JOURNAL OF SOCIAL SCIENCE
Printed ISSN: 2720-9938
Electronic ISSN: 2721-5202
jsss.co.id

Improve the Ability to Solve Mathematical Problems through Creative Problem-Solving Models

Elisa Dwi Ningrum, Irzal Anderson, Andi Gusmaulia Eka Putri
Elementary School Teacher Education, Jambi University, Jambi, Indonesia
Email: elisadwiningrum30@gmail.com, irzalanderson@gmail.com, andigusmauliaekaputri@unja.ac.id

KEYWORDS

ability to solve mathematical problems, creative problem solving

ABSTRACT

The results showed that there was an increase in the ability to solve mathematical problems in fifth grade students at SDN No. 64/I Muara Bulian through the application of the creative problem-solving model, which is seen in the results of observations of the activities of teachers and students in the first cycle of the first meeting with a percentage of 71,42% learning implementation and the first cycle of the second meeting with a learning implementation percentage of 92.85%. Cycle II meetings I and II got a percentage of 100% implementation of learning. The results of the ability to solve mathematical problems in the first meeting, the percentage of classical completeness was 45,45% the first cycle of the second meeting, the percentage of classical completeness was 59,09%, the second cycle, the fi r st meeting, the percentage of classical completeness was 72,72%, and the second cycle, the second meeting, the percentage classical completeness of 85.71%. Based on the results of the study, it can be concluded that the application of the creative problem-solving model can improve the ability to solve mathematical problems in fifth grade students at SDN No. 64/I Muara Bulian.

INTRODUCTION

Mathematics learning is a compulsory learning for all students to train the ability to solve problems, think logically, critically, analytically and systematically. Metamatics learning at each grade level has its own idelization. Mathematics learning in low and high grades certainly has different idealizations of learning. One of the learning in high class is mathematics learning in class V. Class V mathematics learning, ideally has applied learning that trains problem solving skills in students. If the ability of students to solve problems is still low, efforts are needed to improve it. (Muhammad, Septian, & Sofa, 2018; Sari & Noer, 2017)(Shazali, 2015; Widodo & Kartikasari, 2017)(Gift, 2019)

Based on observations in class V SDN No. 64/I Muara Bulian, researchers obtained data from 21 students present, there were only 4 students who were able and 17 students who were not able to solve problems related to learning material. Related to this, researchers tried to provide a test in the form of 5 questions on the ability to solve mathematical problems to grade V students of SDN No. 64 / I Muara Bulian. The test was attended by 18 students present. The ability to solve has its own indicators. Based on Polya's theory, these indicators include problem understanding, problem-solving planning, implementation of problem-solving plans and reflection on plan implementation. Guided by these four indicators, data was obtained that there were 5

students who were able to meet all indicators of problem-solving ability. Meanwhile, 13 other learners, have not been able to meet all indicators of problem-solving ability. (Huda, 2019)(Abduloh, Karomah, & Hidayati, 2018; Partayasa, Suharta, & Suparta, 2020)(Ovan, 2022)(Asikin, 2008; Budiyono, 2019; Ismail, 2018)

Data obtained from observations and tests show that the ability to solve mathematical problems in grade V students is still low. This is a learning problem that needs to be overcome as explained in Permendikbud RI Number 16 of 2022 concerning Process Standards in Early Childhood Education, Primary and Secondary Education Levels that "Process standards are used as guidelines in carrying out effective and efficient learning processes to optimally develop the potential, initiative, ability and independence of students". This explanation is one of the reasons related to the importance of overcoming the problem of low ability to solve mathematical problems(Faturohman & Afriansyah, 2020; Septian, Komala, & Komara, 2019)(Setiawan et al., 2021) .

One of the efforts to improve the ability to solve mathematical problems is to update the learning model applied. One of the learning models is the *creative problem -solving model.* (Cahyani, Khoiri, & Setianingsih, 2019; Sulaeman, Jusniani, & Monastic, 2021a; Turmuzi, Sripatmi, Azmi, &; Hikmah, 2018)This model is a model that focuses on learning problem-solving skills accompanied by reinforcement of creativity. The creative (Gift, 2019)*problem solving* model is a model that is adapted to the demands of 21st century learning, namely 4C competence (*creative, collaboration, critical thinking* and *communication).* (Yulianty, 2019)The 4C competency is a guideline or basis for optimizing the ability of students in accordance with the contents of the Indonesian Minister of Education and Culture Number 16 of 2022.

