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Implementation of Accelerated Learning to Improve Mathematics Communication Ability

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Abstract: The four skills needed in the 21st century are often abbreviated as 4Cs, including communication skills. This research is an attempt to determine students' mathematical communication skills and student responses in learning mathematics. The purpose of this study was to determine the significant improvement in communication skills and to determine student responses to the implementation of accelerated learning. This research uses Quasi Experimental Design with Non-equivalent Control Group Design. Pretest and Posttest in the form of quantitative data in the form of description questions and non-test (questionnaire) in the form of qualitative data. The research was carried out at SMPN 4 Purwadadi with the research population in the odd semester of the 2021/2022 academic year. Sampling using purposive sampling method. The instruments used are test and non-test instruments. The test instrument for students' mathematical communication skills is in the form of description questions and non-test in the form of student response questionnaires. The results of the study by using inferential statistics with a significance level of 5% showed that there was a significant difference regarding the improvement of students' mathematical communication skills and the good response of students to the use of accelerated learning.

Keywords: accelerated learning, mathematical communication, junior high school student.

Abstrak: *Empat kemampuan yang diperlukan di abad 21 sering disingkat dengan 4Cs diantaranya kemampuan komunikasi. Penelitian ini sebagai upaya untuk mengetahui kemampuan komunikasi matematis siswa dan respon siswa dalam pembelajaran matematika. Tujuan penelitian ini untuk mengetahui peningkatan signifikan kemampuan komunikasi serta untuk mengetahui respon siswa terhadap penerapan accelerated learning. Penelitian menggunakan Quasi Eksperimental Design dengan Nonequivalent Control Group Design. Pretest dan Posttest berupa data kuantitatif yang berupa soal uraian dan non tes (angket) berupa data kualitatif. Penelitian dilaksanakan di SMPN 4 Purwadadi dengan populasi penelitiannya adalah semester ganjil tahun ajaran 2021/2022. Pengambilan sampel menggunakan metode purposive sampling. Instrumen yang digunakan berupa instrumen tes dan non tes. Instrumen tes kemampuan komunikasi matematis siswa berupa soal uraian dan non tes berupa angket respon siswa. Hasil penelitian Dengan menggunakan statistik inferensial dengan taraf signifikansi 5% menunjukan terdapat perbedaan yang signifikan mengenai peningkatan kemampuan komunikasi matematis siswa dan bagusnya respon siswa terhadap penggunaan accelerated learning.*

Kata kunci: *accelerated learning, komunikasi matematis, siswa SMP.*

▪ INTRODUCTION

Mathematics is a science that has an important role in various disciplines and in underpinning today's technological advances (Fitriani, 2015). Meanwhile, one of the fields of study that supports the development of science and technology is mathematics (Asrawati & Sulaiman, 2020). Knowledge of mathematics can be communicated through internet forums which are a source of interactive question-answer-based

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information on the Internet. Communication tools are used to investigate various aspects of mathematical discourse and explore its development in the classroom and outside (Sfard, 2012). However, the survey also shows that Internet forums are only used by a few teachers due to time constraints, missing concepts, and lack of infrastructure (Dittmar & Eilks, 2019). In education, one must consider the role of analog technology such as printed books, especially in terms of reading (Weel & Mangen, 2022). While the strongest influence on independent learning is support, collaboration and advice from other students who are more experienced (Hockings et al., 2017). The purpose of learning mathematics in schools is reasoning on trait patterns, generalizing and then providing reasons for the ideas of presenting mathematical statements and then communicating these ideas with symbols, tables, diagrams or other media to clarify the situation or problem (Nawastiti et al., 2018). Therefore mathematics is indispensable in everyday life as well as in the advancement of science and technology. In line with that (Kusuma, 2019) states that there is still a lack of student motivation to study mathematics. Therefore, mathematical communication skills are needed so that mathematics learning can run well. As stated by (Aniswita & Handayani, 2017) communication skills are one of the four skills needed in the 21st century which are more often abbreviated as 4Cs.

