

Implementation Of Cooperative Learning Type STAD In Increasing Student Independence And Learning Outcomes

Saimun, Hanafi, Alkusaeri

Abstract: This study aims to measure the effectiveness of the Student Team Achievement Division (STAD) method in increasing student independence and learning outcomes. The research team conducted an experiment with the type of one group pretest-posttest design on 66 seventh grade students of junior high school. This research is a quantitative research with research instruments consisting of observation sheets, questionnaires and essay tests based on the Realistic Mathematics Education (RME) approach. Questionnaires are used to assess students' personal independence aspects including ability (1) personal regulation, (2) work habits, and (3) learning environment. Then to answer the research hypothesis, we use the student test (t-test) which begins with the normality test and homogeneity test for the data obtained from the field. Based on the results of data analysis, it can be concluded that the STAD method has a significant contribution in increasing students' independence and learning outcomes on mathematics subjects.

Index Terms: Learning Independence, Learning Outcomes, STAD Method.

1 INTRODUCTION

Learning problems always lead to improving the quality of learning processes and outcomes [17]. The independence of student learning is very necessary in the context of learning and learning in the classroom. This is because a teacher may not be able to continuously assist students in learning, so that when students are not accompanied by a teacher, students can learn by themselves [8,16,21]. Related to learning independence which is the target to be developed, the situation that needs to be fostered is that students are able to learn in groups so they can become partners so that they can achieve optimal learning outcomes. The concept of independence in learning rests on the principle that individuals who learn will only arrive at the acquisition of learning outcomes (skills, development of reasoning, attitude formation, and self-discovery), if they experience themselves in the process of acquiring learning outcomes in the context of classroom learning [3, 5,13,20]. Independence of learning implies that students control personal awareness and are free to regulate the motivation, competence, and skills that will be achieved [6]. To get this, students need intellectual skills and knowledge that enable them to select cognitive tasks effectively and efficiently. So, learning independence is defined as a learning process that occurs in a person, and in his efforts to achieve the learning goals of the person is required to be active individually or not dependent on others, including not dependent on the teacher. In this case, the teacher only acts as a facilitator, the teacher is only as a guide, for example helping students to solve problems, if these students encounter difficulties in learning [10,12,22].

So learning independence will be realized if students actively control themselves everything that is done, evaluate and then plan something more in learning that is passed and students want to be active in the learning process that exists. Cole & Chan (1994), stated that self-regulation consists of three groups, namely (1) personal regulation, which includes (a) organization and transformation, (b) structuring goals and plans, (c) seeking information, (d) training and recall, (e) reviewing notes; (2) behavioral performance, which includes (a) self-evaluation, (b) taking notes and monitoring, (c) self-consequences; and (3) learning environment, which includes (a) managing the environment and (b) seeking social assistance [6]. Of the three types of grouping, 9 indicators of learning independence were obtained as follows:

a. Personal Settings

- 1) When reading textbooks students mark important parts
- 2) Students discuss learning assignments with friends
- 3) Students reread the notes

b. Work habits

- 1) Students bring textbooks
- 2) Students make their own notes
- 3) Students work on assignments according to the Student Worksheet

c. Learning Environment

- 1) Students tidy up the tables and chairs after each study
- 2) Students use practical tools and materials
- 3) Students reorganize practical tools and materials

Learning experiences that provide opportunities for students to try on their own and try to find answers to various problems, or the opportunity to work with friends in solving or solving a problem, will be much more challenging to direct the mind and energy, as well as the concentration of students' minds than if they only accept solutions or answer problems from others [15,19]. Learning activities accommodate cognitive processes that change the nature of stimulation of the environment, go through information processing, become new capabilities through practice and experience so as to produce learning outcomes in the form of changes in intellectual abilities, changes in attitudes, and changes in relative motor skills. The

