ANALYSIS OF STUDENTS' MATHEMATICAL CRITICAL THINKING SKILLS ON STATISTICS MATERIAL IN MIDDLE SCHOOL

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Abstract

The purpose of the research conducted by the author was to describe the analysis of students' mathematical critical thinking skills conducted in class VIII-1 on statistics material. The type of research used in this research is qualitative research with a descriptive approach. In this study, data was collected by giving written tests of critical thinking skills and interviews. The results of this study were that subjects in the high category were able to correctly fulfill all indicators of mathematical critical thinking ability, subjects in the medium category were able to carry out 3 indicators of mathematical critical thinking ability, and subjects in the low category were only able to carry out 1 indicator. Based on the results of the analysis of data processing, the data processing of the results of student answers shows that the average acquisition of written test questions is 51.38%. The conclusion is that the mathematical critical thinking skills of class VIII-1 students of SMP Negeri 22 Medan are classified as low. Therefore, the mathematical critical thinking skills of class VIII-1 students of SMP Negeri 22 Medan still need further training so that they can be improved.

Keywords: Critical Thinking Ability; Statistics

Abstrak

Tujuan penelitian yang dilakukan penulis adalah untuk mendeskripsikan analisis kemampuan berpikir kritis matematis siswa yang dilakukan di kelas VIII-1 pada materi statistika. Jenis penelitian yang digunakan dalam penelitian ini adalah penelitian kualitatif dengan pendekatan deskriptif. Dalam penelitian ini data dikumpulkan melalui pemberian tes tertulis kemampuan berpikir kritis dan wawancara. Hasil penelitian ini adalah Subjek dalam kategori tinggi mampu memenuhi semua indikator kemampuan berpikir kritis matematis dengan benar, subjek dalam kategori sedang mampu melaksanakan 3 indikator kemampuan bepikir kritis matematis, dan subjek dalam kategori rendah hanya mampu melaksanakan 1 indikator saja. Berdasarkan hasil analisis pengolahan data, pengolahan data hasil jawaban siswa menunjukkan rata-rata perolehan hasil soal tes tertulis adalah 51,38%. Kesimpulannya adalah kemampuan berpikir kritis matematis siswa kelas VIII-1 SMP Negeri 22 Medan tergolong rendah. Oleh karena itu, kemampuan berpikir kritis matematis siswa kelas VIII-1 SMP Negeri 22 Medan masih perlu dilatih lebih lanjut agar dapat ditingkatkan.

Kata Kunci: Kemampuan Berpikir Kritis; Statistika

INTRODUCTION

Mathematics is one of the subjects in the Indonesian education curriculum which is given to all students from elementary school to university so that they have the ability to think logically, analytically, systematically, critically, and creatively (Usman et al., 2021). This ability must be possessed by students so that students can obtain, manage, and utilize information to face the ever-changing times (Septiana et al., 2019). Currently, the importance of developing students' critical thinking skills in learning has become an educational goal. Education is a method for training students to be able to produce humans who are able to think critically and solve problems in order to become knowledgeable humans who are able to exchange information and encourage the ability to formulate organized and logical arguments (Digital, 2024).

ability is one of the supporting factors for successful learning. Critical thinking ability can be seen from a person's ability to respond responsibly according to rationality and reality. (Kurniawan et al., 2021). Many people think that the ability to think critically is one of the characteristics of intelligent people. Critical thinking skills are needed to overcome problems that require the ability to connect, offer alternative solutions, and analyze and prove (Martyanti, 2018). Students must be able to think critically because science and technology are developing so rapidly and allow everyone to get information quickly and easily. Therefore, developing critical thinking skills is an important component in understanding mathematics (Harahap, 2018).

Mathematics is one of the subjects that must be taught in schools in several countries around the world (Sachdeva & Eggen, 2021). The ability of mathematics to help individuals solve problems in various areas of daily life is one of the reasons why mathematics is a topic that must be studied (Sari et al., 2020). (Hajar et al., 2022) states that every level of education, including elementary, secondary, and post-secondary colleges, teaches mathematics. From elementary schools to post-secondary institutions, mathematics is a subject that is routinely taught in educational environments. Learning is a kind of self-motivation that encourages a person to be interested in himself and take actions that will make him happy. Actually, when studying, students experience anxiety (Panjaitan & Panjaitan, 2023). The availability of mathematics can help people solve problems in various areas of life, including economic problems, social problems, political problems, and especially technological problems. Kurnia and Purwaningrum (Susiaty & Haryadi, 2019) claims that inadequate mathematics teaching is the biggest problem facing mathematics education as a whole. The result of this learning is the development of students' critical thinking abilities which are not yet at their best. Because critical thinking skills are one of the levels of thinking required in

learning mathematics, teachers must also encourage students' critical thinking skills (Novianti et al., 2020).