Mathematics learning should be able to develop communication skills. Because mathematics is not just a thinking tool, but mathematics is also a means of communication between students and communication between teachers and students. In addition to mathematical communication skills that are important for students, there are other supporting factors that are able to realize the objectives of learning mathematics, namely aspects of student responses to learning mathematics. According to Ruseffendi (Harisuddin & Faizal, 2020) that there are many students who after studying mathematics, are unable to understand that even in the simplest part, many concepts are misunderstood so that mathematics is considered a difficult, complicated and difficult science. Based on the results of a study by The OECD International Student Achievement Program (PISA) Indonesia (Miharjo et al., 2019), communication skills in mathematics are ranked 63 out of 70 countries with an achievement rate of 42.3%. This proves that students' mathematical communication skills in Indonesia are still low. In line with that (Maulidin, 2016) states that the low level of mathematical communication, one of which is caused by the factor that students in identical learning only see and imitate friends who are considered good and the methods used in learning seem less fun and even boring. So that students show a poor response in learning. Therefore, this research is not only an effort to improve mathematical communication skills, but also student responses during the learning process. In addition, the effectiveness of learning is also crucial.

A learning is said to be effective if at least four of the aspects of the learning effectiveness criteria are met, the four aspects are: classical learning completeness, student activities, learning implementation, and student responses (Ernawati, 2019). In this case, what is meant by classical completeness is if in the class there are 85% of students who have completed. New approaches to teaching are needed at all levels of education to develop 21st century-appropriate skills namely, inquiry, problem solving, innovation, entrepreneurship, communication, technology, experimental design, and investigation (Corlu & Aydin, 2016). In this case, the selection of the right learning

model is needed to facilitate mathematics learning activities in the classroom. There are results of this study that the learning applies the accelerated learning model. The improvement of adaptive reasoning ability is significantly better using accelerated learning compared to students whose learning uses ordinary learning (Putra & Sari, 2016). In order to improve students' mathematical communication skills, one of them is applying the Accelerated Learning learning model.

Accelerated learning is the ability to absorb and understand new information quickly and master the information (Rose & Nicholl, 2002). Accelerated Learning learning model is an alternative learning model that can be used to improve students' mathematical communication skills. Accelerated learning is adapted to the abilities possessed by each student so that students can communicate the material they learn in the form of group discussions or presentations, attempted by the teacher to students through giving assignments at home to read and understand the subject matter to be studied next, providing opportunities to ask, answer questions and explain the answers given, and the interaction of discussion and cooperation with friends. In particular, this study aims to determine the increase in mathematical communication skills of students who receive mathematics learning with the accelerated learning model significantly higher than students who receive the ordinary learning model; and to find out how students respond to learning mathematics using the accelerated learning model. Mathematical communication skills in question are students' abilities in terms of explaining, describing, listening, asking, clarifying, collaborating, writing, and reflecting real objects, pictures and diagrams into mathematical ideas and finally discussing what has been learned. The usual learning model in question is a model used by teachers in everyday learning by using a general model in accordance with the curriculum that is run at the school. The student response referred to in this study is the student's response to the learning that has been carried out. Student responses are student statements that describe whether or not students are interested in participating in learning activities.

▪ METHOD

Participants

The population is the entire research subject (Arikunto, 2019). The population in this study were class VIII students at SMPN 4 Purwadadi in the 2021/2022 academic year. From the population, two classes were taken as research samples, one class as the experimental class and the other as the control class. The experimental class is class VIII C with the number of class members as many as 31 students, while the control class is class VIII D with the number of class members as many as 31 students. The experimental class was treated with learning using the accelerated learning model, while the control class was given learning using the ordinary learning model.

Research Design and Procedures

Several forms of research design are Pre-experimental Designs, True Experimental Design, Factorial Design, and Quasi Experimental Design (Sugiyono, 2015). This study uses a Quasi Experimental Design. Each research group will be given a pretest and posttest. This test is given to students individually. The pretest was given to see the students' initial ability in mathematical communication, while the posttest was

given to see the progress in mathematical communication skills in the experimental class and control class. In this study using the Noneequivalent Control Group Design. Pretest and Posttest in the form of quantitative data and non-test (questionnaire) in the form of qualitative data. The researcher carried out the preparation stage by compiling research instruments, conducting trials on the instrument, analyzing the results of the trials on the instrument and then drawing conclusions on the results of the trials. Then in the implementation stage, the researcher chose the experimental class and the control class, gave a pretest to the control class and the experimental class, gave treatment using the Accelerated Learning model in the experimental class and learning with the usual model in the control class, gave a final test to the class. experimental and control classes, to determine students' mathematical communication skills after ending the treatment. In this study, the lesson plans for the experimental class were prepared using Accelerated Learning steps, while the lesson plans for the control class used ordinary learning steps. In the final/evaluation stage, the researcher collects all research data consisting of pretest scores, posttest scores, questionnaires and observation sheets, analyzes the results of data processing, draws conclusions from the results of the analysis that has been done.

