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EFFORTS TO IMPROVE STUDENT ACTIVENESS AND LEARNING OUTCOMES IN ONLINE LEARNING USING THE DISCOVERY LEARNING MODEL ASSISTED BY THE QUIZIZZ TEST INSTRUMENT

Cristy Indryany S[1], Pardomuan N.J.M Sinambela[2]

Universitas Negeri Medan [1,2]
cristyindryany55@gmail.com

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ABSTRAK

Berdasarkan observasi yang dilakukan peneliti di SMAN 14 Medan, ditemukan permasalahan dalam pembelajaran Pendidikan Matematika kelas X IPA 1. Strategi pembelajaran yang digunakan guru tergolong tidak efektif dalam pembelajaran online. Kebosanan yang dialami siswa dan tidak memahami materi yang disajikan mengakibatkan menurunnya aktivitas dan hasil belajar siswa dalam kegiatan belajar mengajar. Berdasarkan permasalahan yang ditemukan, peneliti menerapkan strategi pembelajaran dalam pembelajaran online dengan menggunakan quizizz-assisted zoom pada mata pelajaran matematika. Penelitian ini bertujuan untuk meningkatkan aktivitas dan hasil belajar dalam pembelajaran online menggunakan quizizz-assisted zoom. Jenis penelitian ini adalah Penelitian Tindakan Kelas (PTK). Subyek dalam penelitian ini adalah siswa kelas X. Penelitian ini dilaksanakan selama 2 siklus dengan masing-masing siklus dilakukan 2 kali pertemuan. Hasil penelitian menunjukkan bahwa pembelajaran mengalami peningkatan. Data hasil observasi aktivitas belajar menunjukkan bahwa terjadi peningkatan persentase rata-rata aktivitas belajar siswa pada siklus I sebesar 63,5%, meningkat pada siklus II menjadi 80,5%. Hasil belajar siswa pada siklus I menunjukkan bahwa rata-rata kelas pada siklus I adalah 73,75 dan meningkat pada siklus II menjadi 83,75. Sedangkan ketuntasan belajar siswa pada siklus I sebesar 50%, dan meningkat pada siklus II menjadi 85%.

Keywords :
Study Activity; Learning Outcomes; Discovery Learning; Online Learning; Zoom; Mathematics; Quizizz

ABSTRACT

Based on observations made by researchers at SMAN 14 Medan, problems were found in learning Mathematics Education for class X IPA 1. The learning strategies used by teachers are classified as ineffective in online learning. The boredom experienced by students and not understanding the material presented resulted in a decrease in the activity and learning outcomes of students in teaching and learning activities. Based on the problems found, the researchers applied learning strategies in online learning using quizizz-assisted zoom of the mathematics subject. This study aims to improve activities and learning outcomes in online learning using quizizz-assisted zoom. This type of research is Classroom Action Research (CAR). The subjects in this study were students of class X. The research was carried out for 2 cycles with each cycle having 2 meetings. The results showed that learning had increased. The data from the observation of learning activities shows that there is an

increase in the average percentage of student learning activities in the first cycle of 63.5%, increasing in the second cycle to 80.5%. Student learning outcomes in the first cycle showed that the average class in the first cycle was 73.75 and increased in the second cycle to 83.75. While the learning mastery of students in the first cycle was 50%, and increased in the second cycle to 85%.

INTRODUCTION

Education is one of the human efforts to ensure survival in the future, which is also one way to realize dreams in the future. Regulation of the Republic of Indonesia Number 20 of 2003 concerning the Education System is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious and spiritual strength, self-control, personality, intelligence, noble character, and skills needed for themselves, society, nation, and state. National education aims to develop capabilities and shape the character and character of a dignified nation by educating the people (Depdiknas, 2003:6). Mathematics is one of the subjects at various levels of education which is a basic science for other sciences because it contains the ability to think logically, analytically, and systematically. Mathematics is a universal science that underlies the development of modern technology, plays an important role in various disciplines, and advances human thinking. Therefore, mathematics subjects must be taught to all students starting from elementary school so that mathematical abilities are taught from an early age (Baedhowi, 2007:171–181). However, due to the coronavirus pandemic of 2019, which has an impact on all aspects of life and disrupts its functions, including in the field of education, because students are not allowed to study face-to-face. For the sake of the continuity of the education process and to participate in breaking the chain of the spread of the coronavirus, the implementation of learning must adapt to social distancing policies. All teaching and learning activities are carried out at home through online media, and all face-to-face school activities are temporarily suspended. Online learning is a new way of teaching and learning, utilizing internet technology to deliver learning. Online learning is completely dependent on internet network access. Even though students are at home, teachers must ensure that teaching and learning activities continue; Innovation in learning is a solution that needs to be designed and implemented by teachers by utilizing available online media. (Hamid et al., 2020: 86-95)

