



The Exploration of the Surrounding Nature Approach with the Discovery Learning Model for Biology Learning Outcomes

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Abstract: The learning activities to be realized are meaningful learning for the lives of students. Learning that can be applied to help students get to know the surrounding environment as an object of science is the exploration of surrounding nature. This study aims to determine the effect of the surrounding nature approach with the Discovery Learning model on biology learning outcomes for class X SMA Banyuwangi. This research is a Quasi-Experimental Design. The sample was selected using a simple random sampling technique which had previously been tested using a homogeneity test. The sample in this study was class X IPA 1 as the experimental class, and class X IPA 2 as the control class. Data analysis using the t_{test} formula. The results of data analysis obtained $t_{\text{count}} = 7.369$ greater than the t_{table} value $\alpha 5\% = 1.672$, so it can be concluded that there is an influence of the surrounding nature approach with the Discovery Learning model on biology learning outcomes for class X SMA Banyuwangi. The discovery learning model really helps students to gain direct learning experience so that the understanding students get in learning will enter long-term memory and not easily be forgotten.

Keywords: Discovery Learning; Exploration; Learning Outcomes; Surrounding Nature

Introduction

The progress of a nation in the future is very dependent on the quality of education of today's young generation (Shaturaev, 2021; Shaturaev, 2021). Through education, human quality is changed in a better direction and makes it a useful resource for himself and society. Education in Indonesia has been regulated in Republic of Indonesia Law No. 20 of 2003 concerning the National Education System which reads "National Education functions to develop capabilities and form dignified national character and civilization in the context of educating the nation's life which aims to develop the potential of students to become good human beings." believe in and fear God Almighty, who has noble character, is healthy, knowledgeable, capable, creative, independent, and becomes a democratic and responsible citizen".

The more education develops, the more it is realized that there is a need for a student-centered

learning approach. Teacher-centered learning is learning that is less effective, because students will become passive making it difficult to develop good thinking skills, interpersonal skills, and adaptive skills (Ho et al., 2023; Nurdyansyah & Eni, 2016). The learning approach is the teacher's insight or point of view about a lesson (Alimah & Aditya, 2016). One approach that can make students active is the Natural Exploration approach (Siti Alimah et al., 2016).

Surrounding nature is an approach in which learning relates to the natural surroundings both directly and indirectly (Alimah & Aditya, 2016; van Vliet, 2019). Exploration activities invite students to actively explore the surrounding environment to achieve cognitive, affective, and psychomotor skills so that students have mastery of knowledge, skills, work, attitudes, and social life.

The surrounding nature approach can be combined with a learning model. The learning model is a learning method that is used by the teacher in the learning

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process so that learning objectives are achieved (Hamayah & Muhammad, 2014). One learning model that is suitable to be combined with the surrounding nature approach is the Discovery Learning model. Discovery Learning is a model for developing active learning methods by self-discovery, self-investigation, so the results obtained will be loyal and long lasting in memory (Afandi et al., 2013; Bahtiar & Dukomalamo, 2019; Noviyanti et al., 2019).

In biology learning, the environment around the school can also be used as a learning resource for students (Suryawati et al., 2020). Students can interact directly with nature so that they understand more with direct experience with their learning objects. Learning using the school environment can provide greater opportunities to improve student learning outcomes because it makes students more active and fun.

Banyuwangi High School is an equal school that has varied student achievement inputs. Based on the results of observations, in general teaching and learning activities in class are still one-way, so not all students play an active role in the learning. This is evidenced by the presence of students who pay less attention to the teacher in the learning process. Learning that is not contextual can trigger students to learn passively, because students are only invited to imagine natural events. Learning like that is one of the factors that makes student learning outcomes low. Therefore, it is necessary to have contextual and varied learning so that students do not feel bored and bored. Student participation that is less than optimal makes student activity low. Low student activity is also suspected as the cause of students' cognitive scores which are less than the Minimum Completeness Criteria set by the school, namely 70.

Banyuwangi High School has a very supportive environment for exploratory learning, because there are very large rice fields and mangrove forests around it. It is hoped that using the surrounding nature approach combined with the Discovery Learning model will increase students' enthusiasm for learning so that the impact on student learning outcomes will be further improved.

Based on this description, the researcher took the title "The Influence of the Surrounding Nature Exploration Approach with the Discovery Learning Model on Biology Learning Outcomes of Class X SMA Banyuwangi.