In today's educational environment, teaching students to think critically is so important that all educators should do so. The aim is to train students' critical thinking skills for education so that efforts to develop student's critical thinking skills as well as possibly require interactive classes where students are seen as thinkers rather than being taught and teachers act as helpful mediators, facilitators, and motivators. students in learning rather than teaching. This is important information for teachers to have so they can encourage appropriate learning and improve students' critical thinking abilities.

Critical thinking skills can be developed by choosing appropriate teaching techniques, so teaching critical thinking to students can be done at school through the educational process. Without repetition and habit, critical thinking skills cannot be learned in a short time. Students' critical thinking skills can be improved with problem-centered learning techniques (Pratiwi & Harahap, 2022).

Combining the skills of observation, analysis, reasoning, judgment, decision-making, and confidence results in the capacity for critical thinking. (Saputra, 2020). In making decisions, a person must think critically (Rahayu & Dewi, 2022). Research by Hidayah et al. (2017) shows that critical thinking is a thinking process that is rational, reflective, systematic, and useful for problem-solving and decision-making. It can be said that critical thinking ability is the ability to think clearly and maturely while considering and making decisions based on several critical thinking criteria given above.

Ennis (in Hidayah et al., 2017) suggests three characteristics of critical thinking abilities, including: (1) Focus, when the first step in knowing something is to concentrate attention, and (2) Reason, where someone must understand the importance of the truth of information. they have and why it is true, (3) A conclusion (*inference*), where someone can formulate the data collected and the appropriate justification (Ripai & Sutarna, 2019). While Facione(Lestari & Mujib, 2018) proposed four indicators of students' ability to use critical thinking when solving mathematical problems: (1) Interpreting, namely students understanding the problems written and asked; (2) Analyzing; (3) Evaluating; and (4) Formulating, where students draw appropriate conclusions. Therefore, it can be said that the following signs can be used to identify students' mathematical critical thinking abilities: (1) Ensure ideas are used in solving problems, (2) Ensure actions will be tried in solving problems, and (3) Share reasons for responding to and solving difficulties.

Critical thinking skills are a form of integration of observation, analysis, reasoning, evaluation, decision making and persuasion skills based on critical thinking skills (Saputra, 2020) . Critical thinking

means reflective thinking and reasoning to make decisions. Meanwhile, (Rachmantika & Wardono, 2019) explains that critical thinking is logical, reflective, systematic, and productive thinking that is applied to deliberation and decision-making. Based on several definitions of critical thinking above, it can be said that critical thinking ability means the ability to think logically and maturely in considering and making decisions. Based on the results of a survey conducted by TIMSS in 2015, students' mathematical critical thinking abilities in Indonesia are classified as very low. 4 things can be seen from the score. Of 49 countries, the 397 results obtained ranked 44th. Indonesia's score rose in 2011 but is still quite low. Indonesian mathematics students have poor critical thinking skills because the questions given rarely involve analysis and problem-solving. The questions used by TIMSS are non-routine questions with a percentage of 40% that require students' ability to solve problems, 25% that require students' analytical, generalization, and justification skills in answering questions, and 35% that contain questions of understanding as indicators. students' mathematical critical thinking abilities.