Based on this background, researchers formulate problems related to how to improve the ability to solve mathematical problems through *creative problem-solving* models in grade V students of SDN No. 64/I Muara Bulian. This study aims to describe the improvement of mathematical problem solving skills through *creative problem solving* models in grade V students of SDN No. 64/I Muara Bulian. This research is useful to provide good information for teachers, students and schools related to the application of *creative problem-solving* models in improving the ability to solve mathematical problems. The explanation above is the reason for researchers to conduct classroom action research (PTK) entitled "Improving Mathematical Problem-Solving Skills through Creative Problem-Solving Models in Class V Students of SDN No. 64/I Muara Bulian".

METHOD

This research is included in classroom action research. The type of data used is qualitative and quantitative data. Data collection techniques in the form of observation and tests. Observation is carried out with a video recording device to find out in full and detail related to the implementation of learning. The test is used to determine the level of ability of students in solving mathematical problems based on indicators of problem-solving ability. The data analysis technique carried out is to manage the data from observations for descriptive analysis in order to describe the improvement of mathematical problem solving skills in students in class V A SDN No. 64 / I Muara Bulian after the application of the(Zulkarnain & Sarassanti, 2022) *creative problem solving* model. The calculation of the percentage of quantitative problem-solving test results is presented by means of percentage descriptive analysis. The following are the calculation formulas used in this study, namely:

RPP Implementation Percentage = $\frac{Jumlah\ keterlaksanaan\ kegiatan}{Banyaknya\ kegiatan}$ x 100%

Percentage per Indicator = $\frac{Jumlah\ skor}{Banyaknya\ skor}$ x 100%

Student Score Percentage = $\frac{Jumlah\ skor\ yang\ diperoleh}{Skor\ Maksimal}$ x 100%

Classical Completeness Percentage = $\frac{Jumlah\ siswa\ tuntas}{jumlah\ seluruh\ siswa}$ x 100%

RESULTS AND DISCUSSION

Result

Cycle I

Cycle I is held with two meetings, namely Monday, February 6 and Tuesday, February 7 for the 2022/2023 school year. Research is divided into 4 stages, namely planning, implementation, observation and reflection.

Planning

Planning for the first cycle of meetings I and II is carried out with several preparations, namely: 1) Researchers and class teachers discuss related to syllabus, KI and KD, 2) Researchers and teachers discuss related learning materials to be implemented, 3) Researchers propose to teachers related to the time for meetings in cycle I meetings, 4) Researchers compile lesson plans that apply *creative problem solving* models guided by the results of joint discussions with teachers, 5) Researchers prepare observation sheets for teachers and students, 6) Researchers prepare test sheets for problem-solving skills that are adjusted to the learning material to be implemented, 7) Researchers submit RPP validation and test sheets to validator lecturers

Implementation

Meeting I

The implementation of the first cycle of learning meeting I on Monday, February 6, 2023 material "Cubic Volume Units and Liter Volume Units" by applying a *creative problem solving* model. This first meeting, there are still many model stages left behind. The implementation of the first cycle of meeting I, includes the following activities:

A. Introductory Activities

The teacher gave a greeting and prayed together. Before learning begins, the teacher conducts attendance and conditions the neatness of students. Teachers and students sing national compulsory songs to raise students' enthusiasm in learning. The teacher conveys apperception before the delivery of learning material. The teacher conveys a glimpse of the learning material "Cubic Volume Unit and Liter Volume Unit" and conveys the learning objectives.

B. Core Activities

The teacher explained the learning material "Cubic Volume Unit and Liter Volume Unit". The teacher gave examples of questions related to cubic volume units and liter volume units. The teacher directs students to form 3 study groups. The teacher gives the learners a problem sheet. The teacher explains the problems that students need to solve. The teacher asks students to discuss how to solve the problem. The teacher guides each group if students have difficulty solving problems. The finished group continued by presenting the results of their work. Teachers give problem-solving ability test sheets to learners. The teacher gave an explanation regarding how to work on the test sheet. After finishing the work, students submit test sheets to the teacher.