Method

This research is a Quasi Experimental Design involving two groups of subjects, the first in the experimental group is given special treatment, namely using the Exploration of the Surrounding Nature

approach with the Discovery Learning model. As for the comparison class (control class) given direct learning treatment (conventional learning) with the lecture method.

This research was conducted at Banyuwangi High School. The population in this study were all students of X IPA class consisting of X IPA 1, X IPA 2, and X IPA 3. The sample was taken in this study using a simple random sampling technique simple random sample, namely a method of taking samples from all populations randomly without regard to strata in the population members (Sugiyono, 2017). The sample in this study was class X IPA 1 as the experimental class and class X IPA 2 as the control class.

Result and Discussion

Cognitive Realm

Based on the results of the analysis using the t-test on the assessment of cognitive aspects, $t_{count} = 8.588$ with a significant level of $\alpha 5\% = 1.672$. The results of calculations with the above formula produce a t-value greater than the critical value t listed in the table ($t_{count} \geq t_{table}$), so it is concluded that there is an effect of the surrounding nature approach with the Discovery Learning model on the cognitive biology scores of class X SMA Banyuwangi.

The level of knowledge in the experimental class and the control class is very much different. This is evidenced by the scores they got at the test at the end of the learning chapter after the two classes were given different treatment. The average value obtained by the experimental class was 80.53, while that of the control class was 64.90. The following is the difference between the bar chart and the average cognitive scores of students as seen in Figure 1.

One of the factors that makes the average difference in value from the diagram above is when they answer the description questions. In the control class the explanation of the answers is very simple, while for the experimental class the explanation of the answers is very broad. This is proven when giving an example and solving a problem. In question number one students are asked to provide an understanding of individuals, populations, communities and ecosystems and provide examples of each of these meanings. In the experimental class, the examples given tend to be varied, starting from the environment of rice fields, gardens, sea, to lakes. Whereas in the control class the sampling was almost the same, they tended to be in the paddy field environment. When faced with problem solving questions, the answers of the experimental class were related to what they learned while studying in nature. In contrast to the control class, they answered more according to the information they got from the teacher during the lesson.

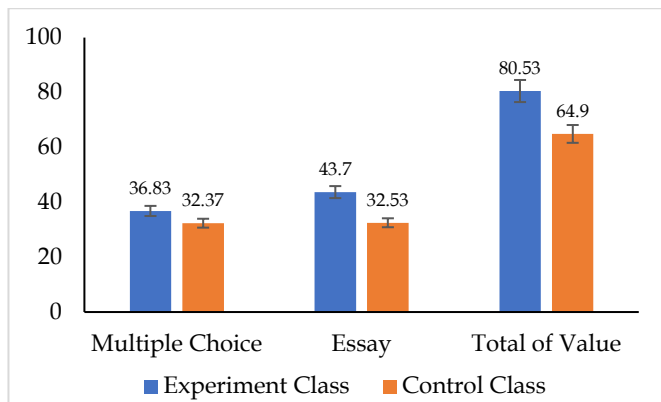


Figure 1. Bar chart of students' cognitive values

In addition, during discussions on answering the questions given in the Student Worksheet for the experimental class and Student Discussion Sheets for the control class, the answers of the experimental class students were broader when linking one problem to another than the answers of class students control. This is because in the experimental class they can tell stories from direct learning that they have learned through real conditions in nature. Unlike the control class, they only studied from books and listened to the teacher's explanations.

The significant difference in knowledge between the experimental class and the control class makes the Discovery Learning model have an influence on learning. This is in accordance with the statement of Afandi et al. (2013) where one of the advantages of learning the Discovery Learning model is helping students to develop or increase students' mastery of skills and knowledge (Nurchayyo et al., 2018; Ozdem-Yilmaz & Bilican, 2020).

Affective Realm

Based on the results of the analysis using the t-test on the assessment of the affective aspect, $t_{count} = 3.181$ with a significant level of $\alpha 5\% = 1.672$. The results of calculations with the above formula produce a t-value greater than the critical value t listed in the table ($t_{count} \geq t_{table}$), so it is concluded that there is an influence of the surrounding nature approach with the Discovery Learning model on the affective value of biology in class X SMA Banyuwangi.

The results of the assessment on the affective aspect, there are differences in the values obtained between the experimental class and the control class. The average value obtained by the experimental class was 84.30, while that of the control class was 74.39. The Figure 2 is a bar chart of students' affective values.

