

Discovery Learning Model as an Effort to Increase Student Interest and Learning Outcomes

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Abstract. The purpose of this study was to determine the application of the Discovery learning model to increasing student interest in learning and learning outcomes. This type of experimental research involved 40 students of SMA Negeri 11 Tana Toraja. Using observational data collection to assess interest and test questionnaires to measure learning outcomes. The data analysis technique used is descriptive statistical analysis. The results of the study (1) The application of conventional learning models to students has not been able to increase student interest and learning outcomes. 2) The application of the discovery learning model in biology subjects to students can increase student interest in learning and student learning outcomes. This proves that the discovery learning model is a good learning model and can be the teacher's choice to increase student interest in learning and learning outcomes.

Keywords: Discovery, Interests, Results, Learning

INTRODUCTION

Learning activities are not only limited to the interaction between teachers and students in the form of teaching and learning processes in the classroom (Bjerg Moller, 2022; Sundari & Leonard, 2021), but include all the learning processes experienced by students both in the family environment, community environment, and also the school environment (Febriani, 2021). learning activities involve various elements of teachers and students including facilities to assist students in teaching and learning activities in class (Haron et al., 2021; Neteria, 2020; Sobandi et al., 2020). Learning is a change for individuals related to changes in knowledge, skills, skills, attitudes,

understanding self-esteem, interests and adjustments that involve all one's behavior (Mursyidi, 2020), learning determines the success of the student learning process (Azzahrah Putri et al., 2021; Mufida et al., 2018). From the learning process, there will be a reciprocal activity between the teacher and students to get to a better goal. Furthermore, according to Trianto (2010), learning is an aspect of a complex activity, which cannot be fully explained. Learning can simply be interpreted as a continuous interaction between development and life experience. From the above opinion, it can be concluded that learning in a complex sense is a conscious effort of a teacher to teach his students (directing students' interactions with other learning

resources) to do the expected goals. Sueni, (2019) said that the learning model is the basic framework of learning that can be filled by a variety of subject content, according to the characteristics of the basic framework. Furthermore, it is explained that learning models can appear in various forms and variations according to the philosophical and pedagogical foundations that lie behind them. Khoerunnisa, et al (2020) said that the learning model can be used as a pattern of choice, meaning that teachers choose proper and efficient learning models to do learning goals. Anuradha, (2019) said, teaching in a routine style may not be interesting for students to learn concepts so it is important to connect concepts with current situations. For this reason, in the learning process, it is necessary to use a learning mode or a variety of learning methods.

The Discovery learning model is a learning model developed by J. Bruner based on a cognitive view of learning and constructive principles (Widiadnyana, 2014). According to Hamalik (2001), discovery is a learning process that focuses on the intellectual mentality of students in solving various problems faced so as to find a concept or generalization that can be applied in the field. According to Salmon, in its application the discovery learning model develops active student learning by discovering themselves, investigating themselves, then the results obtained will be long-lasting in memory, as well as the position of the teacher in the classroom as a mentor and directing learning activities according to the goals (Nuridin, 2016). According to Klahr (2004), A Discovery learning model is a mental process where students assimilate a concept consisting of observing, grouping, hypothesizing, explaining, measuring, and concluding. Inayatsyah, (2020). Says, implementation of discovery learning in the classroom as follows: Encouraging students' independence and initiative in learning, the teacher opening by asking questions and gives students some time to respond, encouraging students to think at a higher level, students are involved actively in the dialogue, or discussions with a teacher or other students, students engage in the knowledge that encourages and challenges discussion.

The learning model certainly has advantages and disadvantages as well as the Discovery Learning learning model. According to Hosnan (2014) the advantages of the Discovery Learning learning model are as

follows: 1) Helping students to improve and enhance cognitive skills and processes, 2) Good knowledge obtained through this method is very personal and powerful because it strengthens understanding, memory and transfer, 3) can improve students' ability to solve problems, 4) helps students strengthen their self-concept, because they gain confidence in working with others, 5) encourage active involvement students, and 6) Encourage students to think intuitively and formulate their own hypotheses.

