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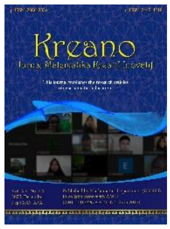

Increasing Intrapersonal and Interpersonal Intelligence Through Problem-Posing Application

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Abstract

This Classroom Action Research (CAR) is an effort to improve students' intrapersonal and interpersonal intelligence through the application of Problem Posing in mathematics learning in Junior High Schools on Constructed Spaces with Curved Sides. The research subjects were 64 students from the 9th grade of a Junior High School in Bandung. Data collection techniques include interviews, questionnaires, observations, and documentation. Intrapersonal and interpersonal intelligence in the experimental class using the Problem Posing learning model is relatively better than the control class using conventional learning models. The results of this study show that the application of the Problem Posing learning model can improve students' intrapersonal intelligence and interpersonal intelligence. There are several advantages that researchers get in implementing Problem Posing besides students become the center of learning and practice working in groups, students become much more enthusiastic so that the learning atmosphere is conducive and full of activity, and presentation activities can build courage and confidence in performance. Learning performance and building a positive attitude during learning. Suggestion: The problem-posing learning model can be an alternative to be applied in the classroom because it can foster self-confidence and make students more active, thereby increasing students' mathematical communication skills, which correlate with interpersonal intelligence.

Keywords: Classroom Action Research, Problem Posing, Intrapersonal and Interpersonal Intelligence.

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Abstract

Penelitian ini sebagai upaya untuk meningkatkan kecerdasan intrapersonal dan interpersonal siswa melalui penerapan Problem Posing pada pembelajaran matematika di Sekolah Menengah Pertama (SMP) pada materi Bangun Ruang Sisi Lengkung. Jenis penelitian yaitu Penelitian Tindakan Kelas (PTK). Subyek penelitian sebanyak 64 orang siswa kelas 9 salah satu SMPN di Bandung. Teknik pengumpulan data meliputi: wawancara, angket, observasi, dan dokumentasi. Kecerdasan intrapersonal dan interpersonal pada kelas eksperimen dengan penggunaan model pembelajaran Problem Posing, relatif lebih baik dari kelas kontrol yang menggunakan model pembelajaran konvensional. Hasil dari penelitian ini bahwa penerapan model pembelajaran Problem Posing dapat meningkatkan kecerdasan intrapersonal dan kecerdasan interpersonal siswa, terbukti dari peningkatan rata-rata keduanya pada setiap siklus. Ada beberapa kelebihan yang didapat peneliti dalam menerapkan Problem Posing, selain siswa menjadi sentral pembelajaran dan melatih bekerja dalam kelompok, siswa menjadi jauh lebih semangat dan antusias sehingga suasana pembelajaran kondusif dan penuh aktifitas, selain itu kegiatan presentasi dapat membangun keberanian dan keyakinan dalam unjuk kinerja belajar dan membangun sikap positif selama pembelajaran. Oleh karena itu, model pembelajaran Problem Posing dapat menjadi alternatif untuk di-terapkan di dalam kelas karena dapat menumbuhkan percaya diri siswa untuk lebih aktif sehingga mampu meningkatkan kecerdasan intrapersonal dan kecerdasan interpersonal.

INTRODUCTION

Teaching is a very noble profession that aims to instill knowledge, skills, and life values in the next generation of people and administrators of this nation. Educational success cannot be separated from the teaching and learning process, as the core of education with teachers as the main role (Yaniawati, 2019). With its main role, a teacher must be able to create a Teaching and Learning Process in the classroom.

The Learning Process is planned so that interactions occur that encourage changes in behavior. Of course, this change is not due to age maturity or mere coincidence (Pia, 2015); this statement is in line with Yuliastuti (2016) and Banks (2019), who state that teaching is a long process. life where someone shares information and ideas so that changes in behavior occur.

In determining success in learning, teachers play a very important role for students because teachers are tasked with managing the course of learning. Apart from that, teachers must also have a learning plan for students in accordance with the curriculum and existing facilities at school (Rumapea, 2014; Ernawati, 2017; Pebriayani, 2020). To develop the skills that have been conveyed, a learning model is needed that can hone these abilities, one of which is the Problem Posing learning model. The problem posed by the learning model is expected to provoke students to discover knowledge that is not the result of accidents but through their efforts to look for relationships in the information they learn (Ngaeni, 2017).