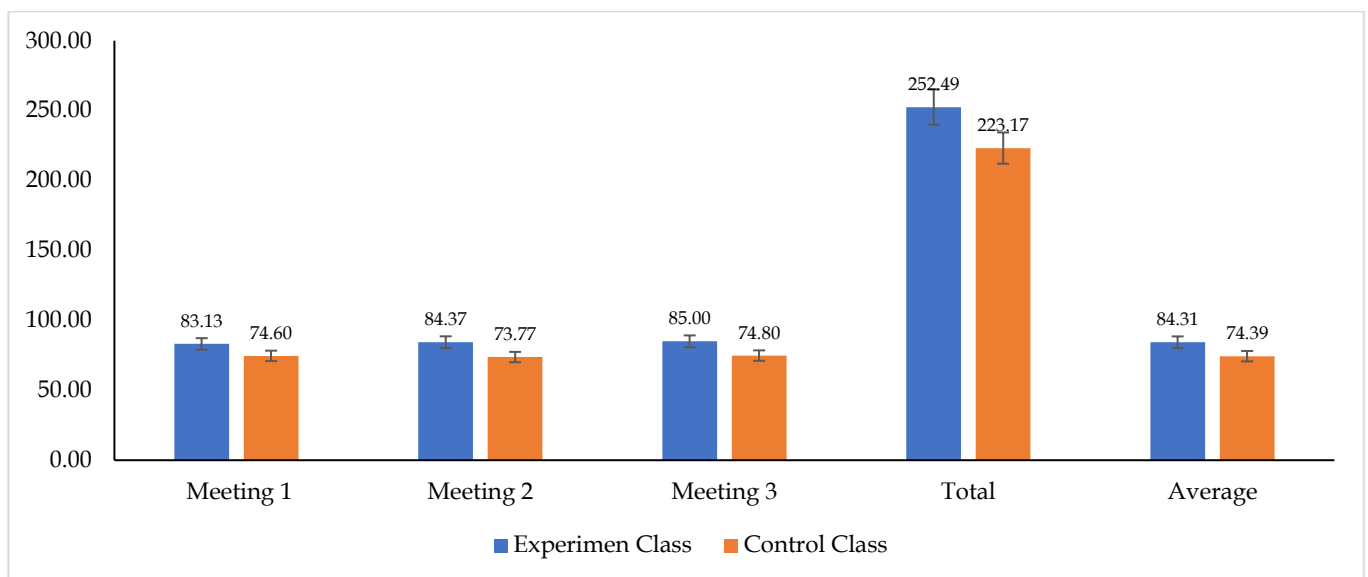


Figure 2. Bar chart of students' affective values.

The diagram above shows that there is a difference between the experimental class and the control class, this is because in the experimental class students pay more attention to the teacher when conveying work instructions in the learning process, because they have to collect data and information during learning. Experimental class students were more active in asking questions when gathering information. In contrast to the

control class, when they received lessons from the teacher they were less enthusiastic about learning so they paid less attention to the teacher during the learning process (Saridewi et al., 2017). This is evidenced by the presence of students playing cellphones, talking to themselves with friends, and some even sleeping. They tend to be passive, only a few students are active during learning.

Learning using the surrounding nature approach with the Discovery Learning model makes students more enthusiastic in learning because they have to investigate so that they find new knowledge from the results of their investigations. This is in accordance with the statement of Alimah and Aditya (2016) that the surrounding nature approach has an exploration component to the environment, they can interact directly with nature so that they find new experiences from their learning, and generate a sense of cooperation between friends. Afandi et al. (2013) also argue that the Discovery Learning model can trigger students to generate a feeling of pleasure in learning because of a growing sense of investigating and succeeding.

Psychomotor Domain

Based on the results of the analysis using the t-test on the assessment of psychomotor aspects, it was obtained $t_{count} = 1.859$ with a significant level of $\alpha 5\% = 1.672$. The results of calculations with the above formula produce a t-value greater than the critical value t listed in the table ($t_{count} \geq t_{table}$), so it is concluded that there is an effect of the surrounding nature approach with the Discovery Learning model on the psychomotor biology scores of class X SMA Banyuwangi.

The results of the assessment on psychomotor aspects, there are differences in the scores obtained between the experimental class and the control class. The average value obtained by the experimental class was 81.73, while that of the control class was 75.56. The Figure 3 is a bar chart of students' affective values.

