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THE IMPLEMENTATION OF DAKON MATHEMATICS (DAKOTA) LEARNING MEDIA WITH DISCOVERY LEARNING METHOD

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Abstract

The learning faced by students is teacher-centered learning. The lack of teachers in managing active classes affects student learning outcomes. The purpose of this study is to improve student learning outcomes in the material for FPB and KPK through the Discovery Learning method assisted by the Dakota learning media (Dakon Mathematics). This research is a classroom action research which consists of 2 cycles, namely cycle I and cycle II. Both cycle I and cycle II have the same stages, starting from planning, implementing, observing and reflecting. The subject of the class action research was conducted at SD Negeri 3 Tanjung Ratu class VI with 26 students, 14 of whom were boys and 12 of them were girls. The object of this research is to improve student learning outcomes on the KPK and FPB materials. The data collection technique used is an observation, tests, and documentation. Data analysis using descriptive is comparing the percentage of student learning outcomes in cycle I and cycle II. The criteria for learning success can be seen from the increase in student learning outcomes with the application of the Discovery learning method and the Dakota learning media. The results showed that the application of the Discovery Learning method and the Dakota learning media could improve student learning outcomes. The data obtained from the results of students' learning completeness in the implementation of cycle 1 with a percentage value of 47% from the previous percentage of 26% in the pre-cycle. In cycle 2 it increased to 74%.

Keyword: Dakon Mathematics; Discovery Learning; Mathematics Learing Outcomes

INTRODUCTION

Mathematics is one of the subjects taught at every level of education and is an integral part of national education (Priyatno, 2012). Apart from that, learning mathematics can put pressure on reasoning in the application of mathematics (Meliyanti & Yonanda, 2018). With the ability to think, students are encouraged to be able to solve their own problems with the abilities they have. Learning mathematics involves not just comprehending the subject matter, but also entails actively constructing knowledge from prior experiences and understanding it thoroughly (Lestari et al., 2021)

Ironically, mathematics among students is a subject that is less popular, their interest in this subject is low so that students' mastery of mathematics is very poor. This has a negative impact on student achievement or learning outcomes. As Results from the pre-cycle of class VI

students at SD Negeri 3 Tanjung Ratu, Kec. There are still many Way Pengubuan that have not reached the Minimum Completeness Criteria Score in the "Low" category. Students are said to be complete if they have reached the specified minimum completion criteria score, namely more than equal to 65. In the pre-cycle stage, 40% of students are declared complete can be see in the following Table 1.

Table 1. Data from Pre-survey Results of Analysis of the Mathematics Learning Process on FPB and KPK Learning Materials for Class VI Students at SDN 3 Tanjung Ratu

No.	Score	Criteria	Total	Percentage
1	≥60	Complete	9	40 %
2	<60	Not Complete	17	60%
Total			26	100%

Source: Data Organizer

The recapitulation of student learning completion data can be seen in Figure 1.