SMP Negeri 22 Medan is one of the schools that has the characteristics of secondary schools in Indonesia in general. Following the age of the students, the conditions and situation of the school, as well as the learning at SMP Negeri 22 Medan which is generally in accordance with schools in Indonesia. From the results of observations made by researchers on the critical thinking abilities of class VIII students at SMP Negeri 22 Medan, it shows that students' critical thinking abilities are still relatively low. This can be seen from the learning process in the classroom which shows that the student learning environment is still classic, where teaching is only teacher-oriented. When learning mathematics in class, it can be seen that the majority of students are not serious about learning. When the teacher explained that many students were sleeping, chatting with friends beside them, busy with themselves, there were even some students who came in and out of the classroom on the pretext of going to the bathroom. Apart from that, when the teacher gives questions, there are still students who are lazy and don't put enough effort into working on the questions given. This will of course have an impact on students' critical thinking abilities being low. Even though there are some students who actively ask questions, overall the students' critical thinking skills are still relatively poor. As for the results of interviews conducted by researchers with subject teachers at SMP Negeri 22 Medan, it is known that students' critical thinking abilities are still low. And in mathematics learning, most students only understand the material during learning, students understand when the teacher gives examples of problems and their solutions, but when faced with problems or problems that are different from the examples given by the teacher, students find it difficult

to determine the steps to solve them. The data obtained shows that students' understanding of answering mathematics problems at SMP Negeri 22 Medan is still not good.

Figure 1. Student Completion of Indicators

From Figure 1, it can be seen that students answered questions not in accordance with the indicators. Students still experience difficulties in determining the important information in the questions. This can be seen from the answers of students who have not completed the analysis of the last part. Therefore, students are still unable to determine what is meant by the question.

Figure 2. Student Completion of Indicators

From Figure 2, it can be seen that students' answers to questions still do not match the indicators. In solving the problem above, students were unable to show supporting evidence such as what was asked and answered. So the results of students' work are still not able to meet the indicators of critical thinking abilities.

This research aims to analyze students' mathematical critical thinking skills in class VIII statistics material at SMP Negeri 22 Medan.

RESEARCH METHODS

This research uses a qualitative descriptive research method. According to Sukmadinata (2020)the qualitative descriptive method is a method that attempts to assess a situation or event as it is without changing the research subject. Therefore, this research aims to share knowledge regarding critical thinking skills in class VIII statistics subjects. Three students were used as research samples carried out at SMP Negeri 22 Medan.

The research instrument is in the form of questions arranged according to indicators of critical thinking ability, consisting of three statistical questions and each question contains four indicators of critical thinking ability. In each question, students are asked to understand (*interpretation*), analyze (*analysis*), evaluate (*evaluation*), and conclude the results of solving the problem (*inference*).

Table 1. Guidelines for Scoring Critical Thinking Ability

Indicators of Critical Thinking Ability	Assessment rubric	Score
Interpretation	Nothing is known, and no questions are asked.	0
	Write what is known and asked but is not correct	1
	Just write what you know accurately and write exactly what you ask	2
	Write only what you know from the question correctly but incompletely	3
	Write what is known and ask the question correctly and completely	4
Analysis	There is no making a mathematical model of the problem given	0
	There is a mathematical model of the problem given but it is not correct	1
	Ada makes a mathematical model of the problem given precisely without giving an explanation	2
	There is a mathematical model of the problem given correctly but there are errors in the explanation	3
	Ada makes a mathematical model of the problem given correctly and provides a correct and complete explanation	4
Evaluation	There is no method used to solve the problem	0
	using inappropriate and incomplete methods in solving problems	1
	using the correct method in solving the problem, but not completely or using an incorrect but complete method in solving the problem	2
	use the right method in solving problems, complete but make mistakes in calculations or explanations	3
	Use the right method in solving problems, complete and correct in carrying out calculations or explanations	4

	No drawing conclusions	0
	Making conclusions that are incorrect and not appropriate to the context of the question	1
Inference	Making inappropriate conclusions even though they are adjusted to the context of the question	2
	Make conclusions appropriately, according to the context of the question but not complete	3
	Make conclusions correctly, according to the context of the question and completely	4

Source: Sugiyono (2016)

This research needs to be carried out, the findings of which will become guidelines for educators who teach students, based on markers of critical thinking abilities. The purpose of this research is to test how well eighth-grade students use critical thinking to solve statistical problems.

The criteria given in Table 2 will be used to evaluate students' critical thinking abilities in general.