Another opinion expressed by Kurniasih (2014), explains some of the advantages of the Discovery Learning learning model as follows: 1) Generating pleasure in students, because of the growing sense of investigating and succeeding, 2) Students will understand basic concepts and ideas better, 3) Encourage students to think and work on their own initiative, and 4) Students learn by utilizing various types of learning resources. Yuliana, (2018) said that the application of the discovery learning model is very helpful in teacher efforts to improve student learning outcomes. Not only that, this model also helps in increasing the amateness of teachers and students, students' self-confidence, and the ability to work independently in problem solving.

Discovery Learning also has weaknesses according to Hosnan (2014), as follows: 1) It takes up a lot of time because educators are required to change their teaching habits, which are generally as information providers to become facilitator, motivators, and mentors, 2) There are limited students' rational thinking abilities, and 3) Not all students can take lessons in this way. Sofeny, (2017) says that the weaknesses also followed, such as: Cognitive overload, potential to confuse the learner if no first framework is available, measurable performance (compared to hard-core teaching designs) is worse for most learning situations, creations of misconceptions.

According to Hosnan (2014), in order for the implementation of the discovery learning model to run smoothly, the stages or rules that must be carried out in teaching and learning activities in general are as follows: 1) Stimulation (providing stimulation). First of all, at this stage students are faced with something that causes confusion, so that the wish to investigate itself arises. 2) Problem Statement (statement/providing stimulation). After stimulation, the next step is for educators to give students the opportunity to find as many

problem agendas as possible that are relevant to the subject matter, then one of them is selected and formulated in the form of a hypothesis (temporary answers to problem questions). 3) Data Collection (Data collection). Serves to answer questions or prove whether the hypothesis is true or not, thus students are given the opportunity to collect various relevant information, and inadvertently students connect the problem with the knowledge they already have. 4) Data Processing. It is an activity of managing data and information that has been obtained by students either through interviews, observations and so on. Furthermore, it is classified, even if it needs to be calculated in a certain way interpreted at a certain level of confidence. Data Processing is also known as coding or categorization which functions as concept formation and generalization. From these generalizations, students will gain new knowledge about alternative answers or solutions that need to be logically proven. 5) Verification. At this stage, students conduct a careful examination to prove whether or not the hypotheses have been set with alternative findings, linked to the results of data processing. 6) Generalization. The last stage of this discovery learning model is generalization. Draw conclusions that can be used as general principles and apply to all events or the same problem, taking into account the results of the verification.

the notion of interest is a development process in combining all abilities possessed by people that are useful for directing the person to an activity that interests him. Syadianiansah (2016) said, Interest is a sense of interest, attention, more want that a person has for something, without any encouragement. This interest will settle and develop in him to get support from his environment in the form of experience. According to Slameto (2003), "interest is a persistent tendency to pay attention and remember some activities". Meanwhile, according to Djaali (2008) "interest is a sense of preference and a sense of interest in a thing or activity, without anyone telling". According to Djamarah (2015) indicators of interest in learning are liking/pleasure, statements of liking, a sense of interest, awareness to learn without being asked, participating in learning activities, paying attention. According to Slameto (2010) several indicators of interest in learning are: feelings of pleasure, interest, acceptance, and

student involvement. Kaban (2019) says, interest in learning is an interest, pleasure, student involvement and student attention to a lesson which then encourages people to learn and pursue the lesson. Ricardo, et al. (2017). That said, interest in learning is a motivating factor for students in learning based on interest or pleasure and students' desire to learn. Interest in learning is also an aspect of motivation builder, a phenomenon that is formed as a result of social interaction, and student involvement in learning activities.

Harifa, (2001) states that learning is understanding something that has been known throughout life but with a different understanding. Pane, (2017) says that learning shows activities carried out by someone who is conscious or intentional. This activity refers to a person's activeness in carrying out mental aspects that allow changes to occur in him. Faizah, (2017), says learning is a conscious activity carried out by people through training and experience that produces changes in behavior that include cognitive, affective and psychomotor aspects. Lallo, (2017) says, learning is an activity to get a change in behavior by obtaining new information through experience.

