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Probing Prompting Improves Junior High School Students' Mathematical Reasoning During the Implementation of Community Activities Restrictions

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Abstract: This research aims to determine the effect of using the probing-prompting technique in significantly improving students' mathematical reasoning abilities in class and to determine students' responses to the application of the probing-prompting technique in mathematics learning during the implementation of restrictions on community activities (PPKM). In this research, quasi-experimental research was used, a Nonequivalent Control Group Design research design. The research was conducted in the odd semester of the 2021-2022 academic year with a population of all class VIII students. The experimental class that received mathematics learning using the Probing Prompting learning model experienced a significant increase with a positive response in mathematics learning during the implementation of restrictions on community activities (PPKM) with a value of 0.70 in the high improvement category. Meanwhile, the control class with the usual learning model experienced an increase of 0.41 with a moderate increase.

Keywords: ordinary learning, ppkm, probing prompting, reasoning

Abstrak: *Penelitian ini bertujuan untuk mengetahui pengaruh penggunaan teknik probing-prompting dalam peningkatan kemampuan penalaran matematis siswa dikelas secara signifikan dan untuk mengetahui respon siswa terhadap penerapan teknik probing-prompting dalam pembelajaran matematika pada masa pemberlakuan pembatasan kegiatan masyarakat (PPKM). Dalam penelitian ini digunakan penelitian kuasi eksperimen, desain penelitian Nonequivalent Control Group Design. Penelitian dilakukan pada semester ganjil tahun ajaran 2021-2022 dengan populasi dalam seluruh siswa kelas VIII. Kelas eksperimen yang mendapat pembelajaran matematika dengan menggunakan model pembelajaran Probing Prompting mengalami peningkatan signifikan dengan respon yang positif dalam pembelajaran matematika pada masa pemberlakuan pembatasan kegiatan masyarakat (PPKM) dengan nilai sebesar 0,70 kategori peningkatan tinggi. Sedangkan kelas kontrol dengan model pembelajaran biasa mengalami peningkatan sebesar 0,41 dengan peningkatan sedang.*

Kata kunci: *pembelajaran biasa, penalaran, ppkm, probing prompting*

▪ INTRODUCTION

Mathematics is a field of study that occupies an important role in education, because mathematics is the main basis for a mindset which is an absolute requirement that students must master. However, mathematics in the eyes of students is a difficult, boring and even scary subject because it has many formulas. Apart from that, even if you have memorized the formula, it is not a guarantee that students will be able to do the questions given by the teacher. Not a few students find it difficult to learn mathematics. This results in students' lack of interest in learning and affects their grades in mathematics. In 2021, the COVID-19 pandemic, which is a global pandemic, is still occurring and has not ended in Indonesia. The government is currently trying to bring the pandemic under control, before it becomes pre-endemic and endemic, one way is by accelerating vaccination to provide a stronger defense for the community to fight Covid-19. Based on Presidential Decree

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No. 24 of 2021, the implementation of level-based Community Activity Restrictions (PPKM) throughout Indonesia will continue with several adjustments. According to Indra, the quality of education in Indonesia is decreasing because they are not yet accustomed to the online learning model (Mamluah & Maulid, 2021). Mathematical material and mathematical reasoning are two things that cannot be separated, namely mathematical material is understood through reasoning, while reasoning is understood and trained through studying mathematical material. The word reasoning is a translation of the word reasoning, which means a person's way of thinking. Reasoning is a stage of high-level mathematical thinking, including the capacity to think logically and systematically. The ability to reason enables students to solve problems in their lives, inside and outside school. Students' mathematical reasoning can solve mathematical problems and can create new ideas (Aeni, Nurfahriani, & Kadarisma, 2018). The higher the students' mathematical reasoning abilities, the better learning outcomes they will have (Islami, Rahmawati & Yulianto, 2020). Considering the importance of mathematical reasoning, it is necessary to carry out an in-depth analysis of students' mathematical reasoning abilities (Ario, 2016). Minister of National Education Regulation Number 22 of 2006 states that one of the objectives of mathematics subjects is for students to be able to reason. Many processes can help to improve students' mathematical reasoning abilities. Following are some research results that can improve students' reasoning abilities. There is a significant difference in the average development of mathematical reasoning abilities of students who use generative learning models from students who use direct learning (Zulkarnain & Rahmawati, 2014). The inquiry learning model can improve vocational school students' mathematical reasoning abilities (Sukmawati & Sukadasih, 2014). STAD type learning improves vocational school students' understanding and mathematical reasoning (Heriani, Hartanto, & Dharmayana, 2017). The increase in mathematical reasoning abilities of students who learn with the TPS type cooperative learning model is better than conventional learning (Zulkarnain & Kurnia, 2016). Mathematics teaching materials with the discovery learning model can improve students' logical reasoning abilities (Astuti, 2017). Probing prompting can be used to improve students' mathematical reasoning abilities (Aripin & Komala , 2018).