This is also in line with the education system, which is entering the industrial revolution 4.0. The change in the era of the industrial revolution 4.0 is about a time when information technology is the foundation of human life. To face the era of the Industrial. Revolution 4.0, it is paramount to possess an education that is able to educate creative, innovative, and competitive generations. One way to improve education is to make the most of technology as a teaching tool. This should lead to results that can keep up with or change the times for the better. Human resource education is not only the responsibility of universities, but all levels of education have the same role in shaping students into quality resources needed for the Industrial Revolution 4.0 (Sutarto, 2018: 465-476).

Due to the rapid advancement of technology, online learning is now possible. In online learning, every student has the opportunity to learn very widely without any obstacles. The online learning process, or e-learning, allows interaction between teachers and students. The activities of the e-learning learning process require an

agreement between the teacher and students so that all learning activities can run well. The definition of e-learning is to provide educational material that is presented using a computer and to deliver the learning material using the web. In addition, the most important thing is that all activities of the learning process can all be stored in storage media. The success of e-learning depends not only on the content or content of e-learning itself but how the process of delivering the material provided by the teacher to students so that students can understand the content or content of the material produced by the teacher (Sandiwarno, 2016: 191). The existence of video conferencing will facilitate the delivery of information from teachers to students during distance learning.

However, most students tend to be less responsive to online learning activities. Those who show this tend to be silent when invited to interact. Students have not taken the initiative to record learning materials. Students are not brave enough to express their opinions; they tend to be silent and do not answer questions when asked. Student activities during the learning process need to be considered by the teacher so that the teaching and learning process gets maximum results. Teachers also have limitations, whereby they cannot pay attention to students one by one. Therefore, teachers need to find solutions to increase student activity so that the learning process is not unidirectional. One of the efforts that can be made to improve student learning activity is to apply a suitable learning model. That is why researchers choose to use the discovery learning model. According to the researcher, students' involvement in the discovery process strengthens students' interest in learning and encourages students to be active in the discovery process (Hosnan, 2014: 32–34). The success of education is also measured by the assessment of learning outcomes or evaluation. Learning evaluation is a technique that educators should not ignore and must be applied in learning activities. The assessment system is an integral part that cannot be separated from the mathematics education system, so any attempt to improve the mathematics education system without an improvement in the assessment system will not be able to provide optimal results. It may even be in vain (Sumaryanta, 2011: 5-9). Learning evaluation activities must be carried out in a planned and interrelated manner between the supporting factors of education. Through this evaluation, teachers can optimally support the implementation of ongoing learning. In connection with the evaluation of learning, which must be done using technology because the learning is done online, Teachers must have support media to make the right evaluation tools so that students can use teacher evaluation tools. Making an online evaluation tool provides flexibility in learning time for students. They can use it anytime and anywhere. Students can interact with teachers using several available applications. Quizizz is an online evaluation that is quite well known and is often used by various groups of students and students. In addition, Quizizz is very easy to access and can be easier to understand. In Quizizz, we can also make evaluations more interactive because evaluations can be available in pictures, writing, or games between one student and another. This makes students more active and learning more fun. (Aini, 2019: 1-6)

From the description of the problems and phenomena above, researchers want to improve activities and learning outcomes carried out online during this pandemic. Teachers are expected to make online learning more flexible, where students can learn anytime and anywhere. Students can interact with teachers using several available applications. Likewise, the evaluation tool that the researcher means is an application to create interactive quizzes that are intended to evaluate all activities using the Quizizz application. For this reason, the researcher took the research title "Efforts to

Improve Student Activity and Learning Outcomes in Online Learning Using the Discovery Learning Model Assisted by Quizizz Test Instruments".

RESERCH METHOD

The population can be defined as the number of cases that meet a specific set of criteria determined by the researcher. The case can be in the form of events, humans, animals, plants, and so on. while the sample is part or representative of the population under study because it is impossible to take the entire population. In this study, the people studied were all grade X students in the even semester of the 2021/2022 academic year. The samples in this study were students of class X-1 SMA N 14 Medan in the even semester of 2020/2021 Academic Year, each of which was 24 students

Research Design is action research with a series of cycles in it. These indicators consist of student activity and student cognitive competence which has increased in a certain percentage. Sumadayo (2013: 41) states that the research design that is the reference for this research is the Kemmis and Mc Taggart research model which consists of 4 cycles or phases of activity. The four stages include: (1) planning, (2) action, (3) observation and (4) reflection. After a cycle is implemented, especially after reflection, it is continued by re- planning which is carried out in the form of the same cycle mediately start the action stage.