According to Munadi, (2008) there are several factors that influence student learning outcomes, among others: 1) Internal factors, including Physiological factors, such as physiological conditions such as excellent health, not in a state of fatigue or tiredness, not in a state of physical disability and so on, all of which will help in the process and learning outcomes. Psychological factors. Every human being or student basically has different psychological conditions. These differences will affect the process and learning outcomes of each. Psychological factors can include intelligence, attention, interests and talents, motivation and cognitive and reasoning power. 2) External Factors, including: Environmental Factors. Environmental conditions also affect the process and learning outcomes. This environment can be in the form of the physical environment or the natural environment and can also be a social environment. The natural environment can be in the form of conditions of temperature, humidity, and so on. The social environment can be in the form of humans or other things that can also affect the process and learning outcomes.

METHODS

The type of research used is a quasi-experimental research, namely research conducted on one group of students. The research design used was a one group pre test – post test design, trying to develop action research, using different teaching methods. In the initial step, the implementation of learning is carried out using conventional methods, namely by lecture and question and answer methods, then tests are carried out, but the test results in this initial stage are considered as pre-tests. Then, in the next stage, the learning method was replaced with discovery learning after that, tests were also carried out and the results were considered as post tests, to see if there was an increase in learning interest and learning outcomes, using this method. The group of students who became the object of the study

were students of class X SMN 11 Tana Toraja. The research population, as many as 40 students. The sample, using a saturated sample of 40 students (Sugiyono 2017). This one-group pre-test-post-test design was measured using pre-test and post-test. The research variables are interest in learning, and student learning outcomes. Data collection techniques, carried out by observation to assess interest in learning, and through tests to measure learning outcomes, namely tests before using discovery learning called pre-test and tests after treatment was given to students using discovery learning called post-test. Indicators of success, assessed based on the minimum Completeness Criteria, are set ($KKM = 75$). The data analysis technique used is descriptive statistical analysis. As for the research design, it can be described in the form of a chart as follows figure 1.

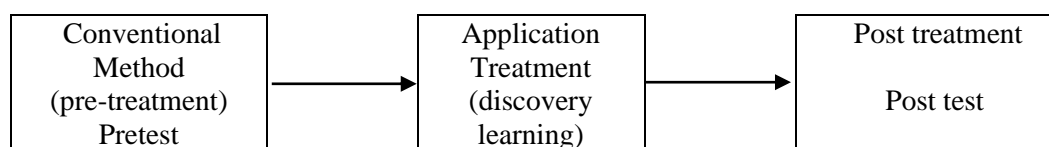


Figure 1. Chart of the type of one group pretest-posttest design

RESULT AND DISCUSSION

Results

Before implementing discovery learning.

The results of observing students' interest in learning before applying discovery learning, during the learning process were observed using the student interest observation sheet that had been provided. The learning process includes: Exploring information through observation, asking questions, then processing data or information, followed by analyzing, reasoning and then concluding. The results of the analysis of the data on the assessment of students' interest in learning in the learning process can be explained in the following table 1.

Based on the results of observations of interest in learning before applying discovery learning in the table above, it can be explained that 83% of students present during the teaching and learning process, 47% of students who have

the willingness to take lessons, and 13% of students who actively ask questions during the teaching and learning process. , Students who do not want to answer questions from the teacher are 93%, Students who are enthusiastic about participating in learning are 40%, Students who delay assignments from the teacher are 77%, Students who carry out other activities during the teaching and learning process 83%, Students who actively seek information about the material as much as 43%. While the lowest percentage of students is 13%, namely students who actively ask questions during the teaching and learning process. Thus the average score of interest in learning before applying discovery learning is 60%.

Based on the results of descriptive analysis, the pretest scores for the biology learning outcomes of class X SMA Negeri 11 Tana Toraja before applying the Discovery learning learning model, a description of the student learning outcomes scores is

obtained which is shown in the following table

2.

