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The Effect of Problem Posing Learning on Mathematical Communication Ability of Fourth Grade Students of State Elementary School 101390 Batang Pane 1 Academic Year 2022/2023

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ABSTRACT
The purpose of this research is toto know the mathematical communication skills before and after using the Problem Posing learning model for the fourth grade students of SDN 101390 Batang Pane 1 in the 2022/2023 academic year and to determine the effect of Problem Posing Learning on the Mathematical Communication Skills of the fourth graders at SDN 101390 Batang Pane 1 in the 2022/2023 academic year. This study uses a quantitative approach. The results showed that the students' mathematical communication skills before using the Problem Posing learning model could be seen from the students' activities in the teaching and learning process during the learning process which was very low where 3 students had met the KKM score and 31 students had not met the KKM score. with an average value of 66.78.

Keywords: Literacy, Numeracy and people's income.

Introduction

Learning and learning are activities that are inseparable in human life. By learning, humans can develop their potential. Without learning, humans may not be able to fulfill their needs. All daily activities require knowledge that can only be obtained by learning. According to Hamdani (2014: 23) Learning is a very important factor in determining the quality of education. Mathematics subjects need to be taught at every level of education to equip students with developing the ability to use mathematical language in communicating mathematical ideas or ideas to clarify a situation or problem. The problems that occur during the learning process identified in Class IV SDN 101390 Batang Pane 1 are teachers still use linear communication, namely the relationship that occurs only in one direction, students are passive in the learning process, students' interest in learning mathematics is low and students' mathematical communication skills are low. . Mathematics is realized very important role. However, the high demands for mastering mathematics are not directly proportional to the students' mathematics learning outcomes. The facts show that student learning outcomes in the field of mathematics are less encouraging. As stated by Aunurrahman (2016: 252): "Of the various fields of study taught in schools, mathematics is the field of study that is considered the most difficult by students, Mathematics is one of the subjects that must be delivered using clear, effective and communicative language. Therefore, communication skills are important in learning mathematics. In detail, the Indonesian government stipulates the competence of learning mathematics that must be achieved by education at the elementary to upper secondary level, which is stated in the Minister of Education and Culture Regulation No. 21 of 2016. One of them is "Having the ability to communicate mathematical ideas clearly" (Muslim, 2017). Then based on what was stated in the NCTM (National Council of Teachers of Mathematics) process in 1989 one of the objectives of learning mathematics, namely: "Communicating ideas with symbols, tables, diagrams or other media to clarify situations or problems (mathematical communication), (Sumarmo, 2017). One of the factors that cause low student learning outcomes in mathematics is the low mathematical communication skills of students which can hinder understanding and mastery of material concepts in learning mathematics. This is supported by the opinion of Ansari (2016: 28) which states: "the higher students' mathematical communication skills, the higher the understanding required of students". One of the important skills in learning mathematics is learning to communicate. "The higher students' mathematical communication skills, the higher the understanding required of students". One of the important skills in learning mathematics is learning to communicate. "The higher students' mathematical communication skills, the higher the understanding required of students".

One of the important skills in learning mathematics is learning to communicate.Mathematical communication skills in learning mathematics are also very important to note, this is because through mathematical communication students can organize and consolidate their mathematical thinking both orally and in writing, besides that, renegotiation of responses between students can occur in the learning process. In the end, it can bring students to a deep understanding of the mathematical concepts that have been studied, (Khairul Asri, 2017). Mathematical communication skills are felt to be very necessary for every student, because communication skills are one of the components of learning objectives in the 2013 curriculum. a tool to assess student understanding, help students organize their mathematical knowledge, help students build their mathematical knowledge, improve mathematical problem solving abilities, advance their reasoning, build self-efficacy, improve their social skills, and be useful in establishing a mathematical community. Although mathematical communication skills are important, ironically, mathematics learning so far has not paid much attention to the development of this ability. So that the mastery of mathematical communication skills for students is still low. and useful in establishing a mathematical community. Although mathematical communication skills are important, ironically, mathematics learning so far has not paid much attention to the development of this ability. So that the mastery of mathematical communication skills for students is still low. and useful in establishing a mathematical community. Although mathematical communication skills are important, ironically, mathematics learning so far has not paid much attention to the development of this ability. So that the mastery of mathematical communication skills for students is still low.

