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Application of Socrative-Based Assessment to Measure Mathematical Creative Thinking Ability with Problem Based Learning Model Viewed from Curiosity

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Abstract

The study aims to (1) test whether the Problem Based Learning model with the application of Socrative-based assessment was effective for measuring students' mathematical creative thinking abilities and (2) describe mathematical creative thinking ability in terms of curiosity in Problem Based Learning model with the application of Socrative-based assessments. The research was included in the mix-method with a sequential explanatory design. The results showed that (1) Problem Based Learning with the application of Socrative assessment was said to be effective for measuring students' mathematical creative thinking abilities; (2) a description of students' mathematical creative thinking ability in terms of curiosity, it was found that students with a high level of curiosity were able to meet the indicators of creative thinking ability elaboration, originality, fluency, and flexibility and were able to explain how to solve smoothly with logical reasons, and students with a medium level of curiosity meeting the indicators of creative thinking ability of elaboration, fluency, and flexibility and being able to explain how to solve it smoothly with logical reasons, and students with a low level of curiosity fulfilling the indicators of creative thinking ability of elaboration and fluency and less able to explain how to solve it smoothly with logical reasons.

1. Introduction

In the era of the industrial revolution 4.0 currently affecting the development of science and information technology rapidly. This means that it requires every human being to have the knowledge and ability to be able to compete globally. To face the era of the industrial revolution, it can be done by advancing the field of education. In essence, education is needed by every human being to improve the quality that is in him. This means that every society in Indonesia has the right to get education. This is because the progress of a country can be measured through the progress of the education of its people. According to Law Number 20 of 2003 concerning the education system, education is defined as a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual power, self-control, personality, intelligence, noble character, and the ability they need. society, nation and state.

Mathematics is one of the subjects that must be given at the level of primary education to higher education. Mathematics as the main source in other sciences has an important role in the development and advancement of technology. According to Shoit & Masrukan (2021), mathematics as a science certainly equips students with various thinking abilities. Meanwhile, according to the Ministry of National Education (2017) mathematics is one of the basic sciences that needs to be given to all students with the aim of equipping logical, analytical, systematic, critical, and creative thinking ability, as well as the ability to work

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together. These competencies are important for every student to have in order to be able to obtain, manage, and utilize information in the life of an ever-evolving society. Therefore, through learning mathematics, it is expected that students have good abilities to deal with various problems in real life.

The results of the 2018 Program for International Student Assessment (PISA) test and evaluation, the performance of Indonesian students is still relatively low (Farihah & Kartono, 2021). This is because Indonesia got a score of 379 in the field of mathematics. The test results are not much different from 2015. PISA 2015 data shows that Indonesia scored 386 in mathematics (OECD, 2015; Shoit & Masrukan, 2021). This shows that the ability of Indonesian students, especially in the field of mathematics, is declining. Furthermore, based on the data on the results of the Computer-Based National Examination for junior high schools in Indonesia in mathematics for the 2018/2019 school year, the average score was 45.06. This shows that students' ability to solve mathematical problems is still relatively low.

Based on data from the school where the research was conducted, namely SMP Negeri 2 Pecangaan Jepara, it showed that the average value of the Mid-Semester Assessment in the two research classes obtained an average score of 57.34 and 60.31. This shows that the ability of students is still relatively low. Therefore, efforts are needed to optimize students' ability to understand and work on mathematical problems. One of the efforts is through the absorption of mathematics material in the school. In addition, it is also necessary to optimize students' mathematical creative thinking ability so that class VII students have better math absorption. This is because there is a significant influence between learning achievement and creative thinking (Andinny, 2017; Shoit & Masrukan, 2021). Students who have high learning achievement will show that their creative thinking ability is also high.

The results of interviews conducted with mathematics teachers at SMP Negeri 2 Pecangaan Jepara said that students' mathematical creative thinking ability were still relatively low. This is because students in working on math problems are still imitating the completion steps that have been practiced by the teacher. Students consider that the completion steps practiced by the teacher are the only answers. Whereas students should have different mindsets in solving math problems even though they produce the same final answer. In addition, the questions given did not fully encourage students to think creatively mathematically. This identifies that students' creative thinking ability have not been optimized.

