

Differences of Student Learning Achievement Using Cooperative Learning Models of Student Team Achievement Division (STAD) Type with Jigsaw Reviewed from the Student's Entry Behavior

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Abstract

The purpose of this study was to determine differences in students' learning achievement taught by cooperative learning type STAD and those who are taught by cooperative learning type Jigsaw, in terms of the students' entry behaviour in grade IV students in SDN 118236 AFD 11 PAT Aek Batu Cikampak 2019 school year 2019/2020. The population of this study was all grade IV students of SDN 11836 AFD 11 PAT Aek Batu Cikampak in 2019/2020. The sample of this study was students from two classes randomly chosen. Forty students from one class was taught with the STAD type cooperative learning model and the other forty students from the other class was taught with the Jigsaw type cooperative learning model. Data was analyzed using two way Anova test (two way Anova). The results of this study indicate that the effect of the two learning model to learning achievement is significant ($t_{count} 8,354 < t_{table} 3,16$). The effect of the low and high score of students' entry behavior to learning achievement is also significant ($F_{count} 40,820 > F_{table} 3,16$). However, The effect of the learning model and students' entry behavior simultaneously to learning achievement is not significant ($F_{count} 0,208 < F_{table} 3,16$).

Keywords

STAD learning model; Jigsaw learning model; entry behavior; learning achievement



I. Introduction

Teaching and learning activities are complex conditions that are intentionally created (Dimiyati and Mudjiono 2006). A teacher must be able to create effective learning conditions which contain various elements that influence one another. Samatowa (2010) states that "learning models suitable for Indonesian children are learning through direct experience (learning by doing)". The lecturer has given more lectures and exercises to do the questions quickly without giving a deep understanding of the concept. (Piliang and Asnewastri, 2020)

Hakim (2008) "Cooperative learning is active learning that emphasizes student activities together in groups and not individually. Students develop their life skills in groups, such as finding and solving problems, making decisions, thinking logically, communicating effectively and working together. And Asma (2012) states that: Student activities in cooperative learning include actively following teacher explanations, completing assignments in groups, providing explanations to their group mates, encouraging their group mates to actively participate and discuss.

Artzt and Newman in Silalahi et al (2020) express the definition of cooperative learning as follows: "Cooperative learning is an approach that involves a group of learners working together as a team to solve a problem, complete a task, or accomplish an objective goal". According to the definition of this definition, cooperative learning is an approach that

includes small groups of students who work together as a team to solve problems, complete a task to achieve a goal together.

From the quotation above, it can be said that cooperative learning is a learning model that allows students to be active in learning activities that teachers can use in carrying out learning activities in the classroom.

There are several types of cooperative learning models developed by experts including the STAD type (Student Teams Achievement Divisions), the Jigsaw type or Expert Team, the GI (Group Investigation) or Group Investigation type and the Structural Approach type. (Arends, 2008 :13).

Rangkuti (2008 : 35) states that cooperative learning type STAD can improve student learning outcomes in this inequality can be seen from the test learning outcomes obtained that out of 35 students there are 30 students (85.71%) students achieve learning completeness, while 5 students (14.29%) students have not reached mastery learning. And Handayani (2009: 39) states that: The application of the Jigsaw learning model to statistics is effective in terms of student learning outcomes with an average picture of achievement of learning outcomes is 86.05%; Of the 43 students, 37 students scored above 65 and 6 students scored below 65 in class IX SMPN 18 Medan

From the quotation above, it can be said that the STAD and Jigsaw types of cooperative learning are cooperative learning models that can improve student learning outcomes

In the Thematic Curriculum for primary class level with the sub-theme of energy sources is one of the subject matter students learn in the even semester of grade IV. Based on the researcher's experience, there are still many students who do not understand the concept of the sub-theme of energy sources so that at the time of the test their scores are not satisfactory.

