IMPLEMENTATION OF STAD TYPE COOPERATIVE LEARNING TO IMPROVE MATHEMATICAL LEARNING OUTCOMES CLASS VIII STUDENTS

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Abstrak:
This study aims to describe the application of STAD type cooperative learning that can improve mathematics learning outcomes of eighth-grade students of SMPN 12 Malang. This type of research is a PTK Kemmis & Mc Taggart model with qualitative consisting of two cycles. This research was conducted in class VIII-A of SMPN 12 Malang which was held by 30 students. Based on the research, STAD type cooperative learning steps are obtained that can improve mathematics learning outcomes of VIII grade students of SMPN 12 Malang, namely (1) Class presentations, teachers do apperception and encourage through question and answer and worksheets. (2) Group discussion, students work together with their groups to work on problems through worksheets. (3) Individual quizzes, students work on individual quizzes. (4) Calculation of individual improvement scores, students exchange and correct the quiz results. Quiz results are used to determine individual or student improving scores and group scores. (5) Giving awards, teachers give awards to the best groups.

Kata Kunci: Cooperative learning, STAD, learning outcomes

INTRODUCTION

The mathematics that has been taught starting in elementary school apparently does not make mathematics preferred by students. This was supported when researchers conducted observations in class VIII-A of SMP Negeri 12 Malang on September 2, 2015. The results of observations showed that students looked passive in learning. The passivity of students in the class can affect student learning outcomes. This is supported by the learning outcomes of class VIII-A students that are relatively low. Many students who completed the functional material test were only 13 out of 30 students or around 43.3%.

Researchers conducted interviews with several students of class VIII-A, found that students get bored quickly when learning mathematics because the method used by the teacher is expository learning. Expository learning makes the

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classroom atmosphere boring. This is in accordance with Hudojo (2005: 99) and Trianto (2010: 6) states that expository learning has weaknesses, namely, the lessons run boring for students, students become passive because they do not have the opportunity to discover their own knowledge, the opportunity for students to express their work is still relatively few. This was allegedly the researcher as the cause of the low learning outcomes of students VIII-A.

Yamin (2008: 3) states that good learning is learning that encourages students to construct their own knowledge. Therefore, learning in class should make students the center of learning (student center). This is in accordance with Hudojo (2005: 72) states that learning by making students the center of learning can make students better understand mathematical concepts and show an interest in joy in learning.

Constructivism is a learning theory that places students at the center of learning. Students are directed to construct their own knowledge. The process of knowledge construction in students can take place well if it is supported by social interaction (Subanji, 2013: 10-11). Learning in accordance with the theory of constructivism is

cooperative learning. This agrees with Subanji (2013: 68) that learning in accordance with the socio-cognition view is cooperative learning. Cooperative learning emphasizes the activeness of students in learning (Slavin, 2005: 8). In cooperative learning, students will be divided into small groups with heterogeneous group structures. Isjoni (2011: 14) states that heterogeneous groups are groups consisting of a mixture of students with different abilities and genders. This is useful for training students to accept differences and work together with friends from different backgrounds. Students will be tutors for their group friends, learn to express opinions in groups, and respect the opinions of friends (M. A. Maulyda, 2020).

STAD cooperative learning is the simplest and easiest type to be applied by teachers who are just starting to use cooperative learning (Slavin (2005: 143) & Majoka, et al (2010: 17). Isjoni (2010: 5), Finisya (2012), Fathoni (2012), Eminingsih (2013), and Khan, et al (2011: 12) state that STAD type cooperative learning emphasizes the existence of activities and interactions between students to mutually help one

another in mastering subject matter in order to achieve maximum achievement.

METHOD

This type of research is Classroom Action Research (CAR). This study aims to improve the learning process in the classroom conducted by teachers and according to Sanjaya (2015: 13) research that aims to improve the learning process is CAR. The CAR design used follows the Kemmis and Mc Taggart models. According to Somadayo (2013: 40) the Kemmis and Mc Taggart models are cycle oriented, in which there are four components namely planning, action, observation, and reflection.

