

## Analysis of The Effectiveness of Mathematics On Students MTs Negeri 2 Medan

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| Article Info   | ABSTRACT   |
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| <p><b>Keywords:</b><br/><i>Effectiveness in Mathematics, Scientific Approach</i></p> | <p>This research discusses the problem of how effective mathematics learning is using a scientific approach at MTs Negeri 2 Medan which was carried out in TP 2023-2024. The aim of this research is to determine the results of the analysis of the effectiveness of mathematics learning using a scientific approach for students at MTs Negeri 2 Medan TP 2023-2024. This research is a descriptive research. Research conducted on 44 MTs 2 Medan students in the field was to analyze the effectiveness of mathematics learning through a scientific approach. This research was conducted in class VII-2 students at MTs Negeri 2 Medan with the subject of transformation. Learning mathematics can be said to be effective by using a scientific approach. This is known from observations of the percentage of student learning recapitulation of 91% which is very active. And seen from each indicator of student activity, the percentage equal to 100% of students plays an active role. From the data obtained there were 3 students who disturbed their friends with a percentage of 5.75%, 16 students did not understand the problem with a percentage of 36.56%, and students understood the problem with the highest number of students, with 25 students and with the highest percentage of 57.69%. So it can be concluded that the average student activity is experienced in the learning process activities, so that there is Effectiveness in Mathematics Learning Using a Scientific Approach for MTs Negeri 2 Medan Students in the 2023/2024 academic year.</p> |

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### INTRODUCTION

Mathematics is one of the basic sciences that is very important to teach to students. However, this is not accompanied by good mathematics learning achievement. The lack of mathematics education is a problem that cannot be resolved.

According to Abdurrahman (2012:204) that:

"Mathematics needs to be taught to students because (1) it is always used in all aspects of life; (2) all fields of study require appropriate mathematical skills; (3) is a strong, short and clear means of communication; (4) can be used to present information in a variety of ways; (5) improve the ability to think logically, accuracy and spatial awareness; and (6) provide satisfaction from efforts to solve challenging problems."

Student learning activeness can be seen from student involvement in various teaching and learning processes. Paul B. Diedrich in Oemar Hamalik (in the Jagad Suminar blog, 2012: 1) divides student learning activities into 8 groups, namely:

1. Visual activities (visual activities) such as reading, observing experiments, demonstrations, exhibitions, and observing other people working or playing.
2. Oral activities (oral activities) such as stating a fact, relating an event, asking questions, giving suggestions, expressing opinions, interviews, discussions and interruptions.

3. Listening activities (listening activities) such as hearing descriptions, conversations, discussions, music, speeches, and so on.
4. Writing activities (writing activities) such as writing essays, reports, tests, questionnaires, copying, and so on.
5. Drawing activities (drawing activities) such as drawing, making graphs, maps, diagrams, patterns, and so on.
6. Motor activities (motor activities) such as carrying out experiments, making constructions, playing models, gardening, looking after animals, and so on.
7. Mental activities (mental activities) such as contemplating, remembering, solving problems, analyzing, seeing relationships, making decisions, and so on.

Emotional activities (emotional activities) such as being interested, bored, happy, brave, energetic, nervous, and so on.

Learning with a scientific approach is a learning process that is designed in such a way that students actively construct concepts, laws or principles through the stages of observing (to identify or find problems), formulating problems, proposing or formulating hypotheses, collecting data using various techniques, analyzing data, draw conclusions and communicate “discovered” concepts, laws or principles.

The scientific approach is intended to provide students with an understanding of recognizing and understanding various subjects using a scientific approach, that information can come from anywhere, at any time, not depending on directional information from the teacher. Therefore, the learning conditions that are expected to be created are directed at encouraging students to find out from various sources through observation, and not just being told.

Applying a scientific approach to learning involves process skills such as observing, classifying, measuring, predicting, explaining and concluding. In carrying out these processes, teacher assistance is needed. However, the teacher's assistance must decrease as the student becomes more mature or as the student's class increases.