Imanuel S.A (2015) stated the results of his research that the causes of difficulties in learning science elementary students in 1) internal factors, namely aspects of interest, motivation, self-confidence, study habits, and ideals; and 2) external factors, namely a lot of foreign terms, the material is too dense, students seem to want to or not have to memorize material, limited learning media, students seem difficult to understand the material without the availability of media, teachers tend to dominate learning, teacher mastery of the material is weak, and too monotonous. Furthermore, Ika W (2017) argues that the low learning outcomes of science students are because they are more product-oriented and not process-oriented.

Based on the description above, the researcher is interested in conducting research with the title: "Differences of Student Learning Achievement Using Cooperative Learning Models of Student Team Achievement Division (STAD) Type with Jigsaw Reviewed from the Student's Entry Behavior".

Chaplin (at Syah 2011: 60) states that: "Learning is the acquisition of a relatively sedentary change in behavior as a result of practice and experience". Furthermore, Usman (2012: 5) says that: "Learning can be defined as a process of changing behavior in individuals thanks to the interaction between individuals and individuals with their environment. The teaching and learning process is a process consisting of a series of teacher and student activities on the basis of a reciprocal relationship that takes place in an educational situation to achieve the stated goals. To achieve these expected goals, of course, an effective learning is needed.

Learning is said to be effective if the learning has achieved the stated goals. To carry out effective learning it must involve students actively. So effectiveness is a match between those who carry out tasks with the intended goals. Usman (2012: 21) says that: "The conditions for effective teaching and learning are those that enable the teaching and learning process, develop learning materials properly, and increase the students' ability to listen to

lessons and master the educational goals they must achieve". Learning can be a medium that is very helpful for both students and teachers in the learning process in the classroom. The use of appropriate learning media can foster interest in learning, even improve student learning outcomes (Daryanto in Simorangkir et al, 2018).

According to Muslimin (in Widyantini, 2008: 4) "Cooperative learning is a learning approach that prioritizes cooperation between students in groups to achieve learning objectives". Meanwhile, according to Anita (in Widyantini, 2008: 4) "The cooperative learning model is a learning model that prioritizes the existence of groups and emphasizes cooperation in it".

Davidson and Kroll (in Asma, 2012: 11) define that: "Cooperative learning is an activity that takes place in the learning environment of students in small groups who share ideas and work collaboratively to solve problems in their assignments".

In cooperative learning, students learn together, contribute to each other's thoughts and are responsible for the achievement of learning outcomes individually and in groups (Slavin in Asma, 2012: 11). Cooper and Heinich (in Asma, 2012: 12) explain that: "Cooperative learning is a learning model that involves heterogeneous small groups and students working together to achieve shared academic goals and tasks, while working together to learn skills - collaborative and social skills. Based on some of the explanations above, it can be said that cooperative learning is based on the idea that students work together in study groups and at the same time they are each responsible for the learning activities of their group members so that all group members can master the subject matter well.

The STAD (Student Teams Achievement Divisions) model of cooperative learning was developed by Robert Slavin and his colleagues at Johns Hopkins University and is the simplest type of cooperative learning. STAD type of cooperative learning can be used to provide students with an understanding of difficult material concepts. Where the material has been prepared by the teacher through student worksheets or other learning tools.

According to Hasratuddin (in Desmayani, 2010: 16): "In this STAD, students are placed in a learning team consisting of four people who are a mixture according to level of achievement, gender and ethnicity. The teacher presents the lesson and then the students work in their teams to ensure that all team members have mastered the lesson".

Furthermore, the MKPBM Team (2011: 219) stated that: "The essence of this STAD is that the teacher delivers the material, then the students are joined in groups of four or five people to solve the questions given by the teacher, after completion they submit their work in a manner single for each group on the teacher".

From the quote above it can be said that the STAD type of cooperative learning is the simplest cooperative learning. Teachers who use STAD learning present the material first. Then students are grouped to discuss solving the problems in the LKS (student worksheets) Jigsaw cooperative learning is a method that can be used in solving problems with low student learning outcomes at SD Negeri 118236 AFD11 PAT Aek Batu Cikampak. Ibrahim, 2012 stated: The application of cooperative learning in the classroom is very well implemented during the learning process, the interaction involves a lot of fellow students, and based on all elements of teamwork, so that all students must have a sense of responsibility, communicate well, evaluate and exist dependence positively with fellow group members.