According to Turmudi (2016: 19) suggests that, through problem solving in mathematics students should acquire ways of thinking, habits to persevere and foster curiosity, and self-confidence in unfamiliar situations that they will use outside the classroom. However, what happens in the field shows that problem solving in the mathematics learning process has not been made the main activity and is still considered the most difficult part of mathematics both for students in learning it and for teachers in teaching it..The results of the study (Endang Wahyuningrum, 2013) show that the mathematical communication skills of Indonesian students are still low. So the teacher seeks learning by using approaches or methods that can provide opportunities and encourage students to practice communication skills in learning mathematics. In learning mathematics with the traditional approach, students' mathematical communication skills are still very limited to short verbal skills on various questions posed by the teacher. Mathematical communication will play an effective role when the teacher conditions students to listen actively (listen actively) as well as they are talking about it. Therefore, changing the view of learning from teaching teachers to students learning must be the main focus in every mathematics learning activity.

Based on the results of initial observations in Class IV SDN 101390 Batang Pane 1, it is known that the low mathematical communication ability is caused by various factors, namely learning materials that are considered difficult, poor teacher delivery, low student interest in learning mathematics, in addition, learning models , strategies or conventional teaching methods. Besides, the lack of textbooks given to students causes students to lack understanding in learning. Huda (2013: 73) reveals that: “strategies show that there is no one best way to teach to achieve instructional goals. This strategy is known as teaching models. Because of that, one of the factors that have a large enough contribution in influencing the low mathematical communication skills of students is the learning model. The learning model used is still teacher centered so that learning becomes boring. Learning activities are influenced by the teacher's view of the meaning of learning. The meaning and nature of learning is often interpreted as receiving information from information sources. This means that there are still some teachers interpret teaching activities as activities to transfer information from teachers or books to students. The meaning and nature of learning is often interpreted as receiving information from information sources. This means that there are still some teachers interpret teaching activities as activities to transfer information from teachers or books to students. The meaning and nature of learning is often interpreted as receiving information from information sources. This means that there are still some teachers interpret teaching activities as activities to transfer information from teachers or books to students.

The low student learning outcomes are caused by a lack of student interest in mathematics, this can be seen in the table below: Table of Results of Mathematics Daily Test Scores for Class IV Students at SDN 101390 Batang Pane 1. Source: List of Teacher Values for Mathematics Studies for Class IV Students at SDN 101390 Batang Pane 1

No	Score	Frequency	Percentage (%)
1	75	13	38.2%
2	<75	21	61.8%
	Amount	**34 People**	**100%**

The low mathematics learning outcomes of students are also caused by their lack of curiosity about something new. Learning is still teacher-centered, not student-centered. This teacher-centered learning causes students to be

passive in learning in class. (Edy and Riska: 26) stated that conventional mathematics learning is characterized by structuralistic and mechanistic and teacher-centered. The level of students' mathematical communication skills has not developed optimally and most students have difficulty in writing, explaining and presenting mathematical ideas. There are still many students when doing learning just sitting, silent, and taking notes, few of them are active in learning. On average, students are still hesitant and passive in conveying their mathematical ideas. Most students are still not used to writing down what is known and what is asked of the problem before solving it, so students often misinterpret the meaning of the question. In addition, students also still do not understand one mathematical concept and the lack of accuracy of students in mentioning symbols or mathematical notation. As stated by Trianto (2014: 5) that the learning process so far still provides teacher dominance and does not provide access for students to develop independently. This results in the knowledge possessed by students is only limited to what has been taught by the teacher so that the ability of students to communicate ideas in solving problems faced does not develop optimally. Furthermore, students lack interaction in establishing communication with other students. So that students have difficulty in developing their ability to communicate ideas and solve mathematical problems they face, resulting in low student mathematical communication. In developing students' mathematical communication skills, it is necessary to design a learning that familiarizes students to construct their own knowledge and which can support and direct students to the ability to communicate mathematics, so that students better understand the concepts being taught and are able to communicate their mathematical ideas or ideas. Learning strategies that can be designed are by applying relevant learning methods, models, or approaches. In addition, to improve communication skills and students' mathematics learning outcomes, the task and role of the teacher is no longer as a provider of information (transfer of knowledge), but as a motivator for students to learn (stimulation of learning) so that they can construct their own knowledge through various activities such as problem solving. , reasoning, and communicating (doing math),