The use of the Probing Prompting learning model influences the development of mathematics learning. Probing Prompting is a learning model in which the teacher provides several guiding and probing questions, so that a thinking process occurs so that students link their knowledge and experience with the new knowledge that is being studied. Suherman (Huda, 2014) revealed that the questions asked during learning are called probing questions. According to Suherman (Huda, 2014) that learning is closely related to questions, namely probing prompting. Suherman said (Huda, 2014) probing prompting is an alternative learning technique that encourages students to be active in building and understanding lesson material. The following are the results of several studies regarding the use of the Probing Prompting model at various school levels. Students' mathematical communication skills are better with probing prompting than with project based learning (Nurhayati, 2019). There was an increase in the average mathematical connection ability of class VII B students at SMP Negeri 15 Banjarmasin in the 2015/2016 academic year from 59.6 in cycle I to 63.3 in cycle II with Probing Prompting. (Danaryanti & Tanaffasa, 2016). Based on the background description above, the problems in this research can be identified as follows; Lack of student interest in participating in mathematics learning; Mathematics learning with conventional models is less able to improve students' mathematical reasoning abilities; Students who still find mathematics subjects difficult. Based on the problems above, this research aims to determine the effect of using the probing-prompting technique in significantly improving students' mathematical reasoning abilities in class and to determine students' responses to the application of the probing-prompting technique in mathematics learning during the implementation of restrictions on community activities (PPKM).

▪ METHOD

Participants

The research was conducted in the odd semester of the 2021-2022 academic year with the population in this study being all class VIII students at SMPN 2 Sukasari. The experimental class whose learning uses the probing prompting learning model is class VIII A, while the control class whose mathematics learning uses ordinary learning is class VIII B.

Research Design and Procedures

This research applies probing prompting learning techniques to significantly improve students' mathematical reasoning abilities compared to results using ordinary learning models. Sampling in this research was carried out using purposive sampling where research samples were taken based on the considerations of the researcher and the teacher concerned. The dependent variable in this research is students' mathematical reasoning abilities. In this research, quasi-experimental research was used, according to Ruseffendi (2005), who stated that the subjects were not grouped randomly, but the researcher accepted the conditions of the subjects as they were. This research design is Nonequivalent Control Group Design which uses two groups, namely the experimental group and the control group. Each research group will be given a pretest and posttest. This test is given to students individually. The pretest was given to see students' initial abilities in mathematical reasoning, while the posttest was given to see progress in mathematical reasoning abilities in the experimental class and control class. Before the instrument is used as a test, the instrument is developed first. The process of developing the question instrument is carried out by carrying out several tests, including testing validity, reliability, distinguishing power and level of difficulty. Apart from that, to see how students responded to the probing prompting learning technique, a non-test instrument in the form of a questionnaire was used specifically for the experimental class.

Instruments

This research uses two types of instruments, namely test instruments and non-test instruments. Instrument for collecting data on students' mathematical reasoning abilities using tests (pretest and posttest). The test instrument is in the form of a subjective test or essay questions to support or evaluate students' reasoning abilities. With the description question type, through the pretest and posttest it will show students' mathematical reasoning abilities, seen from the way students answer the questions given, it can be determined to what extent the reasoning indicators can be achieved. The preparation of the question instrument begins with preparing a grid of the question instrument which is then made in the form of a test instrument format. The question grid contains indicators of reasoning ability and the material to be tested. The questions are arranged based on a grid that has been created along with scoring guidelines for each question item. A non-test instrument in the form of a questionnaire was given specifically to the experimental class which was used to see how students responded to the probing prompting learning technique. When filling out this questionnaire, students can express their attitudes in five answers, namely: strongly agree (SS), agree (S), neutral (N), disagree (TS), and strongly disagree (STS) (Ruseffendi, 2005). The next non-test instrument is observation, which according to Sujarweni (2018:23) is research observation by carrying out comprehensive observations on a certain condition.