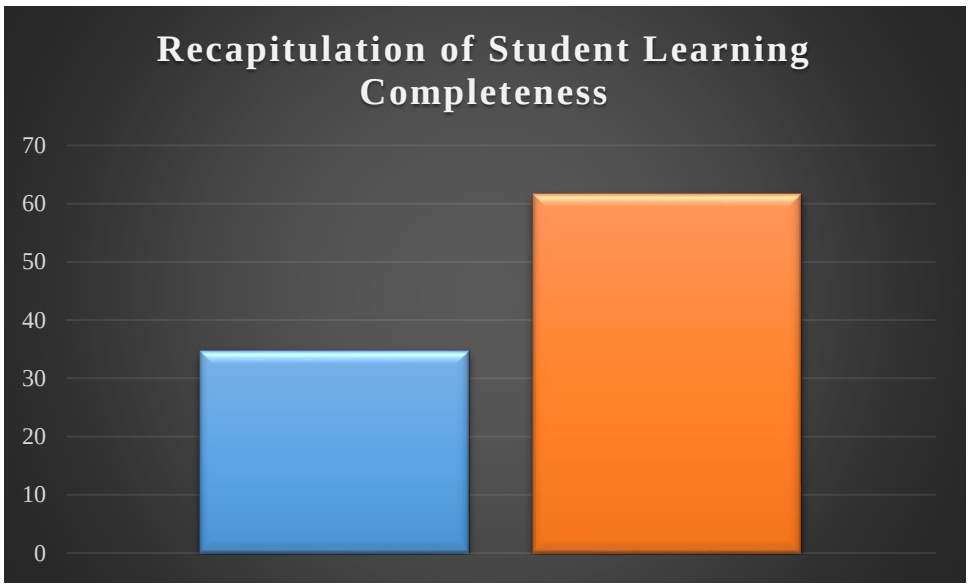

Figure 1. Recapitulation of Student Learning Completeness Achievements

Another thing that can also be seen based on observation is that the teacher's teaching techniques or methods are less relevant. students are less active in learning activities in class. This can be seen when the teacher gives the opportunity to ask questions about material that is not yet understood, but only a few students dare to ask. When the teacher asks questions and asks students to work on questions, only a few students actively answer and dare to work on questions in front of the class. There are still many students who do not dare to express answers

to questions given by the teacher. It was also seen that students were less enthusiastic about learning activities. They tend to just copy what the teacher writes on the blackboard. As a result of low student involvement in learning activities, students are less skilled in asking questions, solving problems, or drawing conclusions from the material they have studied.

Choosing the right strategy and method really optimizes student learning outcomes (Dewi Sinta, 2018) Because method is the key to the learning that will take place, one of which is using the Discovery Learning Method model. Discovery Learning Method. (Cintia, Kristin, & Anugraheni, 2018; Ertikanto, 2018; Syawaludin, 2022) said that Discovery Learning is a teaching model that can improve the individual's ability to self-discovery if applied repeatedly. Meanwhile, according to (Dari & Ahmad, 2020; Salam, 2019) the Discovery Learning model is a learning model that directs students directly during the learning process and solving problems according to problems that exist in everyday life. This learning model also shapes students to think more critically and think at a higher level in solving problems. Meanwhile, The discovery learning model or Discovery Learning is a teaching method that organizes learning that encourages students to acquire knowledge that students did not previously know, so that students tend to discover it themselves (Tompo, Ahmad, & Muris, 2016; Zulkarnain, 2021) Discovery learning train students' thinking skills in solving problems, especially existing problems around students. So students able to creatively invent ideas for finishing that problem (Meliyanti & Yonanda, 2018).

This results in teachers being required to be more creative in the teaching and learning process in order to create a pleasant learning atmosphere (Rosarina, 2016), one of which is by using learning media. One media that can support learning activities is Dakota media (Dakon Mathematics). According to (Fauziah & Amaliyah, 2021) dakon or congklak is a traditional game that children often play in their free time. Meanwhile, according to (Kumullah, Mahmud, & Monica, 2020), dakon is a medium made from plywood which is equipped with 100 number bags made from plastic cups arranged in a 10 x 10 manner which has been equipped with numbers 1-100 and will be filled with bottle caps. aqua. Dakota Media can be used as a learning medium for FPB and KPK material (Fendrik, 2019) Based on the definition above, Dakota media is a tool in the form of traditional games made from certain attractive and durable materials that teachers use to stimulate students in an active, creative and fun learning process (Nursafitri, Fatmawati, & Asmah, 2022) The dakon used in this research is the result of a modification that combines the traditional dakon game with mathematics learning which is referred to as Dakota, namely dakon mathematics. Utilizing educational materials aims to

facilitate effective learning processes, fostering dynamic and participatory learning environments (Lestari, Efendi, & Dara, 2023). Research results from (Fauziah & Amaliyah, 2021; Kumullah, Mahmud, & Monica, 2020) say that there is a significant influence between learning outcomes that use Dakota teaching aids and those that do not use Dakota teaching aids, Dakota media has good quality with a total of 90.7%. The pretest and posttest results are known to be 58% or as many as students of the students who completed the posttest, there was an increase of up to 100% because all students completed their studies.