Thus learning becomes more meaningful (meaningful), students not only learn to know something (learning to know about) but also learn to do (learning to do), learn to animate (learning to be), and learn how to learn (learning to be). learn), and learn to socialize with friends (learning to live together). With such a learning pattern there will be interpersonal communication, cooperative learning groups between students (Suherman, 2013: 3). Therefore, one of the ways offered to overcome these problems is to apply the cooperative learning model in teaching and learning activities. Ansari (2016: 88) revealed: "The benefit of cooperative learning is that there is a sharing process between students so that it is expected to realize a common understanding between them. This form of sharing can be in the form of brainstorming, group suggestions and feedback from teachers so that they can improve their ability to communicate their thoughts, so that communication occurs that can improve learning outcomes. For this reason, a varied and interesting learning model is needed to support student learning activities in the classroom, so as to increase the effectiveness of student learning and it is hoped that with an appropriate learning model, student learning outcomes can increase, because an attractive model plays an important role in influencing the level of success or failure of student learning and the achievement of learning objectives to be achieved by the teacher in the teaching and learning process in the classroom. Therefore, if students are passive in learning, the learning they want to achieve will not be successful.

One alternative learning approach that seeks students to be actively involved in solving problems is to use the Problem Posing model. According to Suryosubroto (2015: 203) Problem posing is a learning model that finds questions and the answers generated for them can cause changes and dependence on external reinforcement on satisfaction due to success in finding themselves, either in the form of questions or problems or answers to the problems posed. The Problem Posing model is a learning model that requires students to compose their own questions or break down a problem into simpler questions. It is expected that learning with the Problem Posing model can improve students' mathematical communication skills to learn so that active learning will be created, students will not be bored and will be more responsive. That way it will affect their learning outcomes and will get better. Problem posing is a learning model that requires students to compose their own questions and solve the problems in their groups. Student involvement in learning by applying the problem posing learning model is one indicator of learning effectiveness. Students not only receive material from the teacher, but also try to find and develop themselves.

This ability will be seen clearly if students are able to ask questions independently or in groups (Sari, 2017). students will not be bored and will be more responsive. That way it will affect their learning outcomes and will get better. Problem posing is a learning model that requires students to compose their own questions and solve the problems in their groups. Student involvement in learning by applying the problem posing learning model is one indicator of learning effectiveness. Students not only receive material from the teacher, but also try to find and develop themselves. This ability will be seen clearly if students are able to ask questions independently or in groups (Sari, 2017). students will not be bored and will be more responsive. That way it will affect their learning outcomes and will get better. Problem posing is a learning model that requires students to compose their own questions and solve the problems in their groups. Student involvement in learning by applying the problem posing learning model is one indicator of learning effectiveness. Students not only receive material from the teacher, but also try to find and develop themselves. This ability will be seen clearly if students are able to ask questions independently or in groups (Sari,

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Learning methods

The learning method set by the teacher allows many students to learn the process (learning process), not just product learning (learning by product). Product learning in general only emphasizes the cognitive aspect. Therefore, the learning method is directed to achieve these goals, namely more emphasis on learning through the process. According to Sanjaya (2015: 1) "Method is a way that can be used to implement strategy. Method literally means 'way'. In general usage, the method is defined as a method or procedure used to achieve certain goals.

Problem Posing Learning Model

Ngalimun (2014:164) suggests that problem posing is problem solving through elaboration, namely reformulating the problem into simpler parts so that it is easy to understand. The syntax is understanding, solution, identification of mistakes, minimizing writing-counting, looking for alternatives in compiling questions. According to Sutiarso, (2019: 24) suggests that problem posing is a term in English, as the equivalent word is used the term "formulating problems (problems)" or "making problems (problems)".

Communicating Ability

Communication terms or in English*communication*comes from the Latin word*communication*, and comes from the word*communis*which means the same in terms of meaning (Uchjana Effendy, 2016: 9). Communication is the exchange of verbal and non-verbal messages between the sender and the recipient of the message to change behavior (Arni Muhammad, 2014: 5). The communication process that occurs is a reciprocal process because the sender and receiver influence each other. While another understanding of communication is to provide information, messages, ideas, ideas, thoughts, feelings, to others with the intention that other people participate which in the end information, messages, ideas, ideas, thoughts, feelings become shared property between communicators and communicant (Karti Suharto, 2015: 11).