C. Concluding Activities

This closing activity was carried out by collecting all test results and allowing students to carry out rest activities.

Meeting II

The implementation of the first cycle of learning meeting I on Monday, February 6, 2023 material "Cubic Volume Units and Liter Volume Units" by applying a *creative problem solving* model. The implementation of the first cycle of meeting I, includes the following activities:

A. Introductory Activities

The teacher gave a greeting and prayed together. Before learning begins, the teacher conducts attendance and conditions the neatness of students. The teacher conveys apperception before the delivery of learning material. The teacher conveys a glimpse of the learning material "Cubic Volume Unit and Liter Volume Unit" and conveys the learning objectives.

B. Core Activities

The teacher explained related to the material "Volume Build Space (Blocks and Cubes)" including its properties and calculation formulas. The teacher provides examples of questions related to calculating the volume of blocks and cubes to be explained to students and sample

questions to be done with students. The teacher directs students to be able to form 4 study groups. The teacher provides and explains the problem sheet to the students. Each group discussed the idea of solving the problem that the teacher had proposed. After each group finishes writing down the solution ideas, the teacher asks the representatives of each group to read the results of the solution ideas that have been discussed together. The teacher gives opinions regarding the solution ideas that have been submitted by each group representative. The teacher asks each group to be able to implement the solution ideas that have been submitted and approved by the teacher. The teacher guides each group, if it has difficulty in implementing the solution idea. The group that finished working on it, continued to present the results of its work. The teacher evaluates the work of students. Teachers give problem-solving ability test sheets to learners. The teacher gave an explanation regarding how to work on the test sheet. Students work independently and collect test sheets to the teacher when they are finished.

C. Concluding Activities

The closing activity is carried out by making learning conclusions first. Teachers and students conclude the learning material and convey a glimpse of the learning of the next meeting. Then the teacher gave a closing greeting and invited students to carry out rest activities.

Observation

Observation of RPP Implementation (Cycle I Meeting I and II)

Cycle I meeting I with the material "Cubic Volume Unit and Liter Volume Unit" there are still several learning steps in the RPP that have not been implemented. Cycle I meeting II with the material "Volume Build Space (Blocks and Cubes)" was carried out better than cycle I meeting I. The results of observations on teachers and students in cycle I meetings I and II are:

Table of Observations of Teachers and Students in Cycle I

No.	Cycle I	Total Implementation Score	Implementation Percentage
1.	Meeting 1	20	71,42%
2.	Meeting 2	26	92,85%

Based on the results of observations of teachers and students during the learning process in the first cycle of meetings I and II, it can be seen that the implementation of RPP has not reached 100% implementation. In the first cycle of meeting I, there are still many learning activities that have not been carried out, such as the application of *creative problem solving* models that have not been implemented in all stages and closing activities that have not been carried out properly. Cycle I meeting II, is better than in cycle I meeting I. There are still 2 more activities that have not been carried out in the implementation of learning, namely the activity of singing the national compulsory song in the preliminary activity and appreciation activities for the presentation of the work of students.

Math Problem Solving Ability Test (Cycle I Meeting I)

The test of the ability to solve mathematical problems in students through *creative problem solving* models will be held on Monday, February 6, 2023. The test consists of 3 math problem solving questions. The following, a recapitulation of the results of the test of the ability to solve mathematical problems cycle I meeting I, namely:

Recapitulation of Test Results of Mathematical Problem Solving Ability Cycle I Meeting I

No.	Category	Success Percentage	Number of Students	Percentage Yield
1.	Low	0% - 50%	6	27,27%
2.	Keep	51% - 80%	6	27,27%
3.	Tall	81% - 100%	10	45,45%
Sum			22	100%

The results of the ability to solve mathematical problems in the first cycle of meeting I showed that there was no achievement in the percentage of research achievement indicators. The classical completeness of the results of the mathematical problem-solving ability test only

reached a percentage of 45.45% in the low category, while the percentage of research achievement indicators was 75%.

