AN ATTEMPT TO BOOSTING OF THE STUDENTS' MATHEMATICS LEARNING ACHIEVEMENT THROUGH COLLABORATIVE LEARNING ACTIVITIES AT KLATEN REGENCY INDONESIA

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Abstract
The aims of this research was to boosting the students' mathmatics learning outcomes through the collaborative learning activities. This research was conducted at SD Negeri 6 Jimbung Klaten Regency, Indonesia in 2021-2022 academic year. The subjects of this study were 23 students of fifth grade in SD Negeri 6 Jimbung. To achieve the research goals, the researcher applied an action research by the steps of planning, actuating, observing, and reflecting. This action research consists of 2 cycles in order to achieve the research target. The findings showed that: (1) The collaborative learning activities can boosthe students' mathematics learning outcomeswith 86.26% passing rate. (2) The collaborative learning activities can boost the students' mathematics learning outcomesfrom first cycle to second cycle by 56.26%. (3) The indicators achievement of this classroom action research through collaborative learning activities can boost students' mathematics learning outcomesby the average of 78.70. Thus, collaborative learning activities can boost students' activity in the mathematics learning process whre the students can improve their collaboration skills and critical thinking to solve mathematics learning problems.

Keywords: *Collaborative Learning, Boost, Learning Outcomes*

INTRODUCTION

Mathematics learning outcomescan be konown as students competencies which obtained after they followedthe learning processes which include of cognitive aspect, affective aspect, and psychomotor aspect (Raresik et al., 2016). This is in line with Pohan et al., (2020) states that learning outcomesis the students' achieving from the learning materials based on the level of thinking and types of teaching materials which consist of conceptual teaching materials, factual teaching materials, procedural teaching materials, and meta-cognitive teaching materials. At the practical level, students' learning outcomes can be improved through the learning process which equipped by the compelete and relevan learning tools, accessable learning resources and innovative learning media which accordance to the student's character, and the teaching methods applied. Both of the explanation above lined with Darmuki et al., (2018) who stated that learning outcomesis the results which obtained from the teaching and learning activities where the students and teachers combining in the process of direct and indirect interactions.

Empirically, the students' learning outcomes, especially improvement of students'mathematics learning outcomes at elementary school students are influenced many factors even internal factors or external factors. One of the mostdominant factors which influenced the students' learning outcomesat elementary school students are the level of teachers' professional competence in teaching progress such preparing the learning material, teaching strategies applied in the learning prosess, class management, and innovative learning tools (Siri et al., 2020), the suitability of the learning media used (Irawan et al., 2019 and Soimah, 2018),and learning method applied by the teacher in the learning process of (Salsabila & Puspitasari, 2020). Other factors which have been proven to influence the learning process and learning outcomes are the level of students' interest in participating in learning, students' motivation, and students' learning styles based on their characteristics and characteristics (Marlina & Sholehun, 2021 and Anggraini et al., 2020).Overally, the results of previous studies revealed that the factors which most influenced the learning outcomes of elementary school students are the teacher's role in the learning process and the participation of parents at home to assist students in repeating the learning materials that have been learned at school.

Evidence of the success of students attending primary school education is the students are equipped to be able to master the basic skills such as listening, reading, speaking, writing, arithmetic and character cultivation (Andri et al., 2020 and Asrianti & Puswati, 2020). For this reason, one of the subjects that must be taught at elementary school level is mathematics with the effective planning, actuating, controlling, and evaluating. Mathematics lessons have a very important urgency to be taught starting from the elementary school level to the next level where the learning process aims to equip students with logical, analytical, systematic, critical, and creative thinking skills (Permendiknas No. 22 of 2006). Furthermore, Rismawati & Erni (2021) specifically explain that learning

mathematics in elementary schools is taught to understand simple concepts to complex concepts to achieve deep mathematical understanding. Elementary school students are expected to be able to recognize pure numbers, integers, understand the concepts of multiplication, addition, subtraction, division, and so on. This competency is a basic mathematical skill that must be mastered by students well.