Research Methodology

In this study, the population of students was less than 100, so the entire population was sampled in this study or also called the saturated sample, so that the sample in this study was 34 samples. The instrument in this research is

using observation.The data analysis technique used in this study is a simple linear regression test. With this type of quantitative research, namely testing and analyzing data by calculating numbers and then drawing conclusions from the test, the statistics used are as follows:Validity Test, Reliability Test.

Results and Discussion

Table 1. of Students' Mathematical Communication Ability Before Using the Problem Posing Learning Model

No	Student's name	Score
1	Afitriani	67
2	Agus Salim	60
3	Abiyu	65
4	Adila Septiani	68
5	Agustina Rahma	59
6	Akhyar Solihin	67
7	Ahyar Rambe	59
8	Mandala Image	69
9	Cynthia Rahmada	68
10	Dahlia Lubis	63
11	Desi Kumala Sari	76
12	Dila Putri Ananda	68
13	Dwi Abdilah	64
14	Ega Yuliandri	67
15	Elvina Rahma Diana	67
16	Ema	81
17	Ernita Sari	63
18	Fahrul Rozi	67
19	Faruk Ali	67
20	Fania Amanda	68
21	Gamma Syahputra	61
22	Hani Aprianti	68
23	Beautiful	69
24	Karmila	67
25	Lailan Saufiq	60
26	Muhammad Dahlan	64
27	Muhammad Ikbal Rambe	68
28	Maulana Pratama	63
29	Miswan	80
30	Nuraini	80
31	Nila Sekar Sari	63
32	Simanjuntak's son	59
33	Raffi Situmorang	69
34	Sauqi Eldani	69
Amount		2271
Average		66.78

Based on the table above, the students' mathematical communication skills before using the Problem Posing learning model where 3 students have met the KKM score and 31 students have not met the KKM score. with an average value of 66.78. The following is the distribution of students' collaboration ability interpretations before using the Problem Posing learning model.

Table 2. Student Interpretation

No	Value Frequency	Amount
1	59-66	13
2	67-73	17
3	74-81	4
Amount		34

Based on the table above that the frequency with a value of 59-66 as many as 13 students, a score of 67-73 as many as 18 students, a score of 74-81 as many as 4 students. Observation/Observation of Students' Mathematical Communication Ability After Using Problem Posing Learning Model.

Table 3. Students' Mathematical Communication Ability After Using the Problem Posing Learning Model

No	Student's name	Score
1	Afitriani	88
2	Agus Salim	91
3	Abiyu	90
4	Adila Septiani	92
5	Agustina Rahma	95
6	Akhyar Solihin	83
7	Ahyar Rambe	93
8	Mandala Image	87
9	Cynthia Rahmada	83
10	Dahlia Lubis	85
11	Desi Kumala Sari	90
12	Dila Putri Ananda	83
13	Dwi Abdilah	83
14	Ega Yuliandri	87
15	Elvina Rahma Diana	90
16	Ema	87
17	Ernita Sari	87
18	Fahrul Rozi	87
19	Faruk Ali	97
20	Fania Amanda	97
21	Gamma Syahputra	97
22	Hani Aprianti	93
23	Beautiful	92
24	Karmila	98
25	Lailan Saufiq	92
26	Muhammad Dahlan	87
27	Muhammad Ikbal Rambe	88
28	Maulana Pratama	97
29	Miswan	93
30	Nuraini	85
31	Nila Sekar Sari	88
32	Simanjuntak's son	87
33	Raffi Situmorang	90
34	Sauqi Eldani	85
Amount		2941
Average		86.51

Based on the table above, the mathematical communication ability after using the Problem Posing learning model where all students have met the KKM score with an average value of 89.50. The following is the distribution of students' collaboration skills interpretations before using the Problem Posing learning model.

