

Improving Numeracy Skills and Learning Achievement Using the Play Method in Class I Mathematics Learning

Aristia Indriani^{1*}, Esti Harini², Ardy Fajar Setyawan³

^{1, 2} *Sarjanawiyata Tamansiswa University, Indonesia*

³ *Golo Public Elementary School, Indonesia*

*Corresponding Author Email: aristiaindriani9@gmail.com

1. Abstract

Numeracy skills are skills that every student needs to have. But in reality, students' numeracy skills are still low because learning is still teacher-centered. In addition, the use of learning strategies that are not in accordance with student needs can also affect students' numeracy abilities and learning achievements. So this study aims to apply the play method in improving numeracy skills and learning achievement in addition and subtraction material in grade I mathematics. This research uses Classroom Action Research with the Kemmis & Mc Taggart model which consists of two cycles. The subjects in this study were 20 grade I elementary school students. Data collection techniques in this study used observation, tests, and documentation. The data analysis technique used is quantitative and qualitative data analysis. Based on the research that has been done, it can be said that the classroom action research has been successful because it has fulfilled the indicators of success of the action and there is an increase in the numeracy skills of class I students in each cycle. The level of students' numeracy skills that have increased can be shown by the learning achievements of students after participating in learning using the play method. The learning achievement of students who scored ≥ 70 in each cycle, namely 45% in the pre-cycle, 9 students completed, 60% in cycle 1, 12 students completed, and 85% in cycle 2, 17 students completed. Based on the research that has been done, it can be said that the classroom action research has been successful because it has fulfilled the indicators of success of the action and there is an increase in the numeracy skills of class I students in each cycle.

Keywords: numeracy skills, learning achievement, playing method

2. Introduction

Along with the rapid development of the times, mathematics continues to experience development as a scientific discipline in the world of education which is always applied in everyday life. This is evidenced by the existence of various kinds of new technologies being created, the process of exchanging money, various forms of administration in various agencies and so on. Some of these things are evidence of developments in the discipline of mathematics.

Mathematics is part of the school curriculum and is one of the compulsory subjects taught to elementary school students. Mathematics subjects have an important role in the cognitive development of students. Learning mathematics must be able to provide learning experiences for students. Student involvement is very important in learning by providing opportunities for students to be involved in problem-solving processes in the learning environment. Mathematics is a scientific discipline that can improve the ability to think and argue, contribute to solving everyday problems, in the world of education and the world of work, as well as providing support in the development of science and technology.(Fathani, 2016).

In the process of learning mathematics, especially in the world of education, namely in schools, aspects of skills in studying mathematics are very important things that must be possessed by every student. Cognitive aspects or understanding other lines of thinking that are also important are memory, skills, and their application. In line with the objectives of learning mathematics, namely to grow and

develop numeracy skills, foster students' transferable abilities through mathematical activities, form logical, critical, careful and creative attitudes. In this case, numeracy skills are an important thing to be mastered by students(Heruman, 2016).

Counting skills are related to the development of children's thinking. Especially for grade I students, they have more activities with concrete objects, which are close to students and are usually found by students in their daily lives. In accordance with the thinking style of class I students who are in the concrete operational stage(Hurlock, 2011). Students are able to classify, operate numbers, understand concepts about space and time, and distinguish between reality and fantasy. Counting skills also include coordinating holding objects, saying numbers and remembering the order. This is indeed quite difficult for children so it takes a long time to really get to know the numbers that represent a number of objects.

Based on this, it is necessary to apply methods that can attract students' attention, namely with various methods suitable for elementary school students which of course are positive games. This will greatly determine the success of the method in student learning itself. According toTriharso (2013)Learning by playing provides opportunities for children to manipulate, repeat, discover for themselves, explore, practice, and acquire countless kinds of concepts and meanings. Therefore, this playing method can increase students' enthusiasm in learning.