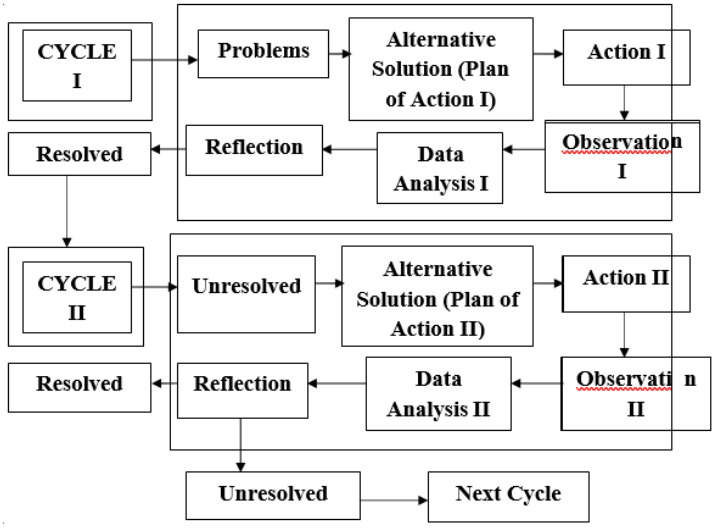

Figure 1 Research Variable Design

The type of research used in this research is classroom action research (CAR). The emergence of classroom action is used to distinguish research in the field of education from research in other fields. Then the existence of a class here is intended to solve problem solving in the classroom. Classes are not limited to rooms, but wherever a teacher carries out the learning process, such as in the laboratory, a place of practice or the learning process outside the classroom. Action research is a systematic investigation conducted by teacher- researchers to collect data about how their schools actually work, how they teach, and how students learn. This data is gathered in terms of getting comprehension, develop reflective practice, influence positive changes in the school environment and educational practices in general, and improve student learning outcomes. (Khasinah, 2013: 107-114) The choice of classroom action research is because it can be a solution in solving problems in the field of education, which can

increase students' understanding when learning and being able to be actively involved in the learning process.

RESULT AND DISCUSION

Analysis Data Student Activities in Cycle I

1. Observation of Student Learning Activities Cycle I Meeting 1

Based on the scores obtained from the mathematics learning activity observation sheet presented in Appendix 38, the students' mathematics learning activity level at the first meeting was obtained as follows:

Table 1 Description Observation Student Learning Activities Cycle I Meeting 1

Level	Criteria	Number of Student	Percentage	Average Percentage
PA > 85%	Very Active	0	0%	**62% (MEDIUM)**
70% ≤ PA < 85%	Active	0	0%	
60% ≤ PA < 70%	Enough	13	54%	
40% ≤PA < 60%	Not Active	11	46%	
PA < 40%	Very Not Active	0	0%	
	∑	24	**100%**	

Table 1 shows Observation of student learning activities cycle I meeting. The percentage of the level of activeness of learning mathematics students in the first cycle of the first meeting of the 24 students is as follows, no students (0%) are in the very active category, no students (0%) are in the active category, 13 students (54%) in the enough category, 11 students (46%) in the no active category, and no students (0%) in the very no active category.

Observations were made to 24 students on the implementation of mathematics learning with the discovery learning model. One of these goals is to increase student learning activity but at the first meeting, student activity is still in the enough category.

If presented with a bar chart, the results are as follows

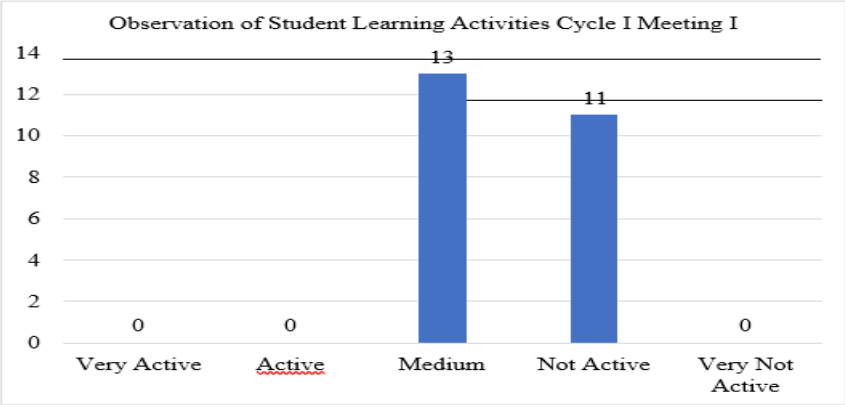

Figure 2 Description observation of student learning activities cycle I meeting 1

