



APPLICATION OF ROLE-PLAYING METHOD TO OVERCOME STUDENTS' LEARNING DIFFICULTIES IN LEARNING MATH STORY PROBLEMS IN SANGUWATANG 1 STATE ELEMENTARY SCHOOL KARANGJAMBU SUBDISTRICT

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ABSTRACT

The background is the evaluation results of Class V students at SD Negeri 1 Sanguwatang where, from the composition of the questions tested, in general the students were not capable and still found it difficult to complete story questions. From the results of observations of students' answer sheets, it appears that there are several reasons why students have difficulty solving mathematics story problems, such as: the ability to interpret the language of the questions is still lacking, students cannot determine what is known and what is being asked and students' ability to determine the mathematical model to be used. in solving problems. Therefore, the role-playing method is applied in the learning process. This research aims to determine the effectiveness of applying the role-playing method in improving student learning outcomes, especially in mathematics story problems. With role-playing, it is hoped that students will be able to realistically describe abstract things in the story. The research procedure was carried out in three cycles: planning, implementation, observation and reflection stages. Data collection techniques use qualitative (attitudes) and quantitative (values) data. Data analysis was carried out using comparative descriptive analysis, namely comparing the values of students' initial conditions, first cycle, second cycle and third cycle. Based on the actions taken, it can be concluded that the role-playing method can improve mathematics learning outcomes in story problems at SD Negeri 1 Sanguwatang. The results of observations on student activities turned out to have good relevance to support improved learning outcomes. The average test results for learning mathematics story problems through role - playing were 60.16 in the initial condition, 64.36 in the first cycle, 68.6 in the second cycle and 79.56 in the third cycle. For the level of learning completeness with a completeness limit of 65, the initial condition is 40%, the first cycle is 56%, the second cycle is 76%, and the third cycle is 92%.

Keywords: Mathematics Story Problems, Role Playing

1. INTRODUCTION

Mathematics is a phenomenal subject in the world of education from college to the elementary school level. Mathematics is always considered by students as a frightening specter like a monster. Students felt dizzy and scared before following him. Mathematics is known as a complicated subject and requires extraordinary reasoning and thinking to solve it because what is found in mathematics is abstract numbers, so it is often difficult for students' reasoning, especially elementary school students, whose reasoning is still concrete. Moreover, if what is encountered is a math problem in the form of a story problem, students will think twice about solving it. On the other hand, students must interpret the meaning of the story, and students must also solve it correctly.

Compared to straight questions, story questions are considered more complicated. This is proven by the results of student evaluations, 75% of students got a score above 65. However, judging from the composition of the questions on the test, 64% of students were not able to solve the story questions. Students still have difficulty solving math problems in the form of stories. From the results of observations of students' answer sheets, it can be seen that there are several reasons why students have difficulty solving story-shaped math problems, such as: the ability to interpret the language of the questions is still lacking, students cannot determine what is known and what is being asked and students' ability to determine the correct mathematical model used in solving problems. Apart from that, teachers are still less able to pay attention to aspects of story questions as a form of practice questions at home. The teacher is still focused on the questions at hand. This provides less space for students to develop their ideas by practicing their ability to solve problems in mathematics.



On the other hand, playing is something that students really like. Almost all students when asked "Do you like playing? Surely the answer for all students is "Like". By playing they are able to express and actualize themselves with freshness and fun. *Smith (2013)* suggests that role playing can increase student motivation and involvement in learning. Apart from that, this method also helps students understand complex and abstract concepts. Students will feel challenged to perform and be able to understand their role in the game. Role Playing is able to express students' emotions, thoughts and abilities in a fun and happy manner. *Sukardi (2020)* states that the role playing method is a form of learning where students learn by acting as characters or individuals in a particular situation or scenario to improve their understanding and skills.

According to *Saracho and Spodek (2017)*, role playing can be an effective tool for improving learning in various fields, such as literacy, mathematics and science. Meanwhile, according to *Komalasari (2014)*, role playing is a model of mastering learning material through developing students' imagination and appreciation. Students act out living characters or inanimate objects to develop their imagination and appreciation. *(Huda et al., 2018)* describe the role playing method as a learning technique in which participants participate in certain roles to explore knowledge, skills and attitudes in the context of certain situations.

Based on the opinion above, it can be concluded that the role playing method is a learning method in which visible camouflage of student behavior or imitation of the situations of the characters in the story is shown in such a way.

