Indonesian Journal of Educational Development (IJED)

Indonesian Journal of Educational Development (IJED)
Volume 4, Issue 1, 2023, pp. 83-91
ISSN 2722-1059 (Online); ISSN 2722-3671 (Print)
DOI: https://doi.org/10.59672/ijed.v4i1.2686

IMPLEMENTATION OF THE DISCOVERY LEARNING MODEL BASED ON THINK PAIR SHARE TO IMPROVE STUDENTS' LEARNING OUTCOMES

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ARTICLE INFO

Article history:
Received April 02, 2023
Revised April 24, 2023
Accepted Mei 12, 2023
Available online May 20, 2023

Keywords: Discovery Learning, Think Pair Share, Learning Outcomes

Abstract. This study aimed to improve student learning achievement through the application of think pair share-based discovery learning models. This type of research was classroom action research with the Kemmis & McTaggart research design. The location of this research was SMAN 1 Kuta Utara in class XII MIPA 4 with a total of 38 students as research subjects. The data analysis technique was carried out in a quantitative descriptive manner. The results of the data analysis showed that the application of the think pair share-based discovery learning model could improve student learning achievement with completeness in cycle I of 68.4% and increased in cycle II with completeness of 84.2%. Based on the results of data analysis, it could be concluded that the application of the discovery learning model based on think pair share could improve student learning outcomes.

INTRODUCTION

Creating fun learning and according to the needs of students is one aspect that can support the success of the learning process (Widana et al., 2022). Education should focus on the ability of students to explore various sources, collaborate and think critically in solving important problems to be applied. These abilities are important as a condition for the 21st century life skills. An educator must prepare learning strategies that are in accordance with the changing times to support the needs of students so they can face global challenges. Improving student learning outcomes is a factor in the success of the learning process (Susmariani et al., 2022).

The success of the learning process can occur when using an interesting learning strategy, an interesting learning strategy can encourage students to be more active and think critically so as to improve student learning outcomes (Astuti & Asikin, 2019). Unfortunately, current educational practice has not paid attention to these aspects, teacher-centered learning is still often carried out even though the implementation of this learning is no longer relevant for use today (Wibowo, 2016). Students become passive in the learning process which in turn may let the knowledge received by students enter short-memory because they do not find their own learning concepts but only memorise theory, this is the result of teacher-centred learning. This opinion is supported by Serin (2018), which states that learning with a teacher-centred approach causes students to become passive and less active so that it affects students' comprehension of material.

Facts at school show that many students are less active in learning, the way students learn focuses on memorisation, which causes learning to be less effective. One of them is in learning biology, the potential of students has not been optimally developed in learning biology. The lack of empowerment of students' thinking, the activeness of students and the construction of understanding is caused by the perception of most people towards learning Biology which is considered a lesson that is only concerned with the process of memorising. This perception causes education to focus on results as a result of the process of memorising students, this certainly will not increase student activity directly, this type of learning does not train students' critical thinking skills, so students only study Biology on the cognitive aspect of memorising. As a result, solving problems related to Biology becomes difficult because students are not accustomed to developing thinking potential.

Students must have activeness to build and construct their own knowledge, this is because learning cannot be forced and delegated to others, where learning activities occur on the basis of the individual's own activity (Octavia, 2020). The characteristics of good teaching can be seen from the high level of activity or learning activities of students, where the higher the activities of students in learning activities, the higher the chances of successful learning (Salo, 2017). The development of students' thinking, emotional, and social processes is influenced by participation in the learning process. To encourage students to be involved in the learning process that can be done by inviting students to participate in learning activities, teachers can provide space for students to carry out activities in class (Wibowo, 2016). Besides that, critical thinking skills are also needed in improving learning outcomes, the high critical thinking skills of students are directly proportional to the cognitive learning outcomes of students (Makhmudah et al., 2021).

The results of a preliminary study and interviews with biology teachers at SMAN 1 Kuta Utara found that 20 out of 38 students scored below the KKM with a percentage of 52.7%. Of the 38 students, 26 students got activeness scores in the low category with a score range of 10-25, 8 students got activity scores in the moderate category with a score range of 30-50 and 4 students got activity scores in the good category with value range 60-70. From the results of interviews with tutors, information was obtained that class XII was a less active class and had low learning outcomes in the learning process. Therefore, to improve student learning outcomes, of course the teacher must develop learning strategies for students so that they can improve their learning outcomes. In the learning process the teacher's presence becomes a crucial aspect, all teacher activities are important in efforts to increase students' interest in learning. The teacher must also be able to create a comfortable environment so that the knowledge provided will be easily accepted by students, this can be done by applying appropriate learning strategies. Therefore, teachers must be equipped with knowledge in the application of learning models that suit their needs and the subjects they teach (Fezha, 2012; Octavia, 2020). The learning model directs learning so that it is processed to achieve certain goals. However, the lecture-based learning model tends to make students bored in its implementation, implementation is no longer relevant in efforts to increase student participation so that a learning model that is not boring and according to needs is needed (Alfitri, 2020). There are several learning models that can be applied and of course adapted to the needs and learning to be carried out. Selection of the right learning model will produce an optimal and effective learning process for students, one of which is a learning model that can train students' activeness and abilities in learning is the discovery learning model. (Makhmudah et al., 2021).