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implementation of learning uses the right learning methods and models with the concepts of subject matter delivered to be important things that need to be optimized [4,23]. Cooperative learning methods become one of the choices, because factually it can provide opportunities for all group members to actively participate in problem solving. Johnson (1987) mentions the main elements of cooperative learning are (1) positive interdependence, (2) face to face interaction, (3) individual accountability, (4) interpersonal and small group skills, and (5) group processing [9]. The basic elements of cooperative learning explain that students must feel that they need each other so that in order to do their group assignments, there is a positive interdependence [2,11,26]. Cooperative learning in groups will not succeed until each member has studied and understood his assignment, they need to collaborate effectively with others to solve problems in groups. Cooperative learning methods in practice in the field have various types. Cooper mentioned the type of cooperative learning consisting of Student Team Achievement Division (STAD), Jigsaw, Constructive Controversy, and Group Investigation [18,25]. In the STAD method, students learn with 4-5 members following the teacher's presentation. Students get quizzes individually to show how much they are learning. Individual quizzes are added to scores in teams, and teams are rewarded for their performances. Teams are formed from students with different academic abilities, gender and intelligence. In all activities, presentation teachers, quizzes on teams, usually take 3-5 periods. The teacher first presents new material in the class, then the team members learn and practice for the material in their group who usually work in pairs. They complete worksheets, ask each other, discuss problems and do the exercises. Their tasks must be mastered by each group member. In the end the teacher gives a quiz that must be done individually by students. Field findings based on observations conducted by researchers at one of the junior high schools in East Lombok, Lombok Indonesia informed that the implementation of mathematics learning took place conventionally. Student learning independence can be said to be low, this is indicated by the low active participation of students in learning activities such as asking questions, group discussions, and students tend to memorize the material presented by the teacher. Therefore, the researcher directed this study to focus on improving learning independence and student learning outcomes by applying the cooperative learning method type STAD to mathematics learning in the seventh grade students of junior high school. The need to apply the STAD method is because this method is the simplest to implement compared to other types developed by Johns Hopkins University based on years of research on cooperative learning [9]. Cooperative learning type STAD emphasizes group work and shared responsibility in achieving goals and mutual interaction between members of the study group. With the application of the STAD method, it fosters student participation in learning activities, both participation contributes to the learning process and results. In this research, learning outcomes are changes in individual behavior, including knowledge, skills, and attitudes which are the results of learning activities shown in numbers. The application of the STAD method in this study was conducted to see an increase in learning outcomes which would indicate an increase in student learning independence in a quality teaching and learning process. Because, learning independence is very closely related to learning outcomes that can be measured

and seen through learning outcomes.

2 METHODS

This research is an experimental research to find out whether the STAD method can improve the independence and learning outcomes of mathematics. This study used a pre-experimental with one group pre-test - post-test design. This design includes only one group consisting of 66 students and does not use the control class. This research was carried out for three treatments for the sample class. Data collection is done by observation, questionnaires, and tests. In this study, the research team used research instruments which included (1) student activity observation sheets, (2) teacher activity observation sheets, (3) questionnaires, and (4) Tests (Essay questions based on realistic mathematical approaches). More detailed research activities can be seen in Figure 1. The pre-test value is obtained by giving a pre-test, then the pre-test results are tested through a normality test with the Chi-Square Test. After the post-test value is obtained, it is tested in three types of tests, namely the normality test, homogeneity test and paired sample test (t-test). The t-test aims to determine the significant differences in the value between the pre-test and post-test students. If the value of $t\text{-count} > t\text{-table}$, then there is a significant difference between the value of pre-test and post-test of students, which means there is an increase in independence and student learning outcomes.

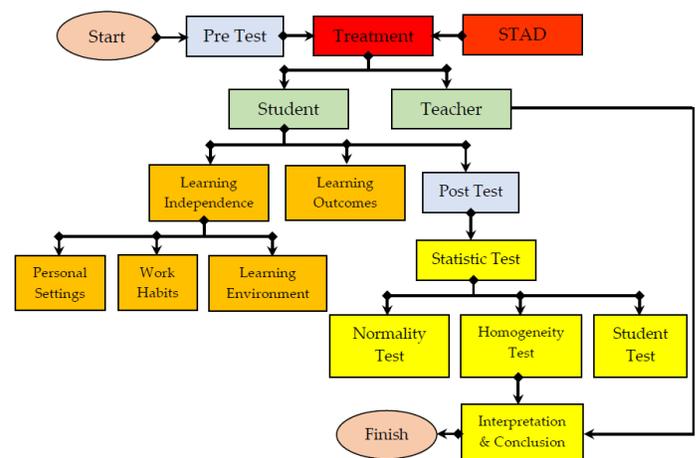


Fig. 1 Research Flow Chart

3 RESULT

After being given treatment three times. Then the data obtained include (1) learning independence, (2) learning outcomes, and (3) learning activities by the teacher. The learning outcome data is tested for normality (Chi Square Test) and homogeneity test (Fisher Test) with a significance level of 1%, aiming to determine the statistical test to be used. The results of the two tests are explained in Table 1 below.

TABLE 1
NORMALITY AND HOMOGENEITY TEST

| Category | Test | Count | Table | Conclusion |
|-------------|-----------|-------|-------|-------------|
| Normality | Pre Test | 6,83 | 61,14 | Normal |
| | Post Test | 25,36 | | Normal |
| Homogeneity | | 1,26 | 2,156 | Homogeneous |

While the results of observations for assessing aspects of student independence in the first treatment are obtained according to the following Table 2.