2. METHODS

The research was carried out at SD Negeri 1 Sanguwatang, Karangjambu District, Purbalingga Regency. The implementation was carried out in the odd semester of the 2022/2023 academic year from May to October 2022. The research subjects were 25 class V students at SD Negeri 1 Sanguwatang, consisting of 10 male students and 15 female students. Nearly 64% of students' abilities are above average. The majority of class V students at SD Negeri 1 Sanguwatang come from lower middle class families where almost all of their parents' livelihoods are farm laborers and entrepreneurs. The data source comes from research conducted by students and teachers. Meanwhile, the types of data used are quantitative data obtained from learning results tests and qualitative data obtained through observation sheets, questionnaires and journals. The data collection techniques used are: data on the situation of implementing the role playing method which is taken using an observation sheet, data on student responses to the implementation of the role playing method which is taken using a questionnaire, self-reflection data, as well as changes that occur in the class are taken using a journal, and data about students' mathematics learning outcomes were taken using learning outcomes tests.

Elliott, J. (2016), views classroom action research as a cyclical process that is oriented towards improving classroom learning practices, is collaborative, and has the potential to contribute to the development of educational knowledge. Despite its limitations, this research remains a valuable approach for teachers to continue learning and improve the quality of learning

In collecting the data needed for research, researchers are assisted by colleagues through observation. Observations carried out by colleagues are observing the activities of researchers and students during teaching and learning activities. The data that will be taken is supported by real data according to what happens in the field. In collecting data, researchers must be objective. This aims to maintain the validity of the data obtained. The data analysis techniques used in this research are data collection, data sorting, data classification, data interpretation and inference.

This classroom action research is planned to be carried out in three action cycles. However, if in the evaluation results of a cycle at least 80% of students have obtained a score of at least 65, then the next cycle will not be implemented because the indicator of success has been achieved. The steps for Classroom Action Research according to *Kemmis, S., and McTaggart, R. (2014)*, are carried out through a cyclical assessment process that consists of four stages, namely planning, implementation, observation and reflection.

Planning is an activity that determines the success or failure of an activity. Planning is made so that the actions to be implemented are directed and clear. Implementation is more stable with a clear and programmed plan. Activities carried out in this planning stage include: (1) creating action implementation scenarios; (2)



making an observation sheet to see how the teaching and learning atmosphere is in the class when the role-playing method is implemented; (3) creating a questionnaire to collect data about student responses regarding the implementation of role-playing methods in learning; (4) creating the necessary teaching aids to help students understand mathematical concepts well; and (4) designing evaluation tools to see whether students have mastered the mathematics material. The implementation of Class Actions must be appropriate so that maximum results can be obtained. The actions that had been designed were implemented by the fifth-grade teacher at SD Negeri 1 Sanguwang. Learning that applies the Role-Playing method must be in accordance with the learning scenario that has been created.

Observations were carried out using the observation sheet that had been made. The observation process is carried out to observe teachers in the classroom during the learning process using the role-playing method. Observations were also made on student behavior and activities during the learning process and the impact of teacher behavior on students during the learning process. Observations are carried out to determine the advantages and disadvantages. Strengths and weaknesses will foster new ideas to improve learning.

Before reflecting, first carry out an evaluation at the end of each action implementation cycle. This evaluation is aimed at finding out whether there is an improvement in students' mathematics learning outcomes in the material being taught. The evaluation tool used is a learning outcomes test prepared by researchers. If classically at least 80% of students have achieved a score of at least 65, then the action is considered to have been successfully implemented. The results obtained at the observation and evaluation stages were analyzed. Weaknesses or shortcomings that occur in each cycle will be corrected in the next cycle.

3. RESULTS & DISCUSSION

Before carrying out learning improvements, the researcher prepared a Learning Improvement implementation plan by implementing role playing. To support the research, researchers prepared observation sheets and were prepared to observe. The results obtained from learning improvement actions in Cycle I are qualitative and quantitative. Qualitative results in the form of increased student activity in learning activities when compared to learning before improvement, student motivation also increased as well as students' creative power and courage to explore and improve their abilities, although not so significantly. This is proven by the students' enthusiasm for role playing. Even though students still feel embarrassed about doing it, they look more fun and happier while learning, as if they were not studying. This is the strength of the learning improvement activities in this cycle. However, the actions in this cycle also have weaknesses, namely that the teacher still helps students too much so that students have less independence and are too dependent on researchers. Students' reasoning power in understanding story problems is still not well formed considering the absence of supporting properties or media.

Quantitative results can be seen from the results of student formative tests. The results of the students' formative tests showed that the students' average score was 64.36, with the lowest score being 30 and the highest score being 75. The level of completeness reached 56% or only 14 students out of 25 students reached the specified completion limit, while 11 students or 44 have not reached the completeness limit because the value is below the specified completeness, namely 65. Detailed formative test results are attached while the global recapitulation can be seen in the table below.