Based on the above results, the ability to think creatively is one of the important ability to be mastered in learning mathematics. As the opinion Regulations of the Minister of National Education of the Republic of Indonesia Number 19 states that in learning mathematics by only providing convergent questions causes an active and creative learning process to be neglected (Widiastuti & Putri, 2018; Susiaty, Prihatin, & Hartono, 2021). This is in line with efforts to face the era of the industrial revolution 4.0, namely 21^{st} century ability. 21^{st} century ability are creative, critical, communication, and collaborative thinking ability that can be used to solve real-world problems and as important preparation for college and careers (Boss, Larmer, & Mergendoller, 2013; Kivunja, 2015; Zakiah, Fatimah, & Sunaryo, 2020). According to Istianah (2013) that the ability to think creatively is related to the ability to produce or develop something new, namely something unusual that is different from the ideas generated by most people. This shows that the ability to think creatively is important in everyday life. Therefore, creative thinking ability need to be developed through education.

Creative thinking ability can be developed with an effective learning model. One of the appropriate mathematics learning models to train and develop students' mathematical creative thinking ability is Problem Based Learning (PBL). According to Maryati (2018), Problem Based Learning is a learning process whose starting point is learning based on problems in real life and then from this problem students are stimulated to study this problem based on new knowledge and experience. These real problems can help students in the learning process before knowing the formal concepts. Students will try to solve problems informally first.

Besides, effective learning can be achieved by applying appropriate assessments. According to Rahman (2017) a good assessment is an assessment that can improve student learning in several ways. In addition to the use of a model of learning, assessment of learners also need to be considered as one important aspect of the learning process (Masrukan & Mufidah, 2017). This assessment in the 21^{st} century leads to the use of information technology (ICT). According to Ma'muroh (2014) stated that an ICT-based assessment or electronic assessment *(e-assessment)* is an assessment made by involving technology and internet networks in its use. Meanwhile, according to Yang, Wang, & Chiu (2015) quoted in Wulan, Isnaeni, & Solihat (2018) which states that a number of studies have shown the effectiveness of using e-assessment in learning, some findings state that e-assessment tends to be more able to reveal students' perceptions of environmental problems. this means that the application of the right assessment will create an effective learning atmosphere. Therefore, we need an electronic-based media that can be applied to carry out an appropriate ICT-based assessment.

One of the media that can be applied as an ICT-based assessment is Socrative. Socrative is an e-learning-based learning media to help teachers produce quizzes, view student scores, and monitor student progress directly. Socrative can be accessed through the website. Several previous studies have found that electronic media such as Socrative can streamline assessment activities and trigger students' enthusiasm for learning (Suhara, Permana, & Firmansyah, 2019). It can also help interaction between teachers, students and between classmates. (Suhara, Permana, & Firmansyah, 2019). This Socrative is very suitable to be applied in electronic assessments because it helps teachers make assessments of students.

The right learning model and the application of appropriate assessments can indeed improve students' mathematical creative thinking ability. In addition to the learning model, the factors that influence students' mathematical creative thinking ability that come from within are curiosity. Curiosity is will or desire to know what we have not known or to know deeper from what we have known before (Sulistiani, Waluya, & Masrukan, 2018). This is because through curiosity students will try to explore ideas by asking various problems to solve a problem in many ways. According to Shoit & Masrukan (2021) curiosity makes students want to know more about what they are learning. Curiosity can also stimulate and encourage students to be interested and participate in learning activities that build knowledge and practice ability (Mardhiyana & Sejati, 2016). This means, students who have high curiosity affect their creative thinking ability in solving a problem by being open. The study aims to test whether Problem Based Learning model with the application of Socrative-based assessment is effective for measuring students mathematical creative thinking abilities and describes mathematical creative thinking ability in terms of curiosity in Problem Based Learning model with the application of Socrative-based assessments. The research is included in the mix-method with a sequential explanatory design.

2. Methods

The type of research was a combination research *(mixed method).* According to Creswell, quoted in Sugiyono (2018) states that a combination research method is an approach in research that combines or connects quantitative and qualitative research methods. Donna M. Martens is quoted in Sugiyono (2018) as a combination research method as research, where researchers collect and analyze data, integrate findings, and draw conclusions inferentially using two qualitative and quantitative research approaches or methods in one study.