Data Analysis

The data obtained in this research is in the form of quantitative data and qualitative data. Quantitative data to determine the increase in students' mathematical reasoning abilities was obtained from the results of the pretest and posttest given to the experimental class and control class. The scoring criteria used are shown in table 1 below.

Table 1. Guidelines for scoring mathematical reasoning ability

Indicators	Answer Details	Score
Generalization Ability	No answer	0
	Identify the process/concept in the case and determine its name	0-2
	Identify the relationship between mathematical formulas/rules/concepts contained in the case in question	0-2
	Arrange patterns based on the relationships between the mathematical formulas/rules/concepts obtained	0-2
	Develop a general form of the process/concept in question accompanied by ethics/explanation	0-2
	Sub-total (one test item)	0-8
Ability to make estimates	No answer	0
	Identify mathematical processes/concepts and their tendencies from given situations	0-2
	Identify the mathematical process/concept in question	0-2
	Prepare estimates relevant to the question	0-2
	Sub-total (one test item)	0-6
Ability to draw conclusions	No answer	0
	Identify the given statement and state it in the form of a premise	0-2
	Identify the concluding statement to be proven	0-2
	Identify the premises, their connections, etc. express them in the form of relevant symbols	0-2
	Arrange relevant premises and draw conclusions based on applicable inference rules.	0-2
	Draw up a final conclusion from the conclusion of the section	0-2
	State the ethics of the final conclusion in a substantiated statement	0-2
	Sub-total (one test item)	0-12

Quantitative data processing in this research used SPSS Version 20 software. The results of the pretest and posttest were used to obtain N-Gain data. The normality test is carried out to determine whether the data obtained is normally distributed or not. The homogeneity test is carried out if the two classes are known to have a normal distribution. The homogeneity test aims to determine whether the two groups have homogeneous variance or not. If the data is normally distributed and homogeneous, a t-test is needed. If the data is not normally distributed or one of the data is not normally distributed, then the Mann Whitney test is carried out. Qualitative data is a non-test instrument in the form of a questionnaire consisting of two groups of statements, namely positive statements and negative statements. The questionnaire approach used in this research is a Likert scale. Each statement in the Likert scale questionnaire has a different score. After processing the questionnaire data, the next step is interpreting the questionnaire data. Then it is described so that it is known whether students as a whole have a positive or negative attitude towards learning mathematics with probing prompting. Next, an observation sheet to describe teacher and student activities referring to learning as well as indicators of mathematical reasoning abilities carried out in the experimental class.

▪ RESULT AND DISSCUSSION

Table 2 below presents a recapitulation of the results of the pretest, posttest, N-Gain and quantitative data analysis of the results of two-mean test processing for the experimental class and control class.

Table 2. Recapitulation of data from pretest, posttest and n-gain results

	Pretest		***Posttest***		***N-Gain***	
	Control	**Experiment**	**Control**	**Experiment**	**Control**	**Experiment**
N	32	32	32	32	32	32
Minimum score	0	0	0	2	-0.100	0.200
Maximum score	4	6	14	18	1.000	1.000
Mean	1.625	1.750	5.573	8.313	0.434	0.699
SD	1.164	1.326	2.133	1.661	0.258	0.176
Two-mean test Sig. (2-tailed)	0.521		0.00		0.00	

The purpose of giving this pretest is to find out whether there is a significant difference in initial mathematical reasoning abilities between experimental class students and control class students. After calculating the pretest scores for the experimental class and control class, based on table 2 it can be seen that the average of the experimental class is 1.750 with a standard deviation of 1.326 while the average of the control class is 1.625 with a standard deviation of 1.164. Before testing the equality of two means, a normality test is first carried out to find out whether the pretest data for the experimental class and control class come from a normally distributed population or not. To determine the normality of the pretest data, the Kolmogorov-Smirnov test was carried out by taking a significance level of 5% using SPSS 20 software. The data shows that the pretest data for the control class and experimental class came from a normally distributed population, so the next test was a homogeneity test, it was obtained that the Sig value the value is 0.97. Because the Sig value is greater than 0.05, it means that in the pretest data between the experimental class and the control class there is no difference in variance or in other words the variance of the two classes is homogeneous. Because both classes come from a normally distributed population and have homogeneous variance, the next test is a test of equality of two means. The test for equality of two means was carried out using the t-test (Independent Sample T-test). The results of processing the similarity test of two pretest data means with the t-test are presented in table 2, obtaining a Sig value. (2-tailed) is