Other facts obtained in the field include (1) teachers in elementary schools experience many obstacles in teaching KPK and FPB material because they only use tree factors, which causes students to not understand the material, (2) teachers often deliver lessons without learning media and only use lecture method, thus creating a boring learning atmosphere for students. To reduce this problem, there needs to be innovation in teaching. FPB and KPK are important materials that students must master in grade IV elementary school level. Helping students in this material includes understanding the concepts of multiples, factors, prime factorization, and distinguishing between prime and non-prime numbers.(Oktaviani, Kristin, & Anugraheni, 2018) The use of dakon mathematics learning media is expected to support FPB and KPK learning in grade IV elementary school, so that students can learn actively, have fun, and understand the material better

Based on the problems that occurred above, the author conducted research entitled "The Implementation of Dakon Mathematics (Dakota) Learning Media Assisted by the Discovery Learning Method in Improving Mathematics Learning Outcomes: On FPB and KPK Material for Class VI Elementary School".

RESEARCH METHOD

The research method used is the Classroom Action Research method. The subjects of this learning research were carried out on class VI students of the UPTD Education Unit of SD Negeri 3 Tanjung Ratu g totaling 26 students with details: 14 boys and 12 girls. The sampling technique in this research is a saturated sampling technique (Sugiyono, 2015) namely a sampling technique when all members of the population are used as samples. This is often done when the population is relatively small, less than 30 people. The steps taken in this PTK research were cycle 1 and cycle 2 (Lestari et al., 2021)starting from planning, implementation, observation and reflection can be seen in the Figure 2.

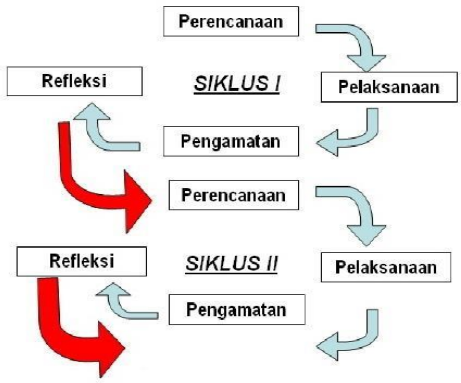

Figure 2. Class Action Cycle (PTK)

The activity steps are in Table 1.

Table 1. The Activity Steps for Class Action Cycle (PTK)

Steps	Description
Planning	This planning is the initial stage of planning learning improvements by holding meetings with class VI teachers and identifying problems, analyzing problem formulations, designing learning implementation by applying the Discovery Learning method assisted by Dakota learning media.
Action	This implementation is carried out during teaching and learning activities in the classroom in accordance with the learning implementation plan (RPP) that has been made at the planning stage.
Observation	The observation stage is carried out during learning in cycle 1 and cycle 2 until the learning is completed. This stage is assisted by making observations to determine the activities of teachers and students in learning in accordance with the learning implementation plan.
Reflecting	Based on the reflection stage, the data that has been collected in the form of observation sheets is reviewed and analyzed as well as evaluating learning outcomes in cycle I, whether there has been an improvement in the Mathematics learning outcomes process using the Discovery Learning learning method assisted by Dakota learning media, drawing conclusions from the learning outcomes that have been carried out. in cycle I to find out the advantages and disadvantages of the learning process. Likewise with cycle II, the same as in cycle I. cycle II carries out reflection based on cycle I in order to improve student learning outcomes.

The data collection technique used is an observation, tests, and documentation. Data analysis using descriptive. The main data in this research are the results of the evaluation of pre-cycle I and cycle II students using the criteria for complete and incomplete. After the data is processed, the percentage of student learning outcomes is then analyzed to compare the percentage of cycle I with cycle II.

RESULT AND DISCUSSION

In the pre-cycle, there are still many students who have not reached the KKM in the "Low" category. At the pre-cycle stage, there were 26 students who had achieved the KKM score with the completion criteria, 9 people with a presentation of 40%. Meanwhile, there were 17 people who did not complete with a presentation of 60%. In this way, researchers followed up on the learning process in cycle 1 to improve learning outcomes from the previous one. In cycle 1, researchers carried out a learning improvement process using the Discovery Learning learning method assisted by Dakota media as can be seen in Table 2.