Absolutely, problem-posing has long been recognized as a very important intellectual activity in scientific investigation (Barakaev, 2020). The Problem-posing learning model can provide a stimulus for students to display their best performance and for teachers to be more creative in learning (Crespo, 2008; Stickles, 2011). The steps for the Problem Posing learning model include: (1) Opening the meeting, explaining the competencies and learning objectives to be achieved, followed by conveying the main material and learning steps that will be implemented using Problem Posing; (2) Explain the material according to the competencies and learning objectives to be achieved; (3) Group students heterogeneously & distribute worksheets according to the material; (4) Provide opportunities for students to discuss working on the student worksheets that have been distributed and related to: a). creating questions from the material that has been given, b). finding solutions and writing them on the worksheet, c). writing questions that cannot be solved by the group on the worksheet, which will later be exchanged with other groups; (5) Each group discusses the questions on the worksheet that came from another group; (6) Several groups present the results of their discussions, and other groups listen and respond; (7) Provide feedback and appreciation to students/groups who have completed assignments well; (8) Together with students, make conclusions/summaries; and (9) Reflect on the learning activities that have been conducted.

The following are the results of studying mathematics for the past two academic years.

Table 1. Average of mathematics learning outcomes

School Year	Average Score per School Year	Standard of KKM
2017/2018	70,04	75,00
2018/2019	70,26	75,00

Every day, we all encounter obstacles and challenges, including the students. Often, these hurdles are intertwined with their mathematics lessons. This underscores the crucial importance of mastering mathematics skills, as they are not only functional in everyday life and various professions (Jansen, 2016; Sulistiani, 2017; Nasution, 2019; Kurniawati, 2020), but also hold the potential to empower students to overcome these challenges. These skills encompass communication, problem-solving, creativity, critical and structured thinking, teamwork, negotiation, self-management, imagination, curiosity, determination, enthusiasm, and perseverance (Sugito, 2017).

So that these mathematical skills can develop according to the expectations of each student, as a teacher, lecturer, or even an educator, the application of appropriate learning is accompanied by the selection of learning strategies where teaching and learning interactions must occur which are prepared, planned and implemented by the teacher to achieve the learning objectives. Thus, it is assumed that the use or application of learning in ways or actions that suit the characteristics of students in mathematics subjects has an important role in forming students' personalities and diversity of intelligence for the better, such as intrapersonal and interpersonal intelligence (Gardner, 1983). The intelligence possessed by a person can not only be seen from an academic perspective but can also be seen from other aspects of intelligence. An example is intrapersonal intelligence (Utami, 2012; Paradita, 2019; Maitrianti, 2021).

Intrapersonal intelligence is intricately linked to the ability to objectively analyze oneself, including understanding one's own feelings, emotions, and needs. On the other hand, interpersonal intelligence is associated with social intelligence, which involves understanding other people's feelings, being highly motivated, and engaging in effective communication (Azid, 2016; Sidik 2018). These two abilities are not isolated, but rather, they are deeply intertwined and play a vital role in a student's overall intelligence.

These intelligences, among the 9 identified by Gardner (1983), are instrumental in fostering one of the six pillars of education mandated by UNESCO: learning to live together. Therefore, students who engage in the study of mathematics while concurrently strengthening their intrapersonal and interpersonal abilities, can potentially become individuals who not only possess high logical abilities but also apply these abilities optimally in a social context. This presents a promising outlook for the future of our students.

Observations at the research locus reveal A general lack of visibility in students' intrapersonal and interpersonal abilities during learning. However, these abilities, as emphasized earlier, are crucial for students to master and can be effectively developed through learning mathematics. Therefore, the author presents a significant proposal-alternative actions or methods to enhance these abilities. This research aims to not only increase intrapersonal and interpersonal intelligence in students through the application of Problem Posing, but also to examine the supporting factors and obstacles in its implementation.

METHODS

This type of research is called Classroom Action Research (CAR). CAR is research that raises actual problems faced by teachers in the field. Problems in the classroom can be resolved, and solutions can be sought through Classroom Action Research (CAR).

