

Analytical of Reasoning and Problem-Solving Skills of Students on the Concept of Electric Circuits in Learning During the Covid-19 Pandemic

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Abstract

This study aims to describe the reasoning and problem solving abilities of students during the Covid-19 pandemic. The subjects of this study were students of class XII MIPA 1 SMA Katolik St. Andreas Palu who uses a qualitative descriptive method or can be said as a phenomenographic research. Respondents were selected based on the Respondent Selection Test, totaling six people. The data obtained from the Respondent Selection Test instrument, reasoning test questions that use reasoning indicators include proportional reasoning, correlation reasoning, conservation reasoning and deductive hypothesis reasoning, problem solving questions based on Polya's theory, rubric for the category of reasoning indicator assessment and interviews conducted online. The results of the study show that students with high ability do not necessarily have high reasoning and problem solving abilities while students who have low reasoning and problem solving are due to a lack of understanding and mastery of students about the material. Environmental factors are one of the causes of students not being able to receive the material properly.

Keywords:

reasoning, problem solving,
covid-19 pandemic

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Introduction

The Covid-19 pandemic period demands that every activity of a person must be carried out at home to avoid crowds of people. This affects everyone's activities in terms of the economic field as well as in terms of education. In the field of education, changes in the learning process greatly affect the activities of students and teachers. Learning which was originally face-to-face learning, during the Covid-19 pandemic, students and teachers had to do distance learning using technological devices such as mobile phones, computers, and laptops as well as the use of the internet network. Distance learning is carried out without any direct physical interaction between the teacher and the learner, the interaction is carried out on a virtual system with the help of technology that allows interaction and transfer of knowledge from the teacher to the learner (Latip, 2020).

The use of Google Forms is an alternative in conducting the learning process during the Covid-19 pandemic to evaluate students. Google Form is an application in the form of form templates or worksheets that can be used by teachers and students for specific purposes in learning (Septiawan, 2020).

Physics lessons are one of the lessons that have to do distance learning so that it requires teacher creativity in conducting online learning which makes students active and creative in the learning process because physics lessons are one of the difficult lessons, especially physics lessons require students' reasoning and ability in learning solve the problem.

Reasoning ability is the ability of students to relate a case to another case, so that a conclusion can be drawn (Supriyadi, et al., 2016). The involvement of students in thinking actively in learning will stimulate their reasoning abilities because reasoning abilities will not develop if they are not trained and used to it (Nurjamilah, et al., 2020).

Each student has different reasoning and problem-solving abilities in mastering learning materials. Each student has different reasoning and problem-solving abilities in mastering learning materials. Students with high reasoning ability and students with low reasoning ability also have different abilities in mastering concepts. Students with high reasoning ability have a higher conceptual understanding than students with low reasoning ability. So there is a significant difference between students who have high reasoning abilities and those

who have low reasoning abilities (Meilina, et al., 2020).

To strengthen reasoning abilities, students need to be trained to think logically and critically. One way is to get used to solving problems by making the right questions, looking at the available facts, distinguishing them from assumptions, to solving the problem with creative and systematic solutions. Getting used to thinking mathematically means getting used to criticizing the data displayed in everyday life (Muslimin & Sunardi, 2019).

The ability to solve problems according to Tumanggor, et al (2019) that students who are experts, solve problems based on appropriate approaches, concepts, principles, and laws, and determine the correct application of physics as a solution, while students who are beginners solve problems only to the extent of entering known values. into the equation without interpreting it, so the solution given is less precise.

Solving physics problems requires divergent reasoning in solving them. Each person has their way of solving problems (Trianggono & Yuanita, 2018). During the problem-solving process, students build knowledge and develop problem-solving skills and self-regulated learner skills (Shofiyah & Wulandari, 2018).

Reasoning and problem-solving skills are closely related to the success of the learning process. In the process of solving problems, students need their reasoning power. Damawati & Juanda (2016) argue that reasoning is related to all thinking processes that shape learning, such as problem-solving and decision making. With good scientific reasoning skills, students can solve problems well and can make the right decisions.

Students with high reasoning abilities can understand problems well, can plan, and can solve problem-solving appropriately. Students are also able to re-examine the answers obtained using elements that have been known in the questions. Students with moderate reasoning abilities can plan and solve problem-solving appropriately and students can re-examine the answers obtained using the information known to the questions. Students with low reasoning ability are not able to understand and plan problem-solving well. They are not able to complete the correct and proper steps. In checking the answers, they have not been able to re-examine their answers using the known elements in the questions (Irianti, 2020).