Instruments

The research instrument consisted of tests and non-tests. The test instrument used in this study was a subjective test or a test in the form of a description. The pretest is given before the learning process takes place while the posttest is given after the learning process ends. The non-test instrument in the form of a questionnaire was given to the experimental class. In addition, researchers made observations, namely direct observations. Observation is a data collection technique by observing directly or indirectly about the things observed and recording them on an observation tool (Sriyanti, 2019). Making this observation sheet will refer to learning and indicators of achievement of mathematical communication skills carried out in the experimental class during learning, as well as identifying behavior or describing teacher and student activities.

Data Analysis

The modified mathematical communication ability scoring guidelines are in table 1 (Soemarmo & Hendriana, 2019).

Table 1. Guidelines for scoring mathematical communication skills

No	Mathematical Communication Indicator	Answer Details	Score
1	Expressing mathematical situations or everyday events into mathematical models and solving them	No answer	0
		Identify known and asked elements or/data and express them in mathematical symbols	0-2
		Identify the relationship between known and asked elements/data	0-2
		Develop a mathematical model of the problem in the form of pictures and or mathematical expressions and explain the mathematical concepts involved	0-4

2	Expressing mathematical models (pictures, algebraic expressions) into ordinary language (composing story problems)	No answer Completing mathematical models (pictures) and or mathematical expressions with relevant elements Identify mathematical concepts/principles contained in the given mathematical model (image and or expression) Identify the problem to be posed and determine the mathematical concepts contained in the problem in question	0 0-2 0-4 0-2
3	Give an explanation of the mathematical model and or pattern	No answer Identify mathematical concepts and processes contained in the given mathematical model/pattern Identify links between mathematical concepts and processes contained in the given mathematical model/pattern Provide an explanation of the relationship between mathematical concepts and processes contained in the given mathematical model/pattern	0 0-2 0-2 0-2
4	Formulate questions for the given situation with reasons	No answer Identify mathematical concepts and processes contained in the given situation Identify mathematical concepts and processes to be asked Prepare questions related to mathematical concepts and processes that will be asked with reasons	0 0-2 0-3 0-3

Before the test instrument is used, it is first tested. Instrument testing is in the form of validity and reliability tests. Researchers to calculate the validity and reliability of a test instrument using the help of SPSS 16 Software. An instrument is said to be valid or valid or the data has high validity, while an instrument that is less valid means it has low validity. The decision is taken by comparing t_hitung with t_table the decision criteria are if t_hitung t_table then it is valid and if t_hitung t_table then it is invalid. Reliability determines the level or degree of consistency or constancy of an instrument. If the evaluation tool is reliable, then the results of two or more evaluations with two or more evaluation tools that are equivalent in each of the above tests will be similar. The normality test was carried out to determine whether the data for the two sample classes came from a population that was normally distributed or not. Testing the normality of the data in this study used the Kolmogorov-Smirnov test of normality with a significance level of 5%. Homogeneity test was carried out if both classes were known to be normally distributed. The homogeneity test aims to determine whether the two groups have homogeneous variance or not. To test the homogeneity by using the significance level or = 5%. Processing is carried out provided that if the data is normally distributed and homogeneous, then a t-test is required. If the data is not normally distributed or one of the data is not normally distributed, then the Mann Whitney test is performed. Data on increasing students' mathematical communication skills can be

obtained from normal gain scores (gain index). The N-Gain obtained according to Hake is the difference between the Posttest score and the pretest score compared to the difference between the ideal maximum score and the pretest score with the N-Gain index criteria according to Hake & Meltzer shown in table 2 (Rahman, 2019).

Table 2. Criteria for N-Gain index

N-Gain index	Criteria
$g \geq 0.70$	High
$0.30 \leq g < 0.70$	Medium
$g < 0.30$	Low

Qualitative data consisting of questionnaires and observations were given specifically to the experimental class to determine student responses to mathematics learning using the Accelerated Learning model. The questionnaire in this study consisted of two groups of positive statements and negative statements. The questionnaire approach used in this study is a modified Likert scale (Ardiyanto & Hendrastuti, 2021) with 4 alternative answer choices, namely: SL (Always), SR (Often), JR (Rarely), TP (Never) with statements in the Likert scale questionnaire have different scores as shown in table 3.

Table 3. Questionnaire answer categories

Statement	Statement Score			
	SL	SR	JR	TP
Positive	4	3	2	1
Negative	1	2	3	4

Researchers conducted a questionnaire analysis with the formula (Lestari & Yudhanegara, 2015)

Percentage of answers = (Frequency of answers / respondents) x 100%

Then interpret the data according to the criteria for interpreting the answers to the questionnaire as shown in table 4 according to Arikunto (Nurhayati & Lestari, 2022).