Table 1. Observation data of student interest in learning before applying discovery learning

No	Indicators Observed	Meeting				Average %
		I	%	II	%	
1	Students who are present during the teaching and learning process	34	86	32	80	83
2	Students who are willing to take lessons	16	40	21	53,33	47
3	Students who actively ask questions during the teaching and learning process	0	0	5	13,33	13
4	Students who do not want to answer questions from the teacher	40	100	34	86	93
5	Students who are enthusiastic about learning	16	40	16	40	40
6	Students who delay assignments from the teacher	32	80	29	73.33	77
7	Students who carry out other activities during the teaching and learning process	37	93.33	29	73.33	83
8	Students who are actively looking for information about the material	13	33.33	21	53.33	43
Average						60

Table 2. Student Learning Outcomes before applying the discovery learning model

Statistics	Value
Number of Subjects	40
Maximum/Highest Value	85
Minimum/ Lowest Value	55
Range	30
Mean/ Average	70
Standard Deviation	9.90

The table 3 above shows that of the 40 students of class X SMA Negeri 11 Tana Toraja who were the research subjects, 5 students were in the low class, 22 students were in the medium group, 8 students were in the high class, and 5 students were in the high category. very

high. Of the 40 people who were the subjects of this study, all students were present at the time of the pretest. To see the completeness of learning outcomes based on the KKM indicator = 75, it can be seen in table 4.

Table 3. Frequency Distribution and Presentation of Pretest Score

No	Score	Category	Frequency	Percentage %
1.	85-100	Very high	5	12.5
2.	64-84	High	8	20
3.	55-64	Currently	22	55
4.	35-54	Low	5	12.5
5.	<34	Very low	0	0
Amount			40	100

Table 4. Distribution of Student Learning Outcomes Completeness

Completeness Criteria	Category	Frequency	Percentage %
0-74	Not Complete	27	67.5
75-100	Complete	13	32.5
Amount		40	100

The table above shows that 67.5% are included in the incomplete group, this means that there are 27 students out of 40 students who need improvement because they have not achieved completeness in learning outcomes, and students who fall into the complete class are 32.5% or 13 students.

After applying discovery learning

The results of the observation of student interest in learning after applying discovery

learning, during the learning process were observed using the student interest observation sheet that had been provided. The learning process includes: Exploring information through observation, asking questions, then processing data or information, followed by analyzing, reasoning and then concluding. The results of the analysis of the data on the assessment of student interest in learning in the learning process can be explained in the following table:

Table 5. Observation data of students' interest in learning after applying discovery learning.

No	Indicators	Meeting				Average %
		I	%	II	%	
1	Students who are present during the teaching and learning process	40	100	40	100	100
2	Students who are willing to take lessons	30	75	35	87.5	81.25
3	Students who actively ask questions during the teaching and learning process	25	62.5	20	50	56.25
4	Students who do not want to answer questions from the teacher	15	37.5	20	50	43.75
5	Students who are enthusiastic about learning	32	80	35	87.5	83.75
6	Students who delay assignments from the teacher	24	60	19	47	53.5
7	Students who carry out other activities during the teaching and learning process	24	60	13	33.33	47
8	Students who are actively looking for information about the material	30	75	35	86.66	80.83
Average						68,30

Based on the results of observations made in table 5, it can be explained that students who are present during the teaching and learning process are 100%, students who have the willingness to take lessons are 81.25%, students who actively ask questions during the teaching and learning process are 56.25%, students 43.75% of students who do not want to answer questions from the teacher, 83.75% of students who are enthusiastic about participating in learning, 53.25% of students who delay assignments from the teacher, 47% of students who carry out other activities during the

teaching and learning process, while students who actively seek information about the material as much as 80.83%. The average score obtained is 68.30%. There is an increase of 8.30% after implementing discovery learning.

Based on the results of the descriptive analysis, the post-test scores on the biology learning outcomes of the tenth graders of SMA Negeri 11 Tana Toraja after applying the discovery learning model, a description of the student learning outcomes scores was obtained which is shown in the following table 6.