In general, learning mathematics is identical to learning a concept because the correct teaching concept will affect students' mathematics learning outcomes. However, learning mathematics for elementary school level students only focuses on mastering the basics of mathematical competence which need for next level. The concept of teaching and basic mathematics understanding of elementary school students should be a priority for every mathemtics teacher who teach for elementary students. This has been explained by Hutagaol (2016) that in the learning process, aspects of understanding a concept and its application become something that really needs to be mastered by students. Rismawati & Erni (2021) emphasize that if the basic concepts of learning mathematics are accepted by elementary school students, it will be difficult to improve again, especially if it has been applied in solving problems in answering questions. So that this condition results in students' interest and perception seeing mathematics as a difficult subject for elementary students (Melinda et al., 2021).

Based on the study which conducted at SD Negeri 6 Jimbung Klaten Regency, it was found that there were still many students who had low motivation in participating in the learning process. In the other hand, students have motivation, but the motivation is not to understand what is being learned but only to fulfill learning tasks so as not to be punished (Ambros et al., 2021). According to the results of previous research, it was revealed that the factor which made students feel bored and did not have high motivation because the learning process was still dominated by the role of the teacher in the classroom. Students' involvement in the learning process was very low (Khovivah, 2021). In fact, students' problems in the mathematics learning process are weak in mastering mathematical concepts such as addition, division, subtraction, multiplication. Students also have the perception that mathematics is a difficult subject. The low ability of students to understand mathematics is indicated by the results of the pre-test with an average value of 60.87 which consists of 69.57 students who do not reach the minimum completeness criteria.

The finding of Kholil & Zulfani (2020) revealed that the difficulty of students learning mathematics was caused by the wrong mindset that was built from the beginning by students, so that they had difficulty understanding the material presented by the teacher in the classroom. In addition to the problem of students' incorrect ways of thinking, students' difficulties in learning can be classified into two problems, namely internal problems and external problems (Arifin, 2020). Subekti et al., (2021) describe internal factors are factors that come from within the students themselves while external factors are factors that come from outside the students themselves. Internal factors that cause student learning difficulties consist of student interests, motivation, talents and things that come from students that become obstacles for students to be able to participate in learning effectively. External factors consist of the learning environment, family support, learning methods or media applied in the learning process. The most influential external factor on student difficulties, student success, improving student learning outcomes or vice versa is the teacher's role in the classroom. Andri et al., (2020) revealed that the factor causing students' difficulties in learning mathematics is the lack of use of media that can support or clarify the material so that students easily understand the material presented. Learning media plays an important role in students' understanding of learning, especially students who have visualistic characteristics. This means that students will be able to understand learning materials with the help of learning tools such as projectors, learning tools or objects that students can use directly in the learning process.

The description of the problems described above indicates that it is important to apply a learning model that is relevant to the types of subjects, teaching materials, and student character. Where through the steps of the learning process students are encouraged to think critically and presentation skills. For this reason, researchers will apply a collaborative learning model. According to Anggreni et al., (2019) the collaborative learning model is learning that encourages a student-centered learning process, by conditioning learning situations where students can work together or create a listening relationship and learn from each other in small study groups to brainstorm suggestions, opinions, ideas, experiences, and skills in order to increase the understanding of all group members to achieve learning objectives.

According to Sato (2014) the collaborative learning model is suitable to be applied in learning because collaborative learning is the essence of learning, presenting learning styles that are in accordance with the characteristics and characteristics of students to study together in small groups, improving students' low academic performance through study groups, and encouraging students are more active in study groups to improve their learning outcomes. The results of research by Mega Sari et al., (2018) show that it can improve the learning outcomes of fifth grade elementary school students. The results of this study are in line with the results of research showing that the application of collaborative learning models in addition to improving student learning outcomes, can also increase student learning motivation (Primadiati & Djukri, 2017), can increase student activity in the

learning process (Inah & Pertiwi, 2017) , and can also improve students' critical thinking skills, problem solving and knowledge construction skills as well as being able to convey information well (Wulandari & Anita, 2019).