Table 2. Average Score Criteria

Score	Criteria
86-100	Very high
71-85	Tall
56-70	Currently
41-55	Low
<40	Very low

Source: Sugiyono (2016)

Once the data is collected, data analysis is performed to offer well-structured data and aid interpretation of what is known so that the information can be shared with different audiences. Data analysis in qualitative research includes data reduction, data presentation, and drawing conclusions. reduction is a type of analysis that clarifies, sorts, directs, eliminates, and organizes data in various ways to provide a clear picture of what is being studied and to facilitate research and collection of additional data. In this investigation, the data reduction steps used were as follows:

a. Provide test subject matter that requires critical thinking.

b. Analyze job test results for the subject.

c. Classify topics according to critical thinking ability standards.

The data presentation procedure is carried out after the data has been reduced. Data is provided in the form of evocative descriptions accompanied by graphs or other visual aids that illustrate the data. By providing data, one can more easily understand what has been done and plan future work. The stages for displaying data are as follows:

a. Showing the subject's work results, which shows his achievements, can be used as interview material.

b. Presents the subject's interview findings, structured in dialogue form.

In this research a conclusion was reached that looked for variations or patterns during testing and interviews. Conclusions were reached about how the critical thinking abilities of the people studied were used by using critical thinking questions on statistical material based on the findings obtained during tests and interviews.
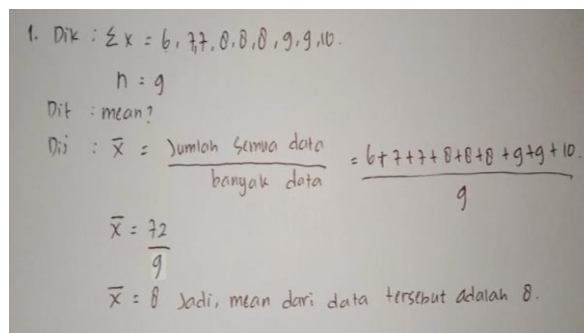
RESULTS AND DISCUSSION

The research entitled "Analysis of Students' Mathematical Critical Thinking Abilities in Class VIII Statistics Material at SMP Negeri 22 Medan" is research conducted to determine students' critical mathematical thinking abilities in solving class VIII statistics questions. Three students with different capacities were used as research subjects. After processing the information regarding the answers given by students, data calculations produced findings, and the total average score was 51.38%. It can be seen from the average that students' mathematical critical thinking abilities are in the low category. The results of the subjects' responses to statistical problems are listed below.

Analysis of High Category Students' Mathematical Critical Thinking Ability

Researchers gave written tests covering topics related to statistics to students to assess their mathematical reasoning abilities. The following is an analysis of test and interview results for high-category students' mathematical critical thinking abilities on RS 29 material.

a. High Category Mathematical Critical Thinking Ability of RS 29 Subjects in Solving Question Number 1 Based on Indicators

Figure 3. Answer explanation of high-category students (Number 1)

Based on Figure 3, it is known that subject RS 29's mathematical critical thinking skills for interpretation indicators are very good because they can write down what they know and the problems asked in the questions correctly and write down the information stated correctly and completely. In critical mathematical thinking skills for subject analysis indicators create mathematical models of the questions given correctly and provide explanations, for subject evaluation indicators use appropriate strategies in solving problem problems and correctly in completing calculations. In mathematical critical thinking skills for inference indicators, subject RS 29 makes precise and complete conclusions according to the problems in the questions. This shows that subject RS 29 is able to meet the indicators of mathematical critical thinking ability in question number 1.

b. High Category Mathematical Critical Thinking Ability of RS 29 Subjects in Solving Question Number 2 Based on Indicators
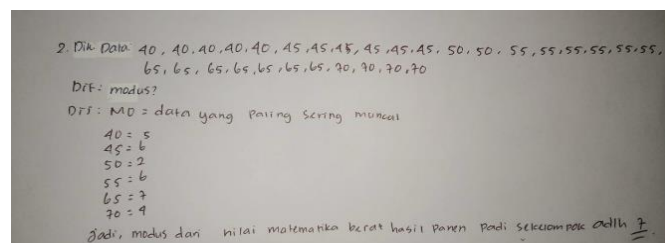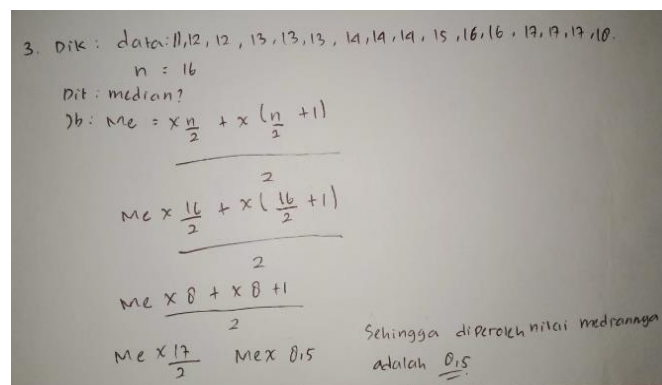