One of the problems faced by the world of education in general is the problem of weak learning processes. In the learning process, children are less encouraged to develop thinking skills. The learning process in the classroom is directed at the child's ability to memorize information. As a result, when these

students graduate from school, they are smart theoretically, but still lacking in terms of application or skills. The low learning outcomes of mathematics are also caused by the learning process that is not optimal. In its development the teacher is expected to be able to improve self-ability in mastering the material, choosing the right method, and involving students in the teaching and learning process (Majid, 2013).

Delivering material traditionally, namely lectures, question and answer and noting what the teacher writes on the blackboard will make students feel bored and bored. If this is allowed to continue, of course it will have an impact on students' interest in learning mathematics which is reduced and results in decreased learning achievement. To create a pleasant atmosphere in learning so that students can understand the given mathematics subject matter, games can be used as a learning method. Learning mathematics with games is an interesting learning activity and allows for a fun and relaxed learning atmosphere. Especially during periods of growth according to their age, students will feel happy if their learning atmosphere is manifested in play activities (Utami et al., 2020).

Based on the various arguments in this presentation, the researcher is interested in studying more about the use of the game method in order to improve mathematics learning skills, especially in the concept of counting, so that it is easily understood by students, especially grade 1 elementary school students.

3. Method

The type of research used in this research is Classroom Action Research, namely teacher activities carried out in the classroom with the aim of improving the

quality of learning. The classroom action research model used is Kemmis & Mc Taggart (Samuel Slamet Santosa & Christupar, 2021). This research was conducted in May 2023 in class IA in the even semester at one of the elementary schools in Yogyakarta for the 2022/2023 academic year.

The subjects in this study were all students in class 1A even semester at one of the elementary schools in Yogyakarta for the 2022/2023 academic year with addition and subtraction material. The number of students in class 1A is 20 people. The object of this research is an effort to improve numeracy skills and learning achievement using the play method in learning mathematics in class 1 even semester at one of the elementary schools in Yogyakarta in the 2022/2023 academic year. The limitation in this study is the selection of mathematics material which only contains addition and subtraction material, especially for grade 1 elementary school students.

Data collection techniques used in this study include observation, testing, and documentation. Observations in this study were used to collect data related to the activities carried out by teachers and students in learning mathematics. It contains preliminary activities, core activities, and closing activities. In addition, it also made observations related to the application of the play method to improve numeracy skills and student learning achievement. The test method is carried out by giving test sheets to students which contain addition and subtraction material at the end of learning. Sugiyono (2016) states that the test is a series of questions or exercises as well as other tools used to measure skills, intelligence knowledge, abilities or talents possessed by individuals or groups. The documentation method is also used

to find out data about the school that is being researched such as school history, vision and mission, geographical location of the school, teacher data, number of students, infrastructure and so on (Kirom, 2020). In this study, documentation was used to find photos or pictures about the process of learning mathematics and student achievement data about numeracy skills.

Data analysis used to process research results is descriptive quantitative and qualitative analysis. With this analysis technique we will give a predicate that refers to the state/quality measurement statement. To determine classical completeness, the formula is used:

$$K = \left(\frac{A}{B}\right) \times 100 \%$$

Information:

K = percentage of classical completeness

A = number of students who scored ≥ 70

B = total number of students

(Arikunto, 2013)

The research phase in the Kemmis & Mc Taggart model consists of four steps, namely planning, action, observation, and reflection. This research was conducted in two cycles. The cycle can be continued or stopped after reaching the action success indicator. The indicators of success to be achieved in this study are as follows:

Table 1. Action Success Indicators

No	Action Success Indicators
----	---------------------------

-
- 1 Actions carried out in accordance with the provisions in learning that use the game method or are in accordance with the rules of the game.
 - 2 After the action is taken, the average student learning outcomes experience an increase from one cycle to the next, so that student achievement will also increase.
 - 3 The achievement of classical learning completeness is in accordance with what has been determined by the school, namely at least 75% of students are declared to have graduated when they get a score of ≥ 70 .
-