This research design uses a Nonequivalent Control Group Design. According to (Sugiyono, 2015 Indrawan, 2016;) this research design is almost the same as the pretest and posttest control group design; only in this design the experimental class and control class are not selected randomly. The experimental class (treatment class) is a class of students whose learning uses learning by applying Problem Posing, and the control class (comparison class) is a class of students whose learning uses conventional learning without special treatment.

In this research, there are two variables, namely the independent variable and the dependent variable. The independent variable is learning by applying Problem-Posing, while the dependent variable is students' intrapersonal and interpersonal intelligence.

The subjects of this research were 9th-grade students of SMP Negeri 18 Bandung, both in the research class and in the control class. The subjects in the research class were 9th-grade students of SMP Negeri 18 Bandung, with a total of 32 students as subjects, consisting of 17 boys and 15 girls. Meanwhile, the control class in this research was 9th-grade students of SMP Negeri 18 Bandung, with a total of 32 students as subjects, consisting of 16 men and 16 women.

The data collection technique in this research uses non-test instruments. Observation techniques are used to obtain data regarding the implementation of learning by implementing Problem Posing to find out and observe teacher and student activities during the learning process as well as to determine students' intrapersonal and interpersonal intelligence before and after participating in learning activities. Documentation techniques are used to support and complete data related to the contribution of implementing learning by implementing Problem Posing. The documentation is in the form of photos and the results of students' work, both individually and in group discussions. It is also used to assess students' intrapersonal and interpersonal intelligence.

Data analysis in this research uses qualitative descriptive analysis techniques. Qualitative data analysis is used to analyze qualitative data, such as the results of observations and documentation studies. The stages of qualitative descriptive data analysis consist of data presentation, reduction (existing data is checked and recorded again), categorization (data is sorted), interpretation, and conclusion. Non-test instruments consist of scales for intrapersonal and interpersonal intelligence, observation guidelines, and interview guidelines.