Figure 4. Answer explanation of high-category students (Number 2)

Based on the first indicator of critical mathematical thinking ability, namely interpretation, it can be seen in Figure 2 that there is answer number 2 of subject RS 29 with high category mathematical critical thinking ability, namely the subject can make what is known and what is asked about the problem in detail and clearly. The second indicator is analysis, this strategy design can be in the form of creating a mathematical model that suits the problem or developing steps to solve the problem. Based on the questions given, the subject can explain the mathematical model to the problem correctly but there are still shortcomings in explaining the meaning of the mathematical model. This shows that RS 29 with high capabilities can prepare plans for solving problems that must be resolved by explaining the conditions for solving the problem and determining the formula that you want to use to find values that often appear. The third indicator of critical thinking ability is evaluation or using the right strategy in solving problems and being complete and correct in carrying out calculations. Based on question number 2, the subject can

use the appropriate method to solve the problem in the question, but not in detail, but still in completing the calculations. The fourth indicator of students' mathematical critical thinking abilities is inference or being able to conclude what is asked correctly. RS 29's ability to express conclusions is still not precise, the subject makes conclusions correctly but not by the context of the question. It can be concluded that subject RS 29 can use strategies but not in detail and make conclusions correctly but still not by the context of the question being asked.

c. High Category Mathematical Critical Thinking Ability of RS 29 Subjects in Solving Question Number 3 Based on Indicators

Figure 5. Answer Explanation of High Category Students (Number 3)

Based on the indicator of mathematical critical thinking ability, namely interpretation, it can be seen in Figure 3 where there are answer number 3 students with code RS 29 in the high category. In Figure 3, it can be seen that RS 29 is very good at making what is asked and what is known from the questions detailed, clear, and correct. The second indicator of critical thinking ability is an analysis where in the questions given, the RS 29 subject's ability to create mathematical models is very good, it can be seen that the subject describes the mathematical model of the problem correctly and precisely but not provide an explanation of the problem. In the third indicator of critical mathematical thinking ability, namely evaluation, the subject uses a mathematical model and the method used is appropriate to the problem, detailed but the subject makes mistakes in completing the calculations. So in the fourth indicator, namely concluding (inference), the subject explains the conclusion but the conclusion is not appropriate even though it is adjusted to the problem in the question, because in the third indicator, the calculations carried out are still wrong even though the correct mathematical model is used.
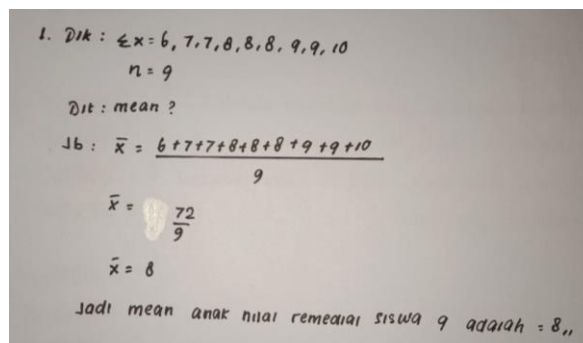
Based on the answers given to questions 1 to 3, subject RS 29 was able to identify the signs used to measure mathematical critical thinking abilities. Therefore, along with the results of calculating the RS 29 subject's scores, the researchers calculated the scores obtained by the RS 29 subjects in solving questions number 1 to 3. This allowed them to determine the level of RS 29 subjects' mathematical critical thinking abilities.

$$Persentase\ Hasil = \frac{Skor\ Jawaban\ Siswa}{Skor\ Total} \times 100\%$$
$$Persentase\ Hasil = \frac{(16 + 13 + 13)}{48} \times 100\%$$
$$Persentase\ Hasil = \frac{42}{48} \times 100\%$$
$$Persentase\ Hasil = 87{,}5\%$$

Based on the results of the subject's RS 29 score, it is known that the subject's score on the RS 29 mathematical critical thinking test is 87.5%. Therefore, it can be said that RS 29 subjects have a high level of critical mathematical thinking ability. This shows that RS 29 subjects have the skills needed to solve questions correctly, understand the issues raised in the questions, choose appropriate models, recognize the assumptions underlying the questions, use appropriate techniques, and draw good conclusions from the answers (Raka Siwa et al., 2018; Romansyah et al., 2019; Safitri, 2017; Safitri et al., 2019; Safitri & Hasibuan, 2018b, 2018a).