0.521. Because the Sig value. (2-tailed) is greater than 0.05, meaning that the average pretest score for the mathematical reasoning ability of experimental class students is not significantly different from the average pretest score for the control class. So the data from the pretest showed that there was no difference in students' initial abilities between the experimental class and the control class. Measuring students' reasoning abilities was carried out by processing data from the final test results (Posttest) of the experimental class and control class after being given treatment, namely the application of mathematics learning using the probing prompting technique in the experimental class and regular learning in the control class. After calculating the Posttest scores for the experimental class and control class, it was found that the experimental class average was 8.313 and the standard deviation was 1.661. Meanwhile, the control class average is 5.573 and the standard deviation is 2.133. So from the posttest data it was found that students' final abilities were different between the experimental class and the control class. However, to see whether the resulting differences are significant or not, a two-mean difference test will be used on the posttest data. The results of testing the difference between the two Posttest averages can be seen in table 2 with the Sig value. (2 tailed) is 0.00, which is smaller than 0.05, meaning that the average posttest score ranking for the mathematical reasoning ability of experimental class students is higher than the posttest average for the control class.

N-Gain analysis is an increase in students' mathematical reasoning abilities which has been obtained from the difference in pretest and posttest scores for the experimental class and control class. As in table 2, it can be seen that the experimental class has the lowest value of N-Gain = 0.20 and the highest value of N-Gain = 1.00. Meanwhile, the control class has the lowest value of N-Gain = -0.10 and the highest value of N-Gain = 1.00. The average N-Gain score in the experimental class is higher compared to the control class. However, to see whether the difference in the resulting increase is significant or not, a test of the difference between the two average N-Gain data will be carried out. The calculation data shows that the N-Gain data comes from a population that is normally distributed and has a homogeneous variance. Based on table 2, by comparing the results obtained from pretest and posttest data, there is an increase in students' mathematical reasoning abilities. The average increase in score obtained by the experimental class was 0.699 while the control class was 0.434. These results show that students who receive mathematics learning using the Probing Prompting learning model have higher improvements than students who receive regular learning. Then a test of the difference between two means was carried out to see the level of significance of the increase in students' mathematical reasoning abilities with a t-test using SPSS Version 20 software. The hypothesis in the test of the difference of two means of N-Gain data is as follows:

H_0 : The increase in mathematical reasoning abilities of students who received learning using the Probing Prompting learning model was not significantly higher than students who received learning using the normal learning model.

H_1 : The increase in mathematical reasoning abilities of students who received learning using the Probing Prompting learning model was significantly higher than students who received learning using the normal learning model.

With a significance level (α) = 0.05, if the Sig. (2-tailed) $\geq$ 0.05 then H_0 is accepted and H_1 is rejected. If the Sig. (2-tailed) < 0.05 then H_0 is rejected and H_1 is accepted.

Table 2 shows the results of testing the difference between the two N-Gain averages using the T-test statistical test, it was found that the Sig. (2-tailed) 0.00 based on the hypothesis testing criteria, it can be concluded that the test data for the difference between two means has Sig. (2 tailed) is smaller than 0.05, so H_0 is rejected, meaning that the increase in mathematical reasoning abilities of students who receive learning using the Probing Prompting learning model is significantly higher than students who receive learning using the regular learning model. This research was conducted on a sample where each class received the same number of hours, the same learning material, namely relations and functions, and the same ability test, namely the reasoning ability test. However, these two classes receive different treatment. The treatment in question is a learning technique. In the experimental class the Probing Prompting learning model was given, while in the control class the ordinary learning model was given. Based on the results of the research analysis, it was found that the results of the experimental class students' mathematical reasoning ability test were higher than those in the control class. In the initial test of reasoning ability, the experimental class got an average of 1.750, while the average of the control class was 1.625, then after being treated with different learning techniques, the average score of the experimental class was 8.313 and the average of the control class was 5.573. This is reinforced by the results of the N-Gain calculation from the experimental class and control class which shows that the average increase in the experimental class and control class experienced a significant difference in increase. The experimental class that received mathematics learning using the Probing Prompting learning model experienced an increase of 0.699 in the high improvement category. Meanwhile, the control class with the usual learning model experienced an increase of 0.434 with a moderate increase. So the increase in the mathematical reasoning abilities of students in the experimental class was significantly higher than in the control class. The following is a bar chart image showing the N-Gain values for the experimental class and control class for each indicator of mathematical reasoning