The discovery learning model is a model that guides learning where students can find learning concepts through discovery activities, activities can be carried out with experiments or non-experiments. The application of this learning model will encourage students to actively participate in learning activities. The application of the discovery learning model is originally teacher-centred transforming to a student-centred learning process (Saturnut, 2022; Syafredi, 2018). However, the discovery model has not empowered effective collaboration for students in the learning process, therefore a cooperative model is needed to accommodate the effectiveness of student learning. One of the studies on the Discovery Learning approach states that the discovery learning model can improve student learning outcomes in the learning process (Sawitri, 2022). This opinion is also supported by research (Setiadewi et al., 2014) showing that the discovery learning learning model can develop students' thinking skills and learning outcomes.

The cooperative learning model also helps in the learning process and the activeness of students to discuss and solve problems with their friends, one of which is the Think Pair Share model. Think Pair Share is a learning model that provides opportunities for students to work together with other students, especially in discussions (Makhmudah et al., 2021). The Think Pair Share Learning Model provides a smaller scope of discussion implementation, so that overall students will be active in the discussion process, discussion planning from think, pair, share is effectively implemented in learning (Wijaya et al, 2021). The combination of the Discovery Learning and Think Pair Share syntax models will make learning more effective because this model directs students in critical thinking processes and the Think Pair Share learning model provides a more effective discussion system making it easier for students to share knowledge due to the intimacy of the discussion groups formed. The Think Pair Share model is a cooperative model so that this learning model will help students to work together in pairs by carrying out discussions that encourage all students to be actively involved. Based on this description, the researchers carried out research related to the application of the Think Pair Share-based discovery learning model to improve student learning outcomes at SMAN 1 Kuta Utara.

METHOD

This classroom action research was designed using action research from Kemmis & McTaggart. Research data was processed with quantitative descriptive to provide a comparison of student learning outcomes in each cycle. The data collection technique used was the observation or observation method and the test method to determine student learning outcomes in each cycle.

The location of this research was at SMAN 1 Kuta Utara, Badung, Bali with research subjects namely class XII MIPA 4 students with a total of 38 students. Research time started from December 2022-February 2023. This research was conducted for 2 cycles, there were 2 face-to-face meetings in each cycle. Research implementation started on Friday 27 January 2023 until Monday 6 February 2023. The implementation was as follows. The implementation of cycle I was on Friday, January 27 and Monday, January 30, 2023. The implementation of cycle II was on Friday, 3 February and Monday 6 February 2023.

The instruments used in this study were teacher activity questionnaires and tests of student learning outcomes. The teacher observation questionnaire contained questions that observe the teacher's process in conducting classroom learning. The questionnaire used was a closed questionnaire so that the observer only needed to choose an answer from each of the alternative answers provided, the provisions for the score of the observation questionnaire

used a Likert scale with a value range of 1 to 5. Student learning outcomes test was used to determine student learning outcomes. The learning achievement test had a score of 1 for each correct answer. The material from this formative test was generally emphasised on the lesson materials that had been taught. The items in the questions consisted of items, both those belonged to the easy category and the difficult category.

The completeness criteria used were in accordance with the minimum completeness criteria from schools for biology learning, namely 80. The indicator of success in this study was an increase in the completeness of student learning outcomes in each cycle which was marked by the achievement of the minimum completeness criteria. Classically 80% of student learning outcomes were completed with a minimum score of 80.

RESULTS AND DISCUSSION

The data analysis in this classroom action research is carried out in a quantitative descriptive manner. The results of the data analysis presented are in the form of observational data on teacher activity in cycle I and cycle II as well as data on student learning outcomes in cycle I and cycle II.

