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Analysis of Critical Thinking Skills of Grade VIII Students in SMP Negeri 1 Gunungsitoli Idanoi In Mathematics Learning

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Abstract
This research is motivated by the observations of researchers at SMP Negeri 1 Gunungsitoli Idanoi, which is still found that students do not like to study mathematics, sometimes this lesson is a difficult lesson both in material and in learning so that it causes the level of critical thinking of students in solving math problems is still lacking. This study aims to describe the level of critical thinking skills of students, especially class VIII at SMP Negeri 1 Gunungsitoli Idanoi, using descriptive qualitative research methods: research that describes variables as they are supported by data generated from actual circumstances. Based on the research results, the average level of students' critical thinking is 47.39 with the average acquisition of students' critical thinking skills based on indicators obtained: Interpretation indicators (60.58), Analysis indicators (55.29), Evaluation indicators (35.58), and Inference indicators (53.85). Thus, based on the average value of students' critical thinking skills, it is obtained that the level of critical thinking of students is still low. Critical thinking is not easy, but critical thinking skills can be learned and trained.

Keywords*: Critical Thinking, Mathematics, Descriptive.*

Introduction

Education is a tool that can create critical and independent human resources and has the quality that can increase the overall selling point, because it is the basic capital to get quality human beings. Talking about education, it is certainly inseparable from the teaching and learning process activities to achieve the expected learning outcomes (Harefa, Lase & Zega, 2023). In a learning process, students must play an active role so that they can easily find and understand the concept of the lesson. Therefore, teachers must have the ability to choose the right learning strategy so that students can be more active in their learning activities (D'Alessio, Avolio, & Charles, 2019; Zagoto, Yarni & Dakhi, 2019; Ziliwu et al., 2022).

One of the abilities that will be developed according to Government Regulation No. 17/2010 on the Management and Implementation of Education is the ability to think critically. Critical thinking ability is an ability that allows a person to solve a problem logically and reflectively with the aim of making conclusions and decisions about what to believe. Critical thinking ability is the ability to think logically and reflectively focused on making decisions that will be trusted (Harefa et al., 2022; Loes, & Pascarella, 2017). One of the materials

studied in the world of education that requires the right learning strategy is mathematics, learning mathematics has goals that can shape students' ability to think critically The objectives of learning mathematics according to the Ministry of Education and Culture 2013 are (1) to improve intellectual abilities, especially students' high-level abilities, (2) to form students' ability to solve problems, (3) to improve students' ability to think critically. (2) forming students' ability to solve a problem systematically, (3) obtaining high learning outcomes, (4) training students in communicating ideas, especially in writing scientific papers, and (5) developing student character.

So, the intended purpose of learning mathematics is that students can solve problems related to mathematics through critical, logical and careful thinking to solve mathematical problems and to take education to the next level. Learning mathematics as part of education has an important role in life, because mathematics is a science obtained by reasoning which can improve thinking in dealing with a problem. However, the implementation of mathematics learning is inseparable from the existing obstacles, both from the teacher and from the students. The teacher can be said to be the figure in control of the learning process and also as the center of education in the classroom.

Based on the results of observations and interviews conducted by researchers with several VIII grade students at SMP Negeri 1 Gunungsitoli Idanoi, it was found that in general they were less interested and felt bored with the learning carried out in class because from the beginning they considered mathematics to be a difficult subject, both in terms of material and in the implementation of learning. Based on the results of an interview with a teacher at SMP Negeri 1 Gunungsitoli Idanoi, the problem that often occurs is that students have different mathematical abilities in solving mathematical problems and the critical thinking ability of each student is still lacking.

Some students are able to express the information in the problem completely, mention what is known and asked correctly, identify the relationship between statements, explain how to solve the problem correctly and draw conclusions along with the reasons, and are able to check the results of their work thoroughly and accurately in solving math problems (Dakhi, 2022; Zagoto, 2022). And some students also experience errors in writing the final answer to the problem because they misunderstand the meaning of the question and cannot review their answers (Telaumbanua, Lase, Mendrofa, 2023; Zagoto, 2018). Based on the facts that occur in the field seen directly during observations that each student has various possibilities in solving math problems. Some students immediately have a picture of the solution and make a challenge that will be solved with routine procedures that students already know (Zagoto & Dakhi, 2018; Zagoto et al., 2022). However, there are also students who do not have a picture of the solution so they do not make the problem a challenge that cannot be solved by a routine procedure that students already know. In addition, each student has different knowledge, experience, recognition or ability in problem solving. A problem for one student is not necessarily a problem for another. This is due to the development of mathematical abilities, initially a problem, after some practice becomes not a problem anymore.

The problem-solving process requires different thinking skills from one student to another. In the process of learning and solving problems, students must be accustomed to developing a critical thinking process.

Thinking is a person's ability to remember, consider something and be able to make decisions from the problems faced. The thinking process can be defined as an activity that occurs internally in the human brain, so to find out how students' thinking

steps in solving problems require something that can stimulate students' thinking processes. Thus thinking is the ability to remember and stimulate events that involve the brain to remember something and make decisions for a problem. The thinking ability that must be developed is the ability to think critically.

In learning mathematics, high-level thinking skills (critical thinking, creative thinking, problem solving, and decision making) are needed, the basis of which is critical thinking, so it must be mastered first. Critical thinking is a person's mental activity in collecting, categorizing, analyzing, and evaluating information or evidence in order to make a conclusion to solve a problem. Critical thinking is a systematic thinking activity that allows a person to formulate and evaluate their own beliefs and opinions and is a process that aims so that we can make reasonable decisions, so that what we think is good about a truth we can do correctly.