The results of research conducted by Markawi (2013) show that physics problem-solving abilities can be grown through problem-solving

exercises, both qualitatively and quantitatively. While reasoning has a significant effect on problem-solving abilities. The influence of reasoning ability can lead to an increase in problem-solving abilities. In solving physics problems, students must use their logical thinking and analyze problems so that students are able to answer questions or solve problems in questions.

Research conducted by Saptono, et al (2013) stated that by identifying important concepts in the material, then giving meaning to the relationship between the identified concepts, students actually used their reasoning abilities. The students' reasoning and analytical thinking abilities were measured using a written test.

Another study on reasoning was carried out by Sihombing, et al (2021) who examined students' mathematical reasoning abilities during the covid-19 pandemic in terms of student learning interests which showed that students who had high abilities could explain what was known and asked, were able to understand formulas and what knowledge What is needed to solve the problem can also provide reasons or evidence for the answers given and can draw conclusions. Students with moderate ability can write down what is known and asked about the problem and can write down the formula used to solve the problem. Meanwhile, students with low abilities are still lacking in mathematical manipulation, providing evidence, and concluding.

Another study on the use of Google Forms was conducted by Hakim & Safi'i (2021) with research results showing that most students through Google Forms make it easier to do assignments, are skilled at using technology and data facilities, and can quickly find out their learning outcomes. The results of the students' reactions also stated that the use of Google Forms can motivate when learning even though they are not in school directly face to face, students can still learn to use Google Forms well.

Based on the explanation above, each student has different reasoning and problem-solving abilities. However, it is still rare for research that combines reasoning and problem-solving skills in students by using reasoning indicator questions and questions that use problem-solving indicators based on Polya's theory during the covid-19 pandemic in physics learning, so the purpose of this study is to describe reasoning and abilities. Students in solving problems during the covid-19 pandemic by using essay questions that are done online using Google forms.

Materials and Method

This research is a type of qualitative descriptive research. This research can also be regarded as phenomenographic research. This research was conducted at SMA Katolik St. Andreas Palu. However, due to the Covid-19 pandemic, the research was conducted *online* using the Google Form application and the Zoom application to conduct interviews.

The subjects of this study were students of class XII MIPA 1 SMA Katolik St. Andreas Palu which consisted of 10 men and 11 women, so that in total there were 21 people. The respondents involved in data acquisition are 6 students whose selection test results are included in the high category with the number of students consisting of 2 boys, the medium category with the number of students consisting of 1 male and 1 female and the low category with the number of students consisting of 1 male and 1 female with the respondent's age range being 17-18 years.

The respondent retrieval technique was obtained based on the Respondent Selection Test which was processed using descriptive data analysis techniques, namely the calculation of the average value and standard deviation using the following equation.

The selection of respondents with high abilities is obtained from the value obtained by students which is greater than the average value plus the standard deviation. For respondents with moderate ability it is obtained if the value obtained by students is greater than the average value minus the standard deviation and less than the average value plus the standard deviation. For respondents with low abilities, it is obtained from the value obtained by students which is smaller than the average value plus the standard deviation.

The type of data used in this study is qualitative data and the data source used is primary data. Primary data is data obtained directly from research respondents so that the source of data obtained is from the results of the respondent selection test in the form of multiple choices, the results of students' reasoning tests in the form of essay questions using reasoning indicators, the results of students' problem-solving ability tests in the form of essay questions and interviews to respondents and subject teachers who will provide other supporting data.

The instruments used in this study include the main instrument and supporting instruments. The main instrument is the researcher himself whose function is to focus research on selecting research subjects, collecting data, and then analyzing them to produce a conclusion. Researchers use field

notes that are used to reveal things that are not recorded in the supporting instruments.

The supporting instrument was used by researchers to obtain data. One of the instruments used in the form of multiple-choice questions and essay questions that have been validated by the validator. The questions used are about the material of electric circuits in series and parallel. Supporting instruments in the form of multiple-choice questions totaling 17 numbers which include 2 numbers regarding the concept of electric current, 5 numbers regarding electric current, 2 numbers regarding electric voltage, 6 numbers regarding replacement resistance in the circuit, 1 number regarding potential difference, and 1 number regarding installation ammeter and voltmeter in the circuit.

