Environmental Education: From Teacher Analysis and Perception

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Abstract. Environmental education is important because it will become the basis for a caring attitude towards the environment. The research objective was to analyze the biology teacher's perceptions of environment-based learning. This research is a qualitative descriptive study using an observation design and semi-structured interview guidelines for three teachers who teach biology in high schools. The research was conducted from March to June 2020. Data collection was carried out by observation, semi-structured interviews, FGD, notes, and voice recordings. Data were analyzed using the Miles and Huberman model. The results showed that there were differences perception of biology teachers when the interview was conducted. The first interview shows the teacher chooses aspects of learning material, while the second interview shows the teacher prefers aspects of the learning model in emphasizing environmental education. The results of the FGD show that environmental-based research studies can provide opportunities for students to hone their psychomotor skills and care for the environment, as well as provide opportunities for teachers to be able to apply environment-based learning models. This research concludes that biology teachers have different perceptions, but tend to be positive that environment-based learning is very effective in building student attitudes and concerns about the environment.

1 Introduction

Environmental education is very important because it will become the basis for a caring attitude towards the environment. Environmental education aims to improve and change behavior to increase knowledge, skills and public awareness of the environment around them. This is expected to be able to activate the role of the community in preserving and maintaining environmental health, both for the present and the future. But unfortunately the environmental damage in Indonesia is very worrying. A lot of garbage is dumped carelessly, especially plastic waste. Plastic waste is very, very difficult to decompose, and can last more than 100 years even in the soil.

One of the right environments to start growing concern for the environment is school. There are many ways that teachers can take their efforts to foster awareness and love for the environment in students. One of them is by utilizing the surrounding environment and waste generated from activities at school. Alex (2011) defines the school environment as everything that is around students, which can influence students in learning activities. Love and concern for the school environment and those around it can increase student

knowledge. The results of research by Ekayanti et al (2018) show that there has been an increase in students' knowledge of the names of plants in school gardens (z = -2,358) *, and school gardens have been used as a natural laboratory in science learning. This of course will provoke students' concern for the environment because from the environment they have been able to learn for real. Learning science, especially biology, is a way for students to love, protect and care for their environment more. Biology can be learned through discovery, so that students' awareness of preserving the environment emerges and realizes an educational goal called Education for Sustainable Development (ESD). Education for sustainable development or ESD is a conscious step taken to protect and preserve the natural, social, and cultural environment as human existence itself.

The teacher is an important component in the learning process. The existence of teachers in teaching and learning activities cannot be replaced by a computer system. Even though in the state of the Covid-19 pandemic and learning was carried out online, teachers still played a role in learning activities. To find out whether biology learning activities are effective or not to raise awareness of the environment, teacher perceptions need to be analyzed. This is because the teacher is a determining component of learning in schools. Teachers' perceptions need to be studied considering that teachers are experienced in implementing environment-based learning in their classrooms. The research objective was to analyze the biology teacher's perceptions of environment-based learning.

2 Method

This research is a qualitative descriptive study using an observation design and semi-structured interview guidelines for three teachers who teach biology in high schools. The research was conducted from March to June 2020. The subjects in this study were taken using purposive sampling, namely 3 teachers who teach Biology at high schools who have taught students with environment-based learning. The three teachers were coded as: Teacher 1, Mr. PAP teaches in class X, Teacher 2, Ms. PLL teaches in class XI and Teacher 3, Mr. NRA teaches in class XI. The object in this study is the teacher's perception of environmental-based biology learning activities to foster concern for the environment, which is outlined in 7 aspects, namely Student, Teacher, Learning Objectives, Materials, Learning Models, Facilities / Tools and Evaluation. Data collection was carried out by observation, semi-structured interviews related to environment-based learning, FGD, notes and voice recordings. Data were analyzed using the Miles and Huberman model. At the time of the interview, the researcher had conducted an analysis of the interviewee's answers. If the answers to the interviewee and analysis are not satisfactory, the researcher will continue the questioning, until a certain stage, data that is considered credible is obtained.