Based on Figure 2. shows the level of understanding of students' mathematical concepts on the initial test. None of the students were in the very no active category,

and none were in the very active or active category. This shows that in learning there are no students who are completely silent and do nothing but there are also no students who are seen to be so active in participating in learning in class. The difference between students' activeness in participating in learning from the moderate category and the inactive category is about 2 people. The level of student activity in meeting 1 must continue to be improved because it still does not meet the desired category.

2. Observation of Student Learning Activities Cycle I Meeting 2

Based on the scores obtained from the mathematics learning activity observation sheet presented in Appendix 38, the students' mathematics learning activity level at the first meeting was obtained as follows:

Table 2 Description Observation Student Learning Activities Cycle I Meeting 2

Level	Criteria	Number of Student	Percentage	Average Percentage
PA > 85%	Very Active	0	0%	
70% ≤ PA < 85%	Active	21	88%	**65%**
60% ≤ PA < 70%	Medium	3	13%	**(MEDIUM)**
40% ≤PA < 60%	No Active	0	0%	
PA < 40%	Very No Active	0	0%	
	∑	24	**100%**	

Tabel 2 show of observation student learning activities cycle I Meeting I. Obtained the percentage of the level of mathematical activity of students in the first cycle of the second meeting increased from the previous meeting but the increase was not very noticeable when compared to the results of observations at the first meeting. From the 24 students, no students (0%) were in the very active category, 21 students (88%) were in the active category, 3 students (13%) were in the medium category, no students (0%) were in the no active category, and no students (0%) were in the very no active category.

From the data above, it can be said that the average percentage of student activity at the first meeting was sufficient and at the second meeting it was still sufficient. This result will be a record for improvement in cycle II.

If presented with a bar chart, the results are as follows

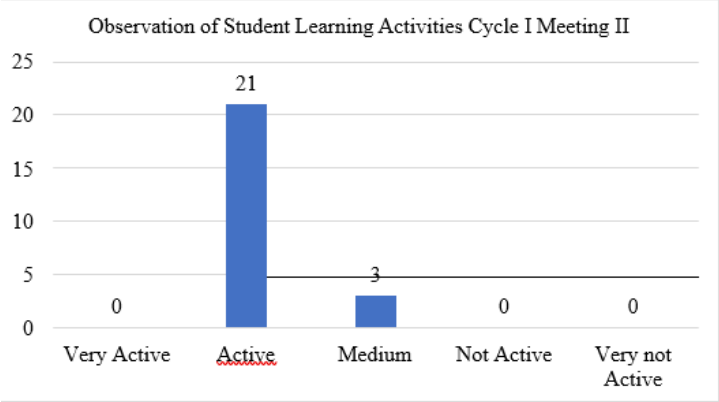

Figure 3 Description observation of student learning activities cycle I meeting 2

Based on Figure 3. It was found that the average level of student activity in learning mathematics in the first cycle of the second meeting showed an increase. The results of the observations showed that the increase in student activity was good, where at the first meeting there were no students who were active in the learning process but at the second meeting there was a high increase. There is an increase of 12 students who were actively involved in the learning process. The results of observing student learning activities are quite good because they are in the active category but the level of student activity in meeting 1 must continue to be improved because it is still in the enough category

3. Percentage of Mathematics Learning Activity Level for Every Indicator Cycle I

Based on the scores of the results assessment to the level of mathematics learning activity presented in Annexes 38 and 39, the percentage of activity levels based on the indicators is obtained as follows:

Table 3 Percentage of Mathematics Learning Activity Level Every Indicator Cycle I

No.	Indicator	Meeting 1	Criteria	Meeting 2	Criteria
1.	Asking	39%	Very No Active	70%	Medium
2.	Answering a Question	59%	No Active	74%	Active
3.	Discussions	73%	Active	82%	Active
4.	Expressing an Opinion	71%	Active	77%	Active
5.	Record Discussion Results	69%	Medium	85%	Very Active

Table 3. shows the percentage of the level of observation of student activity of each indicator of cycle I. Based on Table 4.3. In the first cycle, it was found that the first activity indicator, namely asking questions, had a percentage of 39% at the first meeting and increased to 70% at the second meeting. In the second indicator, which is answering questions, the percentage is 59% at the first meeting and increased to 74% at the second meeting. In the third indicator, which is discussion has a percentage of 73% at the first meeting and increased to 82% at the second meeting. In the fourth indicator, which is expressing opinions, has a percentage of 71% at the first meeting and increased to 77% at the second meeting. In the fifth indicator, which is discussion results has a percentage of 69% at the first meeting and increased to 85% at the second meeting.