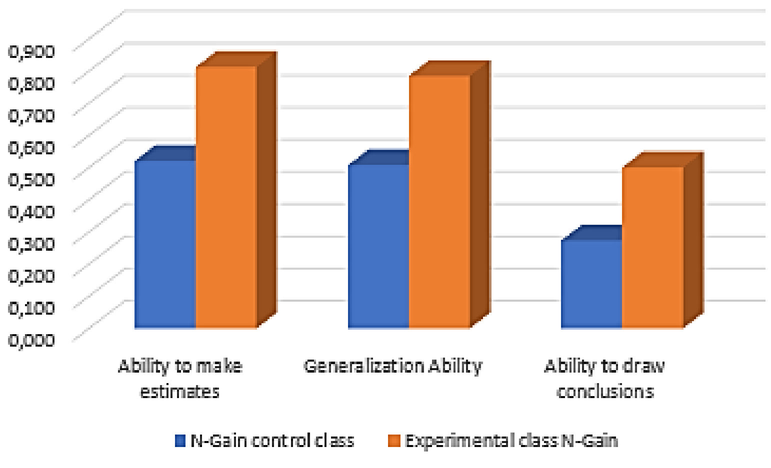

Figure 1. N-gain of control class and experimental class for each reasoning indicator

Based on Figure 1, it shows that the N-gain of the experimental class is always significantly higher for each indicator of mathematical reasoning. This means that the class that received the Probing Prompting learning model experienced a significant increase in their ability to make estimates, generalization ability and ability to draw conclusions. Where the highest increase in students' mathematical reasoning is the ability to make estimates. Based on Figure 2, which is an answer to show that the indicator makes a guess, students are able to identify the process of the situation given and asked, then can make relevant estimates. Based on Figure 3, it shows that students are able to solve problems in a structured manner, identify mathematical processes/concepts in the situations given and asked about, can construct mathematical models, and determine solutions. In this way, it is proven that the indicator for manipulation has been achieved. Based on Figure 4, students can identify the relationship between mathematical concepts and the questions given and can then draw conclusions and compile evidence. So this proves that the indicators for drawing conclusions, compiling evidence and providing reasons have been achieved.