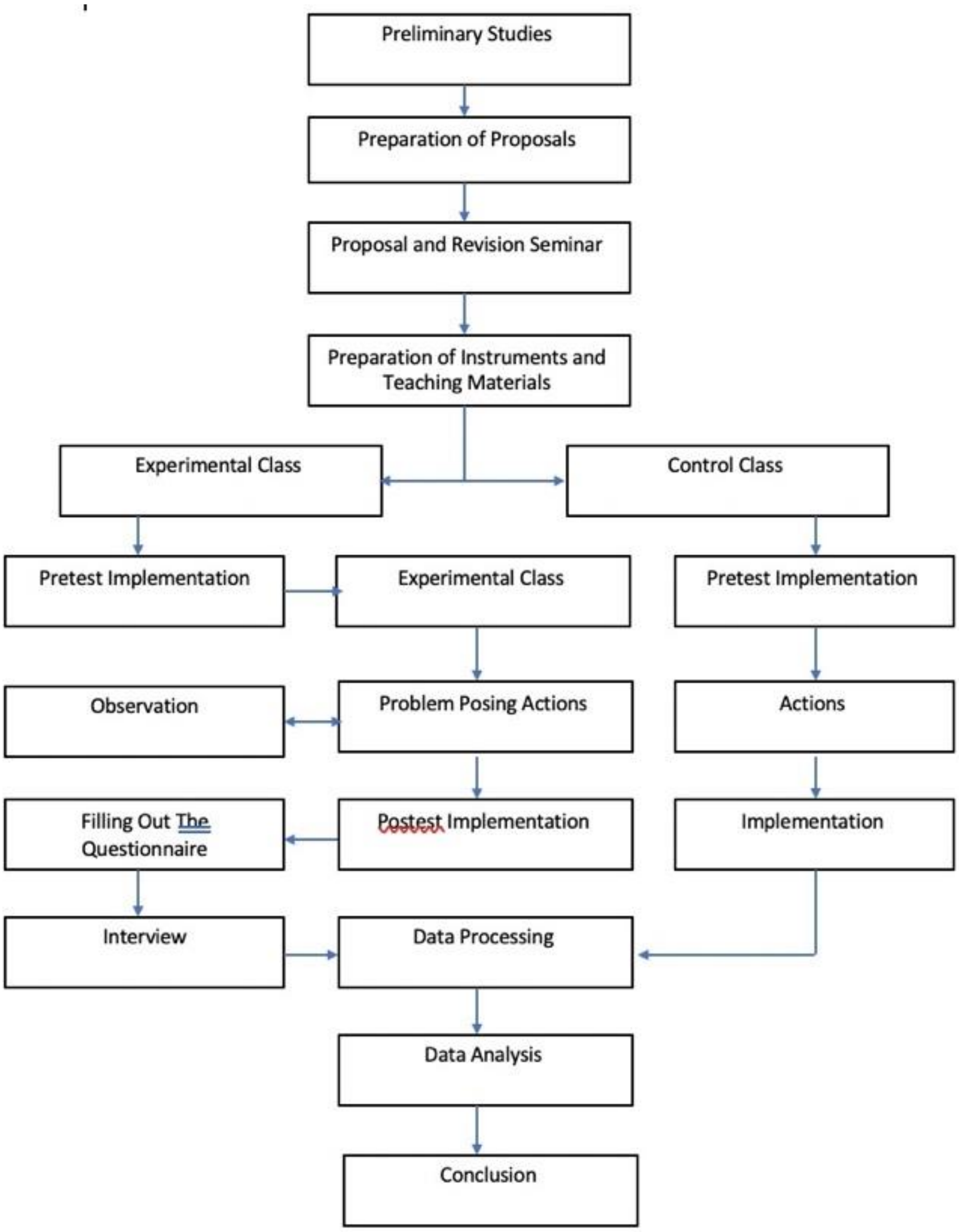

Figure 1. Research Procedures with CAR

Intrapersonal and interpersonal intelligence questionnaire

According to Sugiyono (2015; Indrawan, 2016), a questionnaire is a data collection technique that involves asking respondents a set of questions or written statements to answer. Questionnaires were given to experimental class students both before and after learning using Problem-Posing.

The intrapersonal intelligence and interpersonal intelligence scales in this study refer to the Likert Scale, which consists of positive statements and negative statements. Answer categories consist of SS = Very Often, S = Often, N = Neutral, STS = Sometimes, and TP = Never. The Likert scale is used to measure the attitudes, opinions, and perceptions of a person or group of people about social phenomena (Sugiyono, 2015; Indrawan, 2016;). The intrapersonal intelligence and interpersonal intelligence scales were given before and after the action was carried out. The intrapersonal intelligence and interpersonal intelligence scales will be given to the experimental class and control class.

The intrapersonal intelligence and interpersonal intelligence questionnaire used in the research aims to obtain data about students' intrapersonal and interpersonal intelligence through the Problem-Posing learning model, which emphasizes asking questions to students.

Observation

This research conducted observations to observe the activities of teachers and students in learning activities. Teacher observation guidelines describe the continuity of the learning process, which is guided by the Problem-Posing learning model. Meanwhile, student observation guidelines observe student activities during the learning process, both in independent activities, group activities, and class activities.

Interview guidelines

The interview guide in this research was used to evaluate the learning conducted and strengthen the results of observations. Interviews were also conducted to explore intrapersonal and interpersonal intelligence. Several students were interviewed after they had received mathematics learning through the Problem-posing learning model (See Figure 1).

Student Intrapersonal and Interpersonal Intelligence Questionnaires in mathematics subjects that have passed validity and reliability tests are used as research instruments to test hypotheses distributed to research samples.

The hypothesis is formulated in the form of a statistical hypothesis (right-hand test) according to (Sugiyono, 2015; Indrawan, 2016) as follows:

Ho: $\mu o \leq 3.00$

Ha : $\mu o > 3.00$

Information:

Ho: Students need to have a positive attitude toward the use of the Problem Posing learning model in mathematics learning

Ha: Students have a positive attitude toward the use of the Problem-posing learning model in mathematics learning

RESULTS AND DISCUSSION

Classroom Action Research was conducted in three cycles. The researcher was assisted by a senior teacher who acted as an observer. The observer's task was to observe ongoing learning activities to provide the necessary input for the planning, implementation, observation, and evaluation stages, as well as analysis and reflection on actions in each cycle.