RESEARCH METHODOLOGY

The research design used was the class action research with thetype of individual action research. According to Sugiyono (2018), action research is the scientific way to obtain data with the aim of finding new problems and actions that can be used to solve problems and improve work situations. To achieve effective and efficient action results, these actions were tested through several cycles, until consistent action results were found that could improve students' mathematics learning outcomes. Meanwhile, individual action research is research conducted individually on social situations on a small scale such as in organization, production, and class. The type of data in this study was quantitative data in ordinal form. Ordinal data is quantitative data in the form of rankings taken from measurement results (Sugiyono, 2019).

This research was conducted at SD Negeri 6 Jimbung, Klaten Regency, Indonesia in the 2021-2022 academic year. The subjects of this research were the fifth grade students of SD Negeri 6 Jimbung as many as 23 students. The instrument used in this study to collect data was multiple-choice exam questions consisting of 4 choices. The research data was collected through a written exam using 10 items in each cycle. The validity test wss carried out with construct validity by asking the expert to check the suitability between the exam questions and the learning material that has been taught. The data were analyzed descriptively to describe and explain the improvement of student learning outcomes based on the cycle. The method used to analyze the data from this research was descriptive method. For quantitative data, it was analyzed by finding the mean, median, mode, making class intervals and presenting it in the form of tables and graphs. The data was analyzed to explain the results of the actions given in each research cycle and compare the results of the actions given between one cycle and another.

The first stage in this research was planning process. At this stage the researcher developedthe lesson plan in accordance with the collaborative learning. In developing collaborative learning plans, consulted with other teachers conducted to make research instruments and develop teaching materials. The next stage was the implementation of the action where at this stage the researcher conducted learning by applying collaborative learning in the fifth grade students at SD Negeri 6 Jimbung. The design was developed with other teachers according to the collaborative learning syntax. The next stage was observation activities in the classroom when the action being ran. This stage was carried out when the learning process taken place in the classroom. At this stage the researcher made in-depth observations and recorded all activities and interactions which occurred in the classroom. The last stage was the reflection activity carried out to thoroughly analyze the actions which have been taken properly, the reactions and interactions of students in the classroom, the learning score of students which collected, and compared all the information collected to draw conclusions. The next step was the evaluation to make better the next action if the results of the research which carried out have not reached the specified indicator standard. Reflection in this classroom action research included analysis, synthesis, and assessment of the results of observations of the actions taken. If the problem was still found from the results of observations and reflections, then further research was carried out in the next cycle which included re-planning, re-action, and re-observation so that the problem can be solved.

RESULT AND DISCUSSIONS

Researchers made observations in the first cycle after the learning process using the Collaborative Learning learning model was completed in 3 meetings. The next step, researcher giave the online test to studentsvia google form to measure students' learning outcomes. The results of observations in the first cycle can be seen to the following table below.

Table 1. First Cycle Learning Outcomes

| No	Indicators of Achievement	Score
1	Total socer	1400
2	Evarage score	60.87
3	Highest score	75
4	Lowest score	40
5	Median	65
6	Passing rate	7
7	Failed students	16
8	Passing percetage	30.43%

The median obtained from the first cycle of data using was 65 and the mode of research data was 65. To prepare the presentation in graphical form, the following things were calculated first. Where the number of classes

(K) was 1 + 3.3 x Log (23) 1 + 4.48 = 5.48 rounded up to 6. The class range (r) of this research data was 75-40 to 35 and the class interval length (i) = r/K= 25/6=5.8 became 6. The interval table can be seen below