Problem-solving Ability Test (Cycle I Meeting II)

The test of the ability to solve mathematical problems through *the creative problem solving* model in the first cycle of meeting II will be held on Tuesday, February 7, 2023. The test consists of 3 math problem solving questions. Recapitulation of test results of mathematical problem solving skills in students, cycle I meeting II can be seen in the following table:

Recapitulation of Test Results of Mathematical Problem Solving Ability Cycle I Meeting II

No.	Category	Success Percentage	Number of Students	Percentage Yield
1.	Low	0% - 50%	4	18,18%
2.	Keep	51% - 80%	5	22,72%
3.	Tall	81% - 100%	13	59,09%
Sum			22	100%

The results of the mathematical problem solving ability test in the first cycle of meeting II showed that there was no achievement in the percentage of research achievement indicators. The classical completeness of the results of the mathematical problem solving ability test only reached a percentage of 59.09% with the medium category, while the percentage of research achievement indicators was 75%.

Reflection

Before taking action in cycle II, reflection on cycle I is first carried out.

Table 4.10 Cycle II Follow-up Plan

Constraints	Follow-up Plan
There are still activities to sing the national compulsory song that have not been carried out in the first cycle of the second meeting	Teachers better prepare themselves and understand RPP so that there is no forgotten activity to sing the national compulsory song in the preliminary activity.
There are ceremonial activities on Monday that are long enough so that learning time is slowed down, from 07.15 WIB to 08.00 WIB and literacy activities on Tuesday which make learning activities can only start at 08.00 WIB. The existence of these activities, makes the time for conducting research reduced and inadequate to carry out models and do test sheets.	Teachers and researchers discuss further regarding the allocation of learning time so that the available time can be adequate for the implementation of learning activities according to the RPP.
There are still many students who are slow in writing answers to test questions	The researcher reconsidered the number of test questions, so that there was enough time available to do the test.
Delivery of learning materials that are still not time effective	Teachers and researchers use projectors as a learning medium that displays powerpint that has been prepared, so that teachers and students do not have to bother writing examples of problem solving problems and are more time efficient.

Cycle II

Cycle II is held with two meetings, namely Monday, February 20 and Tuesday, February 21 for the 2022/2023 academic year. Research is divided into 4 stages, namely planning, implementation, observation and reflection.

Planning

Planning for cycle II meetings I and II is carried out with several preparations, namely: 1) Researchers and class teachers discuss related to syllabus, KI and KD, 2) Researchers and teachers discuss related learning materials to be implemented, 3) Researchers propose to teachers related to the time for meetings in cycle II meeting I, 4) Researchers compile lesson plans that apply *creative problem solving* models guided by the results of joint discussions with teachers, 5) Researchers prepare observation sheets for teachers and students, 6) Researchers prepare powerpoints for learning media in cycle II meeting I, 7) Researchers prepare test sheets for problem-solving skills that are adjusted to the learning material to be implemented, 8) Researchers submit RPP validation and test sheets to validator lecturers

Implementation

Meeting I

The implementation of the second cycle of learning meeting I on Monday, February 20, 2023 material "Calculation of Unknown Elements from Building Space (Blocks and Cubes)" by applying a *creative problem solving model.* Its implementation includes the following activities:

A. Introductory Activities

The teacher gave a greeting and prayed together. Before learning begins, the teacher conducts attendance and conditions the neatness of students. Teachers and students sing national compulsory songs to raise students' enthusiasm for learning. The teacher conveys apperception before delivering the learning material. The teacher conveys a glimpse of the learning material "Calculation of Unknown Elements from Building Space (Blocks and Cubes)" and conveys learning objectives.

B. Core Activities

The teacher explained related to the learning material "Calculation of Unknown Elements from Building Space (Blocks and Cubes)". The teacher gave an example of a problem related to how to calculate unknown elements from building space (blocks and cubes) through a powerpoint displayed through a projector that has been prepared. Material for calculating unknown elements of building space (blocks and cubes) includes how to calculate the length of the beam, the width of the beam, the height of the beam and the length of the ribs of the cube. The teacher directs students to form 4 study groups. Teachers provide problem sheets and work sheets to students. Work sheets are prepared by researchers, so that students are more time efficient in working on the problems that the teacher asks. The teacher explains the problems that need to be solved by students. Each group was asked to discuss the problem-solving ideas that the teacher had proposed. After each group has finished writing down the solution ideas, the teacher invites representatives of each group to submit the solution ideas that have been discussed with their groups. The teacher gives an opinion on the ideas proposed by each group and asks each group to be able to implement the solution ideas properly and correctly. The teacher guides each group, if they have difficulty in implementing the solution ideas that have been submitted and approved by the teacher. The group that finished working on it, continued to present the results of its work. The teacher provides an evaluation of the work of students. Teachers and students give appreciation to students who have presented the results of their group work. The teacher asks the learners to return individually to their original place. Teachers give problem-solving ability test sheets to learners. The teacher gave an explanation regarding how to work on the test sheet. After finishing the work, students submit test sheets to the teacher.