Table 6. Student Learning Outcomes Scores after applying the discovery learning learning model

Statistics	Value
Number of Subjects	40
Maximum/Highest Value	90
Minimum/ Lowest Value	70
Range	20
Mean/ Average	80
Standard Deviation	6.88

Table 7. Distribution of Frequency and Presentation of Posttest Scores

No	Score	Category	Frequency	Percentage %
1.	85- 00	Very high	19	47
2.	64-84	High	21	53
3.	55-64	Currently	0	0
4.	35-54	Low	0	0
5.	<34	Very low	0	0
Amount			40	100

The table above shows that of the 40 students of class X SMA Negeri 11 Tana Toraja who were the research subjects, 21 students were in the high class, and 19 students were in the very high category. If the completeness score of student learning outcomes is analyzed,

then the complete and incomplete categories can be seen in the following table 8. To see the completeness of learning outcomes based on the KKM indicator = 75, it can be seen in table 8.

Table 8. Distribution of Student Learning Outcomes Completeness

Completeness Criteria	Category	Frequency	Percentage %
0-74	Not Complete	5	13
75-100	Complete	35	87
Amount		40	100

Table 8 shows that after applying the discovery learning model, the percentage of student learning outcomes is 87% or 35 students are in the complete class and 13% or 5 students

out of 40 students are in the incomplete category. Thus, it can be said that the biology learning outcomes of students have increased after applying the discovery learning model.

The results of reflection after applying the discovery learning learning model is a picture of change, namely when learning with discovery learning the teacher poses problems that are really close to life that are often met in everyday life, so that they understand, focus students' attention on the problems faced in learning, do assignments, and encourage students to seek more and further information. This is enough to give good results because the more active students are in participating in learning, the student's interest in learning will definitely increase.

Discussion

Based on the results of this study, in the early stages of learning with conventional methods after evaluating student interest in learning as measured by direct observation with 8 indicators, the average value is 60%. Then after applying discovery learning, observations were made using the same indicators, students' interest in learning increased with an average value of 68.30%. So there is an increase in interest in learning by 8.30%. Then the learning outcomes on the application of conventional methods, by setting the least completeness criterion value indicator (KKM) = 75, students who meet a complete score are only 13 people or 32.5%. After applying discovery learning, students who achieved the least completeness criteria increased to 35 people or 87%. So there is an increase of 54.5%, a significant increase.

The results of this study are in line with the results of Yuliana's research (2018), which found that the research conducted proved that the discovery learning model can help increase student activity in the learning process with students finding their own information so that it showed an increase in student learning outcomes both in elementary school and at the secondary level. education on it. Likewise with the results of (Kristin's 2016; Amuradha, 2019). Based on the results of the analysis, it turns out that the discovery learning model is able to improve student learning outcomes starting from the lowest 9% to the highest 27% with an average of 17.8%. Furthermore, the research of Suhada et al, (2019), concluded that the application of the Discovery Learning model could improve the activities and learning outcomes of students in class VIIIA of SMP Negeri 26 Seluma on photosynthesis material. Likewise research conducted by Salmi (2019). The results of the

research show that by using the discovery learning model, students' learning mastery before and after the action are; cycle I (60.00%), and cycle II (90.00%). Thus, it can be concluded that there is a significant change in the improvement of learning outcomes between before and after being given classroom action by applying the discovery learning model to students of class XII IPS.2 SMA Negeri 13 Palembang so that this research is considered successful.

The four researchers mentioned above support the results of this study, and at the same time reinforce that the application of the discovery learning model is a good learning model, and is able to increase students' interest in learning and learning outcomes. This is proven through research conducted on a group of class X students at SMA Negeri 11 Tana Toraja, and is supported by several research results that have been mentioned above.

CONCLUSION AND SUGGESTION

Based on the results of the research and discussion, it can be concluded that: 1) The application of conventional learning models for biology subjects in class X SMA Negeri 11 Tana Toraja, has not been able to increase student interest and learning outcomes. 2) The application of the discovery learning model for biology subjects in class X SMA Negeri 11 Tana Toraja, can increase interest in learning and student learning outcomes. Therefore, this study proves that the discovery learning model is a good learning model and can be the teacher's choice to increase interest in learning and student learning outcomes. The results of the study provide suggestions for practitioners to pay attention to student learning outcomes, especially the method given as a learning process because it can increase student interest and learning outcomes.

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