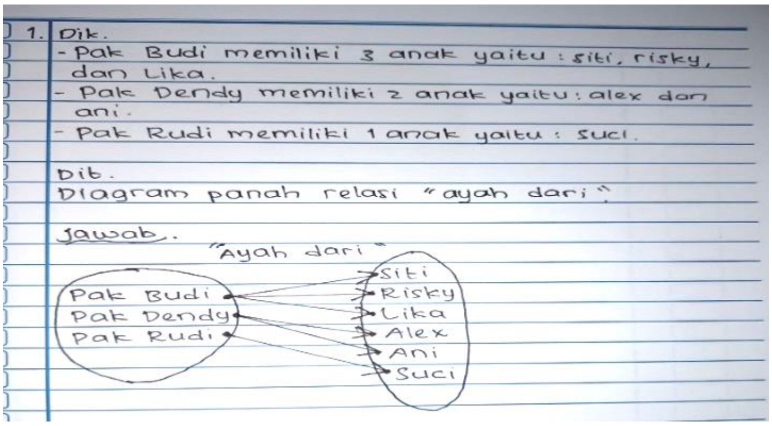

Figure 2. Answers to indicator questions on the ability to make estimates

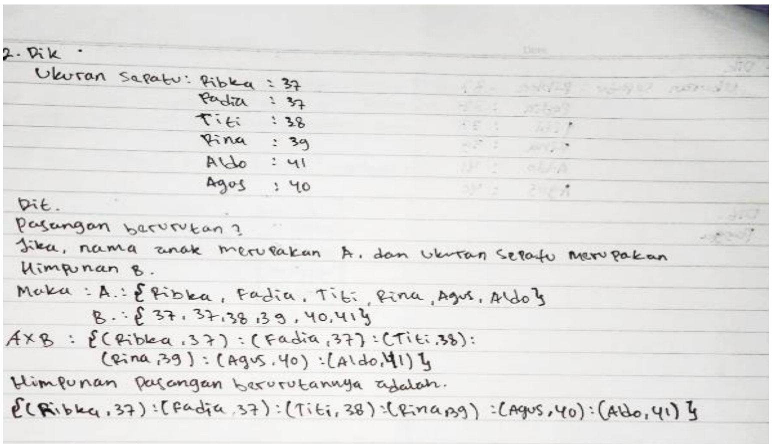

Figure 3. Answers to generalization ability indicator questions

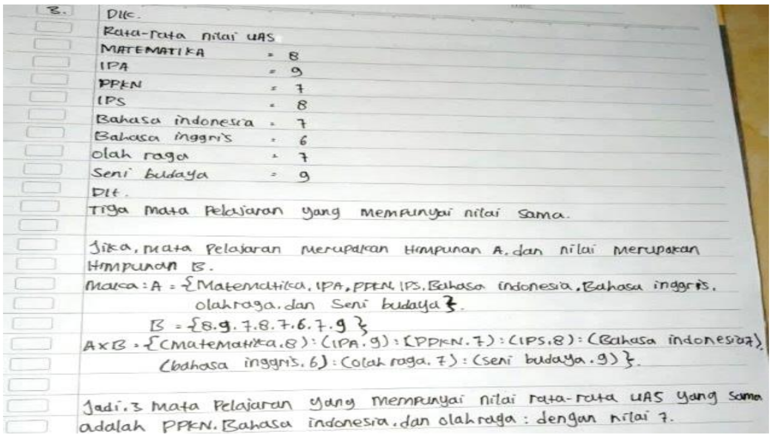

Figure 4. Answers to indicator questions on the ability to draw conclusions

Based on the results of the questions for several reasoning indicators, it shows that mathematical reasoning abilities in the experimental class using the Probing Prompting learning model have been achieved. This happens because in the Probing Prompting learning model the teacher must always provide more motivation and opportunities for students to learn more actively in building their own knowledge. Apart from that, in the third stage of the Probing Prompting learning model, the teacher asks students problems that are in accordance with the indicators so that students try to construct their own knowledge so that students can solve and answer questions given by the teacher. The next stage which also has an important role in the probing prompting technique is in the fifth and sixth stages, namely the teacher appoints one of the students to answer the question and if the answer is correct then the teacher asks other students for responses regarding the answer to ensure that all students are involved in the ongoing activity. . However, if the student finds it difficult to answer, the teacher will ask another question whose answer is a clue to the solution. Then proceed with questions that require students to think at a higher level until they can answer questions according to basic competencies or indicators. Student activities in learning show that the use of probing prompting techniques can make students play a role and participate actively in the learning process and are involved in the question and answer process. So compared to students who receive regular learning, learning using the probing prompting model is successful in making students able to develop their reasoning abilities. Thus, the probing prompting learning model in mathematics learning can facilitate students in improving students' mathematical reasoning abilities with conducive learning that maximizes and optimizes probing questions for students to construct their own knowledge. This is in accordance with research results which show that the increase in mathematical reasoning abilities of students who receive mathematics learning using probing prompting learning is significantly higher than the increase in mathematical reasoning abilities of students who receive regular learning. This is different from ordinary learning, where learning that uses the expository method is characterized by explanations and distribution of tasks and exercises. Students listen more to the teacher's explanation in front of the class and carry out assignments if the teacher gives students practice questions. Apart from that, students listen carefully and note down the important points raised by the teacher so that the teaching and learning process is dominated by the teacher. This results in students being passive, because students only accept what is conveyed by the teacher, as a result students are easily bored, lack initiative, and depend on the teacher. With these characteristics, of course the abilities that should appear in students will not grow and develop.

