

The Application of The Guided Note-Taking (GNT) Learning Method and its Effect on Student's Understanding of Mathematics Concepts

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ABSTRACT

This study aims to determine the effect of applying the Guided Note Taking (GNT) learning method on students' understanding of mathematical concepts. This study uses quantitative methods and is based on the previously discussed results. It can conclude that most students respond positively to the Guided Note Taking (GNT) learning method in learning mathematics because, based on the distribution of questionnaires, they obtained students' responses to the application of the Guided Note Taking (GNT) learning method, the percentage score obtained is 77% which is included in the strong category. In addition, students' understanding of mathematical concepts is included in the good category. The average value of students' mathematical concept understanding test results in the experimental class was 80.44, while the average value of the mathematical concept understanding test results in the control class was 75.67. This shows that the students' ability to understand mathematical concepts in the experimental class is better.

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1. INTRODUCTION

Along with the development of technology today, education is very colouring in everyday life, especially in mathematics education. Mathematics education is one of the basic sciences that has developed rapidly in terms of material and use [1]–[3]. In everyday life, mathematical calculations are realized or not often used by humans to solve a problem [4]–[6]. Mathematics is also taught in schools from elementary to upper secondary level. Mathematics is a study of subjects included in the curriculum. Therefore the study of mathematics is one of the educational processes. Mathematics teaching materials are not only a vehicle for teaching but also a vehicle for education. This means that the teaching of

mathematics is not only aimed at making students able to solve problems and apply mathematical knowledge but at organizing students' reasoning and forming a good student attitude [7]–[9].

Mathematics learning does not only emphasize practising skills and memorizing formulas but on understanding concepts because the subjects in mathematics are hierarchically arranged, so if students cannot understand basic calculations, it will be challenging to learn at a more complex at a higher grade level [10]–[12]. According to Darmadi [13], learning mathematics is not only about "how" must solve a problem but also about "why" and what can solve the problem in a certain way. Concepts in mathematics are arranged hierarchically, meaning that concepts in mathematics are placed in stages, from easy concepts to complex concepts [14]–[16]. So in learning mathematics, there should be no steps or stages that are skipped. Mathematics should be studied systematically and regularly, presented with a clear structure, and adapted to students' intellectual development and the prerequisite abilities they already have [17]–[19]. Thus learning mathematics will be carried out effectively and efficiently. Because mathematics concepts have a relationship, students should be given more opportunities to see connections with other materials. It is intended that students can understand mathematics material in depth. A student who studies a mathematical concept will require prerequisite knowledge which will be the basis for thinking to develop a particular concept.

Based on preliminary research at SMPN 4 Palimanan, most mathematics learning still uses conventional methods. Students only listen to what the teacher says and record what the teacher does. If the traditional approach is often used, students will tend to be bored and pay less attention, so only students with high mathematics learning motivation will progress and develop. In contrast, students who do not have high mathematics learning motivation will take for granted what is given in the teacher's explanation. This ultimately affects the learning outcomes of mathematics. The low learning outcomes of mathematics can be caused by the ability of teachers to apply inappropriate learning methods or strategies. For example, the learning process is teacher-centred, while students tend to be passive. This results in students not having the opportunity to develop their mathematical thinking skills.

To anticipate these problems, it is necessary to apply appropriate learning methods. There need to be variations in learning to improve students' understanding of mathematical concepts in learning mathematics. According to Zaini, Munthe, & Aryani [20], Guided

Note Taking is a learning method that uses a chart and schema (handout) as a medium that can help students take notes when a teacher is adding lessons to the lecture method. The application of this method is intended to improve students' understanding in receiving the subject matter that has been delivered. Guided Note Taking (GNT) learning method is the proper method to anticipate this problem. To be able to improve students' understanding of mathematical concepts, among others, utilizing variations in the learning process so that the class atmosphere is not saturated.

2. METHOD

This study aims to determine the effect of applying the Guided Note Taking (GNT) learning method on students' understanding of mathematical concepts. This study uses quantitative and experimental methods, namely the effect of the application of the Guided Note Taking (GNT) learning method on students' understanding of mathematical concepts. In this study, one group of students was used as the experimental group, which applied an active learning approach with the Guided Note Taking (GNT) method in their learning. The design used in this study is an Experimental Design, namely a Posttest-Only Control Design. This research will involve two classes, where one class is treated as an experiment using an active learning approach using the Guided Note Taking (GNT) method and one class as a control class using conventional methods.

In collecting data, the author uses two data collection techniques, namely questionnaires and tests. The test is used to determine students' understanding after the implementation of learning using the Guided Note Taking (GNT) learning method. The test carried out is a subjective test made by the researcher himself. Meanwhile, to obtain data regarding "Student Responses to the Application of Guided Note Taking (GNT) learning methods", in this study, the instrument used was a questionnaire. Several statements to determine student responses to the application of the Guided Note Taking (GNT) learning method in the form of a Likert scale between 1-5. The Likert scale is a scale that can use to measure attitudes, opinions and perceptions of a person or group about social events or phenomena.

3. RESULTS AND DISCUSSION

This research was conducted at SMPN 4 Palimanan. SMPN 4 Palimanan is one of the state junior high schools in the Cirebon district and not the only junior high school in

the Cirebon district by implementing the 2013 curriculum for class VII and the KTSP curriculum for grades VIII and IX.