3 Results and Discussion

The data were collected by interview and focus group discussion (FGD). Interviews with the three biology teachers were conducted twice. There are 7 aspects that were interviewed, namely aspects of students, teachers, learning objectives, materials, learning models, tools / tools and evaluation. Table 1 shows the results of the interviews with the three teachers.

Table 1. Results of the Biology Teacher Interview

Master Code	Aspect	Coding	Number of codes
Mrs.PLL (Teacher	Students	Care more about the environment.	1
	Teacher	Very effective, scares students, keeps class	3
	Learning objectives	Providing comfortable learning, prioritizing in the field of planting, being a clean environment and supported by KD and KI	4
	Theory	Bacteria, fungi, environmental management,	5
	Learning Method / Model	PPA, PBL, Artwork, DL	4
	Facilities / Tools	Temperature gauge, make use of items in the school environment.	2
	Evaluation	Rubric according to model and multiple choice questions	2
Mr.PAP (Teacher	Students	Growing a sense of care, creating environmental awareness	2
	Teacher	It's been effective, using the school garden	2
	Learning objectives	The environment is more preserved, and KD and	2
	Theory	Bacteria, viruses, ecosystems, environmental change and environmental	5
	Learning Method / Model	Project Based Learning	1
	Facilities / Tools	Projectors, concept maps, direct media in the school environment and media carried by the teacher.	4
	Evaluation	Gives problems by applying the environment,	2
Mr.NRA (Teacher	Students	Understand theory, more wisely, environmental	3
	Teacher	Very effective, environmentally friendly	3
	Learning objectives	Environmental care, KD and KI support	2
	Theory	Ecology and pollution	2
	Learning Method / Model	Learning methods outside the classroom	1
	Facilities / Tools	LCD, Power point, Handphone	3
	Evaluation	Test and rubric	2

The results of the interviews showed that all the teachers agreed that the students became more concerned about the environment after learning biology using models and approaches based on the environment. The results of the interview coding are then described through a histogram as shown in Figure 1.

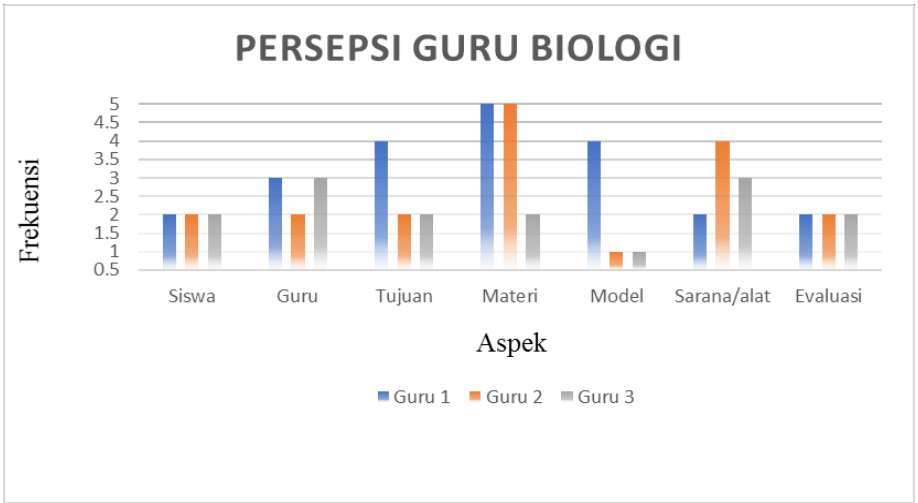

Fig1. First Interview for Environmental-Based Learning Aspects

Viewed from the teacher's aspect, 2 out of 3 stated that the teacher was quite effective in utilizing the surrounding environment for biology learning activities. For the objective aspect, the PLL teacher stated that the teacher's goal was to foster student concern for the environment, this opinion was followed by the other two teachers. The material aspect has an important role in implementing environment-based learning, this is in accordance with the perceptions of PLL and PAP. While the learning model does not really have an effect on learning, tools and evaluation also have an effect on learning. Interviews were then conducted again to obtain more detailed results. The results of the second interview had different results compared to the first. Figure 2 shows the results of the second interview. Focus is centered on the aspects of the model.