Based on the data that has been described, it is found that the results of the analysis of the observation of student activity seen from each indicator are known that the highest percentage of indicators recorded the results of discussions with very active criteria and the lowest percentage of indicators asked with enough criteria.
If presented with a bar chart, the results are as follows

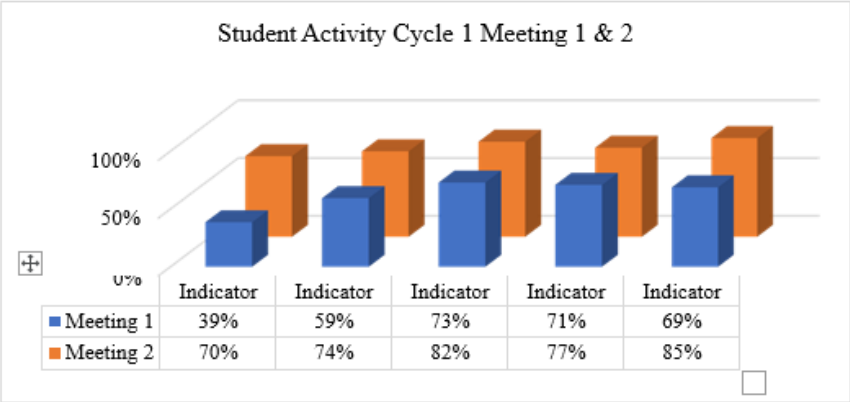

Figure 4. Percentage of mathematics learning activity level every indicator cycle I

Figure 4. shows the percentage increase in learning activity in mathematics in each indicator of cycle I. In the first indicator, namely asking questions, it increases by 31%. In the second indicator, answering questions increased by 15%. In the third indicator, discussion increased by 9%. In the fourth indicator, expressing opinions increased by 6%. Then the last on the fifth indicator, namely noting the results of the discussion increased by 16%.

In the diagram comparing the results of observations at meetings 1 and 2, then based on the data obtained it can be said that of the five indicators that experienced a fairly high increase, the indicator asked questions from 39% to 70%, while the increase that was not too high was found in the fourth indicator, namely stating opinion from 71% to 77%.

4. Observation of Student Learning Activities Cycle II Meeting 4

Based on the scores obtained from the mathematics learning activity observation sheet, the students' mathematics learning activity level at the first meeting was obtained as follows:

Table 5. Observation of Student Learning Activity Cycle II Meeting 4

Level	Criteria	Number of Student	Percentage	Average Percentage
PA > 85%	Very active	4	17%	**83% (Active)**
70% ≤ PA < 85%	Active	19	79%	
60% ≤ PA < 70%	Medium	1	4%	
40% ≤PA < 60%	No active	0	0%	
PA < 40%	Very no active	0	0%	
	∑	24	100%	

Table 5 shows the observation of the learning activities of students of cycle II meeting 4. Based on Table 5. The average level of activeness in learning mathematics in the second cycle of the fourth meeting was found to be in the active criteria. Even so, the percentage of students' mathematical activity level in cycle II at the fourth meeting increased from the previous meeting. From the 24 students, 4 students (17%) were in the very active category, 19 students (79%) were in the active category, 1 student (4%) was in the medium category, no student (0%) were

in the no active category, and no students (0%) were in the very no active category. The table above shows that in student learning activities in cycle II meeting 4, students are still dominated by the active category, but in the no active and very inactive categories, there are no more students in that category.
If presented with a bar chart, the results are as follows