The supporting instrument is in the form of 6 numbered essay questions with 3 numbers on reasoning questions and 3 numbers on problem-solving questions. The reasoning problem discusses the order of the brightness of the lamp in the circuit, looking for the relationship between potential difference and electric current, looking for the value of the clamping voltage, and looking for the effect of voltage and the current flowing on the lamp flame. Meanwhile, the problem-solving problem discusses the replacement resistance, composes a resistor circuit whose total resistance is known, and draws an experimental scheme for measuring voltage and current in series and parallel electrical circuits. The other supporting instruments are in the form of rubrics for the category of reasoning indicator assessment, interviews, and photos/videos.

The reasoning indicator assessment rubric used is proportional reasoning with levels 0-4 which includes a) No Answering ($TM=0$), where students leave their answers blank; b) Intuitive ($I=1$), where students guess the answer, using numbers, operations, or solving strategies randomly, as well as illogical answers; c) Additive ($Ad=2$), where students use a solution strategy, but focus on different things; d) Transitional ($Tr=3$) where students apply and use the strategy of equations with ratios and determine the value, but not right; e) Ratio ($R=4$), where students apply and use an equation strategy with ratios and determine the value correctly (Rimadani, et al., 2017).

Correlation reasoning with levels 0-4 includes a) Not answering ($TM=0$), where students do not answer questions which means students leave answers blank; b) Intuitive ($I=1$), students guess the answer, using numbers, operations, or solving strategies randomly, illogical answers; c) No Relationship ($NR=2$), where students provide reasons and explanations, but the things described are not related; d) One Cell ($OC=3$), where students

give reasons by explaining the relationship to a problem; e) Correlation ($C=4$), where students give reasons and explanations appropriately for all problems by explaining the relationship between problems and reasons.

Conservation reasoning with level 0-4 level a) Not answering ($TM=0$), students do not answer questions which means students leave answers blank; b) Intuitive ($I=1$) students guess answers by using numbers, operations, or solving strategies randomly and illogically; c) No Relationship ($NR=2$), students answered the concept correctly but incompletely and not accompanied by a logical explanation; d) No Comparison ($NC=3$), students maintain a concept but cannot explain how the nature of a concept is the same or different; e) Correlation ($C=4$), students maintain a concept and can explain the reason precisely for a problem.

Deductive hypothesis reasoning has the highest score (3) if the student can answer correctly and the lowest score (0) if the student does not answer/blank the answer, including a) Proposed explanation that students can hypothesize exactly and with reason right; b) Planned test, namely students can plan according to the hypothesis and control other variables; c) Observed results, namely the results obtained by students are in accordance with the hypothesis and the tests are carried out in accordance with the theory and are fully explained; d) Inference, namely student conclusions are in accordance with the initial hypothesis and theory.

The stages of problem solving used are based on Polya's theory including (1) understand the problem, students identify everything they know and what they are looking for; (2) Devise a plan, students use their knowledge and understanding of the material to plan problem solving; (3) Carry out the plan, students carry out problem solving according to the plan that has been made systematically; (4) Look back, students re-examine everything that has been done when solving problems from the identification stage to the implementation of problem solving.

Qualitative data analysis techniques in this study include (1) Respondent Selection Test (TSR) which is a test to capture respondents made in the form of multiple choice questions totaling 17 numbers and given to research subjects then the results of student answers are processed using descriptive data analysis techniques to determine respondents in the high, medium and low categories; (2) Reasoning questions are questions to determine the level of students' reasoning made in the form of essay questions totaling 3 numbers using reasoning indicators and then given to respondents. After that, students' answers were analyzed using the category rubric for the reasoning indicator assessment; (3) Problem solving problems are questions to

determine the level of student problem solving made in the form of essay questions totaling 3 numbers and then given to respondents. After that, students' answers were analyzed using descriptive analysis techniques that have determined the respondent's category and also problem solving indicators based on Polya's theory, namely understanding the problem, planning solutions, implementing plans and evaluating results; (4) The results of the interviews are the results of recordings or videos to the respondents and the subject teachers when being interviewed which will be presented in a qualitative descriptive form to strengthen the results of the study.

Results and Discussion

Data Validity

The Respondent Selection Test which was followed by the students was conducted online using google form. The results of the answers to the Respondent Selection Test (TSR) that have been carried out by the research subjects are then processed using descriptive data analysis techniques so that the categories of students' abilities can be determined which include high abilities, medium abilities and low abilities.

The number of students in the high ability category is five people, the medium ability category is thirteen people and the low ability category is three people. From each category, two students were selected who would be respondents so that the number of respondents to be studied amounted to six people.