4. Results and Discussion

The research results obtained after completing the action and giving tests at the end of each cycle. The test is used as a benchmark that students have understood and mastered the material presented by the researcher or not. The research results obtained from the pre-cycle stage, cycle I, to cycle II regarding students' numeracy skills on addition and subtraction are as follows:

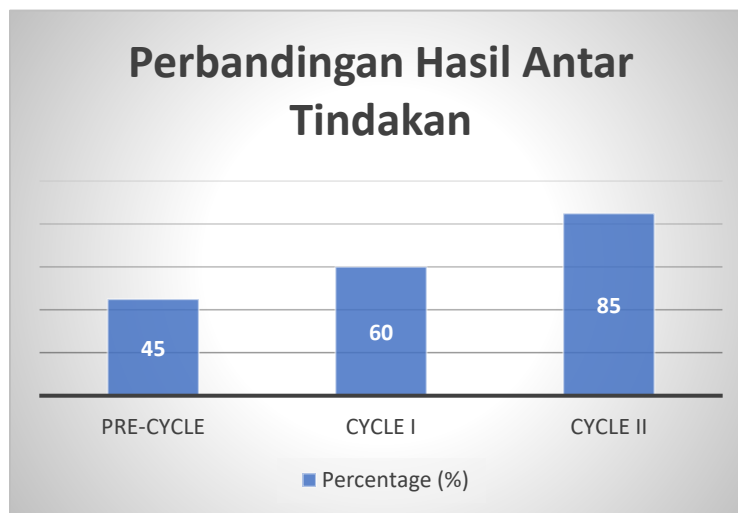


Figure 1. Comparison of Results Between Actions

Based on Figure 1 it shows that there is an increase in each cycle. In the pre-cycle stage, there were 9 students who passed with a percentage of 45%. In cycle I there were 12 students who passed with a percentage of 60%. In cycle II there were 17 students who completed with a percentage of 85%. So it can be concluded that this research is said to be successful because it has experienced an increase from each cycle and in the last cycle, namely cycle II, it has reached 85% of the specified classical completeness percentage, namely $\geq 75\%$. As for the indicators of numeracy skills to be achieved, it contains two indicators, namely performing addition operations using concrete objects and performing subtraction operations using concrete objects.

The results of observation and documentation also show that students are very enthusiastic in participating in learning mathematics using the play method. This is because students feel happy playing and it is easier to understand addition and subtraction material. In addition, this game also trains students to count quickly and accurately and work together with their friends. The games carried out in this study were games using flash cards which contained addition and subtraction questions as well as moving twin games, namely swapping places with students who got the same number.

The application of the play method in learning mathematics for class I can improve numeracy skills and student achievement. This is also in line with the opinion Basiroh (2016) which states that the mathematical game method itself is a way that can be used or an activity that is fun with rules that can achieve the goals

of learning mathematics both cognitively, affectively, and psychomotorly. If games in learning, especially learning mathematics, are carried out repeatedly, it will make students feel used to facing questions that are in accordance with the material being taught (Judge & Sari, 2019).

This can affect the success of student learning. Success in learning is strongly influenced by several factors such as the learning methods and media used, as well as the teacher's role during learning activities. If you have achieved learning success it will increase student learning achievement where students not only understand what they have learned but students can apply what they have learned and what they get in everyday life (Astuti & Leonard, 2020). This learning achievement is knowledge obtained during the learning process resulting from subject tests, so as to get results or scores.

Of course, if learning achievement increases, it will affect students' numeracy skills. This numeracy skill is an intellectual skill that is beneficial for students, moreover as a student it is necessary to have mastery of numeracy skills that are useful in everyday life, such as helping to understand the concepts being studied, helping to facilitate the mastery of science and technology of interest. (Asri, 2019). Learning mathematics is also a process that occurs in learning by teachers with the aim of developing students' creative thinking, as well as increasing the ability to construct new knowledge as an effort to improve mastery of mathematics (Susanto, 2013).

Based on the results and discussion above, it can be concluded that improving numeracy skills and student achievement using the play method in class I mathematics learning material addition and subtraction is said to be successful.