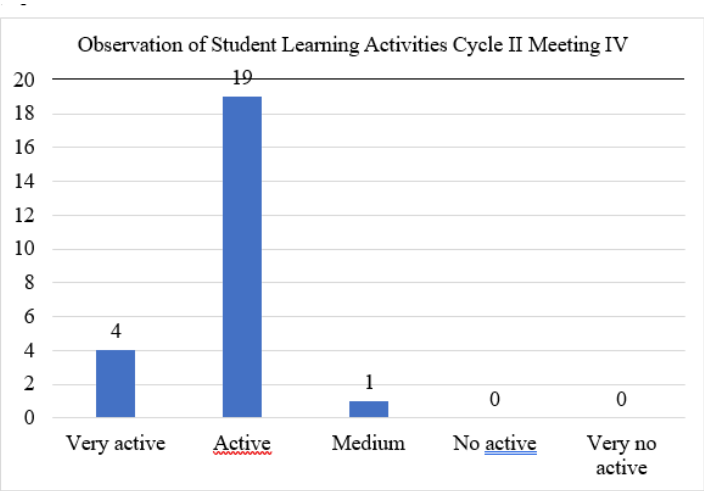

Figure 5. Observation of student learning activity cycle II meeting 4

5. Percentage of Mathematics Learning Activity Level for Every Indicator Cycle II

Based on the scores of the results assessment to the level of mathematics learning activity presented in Annexes 38 and 39, the percentage of activity levels based on the indicators is obtained as follows:

Table 6. Percentage of Student Activity Level for Every Indicator Cycle II

No.	Indicator	Meeting 3	Criteria	Meeting 4	Criteria
1.	Asking	66%	Medium	75%	Active
2.	Answering a Question	75%	Active	78%	Active
3.	Discussions	83%	Active	92%	Very Active
4.	Expressing an Opinion	77%	Active	80%	Active
5.	Record Discussion Results	89%	Very Active	89%	Very Active

Table 6 shows that the percentage of student activity level of each cycle II indicator. Based on Table 6. It is known that in cycle II, the first activity indicator, which is reading has a percentage of 66% at the third meeting and increased to 75% at the fourth meeting. In the second indicator, which is answering questions has a percentage is 75% at the third meeting and increased to 92% at the fourth meeting. In the third indicator, which is discussion has a percentage of 83% at the third meeting and increased to 92% at the fourth meeting. The fourth indicator which is expressing opinions has a percentage of 77% at the third meeting and increased to 80% at the fourth meeting. The fifth indicator which is discussion results has a percentage of 89% at the third meeting and remained at 89% at the fourth meeting.

Based on the information above, it can be seen that the results of the analysis of the active observation of students seen from each indicator are known that the highest percentage of indicators recorded the results of discussions with very active criteria and the lowest percentage of indicators asked questions with enough criteria If presented with a bar chart, the results are as follows

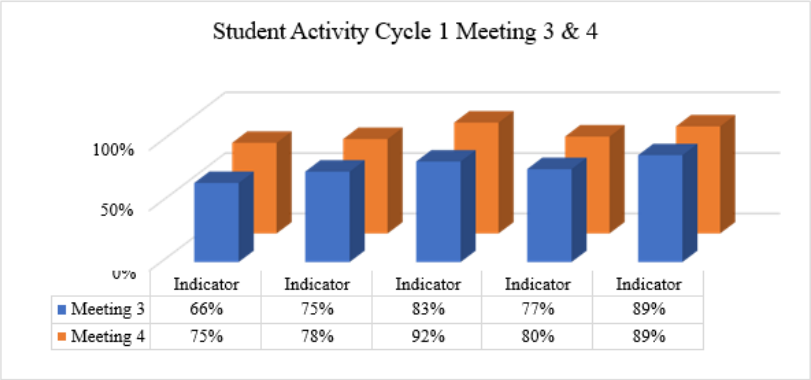

Figure 6 Percentage of mathematics learningactivity level every indicator cycle II

Based on Figure 6. It is known that the second cycle shows the percentage increase in the activity of learning mathematics on each indicator. In the first indicator, asking questions increased by 9%. In indicator, answering questions increased by 3%. In indicator, discussion increased by 9%. In the fourth indicator, expressing opinions increased by 3%. Then the last on indicator, namely noting the results of the discussion did not increase but the percentage obtained was quite high at 89%.

So based on the data obtained, a fairly high increase occurred in the first indicator, namely discussion, while a not too high increase occurred in the fifth indicator, namely recording the results of the discussion. Based on the results obtained, it can also be seen that the three indicators, namely the first, second, fourth indicators are already in the active category and the third and fifth indicators are in the very active category. This increase is already in the desired category, so there is no need to take further actions in the next cycle.

Discussion

Based on obsevation and learning outcomes test data. The following describes the successes and failures in the implementation of Actions at the time of learning Cycle I, namely:

1. There are still some indicators of student learning activities that are classified as little done by students, such as expressing opinions, and asking questions about what they don't understand
2. Student activities in presenting the results of their discussions to other friends still need improvement to make it even better.
3. Students who are active in groups during the learning process are still dominated by students with high abilities, so students with low abilities are not very active due to lack of courage for students not to be afraid of making mistakes.