Analysis of the Mathematical Critical Thinking Ability of Medium Category Students

a. Mathematical Critical Thinking Ability Medium Category Subject RS 21 in Solving Question Number 1 Based on Indicators

Figure 6. Answer Explanation of medium category students (Number 1)

Based on Figure 6, it can be seen that the subject of RS 21 can understand the problem by correctly writing down what is known and asked about the problem, but the subject is unable to write down or identify the mathematical model that will be used. However, the subject of RS 21 was correct in using the strategy to solve the questions completely and correctly in explaining and carrying out calculations. In order to draw conclusions from what is asked correctly, the RS 21 topic calculates all the data by adding up all the existing data and dividing it by the amount of data specified in the question. This shows that only three of the four indications of mathematical critical thinking abilities are met by RS 21 students.

b. Mathematical Critical Thinking Ability Medium Category Subject RS 21 in Solving Question Number 2 Based on Indicators
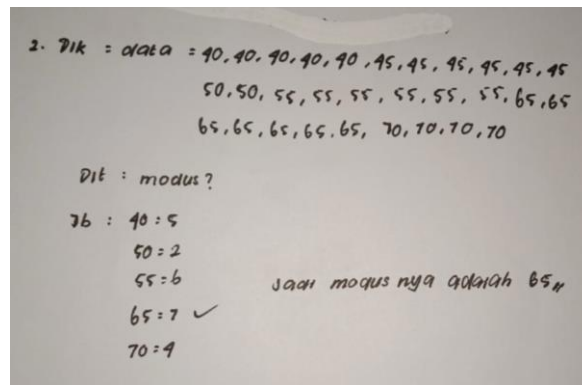

Figure 7. Answer Explanation of medium category students (Number 2)

Subject RS 21 gave a clear solution to question 2 based on Figure 7. The results of subject RS 21's answer sheet revealed that the subject was able to understand the problem by explaining what was known and what was asked in detail and clearly. However, the subject did not write a mathematical model to solve the problem in the question but was able to use the right approach and carry out calculations correctly in solving the problem in the question but not in detail. The subject in the image above was able to provide accurate and comprehensive findings considering the issues raised.

c. Mathematical Critical Thinking Ability Medium Category Subject RS 21 in Solving Question Number 3 Based on Indicators
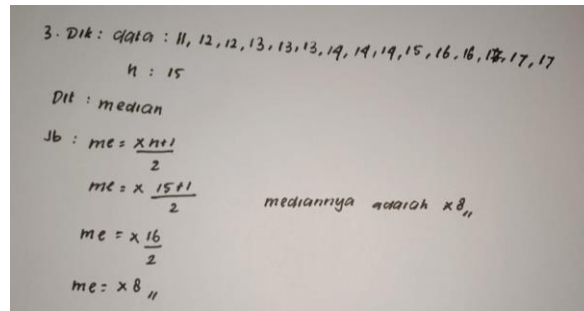
Figure 8. Answer Explanation of medium category students (Number 3)

Based on Figure 8, the RS 21 subject can understand the problem shown by writing down what is known and what is asked about the problem, but the subject is not precise in writing down the amount of data and calculating all the data given in the problem. The amount of data that is known should be 16 data. In identifying the problem of subject RS 21, you can write a mathematical model but the mathematical model written is not accurate, because a lot of the data written by subject RS 21 is not precise so the mathematical model used is not correct. As a result, the strategy used by RS 21 subjects is still not appropriate, the explanations and calculation methods still make errors. So the conclusion written by the subject of RS 21 is not appropriate even though it is adjusted to the problems in the question. This can be seen that in question number 3 the subject was not careful in understanding and calculating the problems given in the question, so that the model and strategy used contained errors.