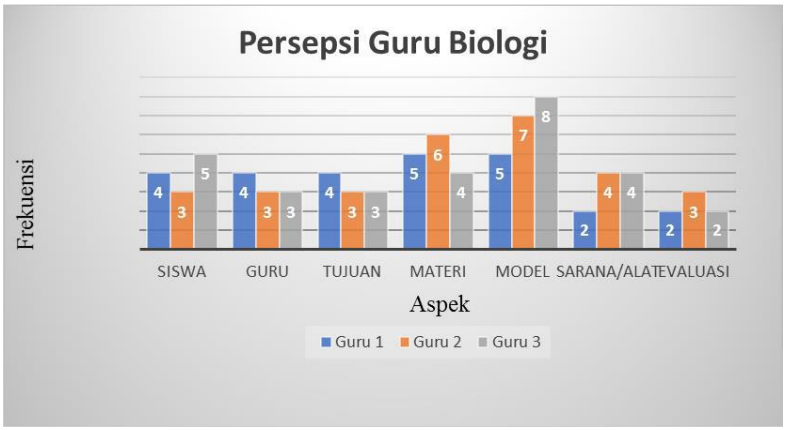

Fig 2. Interview of the Two Aspects of Environmental Based Learning

Based on the picture above, in the results of the first interview and the second interview, there are differences in every aspect. As in the first interview, the most common aspect is the material aspect because biology learning material has been widely applied by biology teachers. Meanwhile, the second interview was more on the method or model aspect. This can happen because learning biology requires a good method or model so that the material can be understood by students.

To support the interviews in this study, a focus group discussion was conducted. The aim is to deepen questions that have not been previously submitted by each participant. The results of the FGD indicated that the three teachers focused on the model applied in environment-based learning activities. The results of the FGD can be seen in Figure 3 below.

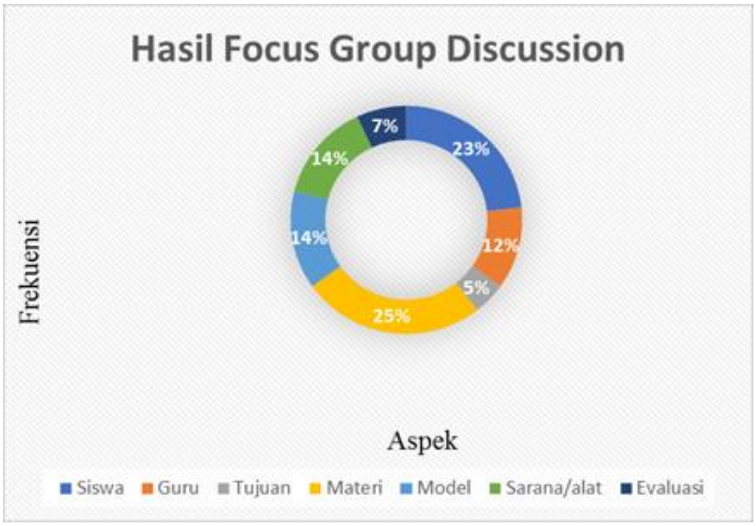

Fig 3. Results of the Focus Group Discussion

In Figure 3, teacher perceptions with interviews through Focus Group Discussion, it turns out that there is an increase in each aspect compared to individual interviews. From the results of the Focus Group Discussion, the most material aspects were compared to other aspects and the smallest was the objective aspects. This can occur because the learning objectives of environment-based biology that are applied in learning are adapted from KD and KI.