**Table 1.** Learning Steps with a Scientific Approach

| <b>Learning Steps with a Scientific Approach</b> | <b>Learning Activities</b>   | <b>Developed Competencies</b>   |
|--|--|---|
| Observe  | Reading, hearing, listening, seeing (without or with tools)  | Train seriousness, thoroughness, searching information  |
| Ask  | Ask questions about information that is not understood from what is observed or questions to obtain additional information about what is observed (starting from factual questions to questions that are hypothetical) | Develop creativity, curiosity, the ability to formulate questions to form critical thinking that is necessary for intelligent living and lifelong learning. |
| Collect Information/Eksperiment                  | 1) Conduct experiments<br>2) Read sources other than textbooks<br>3) Observe objects/events  | Develop a conscientious, honest, polite attitude, respect other people's opinions, communication skills, apply the ability to gather                        |

|                                       |   |   |
|---------------------------------------|---|---|
|                                       | 4) Activity<br>5) Interviews with resource persons  | information through various learned methods, develop lifelong study and learning habits   |
| Associating or Processing Information | 1) Process the information that has been collected, whether limited to the results of collecting/experimental activities or the results of observing activities and information gathering activities<br>2) Processing information collected from adding breadth and depth to processing information that seeks solutions from various sources who have different opinions to which is contradictory | Develop honest, thorough, disciplined, rule-abiding attitudes, hard work, the ability to apply procedures and the ability to think inductively and deductively in drawing conclusions |
| Communicate                           | Delivering results observations, conclusions based on the results of the analysis orally, in writing, or other media  | Develop an attitude honest, conscientious, tolerant, thinking ability systematic, express opinions concisely and clearly, and develop language ability which is good and true         |

From the he steps above will be a reference for approaching this research.

### RESEARCH METHOD

In this research, data collection can use data collection tools that are appropriate to the problem being studied. The instruments used in this research were structured in the form of:

#### 1. Observation

The observation sheet is an observation of the learning process and student activities during teaching and learning activities carried out by the teacher in class. Indicators of student activity are:

Table 2. Student Activity Observation Grid in Learning

| No | Indicator         | No.Item Instrument | Responden |
|----|-------------------|--------------------|-----------|
| 1  | Visual Activities | 1, 3, 8, 9         |           |
| 2  | Oral Activities   | 5, 14, 15          |           |

|   |                      |        |          |
|---|----------------------|--------|----------|
| 3 | Listening Activities | 2      | Students |
| 4 | Writing Activities   | 10, 13 |          |
| 5 | Drawing Activities   | 4, 12  |          |
| 6 | Motor Activities     | 7      |          |
| 7 | Mental Activities    | 11     |          |
| 8 | Emosional Activities | 6      |          |

The data analysis used to overcome the problems presented in this research is descriptive analysis. Descriptive analysis aims to describe students' conditions regarding the main material of transformation. In carrying out observations, we know the students' abilities regarding the subject matter and provide information in taking considerations and implementing efforts to improve existing weaknesses.

## RESULTS AND DISCUSSION

Based on the description of the observation results, student effectiveness increases when learning mathematics using a scientific approach. This research was carried out in two meetings to obtain the value of student activities that occurred in the learning process. The percentage of student activity has clearly increased significantly until it reaches the effectiveness expected in the research. This research was carried out by researchers with the aim of finding out how effective students' mathematics learning is using a scientific approach on the subject of transformation and sub-subjects of translation for students in class VII-2 MTs Negeri 2 Medan T.P 2023/2024.

This research uses a lot of average value calculations to obtain recapitulation scores resulting from student activities that occur within implementation of learning using the observation attachment presented in the attachment. Based on student learning activity data, of the 44 students observed, there were 29 students whose learning activities were very active, and 16 students whose learning activities were active. So the classical percentage of student learning activities is 91% of students who get the active category and above.

If we look at each indicator of student learning activities, namely visual activities, 100% of students carry out this activity, but there are still 2 students disturbing their friends with a percentage of 3.97%, 15 students do not understand the problem with a percentage of 34.10%, and students understand the problems with the largest number of students, namely 27 students with the highest percentage of 61.93%. So, these visual activities have experienced effectiveness in implementing a scientific approach in the learning process.

Judging from the oral activities indicators, students have carried out this activity with a percentage of 100%, but there is still 1 student disturbing friends with a percentage of 2.27%, 15 students do not understand the problem with a percentage of 33.33%, and students understand the problem there were the most students, namely 28 students with the highest percentage of 64.40%. So, this oral activity has experienced effectiveness in implementing a scientific approach in the learning process.