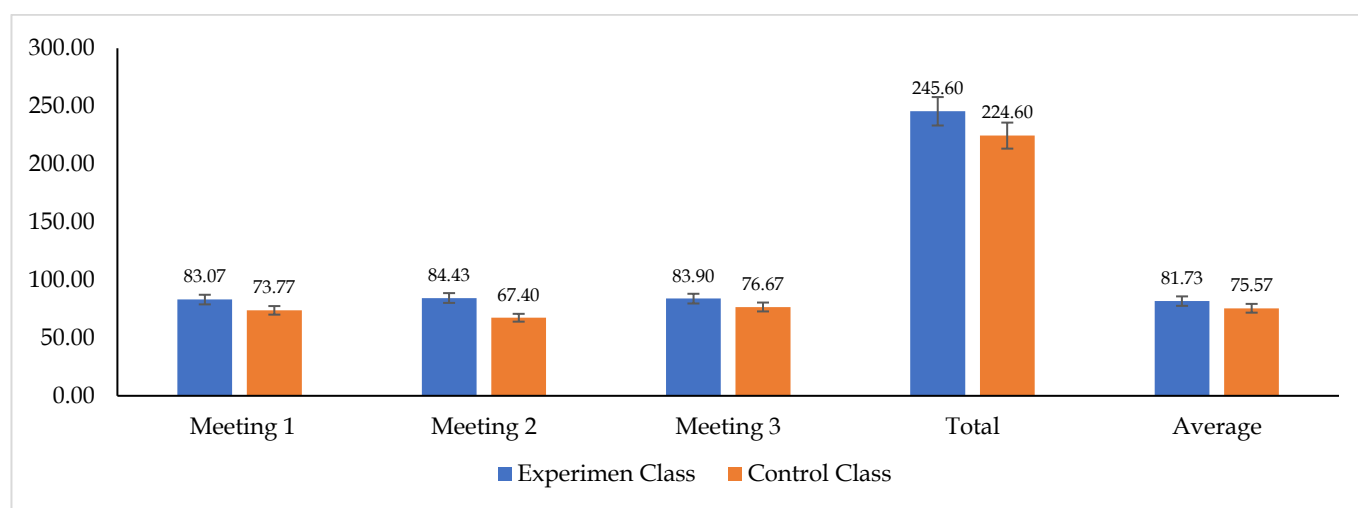


Figure 3. Bar chart of students' psychomotor scores.

The two bar charts show a significant difference, this is because in the experimental class students are more skilled in asking and answering questions, because they have learned directly about nature and problems that occur in nature. In contrast to the control class, they were less skilled in asking questions and giving opinions. Questions are sometimes unclear so it is difficult to understand for the group being asked. Likewise, when the group being questioned answered, their explanation was incomplete. This is in accordance with the statement of (Afandi et al., 2013) one of the advantages of learning using the Discovery Learning model is being able to develop individual talents and skills (Syolendra & Laksono, 2019; Waterman, 2011).

Learning outcomes

Based on the results of the analysis using the t-test on the assessment of the three aspects, $t_{count} = 7.369$ with a significant level of $\alpha 5\% = 1.672$. The results of calculations with the above formula produce t-values greater than the critical t values listed in the table ($t_{count} \geq t_{table}$), so it is concluded that there is an influence of the surrounding nature approach with the Discovery Learning model on biology learning outcomes for class X SMA Banyuwangi.

The combination of cognitive, affective, and psychomotor values or commonly referred to as learning outcomes obtained different values between the experimental class and the control class. The average value obtained by the experimental class was 81.80, while that of the control class was 69.94. The following is a bar chart of student learning outcomes.