Qualitative data was obtained from student response questionnaires given to the experimental class after implementing the Posttest with the aim of knowing student responses to mathematics learning, student responses to mathematics learning using the probing prompting learning model, as well as student responses to mathematical reasoning questions. According to the Big Indonesian Dictionary, response means a reaction or response in the form of acceptance, rejection, or indifference to what the communicator conveys in his message. The questionnaire contains 14 statements, consisting of 7 positive statements and 7 negative statements which students must choose based on their opinions. The results of the percentage analysis of questionnaire data are described as follows. The majority or 97% of students expressed a positive response to the statement that mathematics is an important and enjoyable lesson. Then a small percentage or 3% of students expressed a positive response to the statement that mathematics is a difficult lesson because many formulas are not understood. The majority or 97% of students expressed a positive response to the statement that they learn mathematics because they know its uses in everyday life. Then the majority or 94% of students expressed a positive response to the statement of interest in actively participating in mathematics learning. Then a small percentage or 6% of students expressed a positive response with the statement that they were less active in learning mathematics because it was boring. The majority or 97% of students expressed a positive response that they were happy to express their opinions when the teacher asked questions. Then the majority or 94% of students expressed a negative response to the statement that they were stressed during mathematics learning because they were afraid of not being able to answer the statement. The majority or 97% of students agreed that with probing prompting students become confident and motivated to understand mathematics lessons better. Furthermore, the majority or 97% of students expressed a negative response to the statement that learning mathematics like this makes students confused and not enthusiastic about learning mathematics. Then the majority or 88% of students expressed a negative response to the statement that they did not want to do mathematical reasoning questions because it made it difficult for me to do them. The majority or 97% of students expressed a negative response that the reasoning questions made me confused and I didn't understand the mathematics material. Furthermore, all or 100% of students expressed a positive response to the statement that mathematical reasoning questions can train to improve reasoning abilities. After calculating the average score according to the indicators, the following are the results of calculating the overall average score for the student response scale in table 3.

Table 3. Scale results for all indicators

No	Statement	Score	Percentage of Student Responses	
			Positive	**Negative**
1	Students' interest in learning mathematics	4.3	49%	50%
2	Students' interest in using the Probing Prompting learning model	4.3	50%	49%

3	Students' interest in mathematical reasoning problems	4.3	54%	46%
	Mean	4.3	51%	48%

Analysis of the student response scale is classified based on the constituent indicators, namely student interest in learning mathematics, student interest in using the probing prompting learning model in mathematics learning and student interest in students' mathematical reasoning questions. Processing of the results of this questionnaire was carried out using a Likert scale with the help of Microsoft Excel with a total of 32 students as respondents. Calculations are carried out by analyzing the average score of the response scale for each statement item. Then the average score is compared with the neutral score on a Likert scale, namely 3.00. If it is more than 3.00 then the student's attitude scale is positive and if it is less than 3.00 the student's attitude is negative. Based on table 3, it shows that the indicator of student interest in learning mathematics has an average score of 4.3. The indicator of student interest in using the Probing Prompting learning model has an average score of 4.3, and the indicator of student interest in mathematical reasoning questions has an average score of 4.3. Overall, the average score for all statements is 4.3, where the score is more than 3.00 or a percentage of 51%, which means it still shows a positive response. This is in line with Arikunto (Nurhayati & Lestari, 2022) that the interpretation of the questionnaire with 51% shows that the student response is positive with the criteria being that the response is still not good. So it can be concluded that almost all students showed a positive response even though it was not good. The results of the questionnaire analysis generally showed that students gave a positive response to the implementation of mathematics learning using the probing prompting learning model during the implementation of restrictions on community activities (PPKM). By showing a positive response, the students had good motivation in learning mathematics, thus making students interested in active in learning mathematics even though the response is still not good. This is in line with research by Harisuddin (2021) that almost half of students have independence in learning mathematics in WhatsApp group-based distance learning. This is because during the period of implementation of restrictions on community activities (PPKM) the process of teaching and learning activities did not express their own abilities, meaning that students needed guidance from teachers to learn. This is in line with research by J. Kusuma & H. Hamidah (2020) that learning with Zoom webinar treatment is more effective than with WA Group treatment. However, surveys also show that internet forums are only used by a few teachers, inhibiting factors include time constraints, missing concepts, and lack of infrastructure (Dittmar & Eilks, 2019).