First Cycle

Action Planning

Activities at the action planning stage include preparing a plan that will be implemented in accordance with the problem findings and initial ideas by developing a Learning Implementation Plan (LIP), preparing Student Worksheets, compiling, and preparing observation sheets, preparing equipment to document activities during the learning process, such as a camera, and coordinating with colleagues or observers to help observe CAR activities.

Implementation of Actions

At this stage, the teacher implements learning design using the Problem Posing learning model. In an effort towards improvement, a plan is flexible and ready to make changes according to what happens in the implementation process in the field. In the first cycle, two meetings were held;

the first and second meetings discussed the area and volume of the tube. The description of the material presented by the teacher uses PowerPoint, while the learning activities in this cycle are illustrated below.

At the beginning of the lesson, the teacher (researcher) opened the meeting with greetings and prayer before learning. Next, explain the basic competencies and learning objectives to be achieved, as well as motivate students about the importance of studying this material. After that, the teacher will convey the main material and learning steps that will be implemented by implementing problem posing. Before presenting the material in full according to the LIP, the teacher invites students to recall the material previously studied, as well as the relationship between the previous material and the material that will be and is being studied.

After the students were deemed conducive to being able to participate in the learning, the teacher (researcher) then explained the material on the area and volume of tubes completely and gave the students the opportunity to ask/respond. After it was felt that the explanation of the material was sufficient, the teacher grouped the students into 6 heterogeneous groups. Then, the teacher distributed worksheets about the area and volume of cylinders to the students. Then, the students discuss how to work on the worksheets that have been distributed. In group activities, each group creates questions from the material provided in the student worksheets. Then, students discuss how to find solutions and write them on the Problem Posing I sheet. At the same time, each group also writes down the problems that their group cannot solve on the Problem Posing II sheet and then exchanges them with other groups. Then, each group discusses the questions on the Problem Posing II sheet from the other group. After it was felt that there was enough time for group work, several groups presented the results of their discussions, and other groups listened and responded. In this process, the teacher (researcher) provides feedback and appreciation to students/groups who have delivered assignments/presentations well.

At the end of the learning activity, the teacher (researcher) and the students make a conclusion/summary. They also assess and reflect on the learning activities that have been conducted by implementing problem-posing. Then, the teacher gives assignments related to the lesson material and conveys the learning activity plan for the next meeting. The end of all activities is closed with a final prayer of learning.

Observation

Observations carried out during learning are an effort to observe the implementation of actions by applying problem-posing. What is done is to observe student behavior and participation in teaching activities and monitor group work. In conducting observations, the researcher was assisted by an observer who also observed the learning process based on the student activity observation sheet that the researcher had prepared.

Reflection

At this stage, the researcher discusses with the observer the results of observations made during the lesson. Reflection aims to find out the strengths and weaknesses that occur during learning. The results of the discussions will be used to plan the next learning cycle. In the first cycle, students showed that they still needed more curiosity in understanding the area and volume of cylinders using the problem-posing learning model. Because it is just the beginning, they still look stiff and shy and do not dare to ask questions because they are not used to the Problem-posing learning model. Some students ask questions because they need help understanding the work order.

In group activities, students cannot wait to start the activity, and they feel like they do not need more time, which is why students need time to arrange tables and chairs in group formation. However, some students still do not participate. During the presentation activity, students still seemed hesitant, shy, and afraid of answering the questions incorrectly on the worksheet. Then, to find out the learning outcomes and emphasis on the material they have studied, students need to be given independent assignments individually. In the second cycle, learning is planned by paying attention to the following matters: (1) Researchers must remind them to study first at home; (2) Researchers must prepare tables and chairs in advance for group discussions; (3) Researchers must help students find their worksheet questions for group discussion activities; (4) Researchers must motivate students to dare to express opinions in discussions and presentations and provide answers.

Second Cycle

Basically, the implementation of learning in the second cycle is the same as the first cycle. In the action implementation section, improvements are made to the reflection in the first cycle. As for reflection in the second cycle, namely at the implementation stage, students showed an increase in curiosity about the material discussed, both at the third and fourth meetings. Likewise, participation is more intensive in learning activities by implementing the Problem-Posing learning model.

