



IMPROVING THE ABILITY TO UNDERSTAND AND SOLVE MIXED AUTOMATION OPERATIONS THROUGH LEARNING MODELS STUDENT TEAMS-ACHIEVEMENT DIVISIONS (STAD) FOR CLASS VI PRIMARY SCHOOL STUDENTS

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ABSTRACT

This research aims to increase motivation and learning outcomes in Mathematics through the Student Teams Achievement Divisions (STAD) learning model. This type of research is classroom action research carried out in two cycles with mixed arithmetic operations as the material. The subjects of this research were class VI students at SD Negeri 1 Talagening, Bobotsari, Purbalingga, Central Java, totaling 24 students in the 2022–2023 academic year. This research was carried out in 2 cycles, each consisting of 2 meetings and each meeting included the planning, implementation, observation and reflection stages. The action hypothesis in this research is that the use of the STAD-type learning model increases motivation and Mathematics learning outcomes.

An indicator of success is when student activity in the learning process reaches a score of 75% or more. The average class score for each cycle is at least 75. Students who achieve a score of 75 or 80% of the total number of students. Based on the results of observations of students, it was 37.50% in cycle I, meeting 1 and 58.33% in meeting 2. Meanwhile, in cycle II, meeting 1, the score was 70.83% and in meeting 2, the score was 83.33%. The number of students who obtained a score of 75 or more in cycle I was 16 students or 66.67%, while in cycle II there were 21 students or 87.50%. In cycle II and the final results it was found that students had exceeded the specified success indicators.

Keywords: *STAD Learning Model, Motivation, Mathematics Learning Outcomes.*

1. INTRODUCTION

Educators are professional staff tasked with planning and implementing the learning process, assessing learning outcomes, providing guidance and training as well as conducting research and community service for higher education (UU No. 23 of 2003 concerning the National Education System Chapter XI Article 39 paragraph 2). From the identification of the definition above, the teacher as an element of education has the task of planning and implementing the learning process, assessing learning outcomes, and providing guidance and training to students.

The success of students is largely determined by the teacher's professionalism in carrying out the learning process, which includes determining the learning objectives that will be delivered in the form of a learning implementation plan (RPP). A teacher must master at least two national education standards from the eight National Education Standards, namely Process Standards and Assessment Standards. Teachers feel satisfied and proud if the delivery of lesson material is well received by students and the grades obtained in each assessment are satisfactory. However, this hope has not been realized in practice because it has been hampered by several problems.

According to Hamijoyo regarding educational innovation, he states that "Educational innovation is a change that is new and qualitatively different from what existed before and is deliberately sought to improve abilities to achieve certain goals in education."

Researchers immediately respond and overcome problems that occur in the learning process so that they do not drag on and hurt the success of students' subsequent learning. Problem-solving begins with collecting data, identifying the problem, creating a solution hypothesis, and testing it again.



Learning activities in class require careful planning so that learning objectives are successful. Teachers are one of the determining factors for the success of learning, so before implementing learning, it is best to prepare a learning plan that is packaged hierarchically to provide an active and enjoyable learning process for students. The teacher will feel satisfied if, at the end of the lesson, the students can master the subject matter well. The success of students in the learning process can be seen, among other things, from satisfactory daily test results, the fact that students can carry out practical assignments well and the fact that they can answer questions well and correctly. However, the reality of what is happening at the school where the researcher works has not yet been realized.

In the Mathematics subject 'Mixed Arithmetic Operations', the results of the formative test show that the level of ability in solving mixed arithmetic operation questions is still very low. Of the 24 students, only 6 students, or 25% got a score above 7.5. If this is left untreated and not immediately addressed, it will hurt the student's subsequent learning process and outcomes. Realizing this situation, teachers reflect on themselves to make efforts to improve the learning process through Classroom Action Research (CAR).

From the study problem, the researcher determines an alternative solution to the perceived problem that is appropriate for increased results. Study participants were educated on Mathematics with the material " Operation Count Mixed " through learning models Student Teams-Achievement Divisions (STAD). Through a learning model Student Teams-Achievement Divisions (STAD) are expected to activate participant education so that understanding participant education can improve and become capable of solving various form problems with the material so that results and repetitions also increase.

With the existence of the STAD learning model, participants will get experience directly as guiding teacher friends who haven't controlled material, as well as participant, education for those who haven't yet controlled material No shyness; ask his friend already Can in his group so that the expected understanding and mastery of problem solving can increase. On the other hand, through the STAD learning model, participants will be more interested and involved in learning. With conditions like that, it is also hoped that participants' problems with education can be minimized, and their use can increase performance. Study participants are educated on the material so that expected marks in the National Eye Exam lesson Mathematics can increase in class average.