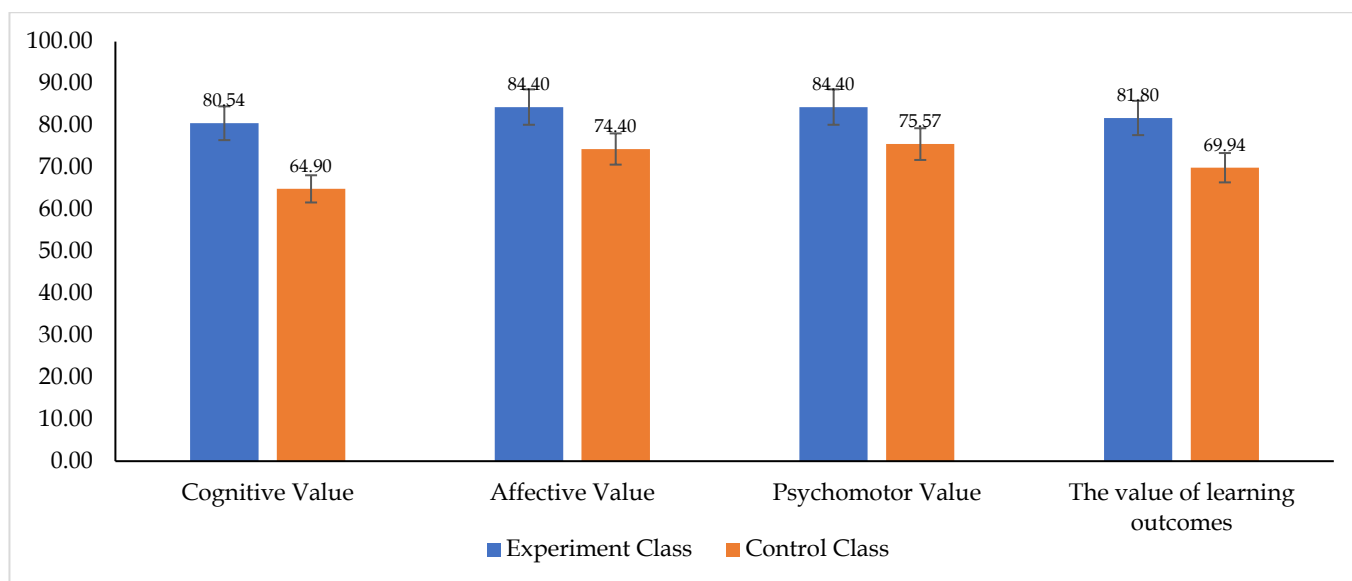


Figure 4. Bar chart of student learning outcomes.

The Figure 4 shows that there are differences in the scores obtained between students in the experimental class and the control class. This is because in the experimental class they were more enthusiastic during the learning process because they were directly involved in the learning process in nature starting from identifying, collecting data to drawing conclusions to gain new knowledge (Fatimah & Rohani, 2022; Saptarini, 2022). They are more active in asking questions either asking the teacher or their group mates. The sense of responsibility and cooperation between group mates is closer, this is evidenced when they go directly to the field, they share tasks in terms of making observations to collect data, as well as when discussing answering questions. They are also proficient in answering questions during discussions in front of the class when presenting their findings. The grammar they convey is natural in accordance with the facts they find when collecting data. The majority of students in the experimental class scored above 70, in other words they got a complete score. Out of 30 students, only 1 student got an incomplete score.

In contrast to the control class, they were less enthusiastic about the implementation of learning (Suwandari et al., 2019), only a few students were active in asking and answering questions. The sense of responsibility and cooperation between group mates is less ingrained, this is evidenced during discussions on answering worksheet questions, only those who are considered smarter do it, the rest are more fun playing their cellphones alone or joking with their friends. When they answered the questions given, they were less assertive in expressing their opinions, this was because they were still guessing about what they were saying. Of

the 30 students, only 63% of students got a completeness score, 37% of them got an incomplete score.

This is in accordance with the statement of Widiadnyana et al. (2014) that the Discovery Learning model is a learning model in which students must build their own knowledge in their minds (Martaida et al., 2017; Simamora et al., 2019). The Discovery Learning model has provided a meaningful learning experience for students in exploring the knowledge they have learned starting from identification to drawing their own conclusions (Fahmi et al., 2019).

Conclusion

Based on the descriptions above regarding the theoretical basis and the results of data collection and data analysis, it can be concluded that "There is an influence of the Surrounding Nature Exploration approach with the Discovery Learning learning model on biology learning outcomes for class X SMA Banyuwangi." This is evidenced by the results of hypothesis testing with the t-test formula obtained $t_{\text{count}} = 7.369$ with a significant level of $\alpha 5\% = 1.672$. The results of calculations with this formula produce a t-value greater than the critical t value listed in the table ($t_{\text{count}} \geq t_{\text{table}}$), which means that the hypothesis is accepted.

Author Contributions

I wrote this article myself. Starting from conducting research to writing articles and publishing.

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Conflicts of Interest

No Conflicts of interest.

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