The students no longer look awkward when asking questions and giving opinions, although only partially. According to Syah (2007), changes in learning outcomes are intangible (untouchable). Revealing overall changes in behavior is very difficult. Therefore, what teachers can do in this case is only take snapshots of changes in behavior that are considered important and are expected to reflect changes that occur because of student learning, both in the dimensions of creativity, feeling, and intention. According to Lasmanah (2016), disclosure of learning outcomes ideally covers all psychological domains that change because of experience and the learning process.

Likewise, in group work activities, students' activities are more unified, and they can work together and participate more fluidly with their friends. Lasmanah (2016) also stated that in the first cycle, there was always an improvement when the learning process was carried out in groups. To get more accurate information about the impact of this cycle, especially to find out learning outcomes on the material they have studied, the teacher (researcher) gave independent assignments to be done individually.

Third Cycle

The implementation of the third learning cycle is basically the same as the first and second cycles, although improvements are made during the implementation of the action.

The results of statistical data processing from the student Intrapersonal Intelligence questionnaire are shown in Table 2.

Table 2. Statistical Data on **Intrapersonal** Intelligence Questioannaire Result

Statistics	Class/ Group	
	Experiment	Control
Average	111,88	106,82
Standard Deviation	13,37	10,66
Minimum Value	88	85
Maximum Value	136	129
Number of Objects	32	32

Meanwhile, the results of the student Interpersonal Intelligence questionnaire are shown in Table 3.

Table 2. Statistical Data on **Interpersonal** Intelligence Questioannaire Result

Statistics	Class/ Group	
	Experiment	Control
Average	111,87	106,81
Standard Deviation	13,36	10,65
Minimum Value	87	84
Maximum Value	135	127
Number of Objects	32	32

The research results obtained by the researcher are described in detail for each variable. The discussion of variables is carried out using quantitative data, namely data that is processed in the form of numbers or scores, which are then interpreted qualitatively. The following will explain in detail the description of research data for Intrapersonal and Interpersonal Intelligence.

In the student Intrapersonal Intelligence questionnaire in mathematics subjects, eleven indicators are used as guidelines for creating a questionnaire as a research instrument. The indicators of students' Intrapersonal Intelligence are: (1). Be aware of their emotional territory; (2). Find ways to express feelings and thoughts; (3). Motivated to pursue goals and ideals; (4). Can work and study independently; (5). Able to learn from past mistakes; (6). Having plans and goals in life; (7). Can control yourself well; (8). Frequently reflect to reflect and understand yourself; (9). Have high self-esteem and self-confidence; (10). Can self-actualize; and (11). Can know his weaknesses and strengths.

Meanwhile, in the student Interpersonal Intelligence questionnaire for mathematics subjects, 10 indicators are used as guidelines for creating a questionnaire as a research instrument. The indicators of students' Interpersonal Intelligence are: (1). Forming and maintaining a social relationship; (2). Able to interact with other people; (3). Recognize and use various ways of connecting; (4). Able to influence the opinions and actions of others; (5). Participate in joint efforts and assume a variety of appropriate roles, from follower to leader; (6). Observing other people's feelings, thoughts, motivations, behavior, and lifestyle; (7). Understand and communicate effectively in both verbal and non-verbal forms; (8). Develop skills to mediate in a conflict and be able to work with people from diverse backgrounds (9). Interested in pursuing an interpersonal, management, or political oriented field; as well as (10). Be sensitive to a person's feelings, motivations, and mental state.

From Tables 2 and 3, it is known that intrapersonal intelligence and interpersonal intelligence for students who receive Problem-posing learning are better than those of students who receive ordinary learning. It is likely due to an increase in students' abilities in each cycle, especially regarding intrapersonal intelligence and interpersonal intelligence. In line with that, Utami (2012) stated that intrapersonal intelligence and interpersonal intelligence will be better than pre-research and previous cycles if special threats such as learning models are carried out. In other words, learning models can increase intrapersonal intelligence and interpersonal intelligence.