From the various existing problems the researcher mentioned above, the main priority is to increase motivation and results in studying students in lesson Mathematics. The problems above need to happen while all parties cooperate. To increase the quality of participant education. In following every lesson teachers should use learning models that are fun and appropriate to the characteristics participants educate so that motivation, activity, and results from study participant education can be constant.

2. METHODS

The subject study is student Class VI Semester II 2022/2023 academic year SD Negeri 1 Talagening regional coordinator bobotsari regency education and culture office Purbalingga, totaling 24 students consisting of 13 men and 11 women. Study carried out at Talagening 1 elementary school regional coordinator bobotsari regency education and culture office Purbalingga. mathematics subjects, competency base using the properties of arithmetic operations including mixed operations, FPB, and LCM. A study was held for two months that is March and April 2023.

Procedure classroom action research is held through a review process consisting of cycles of 4 stages, namely planning (planning), doing the action (acting), observing (observing), and reflecting (reflecting). Reflection results from actions carried out will be used in return for revised plan action on the cycle next. The cycle in this PTK takes place several times, and it ends with what you want. In terms of this PTK cycle with objectively planned repairs, it has already ended, however, it usually will appear as a problem or cause for concern. So you can solve it through the PTK cycle.

A detailed channel repair study can be seen in the picture below:

Research Preparation

(Literary Studies and Discussion)

1. Equalization Concept, Methods, Examples, and Intermediate Stages Research and Observers



2. Sheet preparation observation
3. Compilation Format Interview
4. Test preparation

Preliminary studies

1. Learning Process
2. Diagnostic tests (obtaining initial data)
3. Document Analysis
4. Interview with Students
5. Discussion with the Supervisor: Initial Idea

Cycle I Actions

1. Improvement Planning
2. Implementation of Improvements
3. Observation
4. Discussion with observers
5. Cycle I Reflection

Succeed

Cycle II Actions

1. Improvement Planning
2. Implementation of Improvements
3. Observation
4. Discussion with observers
5. Cycle II Reflection

Data, Data Collection Techniques, and Data Analysis

The data used in this research are two types of data, namely qualitative data and quantitative data. Qualitative data is related to the learning process while quantitative data is in the form of student learning scores. Data collection is carried out using data collection tools in the form of Written tests are used to determine students' absorption and memory of lesson material. Observation is used to observe student and teacher activities during the learning process. Qualitative data is analyzed in the form of a narrative presentation that describes the quality of learning, while quantitative data is analyzed descriptively from student learning outcomes figures and the results of the recapitulation of average scores in Cycles I, II, and III.

3. RESULTS & DISCUSSION

In cycle I, in the planning stage, the results achieved were not significant because there were more students who had not yet completed their studies than those who had completed their studies. In cycle I, significant results are planned in the sense that there must be more students who have completed than the number of students who have not completed. Researchers plan to use the STAD learning model to increase student motivation and learning outcomes.

Learning Outcomes in Pra Syclus Can be Presented in The Table Below:

No		complete	incomplete
1	Total	8	16
2	Percentage	33,33%	66,67%

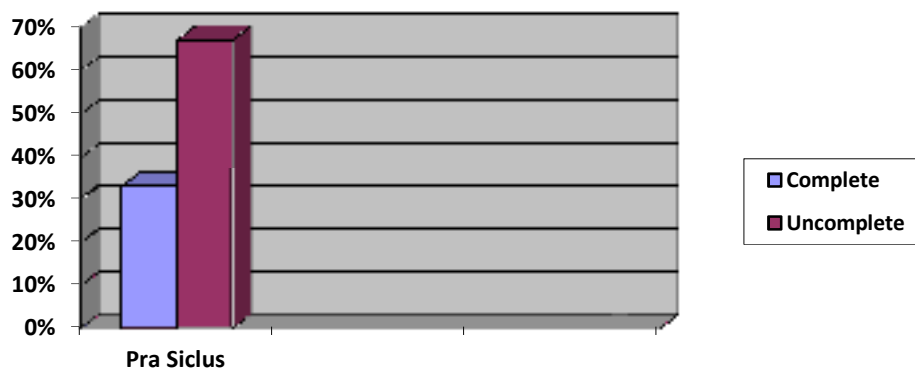


Figure 1. Pra Siklus

Researchers felt that studying Natural Knowledge (Science) on the subject of Energy and its Changes in this first cycle had not been successful. Because there are still 10 children who have not yet finished. After researchers, supervisors and observers discuss the results of observations and interviews which are linked to the results of formative tests, in the second cycle it is necessary to address and explore students' initial perceptions about the material to be studied before the learning process.