Table 4. Classification of interpretation of student questionnaire answers

Percentage of Answers	Interpretation
100 % - 81,26 %	Very good
81,25 % - 62,51 %	Good
62,50 % - 43,76 %	Quite good
43,75 % - 25 %	Not good

▪ RESULT AND DISSCUSSION

Based on research that has been done at SMP Negeri 4 Purwadadi with the research population is class VIII students. While the research design used was a sample of two classes, namely the experimental class whose mathematics learning used the accelerated learning model, namely in class VIII C, and in the control class, the mathematics learning used ordinary learning, namely in class VIII D. Quantitative data were obtained from the results of the pretest and posttest experimental class and control

class. Meanwhile, the qualitative data in this study were obtained from the results of a questionnaire measuring student responses to learning using accelerated learning. Before being treated with accelerated learning in the experimental class and ordinary learning in the control class, a pretest was given to both classes. The purpose of this pretest is to find out whether there is a significant difference in the initial mathematical communication ability between the experimental class and control class students. After two classes were given treatment, then both classes were given a posttest. Then the results of the posttest were analyzed to determine the final abilities of the experimental class students who received accelerated learning and the control class who received ordinary learning. So that it can find out whether students' mathematical communication skills can be achieved by learning mathematics using the accelerated learning model.

The normality test was carried out to determine whether the data for the two sample classes came from a population that was normally distributed or not. Testing the normality of the pretest data in this study used the Kolmogorov-Smirnov test of normality with a significance level of 5%. The significance value for the control class is 0.128 greater than 0.05 and for the experimental class the significance value is 0.200 greater than 0.05. This means that the data from the pretest experimental class and control class comes from a population that is normally distributed. Homogeneity test was conducted to determine the variance of the two sample classes. From the calculation results, it can be seen in Levene's Test that the significance value (sig) = 0.763 is greater than 0.05. This means that between the experimental class and the control class there is no difference in variance or homogeneity. Posttest data can be seen that the average of the experimental class is 36.03 while the average of the control class is 24.23. The experimental class variance is 37.23 with a standard deviation of 6.102 while the control class has a variance of 66.51 with a standard deviation of 8.156. From the posttest data, it is found that the final ability of students is different between the experimental class and the control class. This means that the average posttest score of the experimental class students' mathematical communication skills is higher than the posttest average of the control class. N-Gain data analysis to determine an increase in students' communication skills that have been obtained from the difference in the pretest and posttest scores of the experimental class and the control class. So for more details it is presented in Figure 1.

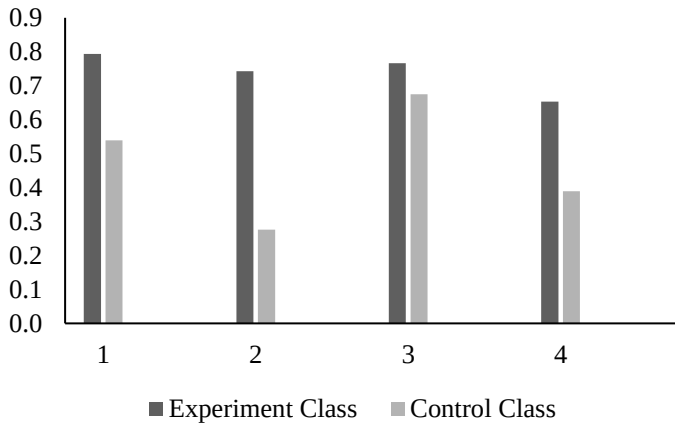

Figure 1. The n-gain value for each mathematical communication indicator

Figure 1 shows the results of N-Gain for the experimental class and the control class for each indicator of mathematical communication. The number one indicator that expresses mathematical situations or everyday events into mathematical models and solves them. Indicator number two which states mathematical models (pictures, algebraic expressions) into ordinary language (composing story problems). Indicator number three that provides an explanation of the mathematical model and or pattern. Indicator number four that composes questions to the given situation with reasons. N-Gain data analysis was conducted to determine an increase in students' communication skills. After calculating the N-Gain data for the experimental class and the control class, based on the results of the homogeneity test, Sig = 0.375, where greater than 0.05 means that the N-Gain data for the experimental class and control class has homogeneous variance. The results of the two-mean difference test of Independent-Sample T Test of N-Gain data using SPSS 16 software obtained a significance of 0.000. Based on the hypothesis testing criteria, it can be concluded that the test data for the difference between the two N-Gain averages has a significance less than 0.05, meaning that the increase in mathematical communication skills of students who receive accelerated learning is significantly higher than students who receive ordinary learning.