The research design used in this research was sequential explanatory. According to Cresswell quoted by Sugiyono (2018), sequential explanatory designs are characterized by data collection and quantitative data analysis in the first stage, followed by qualitative data collection and analysis in the second stage. The form of the research experimental design used in this study was a posttest only design. In this design, two groups were selected randomly. The first group was given the treatment of PBL learning model with the application of Socrative-based assessment. While the second group was given learning treatment with conventional learning. The research design used in this study is illustrated in Table 1.

Table 1. Posttest Only Control Design

Group	Treatment	Post-test
Experiment Class	X	O_2
Control Class	C	O_4

Description:

X : Problem Based Learning with the application of Socrative-based assessment

C : Conventional learning

O_2 : Post-test in the experiment class

O_4 : Post-test in the control class

The population in this study is class VII SMP Negeri 2 Pecangaan Jepara in the academic year 2021/2022, while the sample in this study is class VII G as the control class and class VII H as the experimental class. determination of the sample using a *random sampling technique (random sampling).* Quantitative data was obtained from the results of the mathematical creative thinking ability test, which was then used to test hypothesis 1, hypothesis 2, hypothesis 3 and hypothesis 4. While qualitative data was obtained from the results of filling out student curiosity questionnaires.

Quantitative research was conducted to test the PBL model of learning with the application of effective Socrative-based assessments to measure students' mathematical creative thinking ability. Quantitative data was obtained through a mathematical creative thinking ability test. according to Masrukan (2017) a learning is declared effective if in the experimental group the value of students' creative thinking abilities meets classical completeness at least 75% of many students have obtained a minimum score of 70 as the mastery learning. Based on this, the quantitative data analysis in this study used the average test, the proportion test, the difference test of two averages and the two-proportion difference test.

Qualitative research is used to describe creative thinking ability in terms of high, medium and low curiosity through PBL learning models with the application of Socrative-based assessments. Qualitative data obtained through interviews with research subjects. The research subjects were six students of class VII H of SMP Negeri 2 Pecangaan Jepara by choosing two research subjects from each student who had high, medium, and low levels of curiosity. Determination of the subject in this study using purposive sampling technique. Data collection techniques include curiosity questionnaires, tests and interviews. Qualitative data analysis using the Miles and Huberman model includes data reduction, data presentation, and verification and drawing conclusions (Sugiyono, 2018). Data *reduction*, namely summarizing, choosing the main things, focusing on important things, looking for themes and patterns that are needed and removing unnecessary things (Sugiyono, 2018). Presentation of data *(data display)* , namely presenting data in qualitative research is by text and is narrative (Sugiyono, 2018). Conclusions and verifications to conclude students' creative thinking ability are reviewed, curiosity is verified by technique triangulation techniques and source triangulation.

3. Results & Discussions

3.1. The results of filling out the curiosity questionnaire

Based on the student's curiosity questionnaire, data on the number of students in each curiosity category was obtained. In the following, the results of the analysis of the level of curiosity of each student in the experimental class are presented briefly in Table 2.

Table 1. Student curiosity questionnaire analysis

	Category		
	High	**Medium**	**Low**
Student code	H-01, H-02, H-06, H-07, H-09, H-10, H-14, H-15, H-17, H-21, H-22, H-23, H-24, H-29, H-30, H-32	H-03, H-19, H-20, H-28	H-04, H-05, H-08 H-11, H-12, H-13, H-16, H-18, H-25, H-26, H-27, H-31

The table above shows that there are 16 students who have a high level of curiosity, 4 students have a moderate level of curiosity, and 12 students have a low level of curiosity. The distribution of students' curiosity level is presented in Table 3.

Table 2. Distribution of students level of curiosity

Students level of curiosity	Many student	Percentage
High	16	50%
Medium	4	12.5%
Low	12	37.5%

Next, determine the research subject, namely (1) students with a high level of curiosity Two students with the highest questionnaire score were taken, (2) students with a moderate level of curiosity were taken two students with a questionnaire score right in the middle, (3) students with a low level of curiosity were taken two students with the lowest questionnaire scores. The selection of research subjects from the level of curiosity is presented in Table 4.