Cycle I

Table 1. Results of Analysis of Teacher Activity Data Cycle I

Cycle	Score		Average score	Criteria
	1st meeting	2nd meeting		
Cycle 1	2,25	2,58	2,41	Good

Based on the results of the descriptive analysis of the data in Table 1, it can be explained that the teacher's activity suspension in cycle I, in which the first meeting got a score of 2.25 and at the second meeting got a score of 2.58 with an average score in cycle 1 which is 2.41 and the criteria is good. This shows that the teacher's role is good in the learning process in cycle II so that it can be seen that the teacher has acted as it should and does not interfere with the results of the data obtained.

Table 2. Results of Data Analysis of Student Learning Outcomes (n=38)

Cycle	Score	Number of People	Percentage	Completeness
Before Cycle	>80	20	52,7%	The percentage of pre-cycle completeness is 52,7%, so improvement is needed.
	≤80	18	47,3%	
Cycle 1	>80	12	31,6%	The percentage of completeness in the first cycle is 68.4%, so that it is necessary to carry out the second cycle
	≤80	26	68,4%	

Based on the results of the descriptive analysis of the data in table 2, it can be explained that in cycle I there are 12 students who get the incomplete category with a percentage of 31.6%

and 26 students who get the complete category with a percentage of 68.4% so it is necessary to carry out the second cycle.

The implementation of learning is carried out on biology material in the mutation chapter by following the learning syntax of the discovery learning model based on think pair share. The findings in cycle one shows that the percentage of complete learning outcomes is 68.4%, the percentage in cycle one experienced an increase compared to the percentage before the start of the cycle (pre-cycle) which is 47.3%, so it can be seen that there is an increase in student learning outcomes by 21.1%. However, the improvement results obtained in cycle I does not meet the success indicator, namely 80% completeness. In the implementation of the first cycle, based on the results of observations of teacher activities by observers, it can be seen that the teacher's activities are in the good category with an average of 2.41, this indicates that there are no deviant activities from the teacher that will affect the learning process of students, so that it can be stated that the teacher has acted properly. Through observations made during the learning process it can be explained that students get their respective roles so that all students follow the course of the learning process without exception.

The discovery learning model is a learning model that can guide students in the process of discovering concepts while the use of the think, pair, share learning model will create an active classroom atmosphere because students have a smaller and intimate scope for conducting discussions with their friends so that all students can following the learning process. A similar opinion is expressed by Makhmudah et al. (2021) which states that the combination of the discovery learning model with think, pair, share would help students in the process of finding and designing learning in which students are directly involved in the learning process and gained real experience with cooperation.

Figure 1. Learning process in cycle I

The combination of discovery learning models with learning models produces syntax that can encourage students to be able to follow the learning process. The syntax in the discovery model based on think pair share is stimulation and think, problem statement, data collecting and pairing, data processing and pairing, verification and share, and generalisation. At the stimulation and think stage, students will be given a stimulus related to the learning that will be carried out, at this stage students are given time to think about asking questions or answering teacher questions in the next syntax. Problem Statement is a stage where students can ask questions to the teacher about the initial stimulus or stimulus that has been given and activities can be in the form of giving questions from students to the teacher, in the problem statement phase students are given the opportunity to think independently. Data collecting and pairing is an opportunity given to students to find sources and discuss in pairs

about the data needed to work on assignments given by the teacher, discussions are carried out in pairs in groups containing 4 students so that all students have the opportunity to express opinions.

Carrying out discussions in smaller groups will provide opportunities for students to express their opinions more freely, of course with this strategy all students will participate in learning. Data processing is the stage where students are directed to work on assignments given by the teacher in pairs, working in pairs gives students each task so that the whole will be active in the process of finding and understanding concepts accompanied by discussion in pairs, in addition to discussion in pairs. At this stage, students also agree with groups related to the concepts that have been found. Verification and Share is the stage where students share or present in front of the class, this will at the same time verify concepts that conflict with other groups and as an effort to provide an optimal environment for students to learn to think critically, in this stage the teacher's duty is to verify students' answers to align the understanding and concepts that are formed. Generalisation is the stage where one of the students appointed by the teacher concludes the learning that has been done, the teacher also provides reinforcement of the theory that has been given.

Collaboration from the syntax of this learning model will train independent thinking and provide effective discussion strategies for students, students will get the opportunity to discuss with their partners and groups so that they are trained to apply learning concepts (Muthoharoh, 2017). The combination of the syntax of the think, pair, share-based discovery learning model will give students the opportunity to participate, even for students who were not previously active in learning to enter the learning atmosphere in class, because discussions are carried out in pairs. Discussion groups designed in pairs will provide students with smaller and more intimate groups in the process of exchanging opinions. The existence of redistribution to small groups indirectly causes learning to occur as a whole so that all students are active in forming their understanding, this is what will place students in learning conditions. These conditions support the formation of students' understanding processes so as to improve student learning outcomes before the start of the cycle. A similar opinion is given by Handayani et al. (2022) which states that the condition of students participating in the learning process and being given space to think and discuss would improve learning outcomes.