In accordance with the type of research, the presence of researchers is needed. Researchers act as planners, implementers, data collectors, data analyzers and report makers of research results (Ulfatin, 2013: 154). The research was conducted in the even semester of the 2015/2016 academic year from February to March in class VIII-A of SMP Negeri 12 Malang having its address at Jalan S. Supriyadi no. 49 Malang. The number of class VIII-A students is 30 students.

Data collection techniques in this study through observation to observe the suitability of teacher and student activities with learning implementation plans, learning outcomes tests in the form of worksheet data, quizzes, and end of cycle tests to find out the learning outcomes, field notes to collect data that has not been recorded on the sheet observation, documentation is needed by researchers as evidence of the continuity of the process of implementing actions. Data collected in this study were analyzed using qualitative data analysis techniques according to Moleong (2010: 288) and quantitative.

RESULT

After applying STAD type cooperative learning that can improve mathematics learning outcomes of students of class VIII of SMPN 12 Malang, the following results are obtained:

Cycle I

At the presentation stage, the teacher informs that today's learning model uses STAD cooperative learning. After that, the teacher distributes LKS to each student and the question and answer activity are continued as apperception. The following is one of the excerpts from

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a question and answer teacher and student

Teacher: Children, pay attention to the LKS. After you fill in the names of group members. Watch your activities remember. In what activity were you asked to write down?

Student: To write steps to complete the perfect square of the quadratic equation bu. (simultaneously)

Teacher: Yes right. Is anyone willing to mention? Try ERP to mention the steps.

ERP: The first is changed to its general form, mom, then if the coefficient x^2 is not 1, then it is divided first with the coefficient x^2, then the constant is moved to the right mom, then what else, yes ...

Teacher: Yes right, ERP has already mentioned 3 steps, have the children finished there?

Student: Not yet, ma'am. (simultaneously)

Teacher: What are the next steps for the children?

Student: The next step is to add the square and a half times the coefficient of x and then change to perfect square and then look for the roots. (simultaneously)

Teacher: Yes right. Next, write down the steps you mentioned earlier in the answer box. If you still don't remember, ask your friend.

From the question and answer, it is known that students still remember the prerequisite material. At the group discussion stage, the teacher asks students to sit down with a predetermined group, which is divided into 10 groups each group consisting of 3 heterogeneous students. During group discussions, individual attitudes of students are still high so that group discussion activities are not running. This is due to the lack of habituation in group learning in previous learning. In addition, students have difficulty in discussing, there are students who have discussions outside the topic of learning, and there are groups whose seats are too far from the reach of the teacher. This is due to the teacher's lack of conditioning in student seating.

After completing the worksheets, there was a group representative who presented the results of the discussion in front of the class. The following are the results of discussions from several groups.

Fig. 1 One of the results of group work

Based on these pictures, it can be concluded that most students are wrong in determining the value of the coefficient x of the given quadratic equation so that the next calculation has an error.

In the quiz stage, students are given a quiz to find out students understanding

of learning. At the stage of calculating the individual increase score, an answer is checked and the individual increase score is calculated. From the results of this test can be seen the comparison of initial test scores and quiz scores, then the score is used as a reference in awarding the group. This award is in the form of a charter and congratulations.

In the learning process, the activities of the teacher and students are in accordance with the learning implementation plan, namely obtaining an average score of 3.5 and 3.4 which are in the good category. However, when linked between the results of teacher activities, student activities, and field notes, the actions given by the teacher do not meet the criteria for success. The average results of the quiz and workmanship LKS are 86.45 and 86.34, this means it has met the criteria for success. While the percentage of mastery learning classically is 53.33% so it does not meet the success criteria.

From the implementation of the first cycle, there are some things that need to be improved, namely, the teacher needs to emphasize again the tasks of students in the group, change the position of student seats, the teacher oversees students by visiting each group and checking the results of student work, and the teacher explains slowly and repeats explanation if there are students who do not understand.