Table 2. The First Cycle Interval

No	Interval	Mid Score	Absolut Frequency	Relative Frequency
1	40-51	48	6	26.08%
2	52-58	55	1	4.34%
3	59-65	62	9	39.13%
4	66-71	69	6	26.08%
5	72-75	73	1	4.34%
Total			23	100%

Grapich 1. The First Cycleof Class Interval Data Percentage
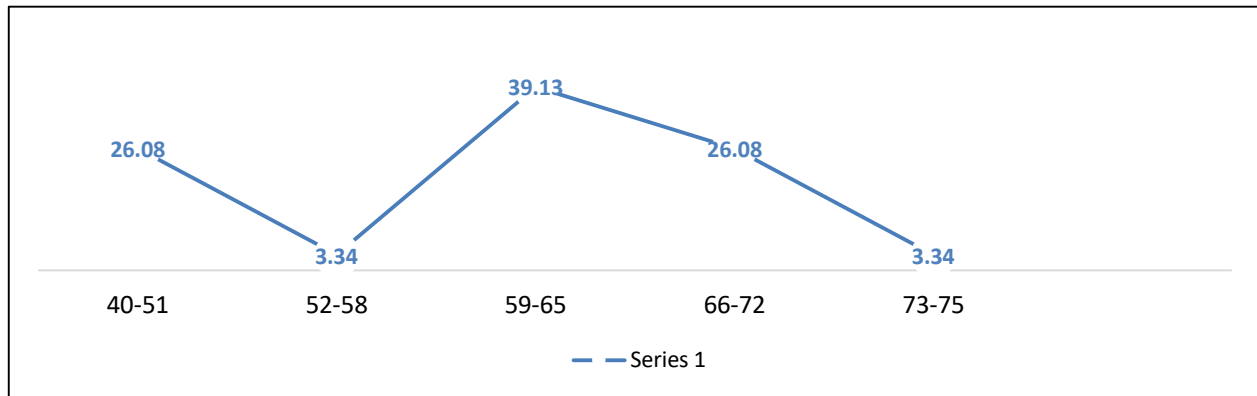
The graph above shows that student learning outcomes in first cycle have not reached the standard of completeness set by the school. minimum score criteria standard was 60 and completeness provisions where the average score of students reaches 75 and students who get a minimum complete score of 80%. The diagram above shows that the students who got the pass information were 30.43% and the class average was 60.87. Based on the graduation provisions, the results of the first cycle still need improvement to the second cycle stage. As for some of the obstacles to the learning process with the collaborative learning, students find it difficult to capture single and mixed substance subject matter in mathematics because they cannot focus on listening to the teacher's explanation. Some students have low independence and lack of initiative in study groups to achieve learning objectives. Students have not been able to collaborate totally in study groups because students have different learning styles so they cannot be integrated. Although there are some obstacles in the learning process, some students have good participation in study groups who act as peer tutors for other students. Able to participate actively and look for various relevant learning resources to solve problems in groups and solve problems at hand.

The research target in the first cycle had not been achieved because there were still many students who did not reach the criteria for completeness scores, so the research continued to cycle II. In the study, observations were made in the second cycle after the learning process using the collaborative learning was completed in 3 meetings. The next step, measured the students' learning outcomes. The results of observations in the second cycle can be seen in the following table below.

Table 3. The Second Cycle Learning Outcomes

| No	Indicators of Achievement	Score
1	Total socer	1810
2	Evarage score	78.70
3	Highest score	95
4	Lowest score	60
5	Median	80
6	Passing rate	20
7	Failed students	3
8	Passing rate	86.69%

The median obtained from the second cycle of data using was 80 and the mode of research data was 80. To prepare the presentation in graphical form, the following things were calculated first. Where the number of classes

(K) was 1 + 3.3 x Log (23) 1 + 4.48 = 5.48 rounded up to 6. The class range (r) of this research data was 95-60 to 25 and the class interval length (i) = r/K= 25/6=4. The interval table can be seen below.

