a variety of materials that are in our daily activities. The environment can be a source of learning because learning not only uses books, but we can use the environment because the environment can provide various benefits for students, namely a) providing experience, b) providing knowledge, c) providing awareness about what people do to the environment, and d) knowing the importance of the environment as our life.

Environmental learning will make people grow their behavior in a number of ways, namely: a) respecting and nurturing life, b) improving the quality of human life, c) conserving the life force and diversity of the earth, d) avoiding waste of non-renewable resources, e) not exceeding capacity limits carrying capacity of the earth, f) change the attitude of life that is consumptive and excessive.

The implementation of environmental learning activities must be well designed and integrated so as not to overlap in the implementation of environmental learning. Environmental learning is also not only done in the school environment but can also be done.

In addition to media, enhancing Biology learning outcomes can also be obtained by developing teaching materials. Development of teaching materials in Biology materials that are considered necessary can be done to improve learning outcomes (Azrai, Ernawati, & Sulistianingrum, 2017; Garcia, 2015; Kamaludin, Surtikanti, & Surakusumah, 2018; Quieng, Lim, & Lucas, 2015; Sigit, Ernawati, & Qibtiah, 2017). This also applies to environmental material, because this material is classified as a difficult material. In addition, teaching materials are also potential to improve students' PEB because they have functions similar to learning media. Electronic learning materials can also be accessed anywhere (Best & MacGregor, 2017; Golitsyna, 2017; Reyna, Hanham, & Meier, 2018).

CONCLUSION

Green consumerism learning in schools has not affected the students' pro-environmental behaviour (PEB). This is evidenced by the PEB score between 7th and 8th-grade students who are no different. Environmental learning outcomes are still relatively low, as many as 78.6% of students are still below the minimum standard of Biology subjects on environmental material. This is because there is little environmental learning in the class that discusses green consumerism. This resulted in an impact on the low PEB score and learning outcomes.

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