The selection of respondents for the high ability category was obtained from the highest student score, namely R-18 and for the second student because the scores obtained by four students were the same, the selection of respondents was done randomly so that students R-19 were chosen. For the medium ability category, it is obtained from the value of the student who has the highest score for the medium category, the result is that two people who have the same value are chosen randomly, namely R-4 and the second student is selected based on the lowest score, but because there is no student response, the student is selected. which has a moderate value of R-12. For the low ability category, it is obtained from the highest student score for the low category, namely R-9 and the second student is selected from the value of students who have low scores for the low category, namely R-17. The six students who were the respondents took the second stage of the test related to reasoning and problem solving.

Reasoning test that students do online using google form. Questions made based on reasoning indicators. The results of the reasoning tests that

have been done by students are then analyzed using the category rubric for the assessment of reasoning indicators.

Troubleshooting tests are also done online using google forms. Students solve the problem then the results of student answers are combined based on the category of student abilities and analyzed using problem solving indicators based on Polya's theory, namely understand problems, devise a plan, carry out the plan and look back. After carrying out the test, the respondents conducted interviews.

Description of Respondent Selection Test Results (TSR)

This Respondent Selection Test was conducted to determine the test results of students with high ability, medium ability and low ability. The test was carried out online using a google form with a total of 17 questions in the form of multiple choice questions.

The results of the Respondent Selection Test (TSR) that have been carried out by the research subjects are then analyzed to obtain categories of student abilities which include high ability, medium ability and low ability. The classification of these categories is done by first calculating the average value and standard deviation.

Students with high category ability as a whole have understood the questions well. Students with moderate category abilities overall are quite good at understanding the questions and students with low category abilities overall are still lacking in understanding the questions.

Description of Student Reasoning Test Results

This test was conducted to determine the level of students' reasoning. Reasoning test questions in the form of essay questions using reasoning indicators include proportional reasoning, correlation reasoning, conservation reasoning and deductive hypothesis reasoning, totaling three numbers which are carried out by respondents in the categories of high ability, medium ability and low ability using google form and analyzed using the rubric for indicator assessment categories reasoning.

1. Proportional Reasoning

Proportional reasoning is a student's ability to solve problems by combining one proportion with another. The analysis obtained from the results of students' answers can be obtained from the proportional reasoning pattern which can be seen in Table 1.

Table 1. Proportional reasoning pattern

No. Item	Rating Category					Total students
	TM	I	A	Tr	R	
1a	5	0	0	0	1	6

1c	5	0	0	0	1	6
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Based on Table 1, the respondents included in the TM category, namely the five student respondents, did not answer which was due to a lack of understanding of students in solving problems regarding electrical circuits when one battery was added to each circuit while one respondent, students R-18, was included in the R (Ratio) category ie students can solve problems related to two electrical circuits but have a different number of batteries.

2. Correlation Reasoning

Correlation reasoning is the student's ability menganalisis problems by using relationships or causal. The analysis obtained from the results of students' answers can be obtained from the pattern of correlation reasoning which can be seen in Table 2.

Table 2. Correlational Reasoning Pattern

No. Item	Rating Category					Total students
	TM	I	NR	OC	C	
1b	5	0	0	1	0	6
2d	5	0	0	1	0	6

Based on Table 2, the respondents included in the TM category, namely the five student respondents did not answer which was caused by a lack of understanding of students analyzing the relationship between potential difference and current in circuits A and B and analyzing the effect of voltage and current on circuits A, B and C while one respondent, namely student R-18, is included in the OC (One Cell) category, namely students can analyze the relationship and influence between voltage and current even though they have not provided a complete explanation.

3. Conservation Reasoning

Conservation reasoning is the ability of students to maintain the concept that even though the appearance of an object changes, certain properties of an object remain the same. The analysis obtained from the results of students' answers can be obtained from the pattern of conservation reasoning which can be seen in Table 3.

Table 3. Conservation Reasoning Patterns

No. Item	Rating Category					Total students
	TM	I	NR	NC	C	
2b	5	0	0	0	1	6
2c	5	0	1	0	0	6

Based on Table 3, the respondents who were included in the TM category, namely the five students, did not answer which was due to a lack of students' understanding of changing the shape of the circuit when a battery was added to the circuit. For question number 2 part b, one respondent, namely student R-18, is included in category C (Correlation), that is, students are able to explain the brightness of the lamps arranged in parallel and then

added one lamp arranged in series. For question number 2 part c, one respondent, student R-18, is included in the NR (No Relationship) category, that is, students have not been able to fully explain what formulas are used in solving problems to find out the value of a series of A, B and C.