This research was conducted in two classes, namely the experimental class and the control class with each class getting three meetings, and each class getting the same number of hours of lessons, the same material and the same test questions. However, these two classes received different treatment. The treatment in question is an accelerated learning model, while the control class is given ordinary learning. Based on the results of the research analysis, the results of the mathematical communication ability test of the experimental class students were higher than the control class. Seen in diagram 1, the results of the N-Gain calculation of the experimental class and control class show that the average increase in the experimental class and the control class has a significant increase in difference. Indicators that state mathematical situations or everyday events into mathematical models and solve them, indicators that state mathematical models (pictures, algebraic expressions) into ordinary language (composing story problems), indicators that provide explanations of mathematical models and or patterns and indicators of compiling questions on the given situation along with the reasons for all of them have increased with the category of high improvement. Furthermore, the achievement of the experimental class mathematical communication indicators showed that students were able to make conclusions in their own language and state them with tables. This shows that the indicator stating the mathematical model (pictures, algebraic expressions) into ordinary language has been achieved. Based on several posttest results describing indicators of mathematical communication in the classroom using mathematics learning with the accelerated learning model has been achieved, this can be seen when students are able to give reasons for the given relation including function or not. This shows that the indicator composes a statement of the given situation along with the reasons that have been achieved. Furthermore, students are able to understand the mathematical model of the function defined by arrow diagrams and express the function with consecutive pairs. This shows that the indicator provides an explanation of the mathematical model and or the pattern has been achieved. This is in line with research which states that students with high mathematical abilities can process data and communicate it in detail, while

students with moderate abilities can process data and communicate it but not in detail, and students with low abilities can only explain mathematical problems (Utomo, 2021).

Questionnaires were given to the experimental class at the last meeting after all students carried out the posttest of mathematical communication skills. Each statement is given an answer choice and a score. Analysis of the student response scale was classified based on the constituent indicators, namely students' interest in learning mathematics, students' interest in using the accelerated learning model in learning mathematics and students' interest in students' mathematical communication problems. The processing of the results of this questionnaire was carried out using a Likert scale with the help of Microsoft Excel. The results of the questionnaire based on the indicators are shown in table 5.

Table 5. Average student response questionnaire results based on indicators

No	Student Response Indicator	±	Respondent's Answer				(%)
			SL	SR	JR	TP	
A	**Students' Interest in Learning Mathematics**						
1	Math is an important and fun subject for me	+	25	3	3	0	74
2	Mathematics is a difficult subject because many formulas are not understood.	-	0	1	28	2	61
3	I study mathematics because I know its use in everyday life.	+	14	16	1	0	68
4	I'm tired of doing math problems	-	0	2	21	8	64
	Average A		9,75	5,5	13,25	2,5	67
B	**Students' Interest in Learning Mathematics Using Accelerated Learning**						
5	By learning mathematics like this, it makes me dare to convey ideas when learning mathematics	+	20	8	3	0	71
6	With mathematics learning like this, I still have difficulty conveying ideas	-	0	2	22	7	63
7	I like to reveal or repeat the main points of the material	+	21	7	2	1	71
8	I'm lazy to repeat the main points of the material	-	0	2	12	17	70
9	By learning mathematics like this it makes my study habits better	+	18	13	0	0	72
10	Learning mathematics with this model makes me understand the material faster	+	5	20	5	1	59
	Average B		10,667	8,667	7,333	4,3333	68%

C	**Students' Interest in Mathematical Communication Problems**						
11	I don't want to work on mathematical communication problems because it makes it difficult for me to do them	-	0	2	18	11	66%
12	Mathematical communication questions make me interested and challenged to work on them	+	15	15	1	0	69%
	Average C		7,5	8,5	9,5	5,5	67%
	Average B (A+B+C)						67%