5. Conclusion

Based on the research that has been done, it can be said that the classroom action research has been successful because it has fulfilled the indicators of success of the action and there is an increase in the numeracy skills of class I students in each cycle. The level of students' numeracy skills that have increased can be shown by the learning achievements of students after participating in learning using the play method. The learning achievement of students who scored ≥ 70 in each cycle, namely 45% in the pre-cycle, 9 students completed, 60% in cycle 1, 12 students completed, and 85% in cycle 2, 17 students completed. Hopefully this research can be an additional reference and if it can be improved in the future for other researchers.

6. Confession

The author would like to thank all those who have been involved in the process of compiling this article. Especially for the Tamansiswa Bachelor Wiyata University which has provided the opportunity and provided support for the implementation of this research. In addition, the authors also thank all school members at one of the elementary schools in Yogyakarta so that this research can run smoothly. Thanks to the help, direction, and motivation from various parties, this article could be finished on time. Hopefully this article can be useful for various

parties.

7. Reference

- Arikunto, S. (2013). *Research Procedure: A Practical Approach*. PT RINEKA CIPTA.
- Asri, A. (2019). Efforts to Improve Beginning Counting Skills Through the Jarimatics Method. *HUMANIST: Journal of Social Sciences and Humanities*, 11(2), 137–146. <https://doi.org/10.52166/humanis.v11i2.2302>
- Astuti, A., & Leonard. (2020). The Role of Mathematical Communication Ability on Students' Mathematics Learning Achievement. *Formative Journal*, 2(2), 102–110. [https://doi.org/10.1016/0749-6036\(91\)90087-8](https://doi.org/10.1016/0749-6036(91)90087-8)
- Basiroh, NH (2016). Application of the Game Method to Improve Mathematics Learning Outcomes in Class I MI Al-Asyirotusyafi'iyah Students. 1–133.
- Fathani, AH (2016). Development of School Mathematical Literacy in the Perspective of Multiple Intelligences. *Journal of EduSains*, 4(2), 136–150. <http://e-journal.iain-palangkaraya.ac.id/index.php/edusains/article/download/524/652>
- Hakim, DL, & Sari, RMM (2019). Mathematical Game Applications in Improving Mathematical Counting Ability. *Journal of Research and Learning Mathematics*, 12(1), 129–141. <https://doi.org/10.30870/jppm.v12i1.4860>
- Heruman. (2016). *Mathematics Learning Model in Elementary Schools*. PT Juvenile Rosdakarya.
- Hurlock, EB (2011). *Developmental psychology*. Erlangga Publisher.
- Kirom, AM (2020). Teacher's Online Learning Strategy in Improving Student Learning Effectiveness in the Middle of the Covid-19 Pandemic in Integrated

Social Studies Class VII Courses at SMPN 1 Sarirejo Lamongan. In Central Library Of Maulana Malik Ibrahim State Islamic University. Maulana Malik Ibrahim State Islamic University.

Majid, A. (2013). Lesson Planning Develops Teacher Competency Standards. PT Juvenile Rosdakarya.

Samuel Slamet Santosa, D., & Christupar, M. (2021). The Effect of Using Song Learning Media on Student Activity and Student Learning Outcomes in Class 3 SD Kristen Saint John Bekasi. Pendas : Scientific Journal of Basic Education, 6(1). <https://doi.org/10.23969/jp.v6i1.3600>

Sugiyono. (2016). Quantitative Research Methods, Qualitative, and R&D. Alfabeta.

Susanto, A. (2013). Theory of Learning and Learning in Elementary Schools. Pranamedia Group.

Triharso, A. (2013). Creative and Educational Games for Early Childhood: 30 Math and Science Games. CV Andi Offset.

Utami, YP, Alan, D., & Cahyono, D. (2020). Study at Home: Analysis of Learning Difficulties in Mathematics in the Online Learning Process. Scientific Journal of Realistic Mathematics (JI-MR), 1(1), 20–26. <http://jim.teknokrat.ac.id/index.php/dikmatematika/article/view/252/84>