Table 1. Recapitulation of Cycle I Student Formative Tests

No	Value Interval	Many Students	Percentage (%)	Completeness Limit	Information	
					Complete	Not Completed
1	... < 54	5	20 %	65	-	√
2	55 – 64	6	24 %		-	√
3	65 – 74	8	32 %		√	-
4	76 – 84	6	24 %		√	-
5	85 - 100	-	-		-	-
Amount		25	100%	<i>Source:</i>		
Students complete		14	56 %	<i>Cycle I Student Formative Test Scores</i>		



Students Incomplete	11	44 %	
The highest score	75		
Lowest Value	30		
Number of Values	1609		
Average	64.36		

The results of observations from colleagues as observers are (1) learning becomes more fun and interactive. This can be seen from the expressions of students who look cheerful, happy and enjoying role playing; (2) student activity is good, seen from the enthusiasm of students in role playing and responding to questions from researchers; (3) there are no role playing properties so that the role-playing activities are less than optimal and often experience problems; and (4) the time required for role playing is long so this needs attention. Researchers held discussions with colleagues as observers regarding things that needed to be done again in the next cycle (Cycle II) so that the results obtained improved. The result of the discussion between researchers and observers was that role playing was equipped with props and other supporting media.

In this cycle, before carrying out learning improvements, the researcher prepared a Learning Improvement Implementation Plan as well as role playing properties and supporting media according to the results of the researcher's agreement during reflection in Cycle I. The strength of action in this cycle occurred after the researcher used role playing properties. Student activity and motivation have increased and role playing can run well. Students are able to understand things that were initially abstract to become real. Students also look fun and happy, as if they are playing without realizing they are learning. The weakness that is very visible in the actions that have been carried out in this cycle is that the role of researchers in assisting the implementation of role playing is still influential, This causes student dependence on researchers so that there is less embedded student independence in determining and carrying out role playing.

The results of the students' formative tests showed that the students' average score was 68.6 with the lowest score being 45 and the highest score being 90. The level of completeness reached 76% or 19 students out of 25 who had reached the specified completion limit, while 6 students or 34% had not. reached the limit of completion because the score was 65. The results of the formative tests in cycle II can be described globally through the following table.

Table 2. Recapitulation of Cycle II Student Formative Tests

No	Value Interval	Many Students	Percentage (%)	Completeness Limit	Information	
					Complete	Not Completed
1	... < 54	2	8 %	65	-	√
2	55 – 64	4	16 %		-	√
3	65 – 74	9	36 %		√	-
4	76 – 84	3	12 %		√	-
5	85 - 100	1	4 %		√	-
Amount		25	100%	<i>Source:</i> <i>Student Formative Test Scores in Cycle II</i>		
Students complete		19	76 %			
Students Incomplete		6	34 %			
The highest score		90				
Lowest Value		45				
Number of Values		1715				
Average		68.6				

The results of observations obtained by colleagues as observers were (1) learning became more fun and interactive. This can be seen from the expressions of students who look cheerful, happy and enjoying role playing; (2) student activity is good, seen from the enthusiasm of students in role playing and responding to questions from researchers; (3) the use of role-playing properties is able to overcome problems in doing role playing and is able



to make students understand things that are still abstract; (4) the time required for role playing is long so this needs attention. The activity carried out in reflection is that the researcher carries out discussions with colleagues as observers regarding things that need to be done and improved in the next cycle (Cycle III) so that the results obtained are as expected, considering that Cycle III is the final cycle of this learning improvement activity. The result of the discussion between researchers and observers was the formation of a student working group to reduce dependence on researchers and save time. This is also combined with role-playing properties and supporting media.

This is the final cycle so preparation and planning are carried out carefully and more maturely so that the results obtained are in line with expectations. The planning carried out includes a Learning Improvement Implementation Plan which has been studied in detail at each point, visual aids in the form of charts, a list of student work groups as well as role playing properties and supporting media. This is in accordance with the results of the agreement during reflection in cycle II. The most obvious action in this cycle is the formation of student work groups so that they are able to explore all their abilities actively, creatively and innovatively. Apart from group work, props are also prepared to support role-playing. This is what makes the strength of the actions carried out in this cycle. By implementing the above, it is clear that students' activeness, creativity and innovativeness increase as well as their cohesive teamwork abilities. Weaknesses only appear when students create story scenarios because the time required increases and in terms of diction it is also not very communicative. However, this weakness is not something that is very urgent to fix.

The results of the students' formative tests showed that the students' average score was 79.56, with the lowest score being 50 and the highest score being 100. The level of completeness reached 92% or 23 students out of 25 students who reached the specified completion limit, while 2 students or 8% have not reached the completion limit because their score is below the specified completion limit, namely 65. The detailed formative test results in cycle III are attached, while the global recapitulation can be seen in the table below.