Learning Outcomes in Cyclus 1 Can be Presented in The Table Below:

No		complete	incomplete
1	Total	16	16
2	Percentage	66,67%	66,67%

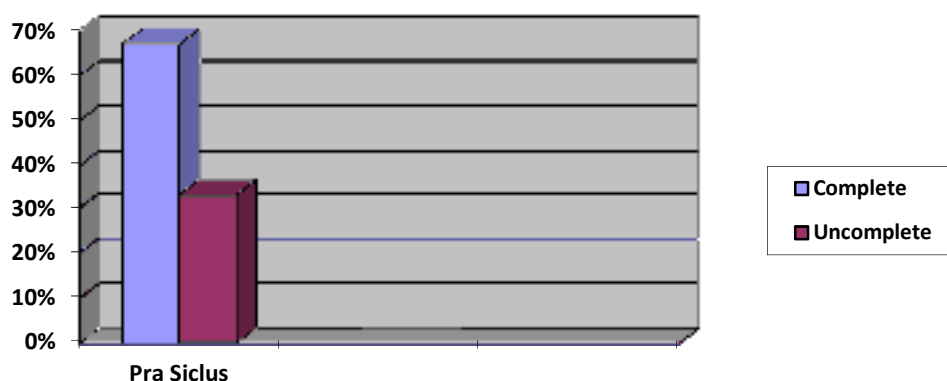


Figure 2. Siklus 1



from initial conditions to Cycle I there was an increase of 33.67%. For more details, see the diagram below:

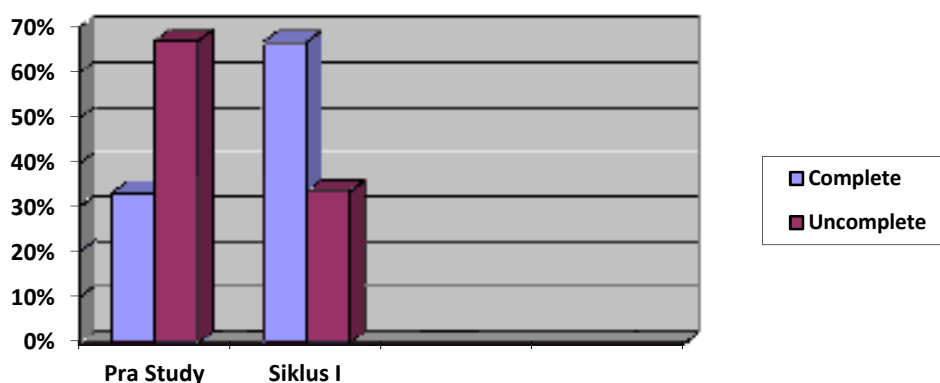


Figure 3. Bar Diagram of Class VI Students' Learning Accomplishments in Initial Studies and Cycle I

Based on the results of the research, there is an enhancement to the results of study participant education. Lots of participants who completed education studied in Cycle I as many as 16 participants had education (66.67%) while 21 students completed Cycle II (87.50%). This matter shows existing enhancement results Study participants educated from cycle I to cycle II also achieved indicator success.

From the observations of Cycle I students on the observation sheet, the following data was obtained:

Table 1. Recapitulation of Mathematics Learning Activity Values Mixed Calculation Operations Material Cycle I Meeting 1 and Meeting 2

No	Number of Students	Activeness					
		A1	B1	C1	A2	B2	C2
1	24	9	8	7	15	10	9
Percentage		37,5	33,3	21,2	62,5	41,7	37,5

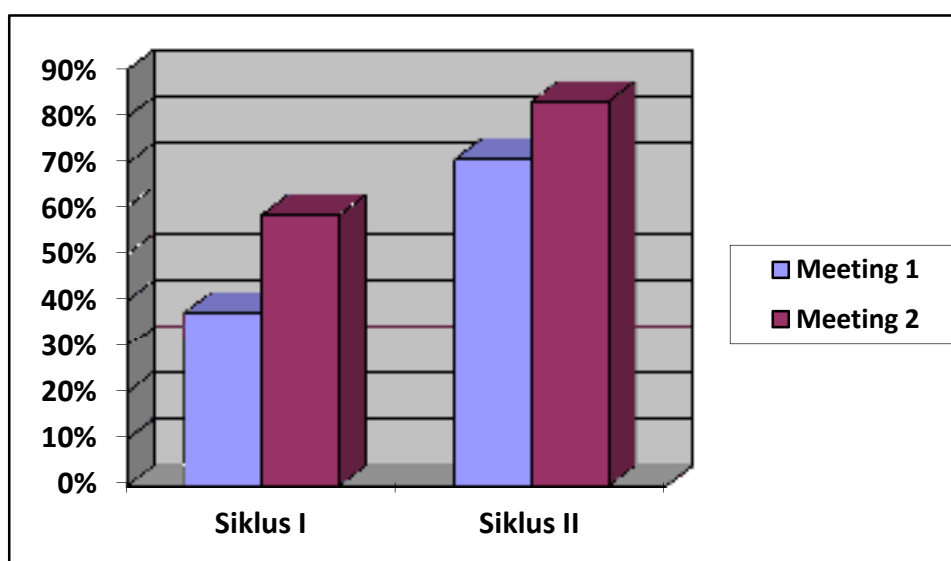




Figure 4. Bar Diagram of Class VI Students' Learning Accomplishment in Initial Study and Cycle I