Judging from the listening activities indicator, students have carried out this activity with a percentage of 100%, but there are still 5 students disturbing their friends with a percentage of 11.36%, there were 14 students who did not understand the problem with a percentage of 31.82%, and students who understood the problem had the highest number of students, namely 25 students with the highest percentage of

56.82%. So, these listening activities have experienced effectiveness in implementing a scientific approach in the learning process.

Judging from the writing activities indicator, students have carried out this activity with a percentage of 100%, but there is still 1 student who disturbs friends with a percentage of 1.14%, there are 16 students who do not understand the problem with a percentage of 37.50%, and students understand the problem. with the highest number of students, namely 27 students and with the highest percentage of 61.36%. So, this writing activity has experienced effectiveness in implementing a scientific approach in the learning process.

Judging from the drawing activities indicator, students have carried out this activity with a percentage of 100%, but there are still 2 students disturbing their friends with a percentage of 4.54%, there are 16 students who do not understand the problem with a percentage of 37.50%, and students understand the problem. there was the largest number of students, namely 26 students with the highest percentage of 57.96%. So, this drawing activity has experienced effectiveness in implementing a scientific approach in the learning process.

Judging from the motor activities indicator, students have carried out this activity with a percentage of 100%, but there are still 2 students disturbing their friends with a percentage of 4.54%, there are 20 students who don't understand the problem. students with a percentage of 45.46%, and students who understand the problem have the largest number of students, namely 22 students with the highest percentage of 50.00%. So, this motorbike activity has experienced effectiveness in applying a scientific approach in the learning process.

Judging from the mental activity indicators, students have carried out this activity with a percentage of 100%, but there are still 2 students disturbing their friends with a percentage of 4.54%, there are 18 students who do not understand the problem with a percentage of 40.91%, and there are students who understand the problem. the highest number of students, namely 24 students with the highest percentage of 54.55%. So, these mental activities have experienced effectiveness in implementing a scientific approach in the learning process.

Judging from the emotional activities indicators, students have carried out this activity with a percentage of 100%, but there are still 6 students disturbing their friends with a percentage of 13.64%, there are 14 students who do not understand the problem with a percentage of 31.82%, and students understand the problem. there was the highest number of students, namely 24 students with the highest percentage of 54.54%. So, these emotional activities have experienced effectiveness in implementing a scientific approach in the learning process.

From the results of this discussion, there is an increase in student learning activities by implementing a scientific approach in the learning process. The application of a scientific approach provides increased student activity in the process student learning and activities during the teaching and learning process in the classroom. All indicators of student activity obtained a percentage of 100% active in the learning process, but there were still 3 students who disturbed their friends with a percentage of 5.75%, 16 students did not understand the problem with a percentage of 36.56% and of the total percentage of active students In terms of student activities in class and understanding the problems being studied, the highest number of students was obtained, namely 25 students with the highest percentage of 57.69%.

Student activity reaches an active value and above in the learning process with a scientific approach to student activities in the classroom. In general, almost all subjects experience activity when learning takes place in the classroom. Students in class VII-2 MTs Negeri 2 Medan have played an active role in their

activities in the learning process carried out in the classroom with the subject of transformation and the sub-subject of translation, thus creating an effective learning atmosphere. Because the percentage of students shows that students are actively involved in activities in class, the use of the Scientific Approach is effective in increasing student activity in class with the subject of transformation and the sub-subject of translation.

## CONCLUSION

Based on the problems, research objectives, research description and research discussion that have been presented, the following conclusions can be drawn:

1. Based on the results of research on student activities which are in accordance with student activity indicators, there is a percentage of 100% of students experiencing activity in the learning process in the classroom, but there are 3 students disturbing friends with a percentage of 5.75%, students do not understand the problem, there are 16 students with the percentage was 36.56% and students understood the problem of getting the largest number of students, namely 25 students with the highest percentage of 57.69%. So the percentage of student learning activities leads to activeness in student activities in the classroom during the learning process.
2. The results of research on student activities in learning obtained from observations of student learning activities, that of the 44 students observed, there were 29 students whose learning activities were very active, and 16 students whose learning activities were active. So the classical percentage of student learning activities is 91% of students who get the active category and above.
3. If seen from the research results, the use of a scientific approach is effective in learning mathematics for students in class VII-2 MTs Negeri 2 Medan Tahun 2023/2024 lesson with the topic of transformation and sub-topic of translation.

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