Table 3. Selection of research subjects from the level of curiosity

Curiosity	High	Medium	Low
Student code	H-10 H-22	H-03 H-20	H-12 H-27
The reason	The results of the curiosity questionnaire are high level	The results of the curiosity questionnaire are medium level	The results of the curiosity questionnaire are low level

3.2. The result of creative thinking ability test

This mathematical creative thinking ability test is given to students in the form of *two tier multiple choice questions.* The reason for choosing a two-tiered multiple choice question according to Tuysuz quoted in Noprianti & Utami (2017) states that a *two-tier multiple choice* has advantages compared to conventional multiple choice and description questions, namely it can reduce errors in measurement and can measure understanding at a high cognitive level. Students answer questions at the first level directly through Socrative e-learning media. Next, students answer questions at the second level by writing them down on paper to be collected. This is because the Socrative e-learning media does not provide long-form answers and upload pictures of the work steps. The questions given are 4 items. From these questions, it will be seen how students' mathematical creative thinking abilities are based on the indicators, namely: (1) elaboration, (2) originality, (3) fluency, (4) flexibility. The data on the results of the mathematical creative thinking ability test are presented in Table 5.

Table 4. The results data of the mathematical creative thinking ability test

	Class	
	Control (VII G)	**Experiment (VII H)**
Many students	32	32
Average	69.219	77.531
Standard deviation	9.435	8.915
The highest score	87	94
The lowest score	52	54

The application of Socrative-based assessment in research can be seen in Figure 1 and Figure 2.

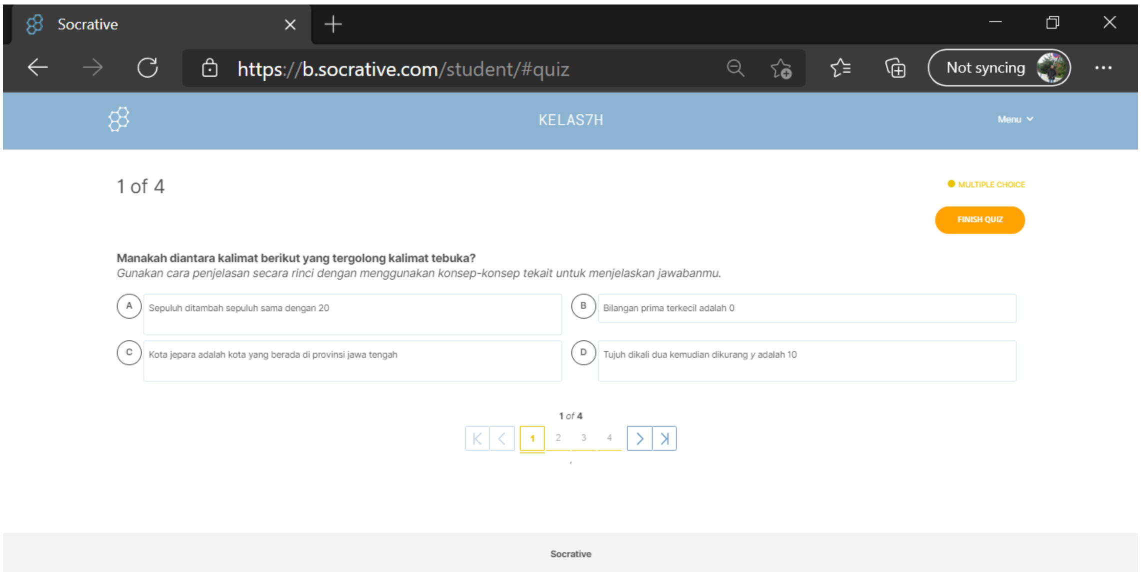

Figure 1. Display of creative thinking ability test questions

Figure 2. Display of assessment results

3.3. Analysis of the Effectiveness of PBL Model with the Application of Effective Socrative-Based Assessment to Measure Students' Mathematical Creative Thinking Ability

Data on mathematical creative thinking ability in the form of quantitative data which is the result of written tests in the experimental class and control class. Based on SPSS calculations related to the *Kolmogorov Smirnov test*, it was found that the data from the mathematical creative thinking ability test in the PBL class with the application of Socrative-based assessment was normally distributed. Based on SPSS calculations related to *Levene's test*, it was found that the data from the mathematical creative thinking ability test in both classes had the same variance.

Hypothesis 1 test in this study was conducted to test whether the average mathematical creative thinking ability of students in the experimental class achieved individual mastery. The hypothesis used is as follows.