Table 4. The Second Cycle Interval

No	Interval	Mid Score	Absolut Frequency	Relative Frequency
1	60-64	62	1	4.34%
2	65-69	67	4	17.39%
3	70-74	72	4	17.39%
4	75-79	77	3	13.04%
5	80-84	82	1	4.34%
6	85-89	87	4	17.39%
7	90-95	92	7	30.43%
Total			23	100

Grapich 2. The Second Cycleof Class Interval Data Percentage
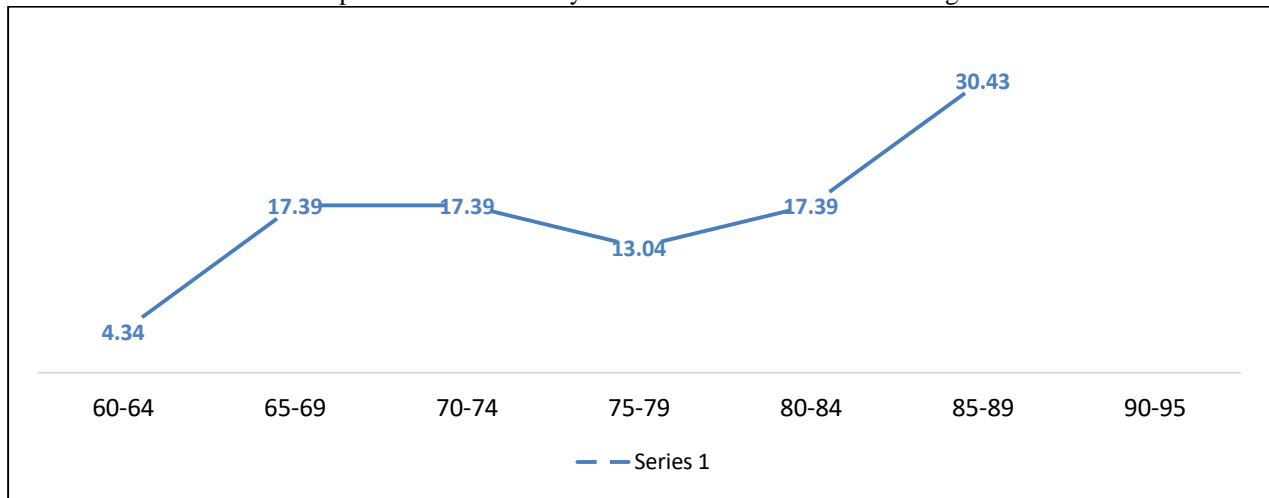
The second graph above shows that students' learning outcomes in the second cycle have reached the standard of completeness of mathematics subject at SD Negeri 6 Jimbung. The results of the evaluation above show that students who received information about passing in the second cycle were 86.69% from 30.45% in the first cycle. Meanwhile, the average grade in the second cycle was 78.70, which experienced a significant increase from the first cycle average, which consisted of 60.87. Based on the fact above, the results of the second cycle do not proceed to the third cycle stage. There were several advantages of the learning process with the collaborative learning in this cycle where the learning process encouraged some students to have good participation in study groups to achieve learning goals. Students were able to actively participate in the learning process in study groups and made suggestions and provided responses to solve problems.

DISCUSSION

The number of cycles in this study consisted of 2 cycles because students' learning outcomes in the first cycle had not yet reached the indicators of the success of this study. The following table and diagram below as an illustration of the comparison of student learning outcomes in the treatment of first cycle and the second cycle.