Cycle II

The learning process begins with conveying the learning procedure. After that, the teacher distributes LKS to each student and continues with apperception through the LKS. Next is one of the excerpts from the teacher's questions and answers with students.

Teacher: Do you remember yesterday's meeting what kids learned?

Student: (simultaneously) Quadratic formula bu.

Teacher: Yes right, who can mention and write the quadratic formula?

At this meeting, students actively raised their hands wanting to go forward answering the apperception given by the teacher. But the teacher appoints students (SMS and) to go forward writing answers.

MR: The quadratic formula $x = -b \pm \sqrt{\frac{b^2-4ac}{2a-b}}$

AAZ: Quadratic formula $x = -b \pm \sqrt{\frac{b^2-4ac}{2}}$

Teacher: How do children answer from MR and AAZ?

Student: AAZ, it should be divided into 2a, you wrote less.

AAZ: Oh yes, wait a moment, ma'am.

Teacher: Well, you guys still remember it. Next, write the quadratic formula in the children's chocolate box so that you all remember it more.

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From the question and answer, it is known that students understand. At the group discussion stage, the teacher asks students to sit with the group. In cycle II the teacher changes the seating position of students, each group is asked to sit face to face and make a limit of one bench with another group. During the discussion, students were able to work well together. After completing the worksheets, the teacher asks one of the groups to write down and present the results of the discussion in front of the

Persamaan Kuadrat	D	$D > 0$, $D < 0$, atau $D = 0$	Akar-akarnya	Jenis Akar (berbeda, kembar, tidak punya akar)
$x^2 - 8x + 7 = 0$	$D = b^2 - 4ac$ $= (-8)^2 - 4(1)(7)$ $= 64 - 28 = 36$	$36 > 0$ $D > 0$	$x_1 = 7$ dan $x_2 = 1$	Berbeda
$x^2 + 4x - 21 = 0$ $(x+7)(x-3) = 21$	$D = b^2 - 4ac$ $= (4)^2 - 4(1)(-21)$ $= 16 + 84 = 100$	$100 > 0$ $D > 0$	$x_1 = -7$ dan $x_2 = 3$	Berbeda
$x^2 + 8x + 16 = 0$ $(x+4)(x+4) = 16$	$D = b^2 - 4ac$ $= (8)^2 - 4(1)(16)$ $= 64 - 64 = 0$	$0 = 0$ $D = 0$	$x_1 = 4$ dan $x_2 = 4$	Kembar
$x^2 - 2x + 5 = 0$	$D = b^2 - 4ac$ $= (2)^2 - 4(1)(5)$ $= 4 - 20 = -16$	$-16 < 0$ $D < 0$	$x_1 = -16$ dan $x_2 = ?$	Tidak punya akar
$x^2 + 10x + 25 = 0$ $(x+5)(x+5)$	$D = b^2 - 4ac$ $= (10^2) - 4(1)(25)$ $= 100 - 100 = 0$	$0 = 0$ $D = 0$	$x_1 = -5$ dan $x_2 = -5$	Kembar

Fig 2. One of the results of group work

Based on Figure 2, it can be concluded that students experience errors in the calculation determining the roots of the quadratic equation but answer correctly in other activities.

In the quiz stage, students are given a quiz to find out students understanding of learning. At the stage of calculating the individual increase score, an answer is checked and the individual increase score is calculated. From the results of this test can be seen the comparison of initial test scores and quiz scores, then the score is used as a reference in awarding the group. This award is in the form of a charter and congratulations.

Teacher and student activities are in accordance with the learning implementation plan and obtain an average score of 3.8 and 3.7 which are in the good category. If it is related to the field notes it is found that the shortcomings of the teacher's actions in the first cycle have been reduced and corrected in the second cycle so that the success criteria can be met in the second cycle learning. The average results of the quiz and worksheet scores are 93.5 and 93.2, this means that it has met the success criteria and the percentage of mastery learning classically is 93.33% so that it meets the success criteria.