$H_0: \mu \leq 70$ (the average student with mathematical creative thinking ability in PBL model with the application of Socrative less than or equal to 70)

$H_1: \pi > 70$ (the average student with mathematical creative thinking ability in learning model with the application of Socrative-based assessment is more than 70)

The test criteria are H_0 rejected if $t_{count} \geq t_{(is\ 0.5-\alpha)}$ and and in other cases H_0 is accepted (Lestari & Yudhanegara, 2017; Arum & Kartono, 2020). The significance level used is 5% and $dk = n - 1$. The following results of the calculation of hypothesis 1 can be seen in Table 6.

Table 5. The result of average test

α	$\bar{x}$	π_0	s	n	t_{hitung}	t_{tabel}
0.05	32	0.75	8.915	32	4.78	1.66

Based on the results of these calculations, the value of $t_{arithmetic} = 4.78$ and the significant level for $=$ 5% and $dk = 32 - 1 = 31$ obtained $t_{table} = 1.66$. because $t_{count} = 4.78 > t_{table} = 1.66$, then H_0 is rejected. It means that the average of students with mathematical creative thinking ability in PBL model with the application of Socrative-based assessment is more than 70 so that it is declared to be actual completion.

Hypothesis 2 testing in this study was conducted to test and find out whether the proportion of students whose mathematical creative thinking ability is more than or equal to 70 in the PBL model with the application of classical Socrative-based assessment reaches more than 75%. The hypothesis used is as follows.

$H_0: \pi \leq 0.75$ (proportion of students with mathematical creative thinking ability in the PBL model with the application of Socrative-based assessment is less than equal to 0.75)

$H_1: \pi > 0.75$ (proportion of students with mathematical creative thinking ability in the PBL model with the application of Socrative-based assessment is more than 0.75)

The test criteria are H_0 rejected if $z_{count} \geq z_{(1-\alpha)}$ and and in other cases H_0 is accepted (Lestari & Yudhanegara, 2017; Arum & Kartono, 2020). The significant level used is 5% and $dk = n - 1$. The following results of the calculation of hypothesis 2 can be seen in Table 7.

Table 6. The result of classical completeness in experiment class

α	x	n	π_0	z_{hitung}	z_{tabel}
0.05	29	32	0.75	2.04	1.64

Based on the results of these calculations, the value and significance level $\alpha = 0.05$ obtained $z_{table} = 1.64$. Obviously $z_{count} = 2.04 > z_{table} = 1.64$ so H_0 rejected. It means that the proportion of students with mathematical creative thinking ability in PBL model with the application of Socrative-based assessment is more than 0.75 so that it is declared classically complete.

Hypothesis 3 test in this study was conducted to test and find out whether the students' mathematical creative thinking ability in the experimental class was more than the mathematical creative thinking ability of students in the control class. The hypothesis used is as follows.

$H_0: \mu_1 \leq \mu_2$ (students mathematical creative thinking ability in PBL model with the application of Socrative electronic assessment is less than or equal to students' mathematical creative thinking ability in conventional learning)

$H_1: \mu_1 > \mu_2$ (students mathematical creative thinking ability in PBL model with the application of Socrative electronic assessment more than students' mathematical creative thinking ability in conventional learning)

The test criteria are H_0 rejected if $t_{count} \geq t_{(1-\alpha)(n_1+n_2-2)}$ and in other cases H_0 is accepted (Lestari & Yudhanegara, 2017; Arum & Kartono, 2020). The significant level used is 5% and $dk = n_1 + n_2 - 2$. The following results of the calculation of hypothesis 3 can be seen in Table 8.

Table 7. The result of two similarity averages test

dk	s	t_{hitung}	t_{tabel}
62	9.165	3.65	1.64

Based on the results of these calculations, the value of $t_{count} = 3.65$ and significant level $\alpha = 0.05$ obtained $t_{table} = 1.64$. Obviously $t_{count} = 3.65 > t_{table} = 1.64$ so that H_0 rejected. This means that students' mathematical creative thinking ability in PBL model with the application of Socrative electronic assessment are more than students' mathematical creative thinking abilities in conventional learning.

Hypothesis 4 testing in this study was conducted to test and find out whether the proportion of students who completed the experimental class was better than the control class. The hypothesis used is as follows.

$H_0: \pi_1 \leq \pi_2$ (the proportion of students who achieve mastery learning in PBL model with the application of Socrative-based assessment is less than the same as the proportion of students who achieve mastery learning in conventional learning)

$H_1: \pi_1 > \pi_2$ (The proportion of students who achieve mastery learning in PBL model with the application of Socrative-based assessment is more than the proportion of students who achieve mastery learning in conventional learning.)