C. Concluding Activities

The teacher concludes the learning material with the students and conveys the learning material for the next meeting. The teacher gave a closing greeting and invited students to carry out rest activities.

Meeting II

The implementation of the second cycle of learning meeting II on Tuesday, February 21, 2023 material "The Relationship between the Third Power and the Root of the Third Power" by applying a *creative problem solving model.* Its implementation includes the following activities:

A. Introductory Activities

The teacher gave a greeting and prayed together. Before learning begins, the teacher conducts attendance and conditions the neatness of students. Teachers and students sing national compulsory songs to raise students' enthusiasm for learning. The teacher conveys apperception before delivering the learning material. The teacher conveys a glimpse of the learning material "The Relationship between the Third Power and the Root of the Third Power" and conveys the learning objectives.

B. Core Activities

The teacher delivered his explanation regarding the learning material "The Relationship between the Third Power and the Root of the Third Power". The teacher gives examples of questions related to the relationship between the third power and the third power root through a powerpoint that is displayed through a prepared projector. The teacher provides examples of problem solving problems that already exist in powerpoint equipped with animation so that students are not bored and more eager to understand example problems. The teacher also distributes note sheets that make it easier for students to rewrite sample questions that have been given by the teacher. The teacher directs students to form 4 study groups. Teachers provide problem sheets and work sheets to students. Work sheets are prepared by researchers, so that students are more time efficient in working on the problems that the teacher asks. The teacher explains the problems that need to be solved by students. Each group was asked to discuss the problem-solving ideas that the teacher had proposed. After each group has finished writing down the solution ideas, the teacher invites representatives of each group to submit the solution ideas that have been discussed with their groups. The teacher gives an opinion on the ideas proposed by each group and asks each group to be able to implement the solution ideas properly and correctly. The teacher guides each group, if they have difficulty in implementing the solution ideas that have been submitted and approved by the teacher. The group that finished working on it, continued to present the results of its work. The teacher provides an evaluation of the work of students. Teachers and students give appreciation to students who have presented the results of their group work. The teacher asks the learners to return individually to their original place. Teachers give problem-solving ability test sheets to learners. The teacher gave an explanation regarding how to work on the test sheet. After finishing the work, students submit test sheets to the teacher.

C. Concluding Activities

This closing activity was carried out with the teacher concluding the learning material with the students and conveying the learning material of the next meeting. The teacher gave a closing greeting and invited students to carry out rest activities.

Observation

Observation of RPP Implementation (Cycle II Meeting I and II)

Cycle II has seen the implementation of RPP which reaches 100% implementation. Cycle II meeting I with the material "Calculation of Unknown Elements from Building Space (Blocks and Cubes)" and cycle II meeting II with the material "The Relationship between the Third Power and the Root of the Third Power". The results of observations of teachers and students in cycle II meetings I and II, namely:

Results of Teacher and Student Observations in Cycle II Meeting I and II

No.	Cycle I	Total Implementation Score	Implementation Percentage
1.	Meeting 1	28	100%
2.	Meeting 2	28	100%

Based on the results of observations of teachers and students during the learning process in the second cycle of meeting I, it can be seen that the implementation of RPP has reached

100% implementation. This means that the implementation of RPP by applying *a creative problem solving* model has gone well.