From the implementation of the second cycle, all the specified learning success criteria have been achieved. Therefore, this study stopped until the second cycle.

DISCUSSION

Cooperative Learning type Student Team Achievement Division (STAD)

The implementation of this research applies the STAD type cooperative learning model consisting of class presentations, group discussions, quizzes, calculation of individual improvement scores, and group awards (Slavin, 2005: 143-146).

1) Class Presentation

The class presentation activity begins with the teacher distributing student worksheets to each student and continued apperception through worksheets namely recalling the prerequisite material ie one variable linear equations and algebraic form operations by reading information and working on some problems. This is in accordance with the opinion of Maulyda (2018) that learning mathematics must be gradual and sequential and based on past learning experiences. Besides through LKS, apperception activities are also carried out through question and answer. With questions and answers, students can express their opinions so that it appears which ones do not understand or do not understand and make the class more active (Yamin, 2007: 67). Furthermore, the teacher provides learning motivation in the form of benefits to be gained by students after learning about the material to be learned

or in the form of examples of the application of material to be learned in real life. This is in accordance with the opinion of M. A. Maulyda, Hidayati, Rosyidah, & Nurmawanti (2019) motivation is needed in learning so that the goal of learning mathematics can be achieved.

Class presentations are led by the teacher, but the teacher is only a facilitator who facilitates students to be able to build their own knowledge. This is in accordance with the opinion of Subanji (2013: 48) that teachers play a role in facilitating students to learn well, can be done by providing learning resources, conditioning the interaction of thinking between students, teacher-students, and students learning resources, and provide adequate assistance.

2) Group discussion

At this stage, students are asked to sit down with groups that have been formed by the teacher. The teacher forms heterogeneous groups based on initial test results and gender. The group formed consisting of 3 students so 10 groups were obtained. Thus, each group will consist of 1 high ability student, 1 moderate ability student, and 1 low ability student. This is in accordance

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with the opinion of Slavin (2005: 150) that divides students into groups, balancing the groups so that each group consists of high, medium, and low ability students.

At the group discussion stage, each group member ensures that all members really learn and more specifically learn to prepare group members to work on quizzes well (Slavin, 2005: 144). The purpose of this group study is to increase academic achievement, acceptance of differences in one group, teach students to work together and socialize (Shoimin, 2014: 44). In the first cycle, the conditioning of students' seats was still lacking, causing students to have difficulty in discussing, there were still students who had discussions outside the topic of learning with other groups, and there were groups whose seats were too far from the reach of the teacher. In cycle II, the teacher changes the seating position of students who were initially aligned and then asked to face each other and arrange group seating to be more organized and easily accessible. This is in accordance with the opinion of Muslich (2009: 73) that classrooms or places of learning, especially student desks and chairs are arranged in such a way that supports active learning activities that enable the emergence of accessibility conditions that students easily reach learning tools and resources, mobility of students and teachers easy to move, interactive ie students easily interact and communicate well, and variations in cooperation that is students can work individually or in groups. As a result, the teacher is easy to supervise and come to groups that are initially far from the teacher's reach, and make it easier for students when discussing.

In the activity of gathering information, students gather information by working on questions that aim to find concepts. In cycle, I, individual attitudes of students are still high so that group discussion is not running. This is due to the lack of habituation in group learning in previous learning. As an alternative solution to cycle II, the teacher emphasizes again the task of students in groups is to help each other so that one group successfully reaches its goal. This is in accordance with Sumantri's opinion (in Majid, 2013: 119) that the teacher increases student involvement by focusing the group on their assignments from time-time and demanding student responsibility for their assignments. As a result, in cycle II, students are accustomed to learning with groups over

time as indicated by students who usually work individually wanting to ask the group if they have difficulty.

3) Quiz

After group discussion, students then work on quizzes individually. A quiz is a form of group member accountability for their group. Scores obtained from individual quizzes will be individual student scores and are used to contribute to group scores.