The test criteria are H_0 rejected if $z \geq z_{0.5-\alpha}$ and and and in other cases H_0 is accepted (Lestari & Yudhanegara, 2017; Arum & Kartono, 2020). The significant level used is 5%. The following results of the calculation of hypothesis 4 can be seen in Table 9.

Table 8. The result of two similarity proportions

α	x_1	x_2	n_1	n_2	p	q	z_{hitung}	z_{tabel}
0.05	29	14	32	32	0.672	0.328	3.9933	1.64

Based on the results of these calculations, the value of $z_{count} = 3.9933$ and a significant level $\alpha = 0.05$ obtained $z_{table} = 1.64$. Obviously $z_{count} = 3.9933 > z_{table} = 1.64$ so H_0 rejected. It means that the proportion of students who achieve mastery learning in PBL model with the application of Socrative-based assessment is more than the proportion of students who achieve mastery learning in conventional learning.

The results of the four hypothesis tests indicate that the completeness of learning the PBL model with the application of the Socrative assessment is more than 75%. Mean while, conventional learning completeness is less than 75%. This shows that learning the PBL model with the application of *Socrative* is a supporting factor for students' mathematical creative thinking abilities. Based on the results of quantitative data analysis, it was also obtained that the average mathematical creative thinking ability of students in the PBL model with the application of *Socrative* more than the students mathematical creative thinking ability in conventional learning. In addition, the proportion of students who achieve mastery learning in PBL model with the application of Socrative-based assessment is more than the proportion of students who achieve mastery learning in conventional learning.

One of the causes of PBL model by applying Socrative-based assessment to be effective towards the achievement of students' mathematical creative thinking ability is that PBL model begins by giving real problems to students, thus helping students in the learning process before knowing formal concepts. In learning the PBL model, each student in the group has a role to be more responsible. Each role they have makes students more enthusiastic in participating in learning. In addition, the application of Socrative assessment can also trigger enthusiasm for learning. As the opinion of Suhara, Permana, & Firmansyah (2019: 16) several previous studies found that electronic media such as *Socrative* can streamline assessment activities and trigger students' enthusiasm for learning. The application of this Socrative assessment was carried out by researchers to provide quizzes at the end of each meeting and a mathematical creative thinking ability test at the end of learning. Based on this, it can be concluded that PBL model with the application of *Socrative* effective in achieving mathematical creative thinking ability.

3.4. Analysis of students mathematical creative thinking ability viewed from curiosity

Creative thinking ability test questions of 4 questions were assessed by scoring guidelines for mathematical creative thinking abilities. After finding the achievement of mathematical creative thinking ability including indicators, namely (1) elaboration, (2) originality, (3) fluency, (4) flexibility . Furthermore, based on the data from the test results of creative thinking ability and the results of interviews with six selected research subjects, a triangulation technique was implemented to obtain the validity of the data. The triangulation technique uses technical triangulation and source triangulation. In the following, the results of the analysis of students' mathematical creative thinking ability in terms of curiosity are presented briefly in Table 10.

Table 9. Analysis of students' mathematical creative thinking ability in terms of curiosity

Category of student curiosity	**Indicator**			
	Elaboration	Originality	Fluency	Flexibility
High	√	√	√	√
Medium	√	–	√	√
Low	√	–	√	–

Description:

√ : fulfill

– : not fulfill

3.4.1 Mathematical Creative Thinking Ability with High Curiosity

The results of the analysis on each research subject showed students with a high level of curiosity had high mathematical creative thinking ability, namely H-10 and H-22. Students with a high level of curiosity can solve all the questions that have been provided correctly. The questions that have been resolved meet all the indicators of creative thinking ability. Based on the results of confirmation through interviews, on the indicators of detail (elaboration), students with a high level of curiosity can provide answers to the correct, detailed choices, and explain how to solve them smoothly, and are confident in their answers. On the indicator of originality, students with a high level of curiosity can provide answers to the correct choices, generate new ideas appropriately, and explain how to solve them smoothly, and are confident in their answers. On the fluency indicator, students with a high level of curiosity can provide answers to the correct choice, provide an appropriate solution, explain how to solve it smoothly, do not feel difficult, and are confident in the answer. On the flexibility indicator, students with a high level of curiosity give answers to the correct choice, are able to provide answers in different ways from the usual ones correctly and are able to explain how to solve them smoothly and are confident in their answers. Based on this, students with a high level of curiosity can fulfill all indicators of mathematical creative thinking ability.