From the results of the interviews, in general, there is some data that environmental-based biology learning can have a positive impact on learning including: students are able to pour ideas into making a creative product, provide opportunities for students to take an active role in doing learning activities, starting from the phase of organizing students on problems, conducting investigations / investigations to developing and presenting work, students are able to improve critical thinking skills, students are active and able to find solutions to problems given and students can communicate freely with both fellow students and teachers. The teacher states that the learning model applied in learning biology provides opportunities for students to improve psychomotor abilities and care for the environment. The application of environment-based learning links the material being studied with the actual environmental conditions. This certainly makes it easier for students to learn and master the material. (Rarasandy, et al., 2013), learning biology leads to the inculcation of environmental care characters in environmental management materials that can increase students' awareness of the environment. This is in line with research by

Ekayanti & Setiawati (2017) which shows that there is a positive interaction between social skills and the GI learning model on science learning outcomes (FA * B = 8.97; p = 0.000*). Ekayanti & Setiawati (2017) also conducted research which showed that the group investigation (GI) learning model could improve student learning outcomes (p = 0,000 *).

Based on the research results above, the responses that reveal the perceptions, opinions and knowledge of the individual as a whole with their experiences, motivations and attitudes are relevant in responding to interviews in every aspect. These aspects consist of students, teachers, objectives, materials, methods / models, tools / tools, and evaluation. Interviews were conducted until the data were decribed, both individually and through Focus Group Discussions. From the results of interviews on aspects of environmental-based biology learning, it shows that teacher perceptions are very good. This can happen because from the aspect being asked has been applied by biology teachers in learning, even though there are differences in perceptions of each teacher. The existence of this difference in perception is influenced by various factors, as stated by Robbins (1996), there are three factors that influence perceptions, namely perception actors, targets and situations. In line with the research of Jakfar, et al., (2014) which shows that there are different levels of teacher perceptions and different levels of student action in environmental management and there is a positive relationship between teacher perceptions and student actions in environmental management.

From the results of the interview, each aspect will be simplified by coding the results of the biology teacher's answer, the goal is to measure how the perception of each individual is. After coding, it shows the differences in each individual. This is because the application of learning to each biology teacher is different, PLL applies contextual learning more often, NRA is more to offline learning and PAP is more learning to produce products, besides that it can occur because of the time and situation, so that his response in each aspect is appropriate which he has applied in learning. PAP stated that product-based learning, especially products from used goods, will be able to raise awareness of the importance of protecting the environment by recycling used goods. This is in accordance with the results of research by Kholidah (2018) which shows that used plastic can be made into new objects through recycling.

Based on the results of research in the field, the teacher plays an important role in helping students in learning biology. Everything that the teacher tries to do in learning which includes the learning model, the methods and approaches applied, as well as the media, teaching materials and learning resources used aim to make it easy for students to understand the material, especially material related to the environment. Teachers' perceptions in every aspect have been applied in learning and the results are very effective. It is said to be effective because the results of the students themselves can be assessed from their attitudes and behavior, such as awareness of students cleaning the classroom environment and the school environment. So teacher perceptions have a positive relationship with student actions in environmental management. In addition, by implementing a Focus Group Discussion on biology teachers, the discussion will be more in-depth and meaningful. The results of the perception of biology teachers can help prospective teachers in the future to implement environment-based biology learning in accordance with their expectations. However, in this study, there were several obstacles among the few FGD groups and only one group interview was conducted due to time constraints. For this reason, it is suggested that in the future pay more attention to the time of the study and the number of participants participating in the study.

4 Conclusion

The results of the analysis of teachers who teach in senior high schools show that there are differences in perceptions of the seven aspects of the interview but tend to be positive, namely that environment-based learning is very effective for students' attitudes and concerns about the environment. Effectiveness is assessed from their attitudes and behavior as there has been awareness of students in preserving the environment.

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