In table 5 it can be seen that statement number 1 has an answer percentage of 74%, this can be interpreted as a student giving a good response regarding mathematics as an important and fun lesson. Statement number 2 has an answer percentage of 61%, which means that students give a poor response regarding the difficulty of mathematics, because there are so many formulas that students do not understand. Statements number 3 and 4 have an answer percentage of 68% and 64%, meaning that students give a good response because they know the usefulness of learning mathematics in everyday life and students will feel bored if they only do math problems. The indicator of students' interest in learning mathematics has an average percentage of 67%, meaning that it shows a good student response to learning mathematics. This is in line with research which states that the results show that interest in mathematics has a direct and positive effect on students' mathematics learning achievement (Zhang & Wang, 2020). Statements number 5, 6, 7, 8 and 9 have answer percentages of 71%, 63%, 71%, 70% and 72% meaning that students give a good response to mathematics learning using the Accelerated Learning model because it makes students dare to convey ideas even though they are still difficulty in conveying ideas, students feel happy to express or repeat the main points of the material even though there is still a feeling of being lazy to repeat the main points of the material, with mathematics learning like this it makes students' study habits better, although this model makes students understand the material longer this can be seen in statement number 10, which has an answer percentage of 59%, which means that students give a poor response related to learning mathematics with this model. The average percentage of statements for indicators of student interest in learning mathematics using the accelerated learning model is 68%, which means that it shows good student responses to the accelerated learning model. Questionnaire statements that show indicators of student interest in responses to mathematical communication problems are in numbers 11 and 12. Statement number 11 has a percentage of 66%, number 12 has a percentage of 69% it shows that even though students do not want to work on mathematical communication problems because of difficulties in doing it but when mathematical communication problems are done it makes students interested and challenged to do it. Overall, the average percentage of statements for indicators of student interest in mathematical communication questions is 67%, meaning that students show good responses. When viewed from the overall average percentage of responses, 67% showed that students gave a good response to

learning mathematics, to learning mathematics using the accelerated learning model, to mathematical communication problems.

From the results of the questionnaire analysis, it was found that students gave a good response to the application of the accelerated learning model in learning mathematics. By showing a good response to learning mathematics, students have good motivation in learning mathematics, thus making students interested in being active in learning and more confident in expressing their ideas. This can be seen in the questionnaire statement which states that the accelerated learning model of mathematics makes students dare to convey ideas when learning mathematics. This is because in learning mathematics using the accelerated learning model students learn in groups and are given the opportunity to present the results of their group work, also by giving short questions that aim to repeat the material that has been studied and students who know the answers get answers. This is in line with research which states that students overestimate their gains, and that peer-study evaluations seem to function better than self-evaluations (Corlu & Aydin, 2016). The results of another study showed that students' negative emotional experiences related to tasks before collaborative work increased group emotion regulation during collaboration (Mänty et al., 2020). The implementation of learning with the accelerated learning model is measured by observation sheets or observation sheets for teachers and students. Observations were carried out by an observer to observe the activities of students and teachers during mathematics learning in the experimental class using the accelerated learning model for three meetings with a time allocation of 2 x 30 minutes. Observational data were obtained from observation sheets filled out by observers during the learning process in the experimental class. The data from observations of teacher activities for three meetings were obtained as follows: at the first meeting an average of 3.5, the second meeting of 3.8 and at the third meeting of 3.8. This shows that the quality of teaching teachers is increasing. At the beginning of learning only an average of 3.5 was obtained, this was because the first meeting of the new teacher adapted to the atmosphere in the classroom, the characteristics of the students and the initial application of the accelerated learning model. At the second meeting it was 3.8 and at the third meeting it was 3.8. There was an increase in the second and third meetings because the teacher had begun to recognize the characteristics of each student so that the application of learning with the accelerated learning model began to run smoothly. The data from the observation of student activities for three meetings was obtained as follows at the first meeting an average of 3.2, the second meeting of 3.8, at the third meeting of 4.0. This shows that an average of 3.2 in the beginning of learning is obtained, this is because at the first meeting, just like the teacher, students also just adapted to learning with the accelerated learning model. However, at the second meeting there was an average increase of 3.8 as well as at the third meeting there was an increase from the previous meeting, which was an average of 4.0. So students have followed and received good learning using the accelerated learning model.

▪ CONCLUSION

Based on data processing, hypothesis testing and discussion of research results regarding the application of the accelerated learning model to improve students' mathematical communication skills, it can be concluded that the increase in

mathematical communication skills of students who receive mathematics learning with the accelerated learning model is significantly higher than students who receive ordinary learning. Based on the results of the qualitative analysis of the response scale, it was found that the students' responses were good to the use of the accelerated learning model in learning mathematics. Mathematics learning with accelerated learning model can be an alternative for learning mathematics in schools. For other researchers who are interested in conducting research on accelerated learning learning models, they can conduct further research on other aspects, for example, they can take on other subjects or materials.

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