The Guided Note Taking (GNT) learning method has never been applied at SMPN 4 Palimanan. Based on the initial observations, the researcher got information about the condition of the class when the learning activities took place. In teaching-learning theory, the teacher uses conventional learning methods, namely the dominant learning method applying the lecture method. This method is suitable to use because this method is easy to implement; the teacher explains orally in front of the class by reading the subject matter. However, the students' ability to listen for 2 hours of lessons did not entirely focus on what the teacher said. If students take too long to listen to lectures, students tend to feel bored and look for other activities such as with their classmates. So that students' understanding of mathematical concepts tends to decrease, they rarely ask for the material they don't understand even though the teacher has questioned often whether there is a material that is unclear. Thus, the lecture method needs to be combined with other ways to keep students focused on the material delivered.

The Guided Note Taking (GNT) method is used to assess students' ability to capture essential points by guiding the form of an imperfect grid so that the lecture method brought by the teacher is more attentive to students' attention [21], [22]. This guide in the form of a grid is called a handout guided note-taking, a handout whose contents are in the form of a grid or essential points in the form of issues that students must fill in during the learning process. In this study, the Guided Note Taking (GNT) method was packaged in the form of group discussions so that what filled out the handouts in groups. Then one of the members of each group presented the debate results. The existence of collaborative activities, discussions, and problem-solving in filling out handouts of guided notes can increase student learning activities.

The Guided Note Taking (GNT) method has seven steps: opening lessons, forming groups, discussion and cooperation in filling out handouts, presentations, efforts to activate students, evaluation and conclusions [20]. Through the Guided Note Taking (GNT) method, students learn to be able to stay focused on the material presented during the teaching and learning process because they learn to complete the material that has been given [21], [23], [24]. Students will also not get bored quickly because the material presented has been summarized in the handout guide on note-taking.

After the data was obtained, it was then tested using the Independent sample t-test, the data obtained were as follows:

Table 1. Independent t-test results
Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Score	Equal variances assumed	.652	.422	3.322	70	.001	4.778	1.438	1.909	7.647
	Equal variances not assumed			3.322	68.565	.001	4.778	1.438	1.908	7.648

From table 1 above, the significance value is 0.001 (<0.05). The decision is to reject H_0 and accept H_a , meaning there is a significant difference where the average mathematical concept understanding test results obtained in-class experiments are 80.44 more. High value. The average effect of the mathematical concept understanding test accepted in the control class is 75.67, meaning that the application of the Guided Note Taking (GNT) learning method has a positive effect.

Table 2. The Result of the Understanding of Mathematical Concepts Test Score
Group Statistics

		Group	N	Mean	Std. Deviation	Std. Error Mean
Score	Experiment		36	80.44	5.644	.941
	Control		36	75.67	6.529	1.088

For the size of the effect, the value of $d = 3.27 (> 1)$, then the positive impact is in the vast category, meaning that the application of the Guided Note Taking (GNT) method has a vast influence on understanding mathematical concepts. Because the Guided Note Taking (GNT) method has a hugely positive effect, and the costs for implementing learning with this method are affordable, the decision to apply this method has practical significance.

In addition, the implementation of the research went well. The Guided Note Taking (GNT) learning method also received an excellent response from the students; this was shown by the enthusiasm to participate in the teaching and learning process, and the students looked more active. At the end of the lesson, students are given an evaluation. Every meeting, students' understanding of mathematical concepts continues to increase, which can be seen from student learning outcomes through the assessments.

There is a significant difference in the learning situation between the control and experimental classes. In the control class, which was applied using the conventional method, students were still seen chatting with their classmates, playing on cell phones secretly, reading books other than subjects, and doing other assignments. When the teacher gives time to ask questions or have an opinion, very few students dare to express their views, and no students dare to ask the teacher. So the teacher must appoint students to be willing to answer questions from the teacher.

The results of this study are strengthened by the theory of one of the objectives of the Guided Note Taking (GNT) learning method, namely that students easily understand and master mathematics subject matter to understand mastering mathematical concepts [25] and from previous research by Jefri Rusdiana [26] concluded that the mathematics learning achievement of students who received the GNT method was better than their achievement learning mathematics for students who receive expository learning methods using fractions in problem-solving for fifth-grade elementary schools throughout the Gajah Mada Cluster, Kepil District, Wonosobo.

4. CONCLUSION

Based on the results that have been discussed previously, we can conclude that most students respond positively to the application of the Guided Note Taking (GNT) learning method in mathematics learning because, based on the distribution of the questionnaire, what obtained students' responses to the application of the Guided Note Taking (GNT) learning method, the percentage score received was 77% which belongs to the strong category. In addition, students' understanding of mathematical concepts is included in the good category. The average value of students' mathematical concept understanding test results in the experimental class was 80.44, while the average value of the mathematical concept understanding test results in the control class was 75.67. This

shows that the students' ability to understand mathematical concepts in the experimental class is better.

Using the Independent sample t-test, the significance value is 0.001 (<0.05), and the decision taken is to reject H_0 and accept H_a , meaning that there is a significant difference where the average test results for understanding mathematical concepts obtained in the experimental class are 80.44 higher than the average value of the mathematical concept understanding test results obtained in the control class of 75.67, meaning that the application of the Guided Note Taking (GNT) learning method has a positive effect. For the size of the impact, the value of $d = 3.27 (> 1)$, it is concluded that the positive impact is in a vast category, meaning that the application of the Guided Note Taking (GNT) method has an enormously positive effect on students' understanding of mathematical concepts. Because the Guided Note Taking (GNT) method has a substantially positive impact, and the costs for implementing learning with this method are affordable, the decision to apply this method has practical significance.

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