Table 3. Student Interpretation

No	Value Frequency	Amount
1	73-80	15
2	81-88	12
3	89-97	8
Amount		36

Based on the table above that the frequency with a value of 73-80 as many as 15 students, a score of 81-88 as many as 12 students, a score of 89-97 as many as 8 students

Hypothesis test

To find out whether or not there is an effect of the Problem Posing Learning Model on the collaborative ability of fifth graders at SD Negeri 014629, Tanjung Balai District, Asahan Regency, a t-test can be carried out with the following formula. Based on the table above, it can be seen that the value of tcountof 4.082 while for t table at N = 34-2 that is 2.036. Then tcount 4.082 > ttable 2.036. So that the results of the study show that there is an effect of the Problem Posing type cooperative learning model on students' mathematical communication skillsclassIV SDN 101390 Batang Pane 1 Academic Year 2022/2023.

Discussion Based on Pretest

At the first meeting, the researcher conducted an initial test (Pretest) which consisted of 15 assessment instruments before using the Problem Posing Learning model. The purpose of the initial test was to measure the initial ability of students before being given treatment, the score of students who met the KKM score was 3 students, and 31 students did not meet the KKM score, with an average score of 66.78. Based on the observations of the researchers, students still find it difficult to communicate in learning. If learning activities are carried out in groups, students use group work time to tell stories and do not solve problems given by the teacher. The lack of students' mathematical communication skills can be seen from the attitude of cooperation and social interaction that students have. The results show that this attitude is still low, so students need to be trained on cooperative attitudes. The students' mathematical communication skills are still lacking in students because there are several indicators such as understanding, enjoyment, influence on attitudes, better relationships, and student actions still have to be motivated by the teacher. In addition, the low mathematical communication ability of students is due to the fact that students are accustomed to learning with learning that still focuses on books and the teacher still dominates his role as a source of knowledge which only considers students as a medium that will be filled with knowledge by the teacher and the teacher does not use a learning model based on the applicable curriculum. students cannot know how to collaborate with fellow students. Therefore, to help students communicate well, the appropriate learning model used in learning is the Problem Posing Type Cooperative Learning Model.

Discussion Based on Post Test

Based onn the results of observing students' mathematical communication skills after using the Problem Posing model have met the KKM standard, where all students have met the KKM score. Where the overall average value is 86.51%. The increase in the average presentation of the highest student activity is asking questions. Students are very enthusiastic in asking questions in discussions with their partners and with groups. After the implementation of the problem posing learning model, students are very enthusiastic about listening to the opinions of other students during discussions and students prefer to give opinions to each other and then their opinions are formulated to be presented or to be an answer to the problems given. Students have also been able to conclude that the learning material has improved and has good criteria. So, on the average value of the post test student activity experienced a significant increase. An increase in the average percentage of student activity is followed by an understanding of angle measurement through a learning process by applying mathematical communication with a problem posing learning model. Giving problems about measuring angles and students solving problems given by researchers and problems being solved by individuals, pairs and groups where they will better understand the concepts of angle measurement and will be stored longer in students' brains. Because they do the processing of information directly and the students themselves do it. This is in accordance with the constructivist view that learning is not merely transferring knowledge that is outside of itself,

When students are comfortable in learning and do not feel pressured, the learning process will run well. This is in line with previous research (Choirunnisa, 2014), that fun learning will increase student activity. The comfort obtained by students depends on the approach taken by the teacher. The role of a teacher in controlling and controlling the class will bring success in learning both in communication, understanding the material and even emotional closeness. This is in accordance with the learning process, the teacher not only acts as an example for the students he teaches, but also as a manager of learning. The effectiveness of the learning process lies on the shoulders of the teacher. Therefore, the success of a learning process is largely determined by the ability of the teacher (Rahman and Amir, 2013:4). In addition, this is in accordance with the focus of the learning system which includes three aspects, namely (1) Students; Students are the most important factor because without students there will be no learning process. (2) learning process; The learning process is what students experience, when they learn, not what educators have to do to teach the subject matter but what students will do to learn it, and (3) learning situation; The learning situation is the environment where the learning process occurs and all the factors that affect students or the learning process such as educators, classrooms and their interactions (Lindegren in Sutikno, 2018:34). Student activity is very influential on the achievement of learning objectives, in an active learning process where there is a dialogue between students and teachers or students with students which will make learning objectives more achievable. Measurement of student activity from the whole there is an increase in the average percentage of student activity from the first meeting to the second meeting, either viewed in general or seen from all the indicators observed.