Tabel 2. Student Learning Outcomes

No	Score	Target	Percentage (%)		
			PRE CAR	**Cycle I**	**Cycle 2**
1	≥ 60	≥ 75%	9 Student (40%)	14 Student (53,84%)	25 Student (96,15%)
2	< 60	< 25 %	16 Student (60%)	12 Student (46,15%)	1 Student (3,84%)

Table 2 shows that after the second cycle of improvements in Mathematics, 25 students with a percentage of 96.15% received a passing grade. Meanwhile, 1 student with a percentage of 3.84% has not yet completed. And the average score is 73.84, the highest score is 100, the lowest score is 60, and the percentage of completeness is 96.15%. Based on the results of observations in cycle II, the teacher's ability to provide an understanding of the Discovery Learning method, Dakota media, FPB and KPK material is mature and detailed, and the teacher's appearance looks neat and appropriate and the language style used is easy to understand. Percentage of Achievement per Cycle student learning outcomes in Pre CAR, cycle 1 and cycle 2 can be seen in Figure 2.

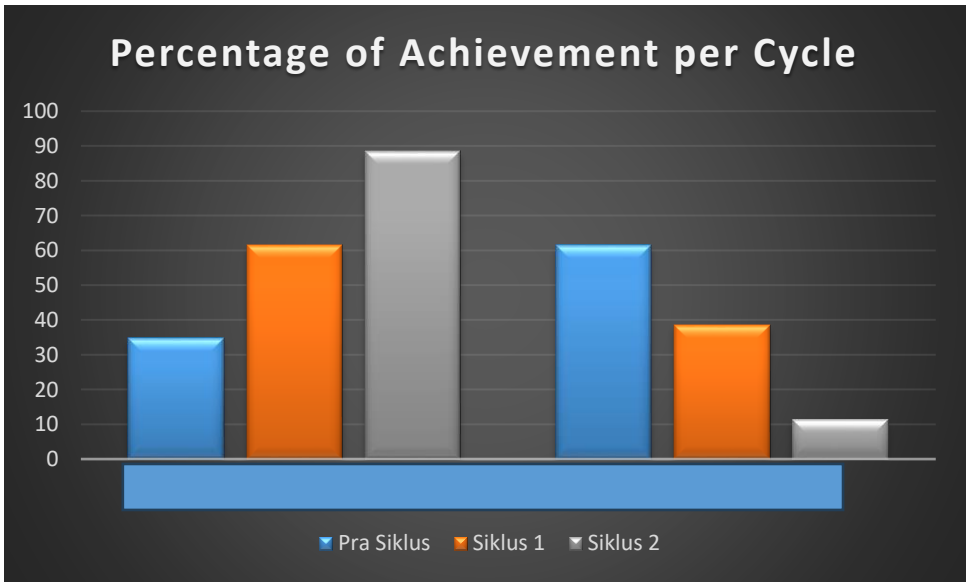

Figure 2. Percentage of Achievement per Cycle

Based on the data in Figure 2, pre-cycle, cycle 1 and cycle 2 experienced an increase. This research was conducted in class VI of SDN 3 Tanjung Ratu semester 1 of the 2022/2023 academic year. From the results of the pre-cycle research, it was found that student scores were low, of the 26 students who passed the KKM, only 9 people had a percentage of 40%, while the scores that had not reached the KKM were 17 people with a percentage of 60%, so the teacher's average pre-cycle score had not used media or methods related to The material still uses lectures. Students only listen to the teacher's explanation. So that students do not focus and do not understand the material presented by the teacher.

In cycle I, the implementation of learning has implemented the steps of the Discovery Learning method, namely the teacher makes a class presentation, the teacher divides the class into 5 groups, the teacher gives a quiz and evaluates the learning results after that the teacher gives awards, this learning step emphasizes that students must be actively involved and able to working together in groups, the activeness and involvement of students that are visible during the learning process can improve student learning outcomes.

Based on the teacher's observation sheet for cycle 1 learning activities, as for the results obtained, in the preliminary/initial activities there are things that need to be improved by the teacher, namely regarding providing motivation, providing references, and conducting apperception. In the learning activities in cycle 1 there are shortcomings, where the teacher explains the procedures for using the Discovery Learning method and Dakota media in very

little detail so that students do not really understand the procedures for implementing the Discovery Learning method and Dakota learning media.