4) Calculation of individual increase scores

The idea behind individual improvement scores is to give students performance goals that will be achieved if they work harder and provide better performance than before (Slavin, 2005: 146). Students can contribute maximum points to the group if they try well. Each student will be given an initial score obtained from the previous grade. Students will then collect points for their groups based on the level of increase in their quiz score compared to the initial score.

5) Group awards

The group will get an award certificate if the group's average score reaches the specified criteria (Slavin, 2005: 146). The awarding is aimed at rewarding the efforts of students for their efforts in groups. Besides, students can get the motivation to be more active and try harder so that the group becomes a winner. Giving group awards is in line with Maulyda's (2018) opinion that awards are needed to improve students' attitudes, satisfaction, and pride in learning mathematics.

Improvement of Mathematics Learning Outcomes of Class VIII-A Students After Following STAD Cooperative Learning

Based on observations, it is known that the value of student activity in cycle II is better than cycle I. The value in cycle I is 3.4, while the value in cycle II is 3.7. Based on the results of data analysis of student performance results in worksheets, it is known that the average score of worksheets in the second cycle is 93.2 (meets the success criteria). The score shows an increase from the average score of worksheets in the first cycle which is 86. The average score of the quiz score in the second cycle is 93.5 (meets the success criteria). The score shows an increase from the average score of the quiz in the first cycle that is 87.

Based on the results of data analysis on the final student test scores,

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it is known that the percentage of students completeness in the second cycle was 93.3%. This percentage shows an increase of 40% from the percentage of completeness of the first cycle which only reached 53.33%. Based on the description above, the learning conducted in this study is said to be successful because it has reached the expected criteria.

Supporting and Inhibiting Factors

Supporting factors in this study are students in the research class who have the characters easily invited to work together by the teacher. When the teacher gives a series of instructions based on the syntax of STAD type cooperative learning students are quite easy to follow. While the inhibiting factor is that the LCD facility is available but cannot be used, so the teacher must explain the material and learning model with a lecture, the impact the teacher must work harder in managing time and sound.

CONCLUSION

STAD type cooperative learning starts with forming heterogeneous groups (3 people) and determining students' initial scores. The division of groups is arranged in advance by the teacher based on the level of cognitive abilities of students obtained at the time of the initial test and gender differences.

At the class presentation stage, the teacher explains the STAD type cooperative learning steps. Each student is given a worksheet, then a question and answer session on the previous material related to the material to be studied. Students are asked to do some practice exercises through worksheets related to prerequisite material. The teacher motivates by giving examples of the application of material learned in daily life through worksheets.

At the group discussion stage, students sit with groups that the teacher has formed. Students discuss with their groups, student activities namely (1) observing, reading information, answering questions, working on problems through LKS observing activities, (2) students make written questions through LKS asking questions. The teacher can give scaffolding to students who have difficulty making written questions by asking students to look back at the problem in observing activities, asking students what they do not know from the given keywords, or by giving examples of questions. (3) students solve problems given to find

information or concepts through information gathering activities, information or concepts that students can apply to solve problems in information processing activities. The teacher monitors students who are working on LKS activities to process information and provide scaffolding if there are students who have difficulty working on it. The teacher gives students the opportunity to check their calculations to ensure their final answers before they are presented. In the group work presentation presentation, the group representative appointed by the teacher writes their LKS answers in front of the class.

Individual quizzes are done with clear instructions and rules. Students return to their initial seats then work on quizzes individually. The teacher can supervise students who are answering quiz questions by going around the class.

Calculation of individual improvement scores begins with students exchanging quiz answer sheets with other students. The individual upgrade points are then used to determine the group that will get the group award with certain criteria.

Group awards are given to the best groups. The best groups are selected based on certain criteria, namely good groups, great groups, super groups. The teacher gives an award in the form of an award charter for the group that gets the highest score.