Based on the answers to questions 1 to 3, RS 21 subjects were able to identify the signs used to measure their level of critical mathematical thinking. Therefore, along with the results of calculating the RS 21 subject's scores, the researcher calculated the scores obtained by the RS 21 subjects in solving questions number 1 to 3, in order to determine the level of the RS 21 subjects' critical mathematical thinking abilities.

$$Persentase\ Hasil = \frac{Skor\ Jawaban\ Siswa}{Skor\ Total} \times 100\%$$

$$Persentase\ Hasil = \frac{(12 + 10 + 5)}{48} \times 100\%$$

$$Persentase\ Hasil = \frac{27}{48} \times 100\%$$

$$Persentase\ Hasil = 56,25\%$$

It is known that the subject's score for critical mathematical thinking skills at RS 21 is 56.25% of the score obtained by the subject above. Therefore, it can be said that the RS 21 subject is included in the medium category for critical mathematical thinking abilities. This shows that subject RS 21 has the skills necessary to answer questions accurately, understand the problem known and asked in the question, but fails to pay attention to the mathematical model used, identify the premises underlying the question correctly and use the right approach, but the answer is still insufficient, and effectively draw conclusions from the data

Analysis of Low-Category Students' Mathematical Critical Thinking Ability

a. Low Category Mathematical Critical Thinking Ability for RS 5 Subjects in Solving Question Number 1 Based on Indicators
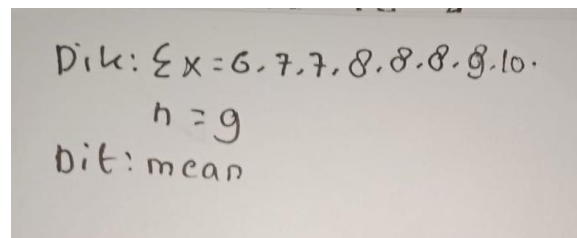

Figure 9. Answer Explanation of low-category students (Number 1)

Writing down what is known and required from the problem correctly and completely shows interpretation or understanding of the problem, which is the first indicator of critical mathematical thinking ability. Figure 9 shows that subject RS 5 was able to understand the questions and write correctly and completely what was known and what was asked. Topic RS 5 was unable to respond and continued his response in Figure 9. Four indications of students' mathematical critical thinking abilities, interpretation, analysis, evaluation, and inference, can be used to show this. Only one indicator, namely the interpretation, was successfully fulfilled by the RS 5 subject.

b. Low Category Mathematical Critical Thinking Ability for RS 5 Subjects in Solving Question Number 1 Based on Indicators
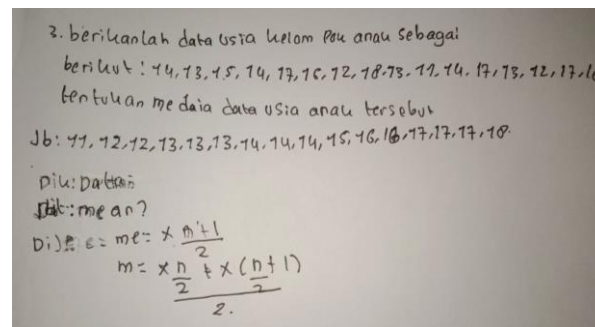
Figure 10. Answer Explanation of low-category students (Number 2)

Figure 10 depicts students' mathematical critical thinking abilities in the low category. The first characteristic of critical mathematical thinking ability is interpretation or understanding of the problem, which is demonstrated by stating accurately and clearly what is known and what is asked about the problem. However, subject RS 5 explained the mathematical model of difficulty that had been given, even though the mathematical model presented was inadequate for the problem posed in this question. In question number 3, subject RS 5 was unable to differentiate between what was known and what was asked in the question. As seen in the picture, the subject did not do any calculations or record a plan of approach to a problem, so the subject could not draw any conclusions.