However, the increase in learning outcomes in cycle I does not meet completeness at 80% where only 68.4% of completeness is achieved. Of course, a reflection is made on the learning outcomes in cycle I, from the reflection results it is known that several actions must be corrected in the implementation of the cycle, namely as follows.

1. The lack of the teacher's role in providing learning resources that are easily accessible to students, so that in the implementation of searching for sources of knowledge in an effort to form concepts causes students to be confused in determining correct and incorrect information. For the next cycle the teacher will guide students in finding appropriate sources of information
2. Making questions in assignments for students needs to be improved by adding pictures so that they are not bored and there is no misinterpretation of the meaning of the questions by students. For the next cycle the teacher will add pictures so that it is interesting for students
3. Inadequate timing that causes the verification stage in cycle I to lack time that results into implementation that tends to be carried out in a hurry. For the next cycle the teacher

will be more assertive in giving work time limits so that activities will be more effective and efficient.

The results of this reflection is followed up in the next cycle so that this research is continued in the second cycle.

Cycle II

Tabel 3. Results of Data Analysis of Teacher Activities in Cycle II

Cycle	Score		Average score	Criteria
	1st meeting	2nd meeting		
Cycle 2	2,6	3	2,8	Good

Based on the results of the descriptive analysis of the data in Table 3, it can be explained that the first meeting gets a score of 2.6 and the second meeting gets a score of 3 with an average score of cycle II by 2.8 and the criteria is good. This shows that the teacher's role is good in the learning process in cycle II so that it can be seen if the teacher has acted as it should and does not interfere with the results of the data obtained.

Table 4. Results of Data Analysis of Student Learning Outcomes (n=38)

Cycle	Score	Number of People	Percentage	Completeness
Cycle 2	>80	6	15,8%	The percentage of completeness in cycle II is 84.2%, so that it has reached an indicator of success.
	≤80	32	84,2%	

Implementation of cycle II is still in the matter of adaptation, learning is done by implementing the same think pair share-based discovery learning syntax as cycle I. The findings in cycle II show that the percentage of complete learning outcomes is 84.2%, the percentage in cycle one experiences an increase compared to the percentage in cycle I, which is 68.4%, so that it can be seen that there is an increase in student learning outcomes by 15.8%. The results of the improvement obtained in cycle II have met the success indicators, namely more than 80% completeness. In the implementation of the first cycle, based on the results of observations of teacher activities by observers, it can be seen if the teacher's activities are in the good category with an average of 2.8, this indicates that there are no deviant activities from the teacher that will affect the learning process of students, so that it can be stated that the teacher has acted as he should.

The implementation in cycle II is accompanied by improvements made to the results of reflection in cycle I. Learning is done based on the syntax of the discovery learning model based on think pair share. During the learning process all students actively participate, discussions are carried out in small groups in pairs, this is because the learning strategy of the think pair share-based discovery learning model provides students with space for discussion with their partners, so that discussions and exchange of information become very effective (Pamungkas et al. al., 2021). Student participation causes students to enter into the learning atmosphere in class so that it will improve student learning outcomes. Conditioning students in more intimate discussion groups will provide space for students to discover learning concepts. This is of course because students are encouraged to be active in the

learning process, which is why there has been an increase in the application of the think, pair-based discovery learning model.

Figure 2. Learning in cycle II

Besides that, the increase occurs because students are invited to think independently and find concepts from the material being studied, this will certainly cause students to have an understanding that affects learning outcomes. Several reflections from cycle I have been corrected during the implementation of cycle II, the teacher has provided learning resources and guided students in finding valid sources, worksheet questions have been added with pictures that can make worksheet interesting for students. Giving clear and firm time limits applied to cycle II causes learning to be more effective so that students can study the material well, giving clear time also has an impact where students are not confused in completing tasks so that learning can be carried out more meaningfully. The application of discovery learning based on think pair share is successful in increasing student learning outcomes with 84.2% completeness so that the implementation of the cycle is stopped in cycle II.

CONCLUSION

Based on the results of the research and discussion that have been reviewed based on relevant research, it can be concluded that the application of the discovery learning model based on think pair share can improve student learning outcomes at SMAN 1 Kuta Utara. It is suggested to teachers of other subjects to try using this learning model. Likewise for other researchers to develop other variables that affect student learning outcomes.

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