Table 3. Recapitulation of Cycle III Student Formative Tests

No	Value Interval	Many Students	Percentage (%)	Completeness Limit	Information	
					Complete	Not Completed
1	... < 54	1	4 %	65	-	√
2	55 – 64	1	4 %		-	√
3	65 – 74	4	16 %		√	-
4	76 – 84	10	40 %		√	-
5	85 – 100	9	36 %		√	-
Amount		25	100%	<i>Source:</i> <i>Cycle III Student Formative Test Scores</i>		
Students complete		23	92 %			
Students Incomplete		2	8 %			
The highest score		100				
Lowest Value		50				
Number of Values		1989				
Average		79.56				

The results obtained by colleagues as observers showed a significant improvement in every aspect that the observer had researched, although there were several weaknesses, they were not that important because they did not really support this achievement. As a final reflection, the researcher and observer held a discussion by comparing the data obtained from Cycle I to Cycle III to be analyzed, interpreted and concluded.

Table 4. Range of Values for Inter-Cycle Learning Formative Test Analysis

No	Value	Pre-Remedial	Learning Improvement
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	Interval	Learning		Cycle I		Cycle II		Cycle III	
		Number of Students	%	Qty Student	%	Qty Student	%	Qty Student	%
1	... < 54	7	28%	5	20%	2	8%	1	4%
2	55 – 64	8	32%	6	24%	4	16%	1	4%
3	65 – 74	6	24%	8	32%	9	36%	4	16%
4	75 – 84	4	16%	6	24%	3	12%	10	40%
5	85 - 100	-	-	-	-	1	4%	9	36%
Amount		25	100%	25	100%	25	100%	25	100%
Completeness		40%		56%		76%		92%	
The highest score		70		75		90		100	
Lowest Value		20		30		45		50	
Number of Values		1504		1609		1715		1989	
Average		60.16		64.36		68.6		79.56	
Action		Learning is conventional without paying attention to student needs		The use of role-playing in learning without simple role-playing properties		The use of role playing in learning with role playing properties		The use of role-playing in learning with role playing properties and student work groups	
Learning Process		Passive Students Students are less involved in learning, Students' creativity and motivation are lacking		Students are starting to be active, are involved in learning, students' creativity and motivation are starting to grow, abstract things in story problems are starting to be captured by students.		Students are active, involved in learning, students' creativity and motivation have grown, abstract things in story problems can be captured by students		Students are active, involved in learning, students' creativity and motivation increases and there is unified team working, abstract things in story problems can be captured by students.	

Source: Recapitulation of Student Formative Test Scores per Cycle

Based on the data above, it is clear that the average score for mastery of the material always increases. The average formative test score in the pre-cycle was 60.16, then increased in cycle I to 64.36, increased again in cycle II to 68.6 and increased in cycle III to 79.56. The level of completion has also increased. This can be seen from the pre-cycle completeness which was only 40%, which increased in cycle I to 56%, then increased again in cycle II to 76% and increased again in cycle III to 92%. On the other hand, the highest and lowest scores also increased, where in the pre-cycle the lowest score was 20 and the highest was 70, in cycle I it increased to the lowest score of 30 and the highest score of 75. The most visible and significant increase was in cycle II to the lowest score of 45 and the highest score of 90, then increased again in cycle III to the lowest value of 50 and the highest value of 100.

Meanwhile, student activity in learning has also increased. This increase starts with motivation, attention to the researcher's explanation, activeness, expressing oneself, expressing opinions, responding to the results of other friends' work, answering researchers' questions, being active in groups, expressing ideas and ideas and helping friends who are having difficulties. This can be seen in the table below.

Table 5. Observation Results of Student Activities Between Cycles



No	Description of Student Activities	Pre-Cycle	Cycle Learning Improvement		
			I	II	III
1	Motivation to learn	40 %	62 %	78 %	85 %
2	Pay attention to the researcher's explanation	45 %	64 %	83 %	90 %
3	Active in role playing activities	43 %	60 %	85 %	88 %
4	Able to express his abilities	40 %	65 %	78 %	86 %
5	Dare to express your opinion	57 %	63 %	79 %	85 %
6	Dare to respond to the results of your friends' work	45 %	70 %	82 %	87 %
7	Able to answer questions from researchers	54 %	72 %	84 %	90 %
8	Work actively in groups	47 %	58 %	78 %	84 %
9	Able to express thoughts and ideas	42 %	68 %	76 %	85 %
10	Help a friend who is in trouble	53 %	66 %	79 %	87 %

Source: Observation results from observers for each cycle

Thus it can be said that increased activity is followed by increased student achievement. There is a real relevance between activities and student achievement.

4. CONCLUSION

Using the Role-Playing Method in learning mathematics story problems can improve student learning outcomes. Apart from that, it can also train students to think critically in solving problems, increase activity and motivate students to participate in learning, increase self-confidence and courage to put forward and express their ideas, ease the teacher's task in delivering material, make it easier for students to accept the concept of mathematical story problems. The use of properties in learning can increase students' understanding of something abstract becoming real and students can work together to build knowledge through their groups.

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