4. Some students did not pay attention when other students explained the results of their discussions to other groups so that when the teacher asked the students could not explain the explanation before.
5. Some students still do not understand the use of technology, especially using zoom and quizizz so that the student is constrained in the learning process taking place
6. There are still students who do not do the learning outcomes test that has been sent via whatsapp because the student has problems that cannot be delayed first.
7. Teachers still do not use time well so that the implementation of learning is still not going well.

Besides the failures obtained by researchers during the first cycle of learning, it turns out that there is also an increase in student learning activities, namely at the first meeting the average percentage of student activity reaches 62% where student activity is still quite adequate and at the second meeting the percentage of student activity reaches 65% and is included in the category enough too. It can be concluded that overall student activity in the first cycle is still classified as quite active with a percentage of 63.5%. Although there has been an increase in student activity, this increase is still not sufficient in achieving the research target, namely with an average student activity percentage of at least 70% From the test results of the first cycle of student learning mathematics on SPLTV material, it is known that 12 students (50%) of 24 students achieved individual learning mastery (KB 75), while 12 students (50%) did not achieve individual learning mastery (KB < 75). The classical mastery level obtained in the first cycle, which is 50%, does not meet the classical mastery requirements because it has not been 85%.

Based on the data obtained in cycle I, there are still many imperfections during the implementation of learning, so the researcher continues the research to cycle II. The reflection on cycle I will be used as a reference to improve the results in cycle II. The activities carried out as an improvement in cycle II are as follows:

1. The teacher motivates students more so that students are more interested in doing the test that will be given next. the teacher also gives students curiosity about the question. The teacher guides the students to find their own understanding so that students are more enthusiastic in doing the questions given
2. The teacher will try to make students actively discuss with their group friends by explaining the importance of group discussion so that students can work on their student activity sheets and provide additional value if the student activity sheet they are working on have improved well.
3. Pay attention to the use of time when conducting core learning, so that time can be used effectively.
4. Provide guidance to each group at the same time. The teacher will visit the breakout room to zoom in on each group and facilitate them to ask questions about the material that is still not understood.
5. The teacher assigns to students who have high abilities to guide their groupmates who still don't understand in doing the problem.
6. So that students can be brave and accustomed to expressing their opinions, researchers are expected to be able to carry out learning by increasing question and answer sessions, both between researchers and students, students with friends in the group or outside the group.

7. The teacher will teach some students who are still difficult in using technology, especially zoom and quizizz so that students who still don't understand how to use it can understand better and the learning process can take place well

In line with observation I, Observation II is also carried out by observing the activities of students and teachers along with the implementation of actions in the learning process using the discovery learning model. During the implementation of learning, all learning activities carried out by researchers by acting as teachers in applying discovery learning will be carried out by teachers of mathematics subjects, namely Mrs. Fitria Mayasari S.Pd., while those who observe student activities in learning are unimed students.

The results obtained on the implementation of Action I are:

1. Results of observations of teachers

   Observations (observations) were carried out by a mathematics teacher in class X-1 IPA SMAN 14 Medan. Observations are made from the beginning of the implementation of the action carried out until the end of the implementation of the learning action. The classroom teacher observes research actions during teaching by using the Discovery Learning model. The results of observations obtained by researchers while carrying out learning with the discovery learning model are as follows:

   a. Weaknesses when managing time poorly were not found again in cycle II. Cycle II time management can be classified as very good, which means that time management during learning is carried out optimally and efficiently so that the teaching and learning process is not rushed with time, especially during the discussion process, students do not work on discussions in a hurry.
   b. During the learning process, the teacher's preparation is good and when the teacher delivers the material in online learning, it is quite good because all students can also see smoothly the material displayed by the teacher on the screens of their respective students. Learning has been much better than previous meetings so that during the learning process between teachers and students there is good cooperation. So, it can be said that the learning was successful.
   c. The teacher has also conveyed and taught about how to use zoom and quizzz well and students can also use
   d. The teacher has used zoom which does not have time limitations so that the learning that takes place is not intermittent and students are also more comfortable in participating in the learning.