3.4.2 Mathematical Creative Thinking Ability with Curiosity

The results of the analysis on each research subject showed students with medium curiosity levels, namely H-03 and H-20 both had medium and low mathematical creative thinking abilities. students with a medium level of curiosity, subject H-03 can solve 3 questions out of 4 questions that have been provided. while the subject of H-20 can solve 2 of the 4 questions that have been provided. The questions that have been resolved meet all the indicators of creative thinking ability. Based on the results of confirmation through interviews, on the indicators of detail (elaboration), students with a medium level of curiosity can provide answers to correct and detailed choices and explain how to solve them smoothly and confidently with their answers. On the indicator of originality, students with a medium level of curiosity can provide answers to the correct choice but there are still many errors in providing solutions in new ways and are unable to explain how to solve them smoothly and are not sure of the answer. On the fluency indicator, students with a medium level of curiosity can provide answers to the correct choice with one way of completing it correctly and explain how to solve it smoothly, do not feel the slightest difficulty, and are confident in the answer. On the indicator of flexibility, students with a medium level of curiosity can provide answers to the correct choice in a different way from the usual one and explain how to solve it smoothly and confidently with the answer. Based on this, students with a medium level of curiosity can only fulfill 2 or three indicators of mathematical creative thinking ability.

3.4.3 Mathematical Creative Thinking Ability with Low Curiosity

The results of the analysis on each research subject showed students with low curiosity levels, namely H-12 and H-27 both had low mathematical creative thinking abilities. students with a low level of curiosity, subject h-12 can solve 2 questions out of 4 questions that have been provided. while the subject of H-27 can solve 1 of the 4 questions that have been provided. The questions that have been resolved meet all the indicators of creative thinking ability. Based on the results of confirmation through interviews on the detail indicator (elaboration), students with a low level of curiosity can provide answers to correct and detailed choices and explain how to solve them smoothly and confidently with the answers. low curiosity Can give answers to the correct choice but does not provide a new solution and is unable to explain how to solve it smoothly and is not sure of the answer. On the fluency indicator, students with a low level of curiosity can give answers to the correct choice but are less precise in providing a solution, are able to explain how to solve it smoothly and feel difficult and unsure of the answer. on the indicator of flexibility, students with a low level of curiosity. Can give answers to the choices correctly but does not provide a solution and is unable to explain how to solve it smoothly and is not sure about the answer. Based on this, students with a medium level of curiosity can only fulfill 2 or one indicator of mathematical creative thinking ability.

4. Conclusion

Based on the results of research and discussion, conclusions are obtained regarding the ability to think creatively mathematically in terms of the curiosity of class VII H students of SMP Negeri 2 Pecangaan Jepara in learning the PBL model with the application of Socrative assessment of linear equations and inequalities of one variable can be described as follows. (1) Problem Based Learning model with the application of Socrative assessment is effective in achieving mathematical creative thinking ability because it meets the following criteria: (a) The mathematical creative thinking ability of students who take part in Problem Based Learning model with the application of Socrative-based assessment more than mastery learning; (b) students who take Problem Based Learning model with the application of Socrative-based assessments are complete in proportion, which is more than 75% of the total number of students who take Problem Based Learning model with Socrative-based assessments; (c) the mathematical creative thinking ability of students who follow the Problem Based Learning model with the application of Socrative-based assessment is better than conventional learning; and (d) the proportion of students who achieve mastery learning scores in Problem Based Learning model with the application of Socrative-based assessment is higher than the proportion of students who achieve mastery learning scores in conventional learning. (2) The description of students' mathematical creative thinking abilities in terms of students' curiosity in learning the Problem Based Learning model with the application of Socrative assessment as follows. (a) subjects with a high level of curiosity are able to meet the indicators of mathematical creative thinking ability elaboration, originality, fluency, and flexibility and are able to explain how to solve problems smoothly with logical reasons; (b) subjects with a medium level of curiosity only met the indicators of mathematical creative thinking ability elaboration, fluency, and flexibility and were able to explain how to solve problems smoothly with logical reasons; (c) subjects with a low level of curiosity only met the indicators of mathematical creative thinking ability, namely elaboration and fluency, and less able to explain how to solve it smoothly with logical reasons.

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