Based on Hypothesis Results

Research conducted by the author onclassIV SDN 101390 Batang Pane 1 Academic Year 2022/2023, researchers want to know whether the Problem Posing Learning Model has an effect on students' mathematical communication skills. Based on the results of hypothesis testing that has been carried out by researchers in (t test) the calculation shows that at a significant level of 5%, it is obtainedtcountof 4.082 while for t table at N = 34-2 that is 2.036. Then tcount 4.082 > ttable 2.036. So it can be concluded that there is an effect of the Problem Posing learning model on students' mathematical communication skillsclassIV SDN 101390 Batang Pane 1 Academic Year 2022/2023. From the discussion above, it can be concluded that mathematical communication skills are very important in learning mathematics. Because through communication, students can organize and consolidate their mathematical thinking. And students can explore their mathematical ideas. In learning mathematics, students are required to develop mathematical language and symbols so that students can communicate orally and in writing, and this will certainly greatly affect their mathematics learning outcomes, because in mathematics, their learning outcomes are closely related to students' ability to represent what they know and understand. what he had learned into the language and symbols of mathematics. From some of the problems that have been given previously, it requires students to be able to determine the solution equation. Students are required to master and understand the material and also communicate it well. Not only that, but students must also be able to write them in the form of mathematical sentences, which later on from these mathematical sentences students will easily solve the problems that have been given. So from this it can be concluded that mathematical communication skills are needed in solving mathematical problems. which later from the mathematical sentence students will easily solve the problems that have been given. So from this it can be concluded that mathematical communication skills are needed in solving mathematical problems. which later from the mathematical sentence students will easily solve the problems that have been given. So from this it can be concluded that mathematical communication skills are needed in solving mathematical problems.

This is also supported by the statement which states that mathematical communication skills are students' ability to read mathematical discourse with understanding, able to develop mathematical language and symbols so that they can communicate orally and in writing, able to visually describe and reflect images or diagrams into mathematical ideas, able to formulate and be able to solve problems through discovery. The implementation of learning by using the problem posing learning model is as follows:

a) Students look creative and responsive and dare to express their opinions in dealing with problems in the LKS and are serious about doing these tasks.
b) Students are more active in learning, in groups of students make questions and answers and at the next meeting students present in front of the class.
c) Students seem eager to learn, students are ready to learn and sit in groups before the lesson begins

Constraints experienced during the study were at the initial meeting where students did not really understand the angle measurement material and when the treatment was applied it made it easier for students to understand the material. The activeness of students who are very enthusiastic in the learning process such as when discussing students are very enthusiastic to ask questions and refute a statement presented by the theme, to overcome this the author limits the questioner to the questioner when each group advances. The advantages experienced during the learning process are that it is easier for students to understand the concept of animal and human movement organs, and students are active in learning, communication between teachers and students goes well. And students want to add hours of lessons when the treatment is applied. So, the treatment given made the students' enthusiasm increase, seen from the student's request to add their lesson hours.

The results of the acquisition of student scores and percentages from the results of observations during the Pre Test and Post Test are as follows:

No	Information	Total students		Percentage %	
		Pre-Test	Post Test	Pre-Test	Post Test
1	Complete	3 Students	34 students	8.8%	100%
2	Not Complete	31 students	-	91.2%	-

From the table above, it can be seen that the pre-test scores of students who completed were 8.8% and those who were not completed were 91.2%. As for the Post Test, all students were declared complete.

Conclusion

Students' mathematical communication skills before using the Problem Posing learning model can be seen from student activities in the teaching and learning process during the learning process which is very low where 3 students have met the KKM score and 31 students have not met the KKM score. with an average value of 66.78. The ability to collaborate with students after using the Problem Posing Learning Model can be seen from the activities of students in the teaching and learning process after using the Problem Posing learning model during the learning process, where all students have met the KKM score with an average value of 86.51. There is an effect of Problem Posing Learning Model on students' collaborative abilities. From the results of the research that has been carried out, the suggestions put forward by the researcher are as follows:

1. For school
   Based on the results of this study, it is suggested that the teaching and learning process using the Problem Posing learning model is developed by teachers to be used during classroom learning.
2. For Educators
   Educators are advised to get Problem Posing learning models in Mathematics so that learning is more effective and fun.
3. For Researchers
   For further researchers, it is hoped that they can redevelop research using the Problem Posing method in other subjects.

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