2. Results of observations of Student

   Observations made to students regarding student activities during learning activities took place. Based on the results of observations made to students, it was found that:

   a. During the learning process, the students were seen to be more active in solving the questions on the student activity sheet. This could be seen when the students sent some answers to the researcher
   b. Students are seen to be active in participating in the discourse process in their respective groups. The process of exchanging ideas also occurs during discussions between students who have high skills and students who still do not understand.
   c. When one of the representative students of the group presents the results of the discussion, it is seen that the other student is responding to the results of the

group's discussion, it can be seen that the student is more responsive to the results of his discussion and revises things that are wrong or not as they should be.

d. Students are more daring to respond and present the results of the answers from the existing student activity sheets. This can be seen from the interaction of students with students and the teacher and students are well established.
e. Overall, student activity has been better than before and the average student has done learning activities well

Based on the efforts made by researchers in cycle II, they have succeeded in increasing ability test result and student activity in three variable system of linear equations topic so as to achieve classical learning completeness. Based on the data analysis conducted, the data obtained are:

1. Test

   The learning outcomes of class X IPA SMAN 14 Medan after being given action II can be seen that of 24 students, 21 students (88%) have achieve individual learning completeness (KB ≥ 75), while 3 students (13%) do not achieve individual learning completeness. The level of classical learning completeness obtained in the second cycle, which is 85% already meets the classical completeness requirements because the student's score is ≥ 85% with high criteria..

   Different from Cycle I, showed that 12 student (50%) from 24 student who achieved individual learning completeness (KB ≥ 75), while 12 student (50%) did not achieve individual learning completeness (KB < 75). So that this research can be said to be successful because students' classical learning completeness in cycle II has reached 85%.

2. Observation Student Activity

   Based on observations, it is known that in cycle II the first activity indicator, which is reading, has a percentage of 66% at the first meeting and increased to 75% at the second meeting. In the second indicator, which is answering questions, has the percentage is 75% at the first meeting and increased to 92% at the second meeting. In the third indicator, discussion has a percentage of 83% at the first meeting and increased to 92% at the second meeting. The fourth indicator, which is expressing opinions, has a percentage of 77% at the first meeting and increasing to 80% at the second meeting. The fifth indicator which is discussion results has a percentage of 89% at the first meeting and increased 89% at the second meeting.

3. Observation Teacher activity

   The teacher has been able to maintain and improve the management of mathematics learning by using the discovery learning model. This is based on observational data on teacher performance in the management of discovery learning learning has increased from the average of the first cycle which is 2.76 categorized as good to increase in the second cycle which is 3.55 into the very good category.

Based on the results of observations of teachers, student activities and learning outcomes II, there was a very good increase from the previous cycle. It can be seen that most students have been able to get high scores and some even get very high scores. his indicates an increase in activity and student learning outcomes based on data analysis from the initial test to the analysis of learning outcomes II using the application of discovery learning in the classroom. It turns out that you can get an improvement from each test result. In the first cycle for the student activity section, it was quite good but in

the first cycle there was still not enough of the desired category for each indicator so that it would be continued again in the second cycle.

There are many shortcomings that exist in each indicator. Indicators such as expressing opinions, students still pay less attention to other students who give their opinions. Then, on the indicator of asking students, they are still not able to ask questions to the teacher or their friends, where the students feel embarrassed to ask questions. Then, on the indicator of answering questions, most students do not want to answer questions because there is no confidence in the students, students often feel afraid of being wrong if the answer is wrong. Then in group discussions students are still not optimal in exchanging ideas with their group friends, most students work individually in answering student activity sheets and then distribute them to other friends but the discussion process like this is still not optimal. Then the indicator records the results of the discussion, it is quite active that all students provide the results of their discussions to the teacher. Because there are several indicators that still do not meet the desired category, the researcher adds things to improvement in the learning process.

After that, it turned out that in the second cycle there was an increase, where the teacher provided the widest opportunity for all students to be active during the learning process. Learning methods such as when the teacher encourages students to be able to ask questions by giving students the task of preparing a question about the material being studied. It motivates students to be able to give them the confidence to ask questions and provide ideas to students by stimulating students to improve quality and Provide several ways to ask questions so that over time the students will have the courage to ask questions and provide ideas. By using a learning model that is better than the first cycle, students are more active in class and their activities and learning outcomes increase.

Based on the results of the second cycle of research, it was found that every indicator in this study had been achieved. This means that the purpose of this study was also achieved, so that learning was stopped and not continued to the next cycle. Thus, based on the results of observations by applying the learning model of discovery learning and the results of learning tests can increase the activeness and learning outcomes of students in class X IPA SMA N 14 Medan.

CONCLUSION

Based on the presentation of the results of the research and discussion, it can be concluded that the application of the discovery learning learning model can increase the activeness and learning outcomes of class X science students of SMA N 14 Medan. The increase was shown through the results of assessment through tests after the discovery learning learning model was applied, the results were obtained, namely the average class from 73,75 in cycle I, increased to 83,75 in cycle II.

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