Table 5. Comparison of First Cycle and the Second Cycle Result

No	Nuber of Cycles	Passing Persentage	
		Pass	Failed
1	First Cycle	30.43%	69.57%
2	Second Cycle	86.69%	13.31%

The table above shows that the percentage of passing students in the first cycle is very low, which is 30.43% and students who do not pass consists of 69.57%. Students' learning outcomes have increased in the second cycle where the percentage of students who passed reached 86.69% and students who did not complete as many as 13.31%. The increasingof students' learning outcomes from first cycleto second cyclewas 56.26%%. This increasing can be said to be very significant. Thus the results of this study can be said to be successful because it has reached

the established indicators of research success, namely 80% of students passed with an average score of 80. Student learning outcomes can increase because the implementation of the collaborative learning was more effective because researchers continue to improve plans, implementation, and evaluation of first cycleand second cycle. The results of this study also proven the results of previous studies were empirically proven to improve student learning outcomes (Primadiati & Djukri, 2017 and Inah & Pertiwi, 2017).

Effectiveness of Collaborative Learning Model

Empirically collaborative learning was proven to improve student learning outcomes. It couldbe proven that the increase in student learning outcomes from first cycleto second cyclewas 56.26%. The application of the collaborative learning was effective in creating a student-centered learning process. The learning activity was designed in the classroom to encourage students to be actively involved in small study groups consisting of 4 students in one group by following the learning syntax developed in the lesson plan and totally applied in the learning process. At the beginning of learning students understood the character of the learning material and the learning objectives presented by the teacher visually. Next, students were conditioned into study groups which arranged based on the teacher's considerations. Those activities made students able to understand learning objectives effectively and the presence of other students in the study group becomes a source of learning and information to all group members. In the learning process students have determined the tasks and functions of each in the group so that all students can participate totally in the learning process. Communication which taken place in study groups helped students be more flexible in asking questions that have not been understood.

The application of the collaborative learning encouraged students to be able to construct conceptual and factual knowledge as well as procedural knowledge through the process of associating their knowledge with the knowledge possessed by other group partners and their connectivity with the material being studied as a group. Students could find new and innovative knowledge through collaboration in groups, especially through literacy activities developed by teachers in the learning process through observation activities, observing videos and pictures presented. Students in groups or between groups can contribute suggestions to find answers to the lighter questions posed at the beginning of the lesson. This process couldboost students' critical thinking skills to understand deeply and fundamentally the material being studied. In addition, students could improve their communication skills through brainstorming so that they couldfind the right concepts to solve mathematics learning problems in accordance with the teaching materials delivered by the teacher. The results of this discussion were in line with the results of research conducted by Wulandari & Anita (2019) which couldimprove students' critical thinking skills, problem solving and knowledge construction skills as well as being able to convey information well.

At the stage of working on assignments in groups students couldincrease independence and responsibility and increase creativity in solving problems together. This process provides an effective and meaningful learning experience for students to boost understanding of the conceptual and factual material that has been discussed in the previous activity. This is the strength of the collaborative learning where students experience contextual learning activities to apply theory to the level of practice to create learning products and solve problems with collaborative study group partners. Previous research has also shown that the collaborative learning encourages students to be able to actively and communicatively solve problems in the learning process (Mega Sari et al., 2018 and Anggreni et al., 2019). The application of this model also provides opportunities for each student through collaboration in developing groups and has the opportunity to actualize their thinking in solving creative problems.

CONCLUSION

Based on the results of the analysis and discussion of the research in the previous section, the results of research can be concluded that the collaborative learning activities which designed could improve students' learning outcomes by passing rate 86.69%. The collaborative learning designed couldboost the students' learning outcomes from first cycle to the second cycle up to 56.26%. And indicators of the success of this researchwhere wasthe boosting of students' learning outcomes with the average value of 78.70. The results of the data analysis of the research cycles above shown that collaborative learning could significantly booct the mathematics learning outcomes of elementary school students. Based on the research findings,the suggestions to another researchers need to be provided such as for teachers, and school principals to apply the collaborative learning to make better the teaching practices and boost the students' learning outcomes in each subject, especially mathematics subject at the elementary school level. Conducting the other research such as with different variables to increase the effectiveness, activity, critical thinking skills, and collaboration skills of students in learning in each subject, especially mathematics. Improving scientific culture in each education unit through action research activities to increase teachers' insight and knowledge.

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