Complete results regarding the recapitulation of the results of the attitude scale questionnaire are presented below (See Table 4)

Table 4. Result of Assessment of Indicators of Intrapersonal Intelligence

Statistics	Class/ Group	
	Experiment	Control
Aware to his emotional teritory	3,65	2,98
Find ways to express their feelings and thoughts	4,12	3,42
Motivated to pursue goals and ideas	3,50	3,28
Can work and study independently	3,96	3,79
Able to learn from past mistakes	3,58	3,43
Have plans and goals in life	3,52	3,33
Can control himself well	3,67	2,86
Often reflect and understand yourself	4,14	3,46
Have high self-esteem and self-confidence	3,52	3,34
Can self-actualize	3,98	3,86
Knows his weakness and strength	3,61	3,43

From Table 4, we can see that the average value of the entire statement is greater than the normal value (>3), namely 3.59 for the component related to intrapersonal intelligence. Finding that the overall average of the statements is greater than the normal value (>3) means that students' intrapersonal intelligence increases through learning mathematics with the application of Problem-Posing. Meanwhile, the results of interpersonal intelligence are as follows (See Table 5).

Table 5. Result of Assessment of Indicators of Interpersonal Intelligence

Statistics	Class/ Group	
	Experiment	Control
Forming and maintaining social relationship	3,64	2,96
Able to interact with other people	4,11	3,41
Recognized and use different ways of connecting	3,49	3,27
Able to influence the opinions and actions of others	3,97	3,78
Participate in joint efforts and assume appropriate roles, from follower to leader	3,59	3,44
Observing the feelings, thoughts, motivations, behaviors, and lifestyle of others	3,53	3,34
Understand and communicate effectively both verbal and non-verbal forms	3,66	2,84
Develop skill to mediate in a conflict, be able to work together with people from different backgrounds	4,16	3,47
Interested in pursuing an interpersonal, management or political oriented field	3,51	3,36
Sensitive to a person's feelings, motivations, and mental state	3,96	3,88

From Table 5, we can see that the average value of the overall statements is greater than the normal value (>3), namely 3.41 for components related to interpersonal intelligence. Finding that the overall average of the statements is greater than the normal value (>3) means that students' interpersonal intelligence increases through learning mathematics with the application of Problem Posing.

Excellent intrapersonal and interpersonal intelligence is crucial for students' ability to analyze themselves objectively, both internally and socially, appropriately and well.

According to Zefanya (2018), intrapersonal intelligence plays a very important role in studying mathematics. Learning mathematics is not just about calculating mathematical formulas or using logic; it is about more than that. To find the meaning of a mathematical formula requires deep reflection on it. Apart from that, learning mathematics also requires consistent motivation within the individual. It is in accordance with the opinion of Adriyati and Nursa'adah (2015: 390), who states that: "Every child has a different portion, even though they do not have high intelligence in music or mathematics, children can optimize their abilities by practicing actively, introspection of mistakes and motivating yourself."

According to Salsabila & Zafi (2020), learning with a student social aspect approach is also demonstrated through student involvement in all activities during the learning process. In learning that involves students, the teacher provides real examples from everyday life. It is in accordance with the results of research (Sutarna 2018), which states that "a social approach is one of the activities that can increase interpersonal intelligence. During the learning process, students will appear active if they are involved in learning activities.

Regarding the importance of the various things above, what have been the learning practices so far, especially in teaching mathematics in junior high schools, especially in junior high schools, in the research focus? Mathematics learning in schools generally still uses conventional learning applications because this method is generally easy to implement, fast, and practical. This learning tends to be teacher-centered; that is, the teacher dominates the class. Teachers teach with lectures and expect students to listen, pay attention, take notes, and memorize the material given by the teacher. Students are forced to memorize formulas and be able to apply the formulas or concepts being studied. Students will not be able to obtain important learning values if teachers only use lectures and drills. Students must be given the opportunity to think creatively, critically, and analytically and actively participate in learning so that students can obtain better learning outcomes.

Based on the results of the observer's notes on the observation sheet regarding teacher and student activities during the implementation of classroom action research, the analysis of the results of observing teacher and student activities can be stated as follows (See Table 6).

Table 6. Result of observation of teacher activities in mathematics learning using the problem posing learning model

Meeting	Percentage (%)	Category
1	71	Enough
2	73	Enough
3	76	Good
4	79	Good
5	82	Good
6	88	Good
Average	78,17	Good

Based on table 6 shows an overall picture of the teacher's activities; in this case, the researcher who implemented them almost went well. At the first to second meetings, the percentage of teacher activities was in the sufficient category, while at the third to sixth meetings, the percentage of teacher activities was in the excellent category. From the table, the teacher's activities at the first meeting to the second meeting, namely the beginning of the research, had a lower percentage of activities, namely 71% and 73%, compared to other meetings.