Math Problem Solving Ability Test (Cycle II Meeting I)

The test of the ability to solve mathematical problems in students through *creative problem solving* models will be held on Monday, February 20, 2023. The test consists of 1 math problem solving. The number of test questions is reduced as a form of improvement from cycle I, so that the application of the model and the implementation of the test are even better than before. Recapitulation of test results of mathematical problem solving skills in students, cycle II meeting I can be seen in the following table:

Recapitulation of Test Results of Mathematical Problem Solving Ability Cycle II Meeting I

No.	Category	Success Percentage	Number of Students	Percentage Yield
1.	0% - 50%	Low	2	9,09%
2.	51% - 80%	Keep	4	18,18%
3.	81% - 100%	Tall	16	72,72%
Sum			22	100%

The results of the mathematical problem solving ability test in the second cycle of meeting I showed that there was no achievement in the percentage of research achievement indicators. The classical completeness of the results of the mathematical problem solving ability test reached a percentage of 72.72% in the medium category, while the percentage of research achievement indicators was 75%.

Math Problem Solving Ability Test (Cycle II Meeting II)

The test of the ability to solve mathematical problems through *the creative problem solving* model in the second cycle of meeting II will be held on Tuesday, February 21, 2023. The test consists of 1 math problem solving. The number of test questions is reduced as a form of improvement from cycle I, so that the application of the model and the implementation of the test are better than before with more adequate time. Recapitulation of test results of mathematical problem solving ability in students, cycle II meeting II can be seen in the following table:

Recapitulation of Test Results of Mathematical Problem Solving Ability Cycle II Meeting II

No.	Category	Success Percentage	Number of Students	Percentage Yield
1.	0% - 50%	Low	2	9,52%
2.	51% - 80%	Keep	1	4,76%
3.	81% - 100%	Tall	18	85,71%
Sum			21	100%

The results of the mathematical problem solving ability test in the second cycle of meeting II showed that there was no achievement in the percentage of research achievement indicators. The classical completeness of the results of the mathematical problem solving ability test has reached a percentage of 85.71% with a high category so that this percentage has reached the percentage of research achievement indicators, which is 75%.

Reflection

Based on the results of actions in cycle II, the ability to solve mathematical problems in students has increased from the previous cycle. Cycle I meeting I obtained 45.45% and cycle I meeting II obtained 59.09%. Cycle II showed an increase in the ability to solve mathematical problems in students, namely cycle II meeting I obtained 72.72% and cycle II meeting II obtained 85.71%. It can be concluded that in cycle II actions can be said to be successful because they have achieved the following indicators of class action research achievement:

1. Research performance indicators can be seen from the increase in the ability to solve mathematical problems in students of grade V A SDN No. 64 / I Muara Bulian during the learning

process obtained from the implementation of cycle I to cycle II by applying a *creative problem solving* model.

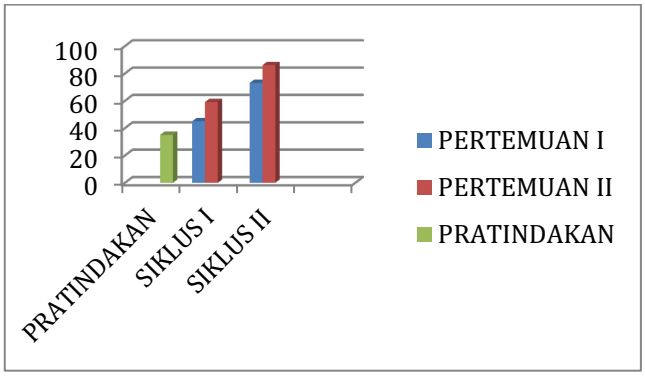
2. This Classroom Action Research (PTK) is categorized as successful if it has shown an increase in the percentage of mathematical problem solving skills in grade V A SDN No. 64/I Muara Bulian students from the initial condition to 75%.