Based on the results of cycle I and cycle II in the planning stage, it is hoped that the results achieved will be significant in order to achieve indicators of learning completeness. In cycle II, significant results are planned in the sense that the number of students who have completed must be greater than the number of students who have not yet completed and achieved the indicators of success. In cycle II, the researcher plans to use the STAD learning model with a smaller number of students in the group and provide slight modifications in learning that serve to increase cohesiveness in the team so that it can increase the motivation and learning outcomes of students in the group and end with a successful independent evaluation.

Based on the results of research on student activities, it was found that there was an increase from cycle I to cycle II. This is shown from the results of student observations in cycle I that student activity in lesson 1 reached 37.50% in lesson 2 reached 58.33%. Meanwhile, in cycle II meeting 1 obtained a score of 70.83%, and meeting 2 obtained a score of 83.33%. Hence, after learning in cycle II activities participants have already reached indicator-determined success.

From the observations of Cycle II students on the observation sheet, the following data was obtained:

Table 2. Recapitulation of Mathematics Learning Activeness Values Material for Mixed Counting Operations Cycle II Meeting 1 and Meeting 2

No	Number of Students	Activeness					
		A1	B1	C1	A2	B2	C2
1	24	17	3	4	20	3	1
Percentage		70,8	12,5	16,7	83,3	12,5	4,2

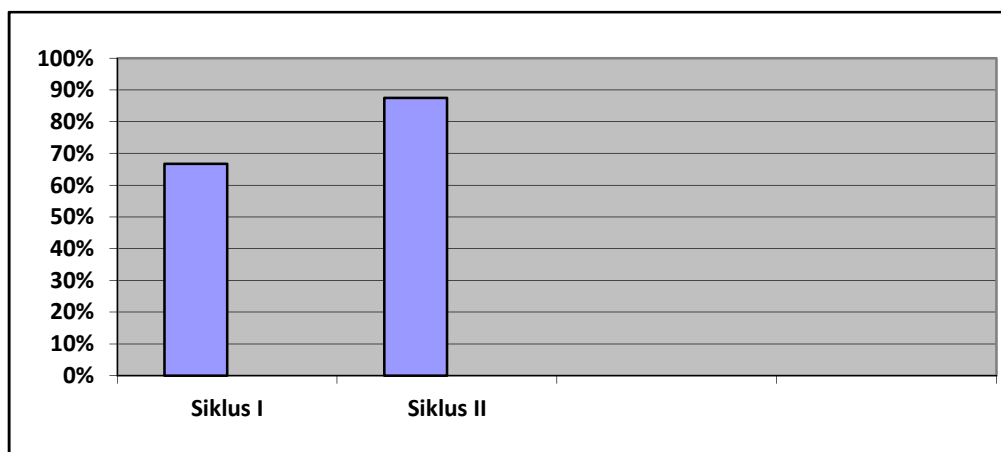


Figure 5. Bar Diagram of the Percentage of Student Learning Completeness in Each Cycle

4. CONCLUSION

Based on the findings obtained from improving learning through PTK, it can be concluded:



Applying the STAD learning model to learning the concept of "Mixed Whole Number Calculation Operations with Whole Numbers" can increase students' motivation to learn.

Efforts to improve student learning outcomes regarding "Mixed Whole Number Calculation Operations with Whole Numbers" through the STAD learning model have proven successful. From the two learning improvement cycles, it turns out that the final learning achievement achieved by students was 87.50%.

From the conclusions above, the researcher provides suggestions to teachers, especially elementary school teachers, as follows:

Teachers should always improve learning by applying expert learning theories so that students are motivated to learn and learning outcomes improve.

Teachers should always avoid conventional learning patterns. Moreover, learning Mathematics requires learning that can shape students to think critically. For example, learning improvement practices using the STAD learning model have been proven to be able to motivate students to learn actively and be able to find information well.

Teachers should always strive to improve student learning outcomes by implementing learning approaches, and methods, and utilizing the environment as a learning resource for students. Facts show that teachers tend to only use the classroom as a place to learn. They rarely take their students to study outdoors. This results in the concepts received by students tending to be verbal.

To improve student learning outcomes, teachers should always be willing to innovate in their learning practices. The method includes teachers looking for reference books related to learning practices. In this way, teacher professionalism will continue to increase.

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