The core activity that needs to be improved is explaining the procedures for using media and implementing learning using the Discovery Learning method which is still not complete and detailed. Then for the closing activity the teacher was quite good at providing feedback and conclusions with the students. And in terms of appearance, the teacher observed that he was good in appearance and speaking. In the main activity, there was something unique in the learning activity that took place, there were three students who asked about Dakota.

Based on the results of the first cycle improvement evaluation activities in the Mathematics subject, it was recorded that 14 students with a percentage of 53.84% received a passing grade. Meanwhile, 12 students with a percentage of 46.16% have not yet completed. And the average score is 59.61, the highest score is 100, the lowest score is 50, and the percentage of completeness is 53.84%. Judging from the percentage figures, in cycle 1 there was an increase in learning outcomes, where the percentage of complete marks in the previous pre-cycle was 34.61%, this was because in the pre-cycle the teacher was still very monotonous in delivering the material, and did not use any learning media so that children a little difficult to understand the material presented.

In cycle II, this was done together with colleagues to discuss any obstacles that occurred in the implementation of cycle II. Overall, the learning steps have been carried out in accordance with the Discovery Learning procedures. Apart from using the Discovery Learning method, Dakota learning media also really helps students to learn KPK and FPB because students can play while learning and also students are very enthusiastic in solving the questions given, students have good enthusiasm when taking individual quizzes, it can be seen from all students simultaneously said "Using Dakota media and group learning is very easy and more exciting."

Based on the teacher's observation sheet for cycle II learning activities, the results obtained, in the preliminary/initial activities, core activities, and closing activities, the teacher was quite good at providing feedback and conclusions with the students. And in terms of appearance, the teacher observed that he was good in appearance and speaking. For the results of the second cycle improvement evaluation activities in the Mathematics subject, it was recorded that 25 students with a percentage of 96.15% received a passing grade. Meanwhile, 1 student with a percentage of 3.84% has not yet completed. And the average score is 73.84, the highest score is 100, the lowest score with a score of 60, and for the percentage of completeness

with a score of 96.15%. Based on the results of the second cycle of observations, student learning outcomes again experienced an increase in the percentage of completion results, because the teacher's ability to provide an understanding of the Discovery Learning method, Dakota media, FPB and KPK material was mature and detailed, and the teacher's appearance looked neat and appropriate and stylish. the language used is easy to understand.

Previous research has shown that the use of mathematics dakon media has a significant positive impact on students' mathematics learning achievement.(Nugroho & Arrosyad, 2020) The use of the integer operation dakon board has a significant effect on students' mathematics learning achievement. Students who use dakon media show a marked improvement in their learning outcomes, and (Nataliya, 2015) The use of Dakon mathematics media in students' numeracy skills in elementary schools shows that the average student numeracy ability after using Dakon media is higher than before using this media. This confirms the effectiveness of dakon media in improving students' numeracy skills.

The main difference between this research and previous research lies in the material taught. Previous research focused on integer operations, addition and multiplication, while this research focuses on material on the Greatest Common Factor (FPB) and Least Common Multiple (KPK). Overall, the use of this media involves students directly in the teaching and learning process, so that students become more active and understand the concepts of the material better. By experiencing and doing what they learn for themselves, it is hoped that students will be able to remember the material for a long period of time and improve their learning achievement. Engaging learning experiences can enhance students' motivation to learn and make learning more readily accepted (Huda et al., 2019).

CONCLUSION

Based on the discussion of research results in the previous chapter, it can be concluded that the Discovery Learning learning method assisted by Dakota learning media (Dakon Mathematics) can improve student learning outcomes, where the results of the learning completeness score in the pre-cycle are 40% in the "poor" category, whereas in cycle 1 rose to 53.84% in the "sufficient" category. Then in cycle 2 it rose again to 96.15%. The advantage of applying the Discovery Learning method is that using this method can activate and build cooperation between students, and Dakota learning media can make students play while learning, so this has an impact on increasing students' learning completeness scores and students' average scores.

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