The results of student observations have increased from the beginning of pre-action, cycle I to cycle II. The results of pre-action observations were 34.78% and after the first cycle of action by applying the *creative problem solving* model increased to 59.09% and in the second cycle increased to 85.71%. Observation data can be presented in the following table:

Comparison of Preaction, Cycle I and Cycle II Percentages

Aspects	**Percentage**				
	Preaction	**Cycle I**		**Cycle II**	
		Meeting I	**Meeting II**	**Meeting I**	**Meeting II**
Percentage	34,78%	45,45%	59,09%	72,72%	85,71%

Based on the table above, it can be presented in the form of a bar chart regarding the improvement of mathematical problem solving skills in grade V students of SDN No. 64 / I Muara Bulian through *creative problem solving* models in cycle I and cycle II actions as follows:



Comparison Diagram of Intercycle Action Results

Discussion

Based on the results of research in cycles I and II by applying *creative problem solving* models to improve the ability to solve mathematical problems in students of grade V A SDN No. 64 / I Muara Bulian there is an increase in each cycle. The stage of the *creative problem-solving* model that is carried out is to form a learning group, then the teacher gives one problem to each group. The teacher provides an explanation of the problems posed to students and asks students to discuss solution ideas to solve the problem. Representatives of each group conveyed solution ideas that had been discussed and teachers gave opinions regarding the solution ideas submitted. Students implement solution ideas that have been responded to and approved by the teacher. The finished group continues to present the results of their work and the teacher evaluates the work of the students. Teachers and students give appreciation to students who have presented the results of their group work.

The application of the creative problem solving model is supported by the opinion of those who state that the creative problem solving model is a structured and systematic (Gift, 2019)*problem* solving model by combining critical and creative thinking skills. The steps for implementing the creative problem solving model are carried out in line with the opinion that the *creative problem solving* model consists of 5 steps, namely (1) defining the problem is choosing the problem (Gift, 2019) *to* be discussed then analyzing the root of the problem, (2) collecting ideas *(generating ideas)* is to collect as many ideas and as creatively as possible to provide the best possible solution to the problem, (3) decision making (*decide*) is to select the solution ideas that have been collected to then decide the best solution, (4) implementation of

the solution (implement) is to implement the best solution that has been decided, (5) evaluate the solution *(evaluate*) is to evaluate how to implement the chosen solution to the problem, whether it has been able to overcome it or not.

The *creative problem*-solving model provides an increase in the ability to solve mathematical problems in students because they are accustomed to think creatively in solving problems. In line with this, the opinion of that the (Sulaeman et al., 2021)*creative problem* solving model has five advantages, namely (1) students are accustomed to being able to design, find, think and act creatively, (2) develop students' ability to solve problems, (3) provide an increase in the creativity ability of students, (4) stimulate the development and improvement of students' abilities in solving problems, (5) make students capable apply his understanding in solving real-life problems. Based on this presentation, it can be concluded that the ability to solve mathematical problems in students increases with the application of creative *problem-solving models.* The ability to solve problems is the ability to practice the knowledge possessed to solve the problems experienced. The ability to solve problems has its own indicators. Based on Polya's theory, these indicators include problem understanding, problem-solving planning, implementation of problem-solving plans and reflection on plan implementation. (Setiawan et al., 2021)(Ovan, 2022).

CONCLUSION

Based on the results of the study, it was concluded that the application of creative problem solving models can improve the ability to solve mathematical problems in students. The improvement of the ability to solve mathematical problems occurs gradually from cycle I to cycle II by applying creative problem solving models, namely defining problems, collecting ideas, making decisions, implementing solutions and evaluating solutions. The implementation of actions by applying creative problem solving models can improve the ability to solve mathematical problems in students, ranging from increasing indicators of problem understanding, problem solving planning, implementation of problem solving plans and reflection on plan implementation.

REFERENCES

Abduloh, Umar, Karomah, Nur, &; Hidayati, Sri. (2018). Improving the ability to solve mathematical problems in mathematical literacy problems through the Creative Problem Solving Model Class VIII H SMPN 9 Semarang. *PRISMA*, *Proceedings of the National Seminar on Mathematics*, *1*, 774–780.

Asikin, Moh. (2008). The effect of interactive CD-assisted creative problem solving (CPS) mathematics learning model on problem solving ability in grade X high school students. *Sheet of Education*, *37*(1).

Budiyono, Ahmad. (2019). The Scope of Islamic Education Technology in the Industrial Era 4.0. *Attaqwa: Journal of Islamic Education*, *15*(1), 64–74.

Cahyani, Sisvina Dian, Khoiri, Nur, &; Setianingsih, Eka Sari. (2019). The influence of creative problem solving learning models on students' mathematical problem solving abilities. *Pulpit PGSD Undiksha*, *7*(2).