TABLE 2
ASSESSMENT OF LEARNING INDEPENDENCE AT THE FIRST TREATMENT

| No | Aspect | Average Score |
|----------------|----------------------|---------------|
| 1 | Personal settings | 1,95 |
| 2 | Work habits | 1,82 |
| 3 | Learning environment | 1,69 |
| Average | | 1,82 |

Based on the data analysis described in Table 2 above, the second treatment is prepared with a learning plan to improve some important factors that influence the improvement of learning processes and outcomes. Improvements in the second action focused on important things in learning such as (1) the focus of learning material, (2) improvement and application of the STAD method by the teacher and (3) the efficiency of improving the learning process. Based on the results of observations obtained data assessment of student learning independence in the second treatment according to Table 3 below.

TABLE 3
ASSESSMENT OF LEARNING INDEPENDENCE AT THE SECOND TREATMENT

| No | Aspect | Average Score |
|----------------|----------------------|---------------|
| 1 | Personal settings | 2,17 |
| 2 | Work habits | 2,02 |
| 3 | Learning environment | 2,11 |
| Average | | 2,10 |

Based on observations, student behavior both at the beginning and end of learning, as well as during the presentation showed improvement. Even though there is an increase, it appears that each score that has been considered has not reached its maximum, in the sense that it still needs better improvement. This fact shows that the learning objectives of the second treatment are good, but there are still some students who have not been active in the group and are still embarrassed to express their opinions. So there are still some students whose behaviors and learning outcomes need to be improved. Next, based on the results of observations on the third treatment, the results of the students' independence are obtained according to Table 4 below.

TABLE 4
ASSESSMENT OF LEARNING INDEPENDENCE AT THE THIRD TREATMENT

| No | Aspect | Average Score |
|----------------|----------------------|---------------|
| 1 | Personal settings | 2,22 |
| 2 | Work habits | 2,51 |
| 3 | Learning environment | 2,76 |
| Average | | 2,49 |

The results of the analysis for student learning independence activities are shown from observations of student activities in each aspect of independence in the third treatment according to Table 4 above obtained information that the students in general have very much learning independence which

increased significantly. This is according to the explanation in Figure 2 below.



Fig. 2 Score of Learning Independence

In addition, the results of observations of the teacher's activities in managing the class obtained data according to Figure 3 below.

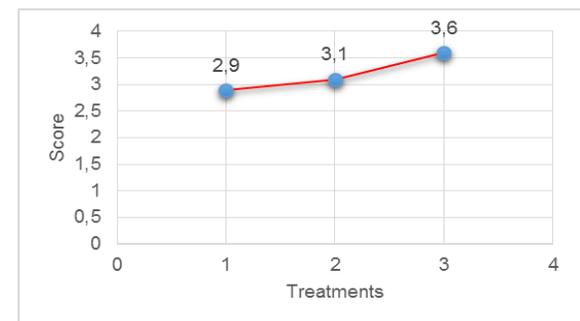


Fig. 3 Score of Each Treatment

Then, the data obtained from the results of the pre-test and post-test as a measure of learning outcomes, were further analyzed using paired sample tests. Based on the results of data analysis obtained t-count value of 13.4, while at a significant level of 1% obtained t-table value of 2.43. This means that between the pre-test and post-test scores of students there were significant differences as indicated by the increase in scores on the students' post-test. In other words, at the 99% confidence level, it is stated that the application of the STAD method has a significant contribution in improving and developing student independence and results on mathematics subjects, in addition to increasing teacher activity in managing classes very well.

4 CONCLUSION

Based on the results of data analysis using the t-test showed that at 99% confidence level, information was obtained that the application of the cooperative learning type STAD could develop students' independence and mathematics learning outcomes. Improved student understanding can be seen from the significant increase between tests before treatment with the test after treatment. Improving the learning outcomes of these students shows that the absorptive capacity of students increases so that they can improve their learning outcomes. The hypothesis proposed at the beginning of the study was accepted, besides that the above hypothesis was also

supported by the implementation of the learning process with very good criteria in each treatment, namely 80% -90% achieved. If the implementation is very good or satisfying, it can help students understand every material described during the learning process. A good understanding will affect the learning outcomes of students, on the contrary satisfying learning outcomes reflect the understanding possessed by students very well. This research shows the following implications:

- a. The results of this study have proven that the application of various learning strategies through the cooperative approach of the STAD type in teaching mathematics contributes greatly to the improvement of student learning outcomes.
- b. Increasing students' independence in learning mathematics has implications for the need for teachers to improve their insight, creativity and experience in improving learning through learning design that can generate active students to train and provide opportunities for students to develop cooperative skills and learning independence.
- c. The results of student responses to mathematics learning with cooperative learning type STAD were very positive. The implication for students is that they are more happy, motivated, relaxed and serious in learning through the collaboration they build.
- d. Various obstacles faced by teachers during the mathematics learning process have implications for: (a) the need for teachers to prepare various learning tools first, (b) effective use of time, and (c) need to develop various mathematical learning methods and strategies that are appropriate to the situation and condition.

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