4. Deductive Hypothesis Reasoning

Reasoning deductive hypothesis is the student's ability to draw Conclusions by examining the first hypothesis. The analysis obtained from the results of students' answers can be obtained from the reasoning pattern of the deductive hypothesis which can be seen in Table 4.

Table 4. Patterns of Reasoning Deductive Hypothesis

No. Item	Indicator	Score				Total students
		0	1	2	3	
2a	Proposed explanation	5	1	0	0	6
	Planned Test	5	1	0	0	6
	Observed result	5	1	0	0	6
	Inference	5	1	0	0	6
3	Proposed explanation	2	0	2	2	6
	Planned Test	2	0	4	0	6
	Observed result	2	0	4	0	6
	Inference	3	0	1	2	6

Based on Table 4, for question number 2 part a, there were five students who did not answer so that the score obtained was 0. This was due to a lack of understanding of students about taking hypotheses and making conclusions about the causes of lights having the same or different brightness while students who The answer consists of one person, namely students R-18 which gets a score of 1 in each indicator. Students have been able to answer but have not used their deductive hypothesis reasoning, namely hypothesizing and providing complete conclusions about the order of lamp brightness and the causes of the brightness of the lamps in series A, B and C can be different or the same.

Table 4, to Question 3 on the indicator p proposed explanation, student R-4 and R-17 empty the answer sheet, student R-18 and R-9 has a score of 2 because hypothesized but did not give a reason and the reason is given less complete, R-19 and R-12. has a score of 3 because students provide hypotheses and also give the right reasons. In the planned test indicator, students R-4 and R-17 vacated the answer sheet, students R-18, R-19, R-9, and R-12 had a score of 2 because the plan was in accordance with the hypothesis but did not control for other variables. On indicator observed result, student R-4 and R-17 empty the answer sheet, student R-18, R-19, R-9 and R-12 has a score of 2 for the results obtained are in accordance with the

hypothesis but students are less give an explanation. On indicators Inference, student R-4, R-17 and R-9 vacate the answer sheet, student R-18 has a score of 2 because students can provide conclusions but still failed to give an explanation, the student R-19 and R-12 has score 3 because students can provide conclusions that are in accordance with the initial hypothesis and theory.

Description of Student Problem Solving Test Results

This test was conducted to determine students' understanding in solving problems, especially in the material of electrical circuits. The questions in this test consist of three numbers in the form of essay questions which are then analyzed using problem solving indicators based on Polya Theory including understanding problems, planning solutions, implementing plans, and evaluating results.

1. Understand the Problem

At this stage, to understand the problem students must understand what is known and asked so that students can answer the questions well. For students R-19 who are included in the high ability category, they have written down what they know but still do not provide an explanation of what is being asked in the question and other students do not write it down because students are not used to writing down what is known and asked [Rohma, et al \(2018\)](#) explain that in understanding problems students are less careful and thorough in reading questions and students are not accustomed to writing down what is known and asked in questions. However, at the interview stage, almost all students were able to explain what was known and asked the questions even though students had to read the questions repeatedly. [Setyarini, et al \(2021\)](#) explain that when students are able to understand the questions, students will be able to identify the factors of the questions given.

2. Devise a Plan

At this stage, students plan solutions by determining which formulas, methods, or methods are used to solve the problems. At this stage only students R-17 wrote down the formula that would be used to solve the problem and other students did not write a problem-solving plan because students were not accustomed to writing formulas so that students immediately answered the questions given so that in the interview stage, almost all students were confused to determine the formula to be used. [Rohma, et al \(2018\)](#) explained that students were not used to writing plans such as writing down the steps for completion and also the formulas used.

3. Carry Out the Plan

At this stage, students use formulas, methods or methods that have been planned to solve

problems. At this stage, only students R-12 did not answer which was due to a lack of student understanding of the material and other students had answered but due to the lack of accuracy of students in answering and the absence of a good plan implementation, when solving the questions there were errors even though the results obtained were correct. The lack of accuracy of students in doing calculations is one of the causes of the low ability of students in carrying out problem solving plans (Sugiarto, et al., 2016). However, in the interview stage, almost all students have explained well how to solve the problem.