Critical thinking in learning mathematics is a student's cognitive process in analyzing systematically and specifically the problems faced, distinguishing these problems carefully and thoroughly, and identifying and reviewing information in order to plan problem-solving strategies. Critical thinking is thinking that is deeply reflective in decision making and problem solving to analyze situations, evaluate arguments, and draw appropriate conclusions. People who are able to think critically are people who are able to conclude what they know, know how to use information to solve problems, and are able to find relevant sources of information to support problem solving.

Based on the explanation above, critical thinking skills are basic abilities that are actually already owned by each individual to solve problems, because critical thinking skills are needed in everyday life. Thus, critical thinking skills are abilities that require students to be able to identify, gather information, process the information obtained and draw conclusions. Critical thinking skills can be honed to be sharper by continuing to practice in working on problems regularly.

Critical thinking is not easy, but critical thinking skills can be learned and practiced. Therefore, teachers must find learning methods that can involve students in critical thinking. Learning must be able to invite students to practice and learn to think critically so that after graduating students are equipped with critical thinking skills.

Research Methods

The type of research used in this study is qualitative research with a descriptive approach that aims to describe critical thinking skills qualitatively. This research uses qualitative research methods with descriptive research types. In analyzing the data, the research used test instruments, field notes, interviews, and documentation. This research was conducted at SMP Negeri 1 Gunungsitoli Idanoi class VIII in the 2022/2023 academic year. Researchers gave a research question test to get data in the form of subject answers to measure the level of achievement of students' critical thinking skills in solving mathematical problems on Phytagorean Theorem material.

The questions given by researchers are in the form of questions that include indicators of students' thinking skills. The question was made by the researcher himself and has been validated to the validator and tested on students of SMP Negeri 1 Gunungsitoli Barat.

Result And Discussion

1. Test Validity Test

Test the validity of the items using correlation. The question is said to be valid if the correlation value $r\_hitung \geq r\_tabel$, with a significant level of 5%. Based on the critical thinking ability test data, the calculation of the validity test of item number 1 was obtained 11.819. Then confirmed on the rtable for N = 23 at a

significant level of 5% (α = 0.05) obtained rtable = 0.413. Because rxy ≥ rtable, test item number 1 is declared valid. Based on the calculations made by the researcher, all test items item 1 to item 4 are declared valid so that they can be used as research instruments. Listed in the attachment.

2. Test Reliability Test

To test the reliability of the test is done using the alpha formula. With the reliability test obtained r = 0.6076 and rtable = 0.413. Because r ≥ rtable, the overall test is declared reliable. Included in the attachment. Thus, measurements made using tests as research instruments provide consistent (fixed) results so that they can be trusted and can be used anytime and anywhere.

3. analysis result

Based on the results of the Test Tests and Interviews conducted by researchers to SMP N 1 Gunungsitoli Idanoi students, researchers obtained valid data to determine the level of students' mathematical creative thinking abilities on each indicator that became the benchmark for achievement. In the item 1 test test which has the Interpretation indicator as this indicator has a level of difficulty classified as easy, with the benchmark assessment of student researchers being able to restate what is known. And after the researcher analyzed the results of student completion, there were only a few students whose work process was correct in completing the test.

In item 2 test test which has an indicator of Analysis as this indicator has a level of difficulty classified as difficult, this indicator requires students to be able to make a mathematical model of the problem correctly and provide a correct and complete explanation. And after the researchers analyzed the process of student work, only some of them were able to do the test.

In the item 3 test test which has the Evaluation indicator as this indicator has a level of difficulty classified as moderate, this indicator requires students to be able to provide answers with the right strategy in solving the problem, complete and correct in carrying out calculations / explanations. And most students are able to do the test, because students are able to think creatively in providing answers according to their own interpretation of the picture and then calculate with the help of learned formulas.

In item test 4 which is the Inference indicator as this indicator has a level of difficulty classified as easy, this indicator requires students to be able to make the right conclusion. And after the researchers analyzed each student's answer sheet, the researchers concluded that most of them were able to do the test, but forgot to make the final conclusion which was the main point.

4. Analysis of Low Critical Thinking Ability

Based on the results obtained by researchers, students' critical thinking skills are low. To examine further, researchers examined the low critical thinking skills of SMPN 1 Gunungsitoli Idanoi students based on the results of student tests and interviews, it was found that when students worked on math problems, many were still unable to understand the meaning of the problem and how to solve it, students lacked understanding of the concept of solving problems and were less able to use the right strategy in solving problems and the level of student reasoning was also lacking. From the results of interviews, the average student has not been able to make a mathematical model and provide the correct answer because they do not understand the material and are confused. The researcher assumes that lack of mastery of concepts and lack of thoroughness in working on problems can affect critical thinking skills.

So, in working on math problems not only calculation is needed, especially in understanding critical thinking. Critical thinking requires students to understand the meaning of the problem, follow step by step, apply the right strategy related to the

question in question, so that the results obtained match the expected results.

Conclusion

Based on the results of research conducted at SMP N 1 Gunungsitoli, it is concluded that the critical thinking ability of SMP N 1 Gunungsitoli Idanoi students in solving mathematical problems on the phytagorean theorem material to solve problems based on the average indicator is 47.39. The critical thinking ability of these students is still categorized as low. Based on the results of the research that has been done, the researchers conveyed the following suggestions.

1. This research is expected to provide information for further research to conduct the same research but in different materials or different levels of education. This research is still limited and uses a small sample, so it is possible that it has not provided an accurate picture in exploring information about students' critical thinking skills. This research should be reflected upon to be improved.
2. Seeing the different critical thinking skills of students, this research is expected to be used as a reference for schools to add more effective learning media, and prepare quality textbooks so that they can support the development of students' critical thinking skills.
3. Students are expected to often train themselves in solving problems that measure students' critical thinking skills, so that in the future students become accustomed to solving difficult math problems.

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