It is because the researcher was the first to apply the Problem Posing learning model and found it difficult to adapt to the situation and conditions of the students. In contrast, for the next meeting, there was a slight improvement because the teacher had started to get used to the environment even though it was still categorized as adequate. Likewise, at the next meeting, it was getting better. It can be concluded that teacher activity during the 6 meetings has increased from the first meeting to the sixth meeting.

Observing student activities is the extent to which students respond to the activities carried out by them. Observations were carried out in six meetings, observing the assessment of student activities during the learning process using the Problem-Posing learning model. Observations made on the experimental class at each meeting can be seen in Table 7.

Table 7. Result of observation of student activities in mathematics learning using the problem posing learning model

Meeting	Percentage (%)	Category
1	46	Not Enough

Meeting	Percentage (%)	Category
2	58	Not Enough
3	71	Enough
4	75	Good
5	79	Good
6	82	Good
Average	68,50	Enough

Based on the Table 7, student activity in the Problem Posing learning model at each meeting has increased, although initially with a low percentage, namely 46%. It gradually rose, and at the second meeting, it was 58%. At the first and second meetings, it was in the poor category. At the third and fourth meetings, there was an increase, namely 71% and then 75%, so that at the third meeting, it had achieved a fair category, and at the fourth meeting, a good predicate. At the fifth and sixth meetings, the percentage also increased, namely 79% and then 82%; both are in an excellent category.

From the results of written interviews with students in the learning model group Problem Posing. Then, the results of interviews with several students can be displayed as follows (See Fig. 2).

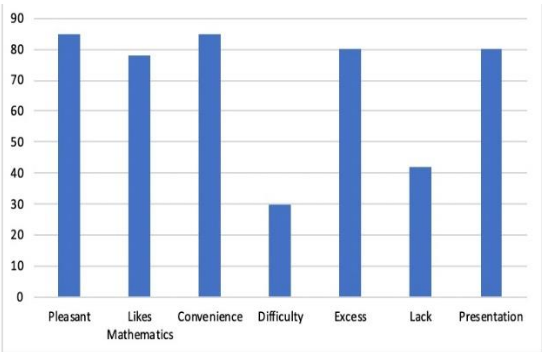

Figure 2. Result of Student Interviews in the Experiment Class

Based on the results of the interview, the following analysis results were obtained: Students think that mathematics is fun if it is related to everyday life. Students think that when applying the Problem-posing learning model, they prefer learning mathematics in groups rather than individually. Students think that if the questions are easy, then students like mathematics, but if the questions are difficult, students think mathematics is not fun. Students think that if they cannot do the questions, then they think the questions are difficult. Students think that the Problem Posing learning model implemented has its advantages and disadvantages. Students think that through the model Problem Posing, learning to make individual presentations to make explanations becomes easier. From the several student opinions above, the Problem Posing learning model received a positive response from students related to the availability of learning resources, discussions, and presentations.

CONCLUSION

Based on the research and test results that have been carried out, it can be concluded that students' intrapersonal and interpersonal intelligence increases through learning mathematics with the application of Problem Posing because this learning model can provide a good stimulus for students to understand their feelings, emotions, and needs, even understand the feelings of other people, be highly motivated, and be able to interact well with other people through effective communication.

6 (six) obstacles were found, namely: 1) adaptation at the beginning of the activity (first face-to-face); 2) availability of learning resources and media; 3) conventional learning patterns that are already firmly attached to students; 4) time constraints; 5) pattern adjustments LIP; and 6) support from observers as colleagues.

Based on the findings and conclusions of this research, several recommendations were obtained, namely, implementing the Problem-Posing learning model, especially in increasing intrapersonal and interpersonal intelligence. Intrapersonal & Interpersonal Intelligence: Students should get used to doing more interesting, creative, and innovative student worksheets. Apart from that, the Problem-posing learning model should not only be applied to material on curved geometric figures but can also be applied to other mathematical materials such as flat geometric figures, quadratic equations and functions, and geometric transformations.

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