4. Look Back

At this stage, students re-examine the results of the answers that have been done which can be known when conducting interviews with students. The results of the interviews obtained for each student, namely students R-19 and students R-17, did not evaluate the results of their work anymore. Rohmah, et al (2018) explained that students are not used to re-examining the solutions they get because they feel confident with their answers. As for the other students, they did the evaluation stage with the results of their work but were not too sure about the results of the answers they had done.

Relationship of Reasoning and Problem Solving Students

The relationship between reasoning and students' problem-solving abilities is that not all high-ability students have high reasoning due to the lack of students in understanding and analyzing questions, as well as problem-solving abilities because students do not plan well so that the answers given are incomplete. Students who are moderately capable also have low reasoning due to lack of understanding and mastery of the material making students unable to provide answers while problem solving abilities are caused by lack of mastery of the material so that the answers given by students are incomplete. For the low ability category, students also have low reasoning due to lack of understanding and mastery of the material making students unable to provide answers, while problem solving abilities are due to the lack of students understanding the material so that students cannot answer as a whole.

Regarding the above, students who are highly capable and have moderate reasoning are quite able to analyze problems using existing relationships even though the shape of the object changes, so the answers given are still incomplete. Students who are highly skilled and have a low reasoning has not been capable of in terms of analyzing the problem and therefore can't provide an answer. Students who have moderate and low abilities and have low

reasoning have not been able to analyze problems and relate relationships between variables. From this, according to Sundari & Rimadani (2020) that students have not been able to manage information properly and completely from a data and confirmed by Rimadani, et al (2017) that due to limited knowledge of students, where if students have limited knowledge then students cannot Proficiently answer problems in detail.

Students who have high reasoning abilities and students who have low reasoning abilities also have different abilities in mastering concepts. Students with high reasoning abilities have a higher understanding of concepts than students with lower reasoning abilities (Meiliana, et al., 2020).

Based on the description above, students' reasoning and problem solving are still relatively low because students are still lacking in understanding the explanation of what is known, what is asked and what problem solving strategy will be used to solve the problem, for example, determining the formula to solve the problem. According to Erlina, et al (2018), students actively seek information related to Physics only to solve low-level cognitive thinking questions in the form of rote definitions, remember Physics formulas, apply Physics formulas with simple mathematical operations, and read single graphs.

Students' difficulty in solving problems is influenced by students' lack of understanding of the material, students find it difficult to digest the language used in the questions, students find it difficult to work on problems using formulas, students feel complicated in answering math problems, students' numeracy skills are low, and students are in a hurry to solve problems. perform calculations (Charli, et al., 2018). This is also in line with the research of Maharani & Bernard (2018) the low ability of students is due to a lack of mastery of basic concepts and concepts from the material being tested.

Less effective learning is because during the Covid-19 pandemic, the learning process is carried out online so that many students find it difficult to understand learning materials, for example, students must be explained repeatedly to be able to understand the material so that when online learning is carried out, these students find it difficult to understand the explanation teacher. This is also in line with research by Nova, et al (2021) that students find it more difficult to understand the material due to network constraints, thus disrupting the delivery of learning materials by the teacher. In some schools, shortened lesson hours are also implemented, so that there is less time for questions and answers between teachers and students. Students also feel they are not free to ask the teacher.

Sometimes the teacher only gives assignments without an explanation of the material.

Students still need to be continuously trained and guided to further improve their formal reasoning skills to maximize their thinking skills. Teachers who act as educators and at the same time become parents of students in schools are the foundation for the development of their students' reasoning abilities (Ikbal, et al., 2020).

Environmental factors also affect online learning. In the interview stage with students, it was found that when they did online learning, parents usually did not trust them, so they told students to do something. So during the learning process students sometimes choose to be late or not attend the meeting. Therefore, the role of parents is very important for the smooth learning process of students at home. This is in line with the research of Sholikah & Hanifah (2021) who say that the role of parents is needed to support the learning process at home so that it runs effectively like learning at school.

Conclusion

Each student has different reasoning abilities. Students who have high ability categories and moderate reasoning are quite capable of analyzing questions while students who have medium and low ability categories have low reasoning due to lack of understanding and mastery of students on the material. The lack of student understanding of the material is due to ineffective learning where learning is carried out online during the covid-19 pandemic. Online learning that is done at home affects student learning activities. Another factor that affects student learning activities is the difficulty of students to ask questions when learning online.

Troubleshooting students also remains low due to the lack of students in understanding the problem so that students do not make the problem-solving strategies well and learning in online also affect student learning activities students are due to environmental factors and difficulties students to ask it online.

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