Based on the description above, it can be said that students show a positive response to the application of mathematics learning using probing prompting. The implementation of learning using the probing prompting model is measured using tools in the form of observation sheets or observation sheets of teacher and student activities. Observations were carried out by an observer to observe student and teacher activities during mathematics learning in the experimental class over three meetings with a time allocation of 5 x 25 minutes. The highest score for each activity quality observed was 5 with the number of observation items for teachers totaling 14 and for students totaling 9. Observation data was obtained from observation sheets filled in by the observer during the lesson. As for data from observations of teacher activities for classes during 3 meetings, it was concluded that the quality of teachers' teaching was increasing. At the first meeting the average was 3.5, at the second meeting it was 3.6, at the last meeting it was 3.7. At the start of the lesson, an average of only 3.5 was obtained, this was because at the first meeting the teacher had just adapted to the class atmosphere, student characteristics and the initial implementation of the probing prompting learning model in the class. At the second meeting, the average was 3.6. There was an increase in the second meeting because the teacher had begun to adapt and get to know the characteristics of the students. At the third meeting the average was 3.7, it can be seen that learning is getting better because the teacher evaluates deficiencies in previous learning. Furthermore, data from observations of student activities during three meetings. At the first meeting the average was 3.6, at the second meeting it was 3.7 and at the third meeting it was 3.9. It can be seen that at the beginning of learning an average of 3.6 was obtained because at the first meeting, just like the teacher, students were just adapting to the probing prompting model of learning. At the second meeting they got an average of 3.7. This is because at the second meeting students began to adapt. At the third meeting they got an average of 3.9. At the third meeting the quality of student activities improved. Apart from requiring cohesiveness and cooperation between groups, students are also used to reasoning questions that are not far from problems in everyday life and students are more curious about solving problems so they have a sense of pride in being able to solve problems well. Therefore, students receive learning well using the probing prompting learning model so that it can improve students' mathematical reasoning abilities. Sugandi (in Utari, 2006:35), states that studying together, both among each other, children and adults will help their cognitive development. This is in line with Utomo's (2021) research that students with low abilities can only explain mathematics problems. This is in line with research which states that evaluation from learning partners seems to function better than evaluating oneself (Corlu & Aydin, 2016). Other research results show that collaborative work improves group emotion regulation during collaboration (Mänty et al, 2020). Cognitive development will be more meaningful if it is based on real experience. Every individual has their own ego. By using their own language, individuals form schemas and change these schemas. Individuals themselves construct new knowledge when interacting with the experiences and objects they encounter. Based on the discussion above, Probing Prompting in mathematics learning will help students to understand mathematical concepts because there will be direct interaction with the teacher which will be able to improve students' mathematical reasoning which will ultimately have an impact on student achievement. This is in line with research which shows that interest in mathematics has a direct and positive effect on students' mathematics learning achievement (Zhang & Wang, 2020). Reasoning is a thinking process to draw conclusions and make new statements. So, inductive reasoning occurs, which requires the activity of observing specific examples with a basic pattern or regularity. Apart from that, deductive reasoning also occurs which involves a process of drawing conclusions based on what is given, apart from that it proceeds from general rules to a conclusion about a more specific case. Student response is the student's response to the learning process that has been carried out. The response is in the form of how enthusiastic the students are about the learning that has been carried out, and whether they are able to link the students' knowledge and experiences with the new knowledge that is being studied. Students' attention to the lesson being studied tends to be more maintained because students always prepare answers, they must always be ready if suddenly pointed out by the teacher.

▪ CONCLUSION

The conclusion of the research results provides more comprehensive information regarding the use of the probing-prompting technique, where the use of this technique can help improve students' mathematical reasoning abilities significantly with a positive response in mathematics learning during the implementation of restrictions on community activities (PPKM). For further suggestions, it is hoped that there will be research that can be an option or choice for mathematics subject teachers in choosing learning models or techniques in classes with different materials, so that later it can be used as alternative reference material for students and mathematics subject teachers in efforts to improve students' reasoning, especially in junior high school or senior high school environments.

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