Based on questions 1 to 3, subject RS 5 was able to identify the signs used to measure students' mathematical critical thinking capacity. Therefore, to determine the level of critical mathematical thinking abilities of RS 5 subjects, researchers assessed the subjects' scores in answering questions number 1 to 3 correctly. The following are the results of calculating the RS 5 subject score.

$$Persentase\ Hasil = \frac{Skor\ Jawaban\ Siswa}{Skor\ Total} \times 100\%$$

$$Persentase\ Hasil = \frac{(4 + 0 + 1)}{48} \times 100\%$$

$$Persentase\ Hasil = \frac{5}{48} \times 100\%$$

$$Persentase\ Hasil = 10,41\%$$

The results of the subject's score for mathematical critical thinking ability RS 5, it was 10.41%, by the findings of the score obtained by the subject. Therefore, it can be said that subject RS 5 is included in the category of low critical mathematical thinking abilities. This shows that subject RS 5 can solve questions correctly, understand the problem raised and posed in the question, be aware of the model used,

correctly identify the premises underlying the question use appropriate techniques, and offer a reasonable conclusion in response to the question.

The percentage results of the written tests on mathematical critical thinking skills for each of the 3 subjects can be seen in the following table:

Table 3. Critical Thinking Ability Test Results for 3 Subjects

Name	Percentage	Category
RS 29	87.5	Very high
RS 21	56.25	Currently
RS 5	10.41	Very low
Average	51.38	Low

Source: Primary Processed Data, 2023

The following are the results of the subject having developed critical thinking skills after taking a written test with statistical questions. The table below shows indicators of mastery of critical thinking skills.

Table 4. Indicators Achieved by 3 Subjects

Name	Indicators of Mathematical Critical Thinking Ability Acquired		
	Question No.1	Question No. 2	Question No. 3
RS 29	1. Interpretation 2. Analysis 3. Evaluation 4. Inference	1. Interpretation 2. Analysis 3. Evaluation	1. Interpretation 2. Analysis 3. Evaluation
RS 21	1. Interpretation 2. Evaluation 3. Inference	1. Interpretation 2. Evaluation 3. Inference	1. Inference
RS 5	1. Interpretation		1. Interpretation

Source: Primary Processed Data, 2023

From the results of the assessment of students' critical mathematical thinking abilities and the results of interviews with the three subjects in class VIII-1, it can be seen that each subject has varying levels of proficiency in that field. Subject RS29 was able to fulfill all indicators of critical thinking ability in question number 1, but in questions number 2 and 3 he was only able to fulfill the indicators of interpretation, analysis, and evaluation and was less able to fulfill the indicators of critical thinking ability

(Anjani & Safitri, 2023; Handayani et al., 2023; Nasution et al., 2023; Safitri et al., 2024; Safitri, Hansyah, et al., 2023; Safitri, Muti'ah, et al., 2023; Uswatun Hasanah et al., 2023). conclude or present them. In questions 1 and 2, subject RS21 only succeeded in completing the inference, evaluation and inference indicators; however, there was less success in completing the analysis indicators which included identifying mathematical models in question 3. Only interpretation indications could be fulfilled by the RS 5 topic in question number 1, while the interpretation, analysis, and assessment indicators could be fulfilled not fulfilled by subject RS 5 in question number 3.

CONCLUSION

In this research a conclusion was reached that looked for variations or patterns during testing and interviews. Conclusions were reached about how the critical thinking abilities of the people studied were used by using critical thinking questions on statistical material based on the findings obtained during tests and interviews. Based on research findings and analysis of how well students use their critical thinking skills in solving statistical problems, it can be said that the three research subjects in class VIII-1 of SMP Negeri 22 Medan had an average critical thinking score of 51.38%. This shows that research subjects in class VIII-1 have not optimally carried out activities related to learning, such as interpreting, analyzing, evaluating, and drawing conclusions or conclusions. Lack of understanding in solving mathematical problems which requires the development of higher level thinking abilities results in students' low critical thinking abilities. As a result, students are less accustomed to honing their critical thinking skills. Skills. Therefore, SMP Negeri 22 Medan needs to create stronger mathematics subjects to improve students' critical thinking abilities.

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dapat membantu guru dalam menyampaikan membantu pemahaman peserta didik . 2 Selanjutnya penelitian yang dilakukan oleh Anisa pembelajaran . 6 Sebab video pembelajaran ini mampu membantu pendidik dalam mengajarkan adaptasi dengan adanya pembelajaran dengan menggunakan video yang memaksakan guru wajib untuk menyajikan pembelajaran yang kreatif dan inovatif sehingga dengan adanya video pembelajaran dapat membantu siswa untuk memahami pelajaran yang disampaikan dan. 18(3), 2207–2218.

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