Faturohman, Ikhsan, &; Afriansyah, Ekasatya Aldila. (2020). Improving Students' Mathematical Creative Thinking Ability through Creative Problem Solving. *Mosharafa: Journal of Mathematics Education*, *9*(1), 107–118.

Huda, Miftahul. (2019). *Teaching and Learning Models*. Yogyakarta: STUDENT LIBRARY.

Ishmael, Raoda. (2018). Comparison of the effectiveness of project-based learning and problem-based learning in terms of the achievement of learning objectives. *Pythagoras: Journal of Mathematics Education*, *13*(2), 181–188. https://doi.org/10.21831/pg.v13i2.23595

Kurnia, Gita. (2019). *Creative Problem Solving Textbook*. Jakarta: Salemba Teknika.

Muhammad, Guntur Maulana, Septian, Ari, &; Sofa, Mastika Insani. (2018). The use of Creative Problem Solving learning models to improve students' mathematical problem solving skills. *Mosharafa: Journal of Mathematics Education*, *7*(3), 315–326.

Ovan. (2022). *Mathematics Teaching and Learning Strategies*. Jakarta: KENCANA.

Partayasa, Wayan, Suharta, I. Gusti Putu, &; Suparta, I. Puff. (2020). The effect of the learning video-assisted Creative Problem Solving (CPS) Model on problem-solving ability in terms of interest. *JNPM* (National *Journal of Mathematics Education*), *4*(1), 168–179.

Sari, Ayu Devita, &; Noer, Sri Hastuti. (2017). Mathematical problem solving ability with creative problem solving (cps) models in mathematics learning. *Proceedings of the National Seminar* on *Mathematics and Mathematics Education*, 1(1), 245–252.

Septian, Ari, Komala, Elsa, &; Komara, Kurniawan Aji. (2019). Learning with the Creative Problem Solving (CPS) model to improve students' mathematical creative thinking skills. *Prism*, *8*(2), 182–190.

Setiawan, Makis, Pujiastuti, Emi, &; Susilo, Bambang Eko. (2021). Systematic Literature Review: The Effect of Mathematical Anxiety on Students' Problem-Solving Ability. *QALAMUNA: Journal of Educational, Social and Religious Affairs*, *13*(2), 239–256. https://doi.org/10.37680/qalamuna.v13i2.870

Sulaeman, Moch Gustiana, Jusniani, Nia, &; Monariska, Erma. (2021a). The use of creative problem solving (CPS) learning models to improve students' mathematical problem solving skills. *Mathema: Journal of Mathematics Education*, *3*(1), 66–81.

Sulaeman, Moch Gustiana, Jusniani, Nia, &; Monariska, Erma. (2021b). Use of Creative Problem Solving (CPS) Learning Model to Improve Students' Mathematical Problem Solving Ability. *Mathema: Journal of Mathematics Education*, *3*(1), 66. https://doi.org/10.33365/jm.v3i1.992

Shazali, Mohammed. (2015). The effect of maple 11 media-assisted creative problem solving learning model on mathematical problem solving ability. *Al-Gebra: Journal of Mathematics Education*, *6*(1), 91–98.

Turmuzi, Muhammad, Sripatmi, Sripatmi, Azmi, Shahrul, & Hikmah, Nurul. (2018). Application of creative problem solving (CPS) learning model to improve the problem-solving ability of mathematics education students. *Journal of Incandescent MIPA, 13*(1), 45–50.

Widodo, Suprih, &; Kartikasari, Kartikasari. (2017). Learning mathematical problem solving of elementary school students with a creative problem solving (CPS) model. *Prism*, *6*(1), 57–65.

Yulianty, Nirmalasari. (2019). The ability to understand students' mathematical concepts with a realistic mathematics learning approach. *Raflesia Journal of Mathematics Education*, *4*(1), 60–65. https://doi.org/10.33449/jpmr.v4i1.7530

Zulkarnain, Zulkarnain, &; Sarassanti, Yumi. (2022). Analysis of Student Problem-Solving Ability in Solving Linear Equation System Story Problems. *SIBATIK JOURNAL: Scientific Journal of Social, Economic, Cultural, Technological, and Educational*, *1*(3), 133–142. https://doi.org/10.54443/sibatik.v1i3.19