REFERENCES

Eminingsih. 2013. Peningkatan Hasil Belajar Matematika melalui Pembelajaran Kooperatif Tipe STAD pada Sisa Kela VII E SMP Negeri 3 Batang. *Lembaran Ilmu Kependidikan*. 42(1): 29-35.

Fathoni, Husnul. 2012. *Penerapan Pembelajaran Kooperatif tipe STAD untuk Meningkatkan Hasil Belajar Matematika Siswa Kelas VIII MTS Mambaul Ulum Banjarejo*. Skripsi tidak diterbitkan. Malang: FMIPA UM.

Finisya, Junita. 2012. *Penerapan Model Pembelajaran Student Team Acvievement Division (STAD) dalam Meningkatkan Hasil Belajar Matematika Kela VII-C Siswa SMP Darusalam Blitar*. Skripsi tidak diterbitkan. Malang: FMIPA UM.

Hudojo, Herman. 2005. *Pengembangan Kurikulum dan Pembelajaran Matematika*. Malang: UM PRESS.

Isjoni. 2011. *Cooperative Learning Mengembangkan Kemampuan Belajar Berkelompok*. Bandung: ALFABETA.

Khan, Gul Nazir & Inamullah, Hafiz Muhammad. 2011. Effect of Student's Team Achievement Division (STAD) on Academic Achievement of Students. *Asian Social Science.* 7(12): 211-215.

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Majid, Abdul. 2013. *Perencanaan Pembelajaran Mengembangkan Standar Kompetensi Guru*. Bandung: PT Remaja Rosdakarya.

Majoka, Dad dan Mahmood. 2010. Student Team Achievement Division (STAD) as an Active Learning Strategy: Empirical Evidence from Mathematics Classroom. *Journal of Education and Sociology*, ISSN: 2078-032X: 16-20.

Maulyda, A. M. (2018). *Representasi Matematis Anak yang Berbakat di Bidang Musik dalam Menyelesaikan Masalah Matematis*. Universitas Negeri Malang.

Maulyda, M. A. (2020). *Paradigma Pembelajaran Matematika Berbasis NCTM* (1st ed.). Malang: CV. IRDH.

Maulyda, M. A., Hidayati, V. R., Rosyidah, A. N. K., & Nurmawanti, I. (2019). Problem-solving ability of primary school teachers based on Polya's method in Mataram City. *PYTHAGORAS: Jurnal Pendidikan Matematika*, *14*(2), 139–149.

Moleong, Lexy J. 2010. *Metode Penelitian Kualitatif*. Bandung: PT Remaja Rosdakarya.

Muslich, Masnur. 2009. *KTSP Pembelajaran Berbasis Kompetensi dan Kontekstual*. Jakarta: PT Bumi Aksara.

Sanjaya, Wina. 2015. *Penelitian Tindakan Kelas*. Jakarta: Kencana.

Shoimin, Aris. 2014. *68 Model Pembelajaran Inovatif dalam Kurikulum 2013*. Yogyakarta: Ar-Ruzz Media

Slavin. 2005. *Cooperative Learning Teori, Riset dan Praktik*. Bandung: Nusa Media.

Subanji. 2013. *Pembelajaran Matematika Kreatif dan Inovatif*. Malang: UM Press.

Somadayo, Samsu. 2013. *Penelitian Tindakan Kelas*. Yogyakarta: Graha Ilmu.

Trianto. 2010. *Model Pembelajaran Terpadu: Konsep, Strategi, dan Implementasinya dalam Kurikulum Tingkat Satuan Pendidikan (KTSP)*. Jakarta: Bumi Aksara.

Ulfatin, Nurul. 2013. *Metode Penelitian Kualitatif di Bidang Pendidikan*. Malang: Fakultas Ilmu Pendidikan Universitas Negeri Malang.

Yamin, Martinis. 2007. *Strategi Pembelajaran Berbasis Kompetensi*. Jakarta: Gaung Persada Press.

_____. 2008. *Paradigma Pendidikan Konstruktivistik*. Jakarta: Gaung Persada Press.