Based on this, in the Jigsaw cooperative learning process all group participants are expected to be experts (to learn to be experts) in sub-topics and themes and to be able to teach these sub-topics to their home group.

Based on the explanation above, all students are encouraged to actively design concepts and knowledge, not only responsible for all the success of their own learning, but the success of their group learning.

II. Research Methods

This type of research is experimental research. The sample in this study is grouped into two classes, namely the first as experimental class A and the second part of the experimental class B. Experiment class A is a class taught using STAD cooperative learning and experimental class B is a class taught using Jigsaw cooperative learning.

Thus the research design can be described as follows:

Table 1. Research Design with 2x2 factorial design

Early Abilities (KA)	Learning model (MP)	
	STAD (MP _{STAD})	Jigsaw (MP _{Jig})
High (KA _T)	MP _{STAD} x KA _T	MP _{Jig} x KA _T
Low (KA _R)	MP _{STAD} x KA _R	MP _{Jig} x KA _R

The population of this study was all students of class IVSD Negeri 118236 AFD11 PAT Aek Batu Cikampak in the academic year 2019/2020, totaling 3 classes. Researchers used the cluster random sampling method in sampling. Of the 3 classes the researcher took 2 classes randomly used as the sample, namely class VII A as the experimental class and class VII B as the control class. One class is taught with the STAD type cooperative learning model (hereinafter referred to as experimental class A) and the other class is taught with the Jigsaw cooperative learning model (hereinafter referred to as experimental class B) each totaling 40 students.

III. Results and Discussion

3.1 Results

1. Learning outcomes using the Cooperative Learning Model Type Student Teams Achievement Division (STAD)
Based on the research conducted, for students who were taught with the Student Teams Achievement Division (STAD) Cooperative Learning Model, the average score was obtained (= 18.68; variance (= 7.097; standard deviation (s) = 2.664. obtained was 24 and the lowest score obtained was 14, while the Median (Me) = 18.50
2. Learning outcomes using the Jigsaw Type Cooperative Learning Model
For students who were taught with the Jigsaw Type of Cooperative Learning Model, the mean score was obtained (= 17.35; variance (= 7.259; standard deviation (s) = 2.694. The highest score obtained was 23 and the lowest score obtained was 12 , while the Median (Me) = 17.50
3. Learning outcomes with high students' initial abilities
Based on the research conducted, for students with high initial abilities, an average or mean score (= 20.15; variance (= 3.003; standard deviation (s) = 1.733) was obtained. The highest score obtained was 24 and the lowest score obtained was 17, while the Median (Me) = 20
4. Learning outcomes with low initial ability of students
Based on the research conducted, for students with low initial abilities, an average or mean score (= 15.88; variance (= 2.881; standard deviation (s) = 1.697) was obtained. The highest score obtained was 19 and the lowest score obtained was 12, and Median (Me) = 16.00.
5. Student learning outcomes use the Cooperative Learning Model Type Student Teams Achievement Division (STAD) with High Initial Ability

- For students who were taught with the Student Teams Achievement Division (STAD) Type of Cooperative Learning Model with high initial ability, the mean score was obtained (= 20.80; variance (= 2.799; standard deviation (s) = 1.673.
6. Data on student learning outcomes uses the Cooperative Learning Model Type Student Teams Achievement Division (STAD) with Low initial abilities
 7. For students taught with the Student Teams Achievement Division (STAD) cooperative learning model with low initial ability, the average or mean score was obtained (= 16.55; variance (= 2.262; standard deviation (s) = 1.504.
 8. Data on learning outcomes using the Jigsaw Type Cooperative Learning Model with high initial abilities
For students who were taught using the Jigsaw-Type Cooperative Learning Model and high initial ability, the mean score was obtained (= 19.50; variance (= 2.474; standard deviation (s) = 1.573).
 9. The learning outcome data uses the Jigsaw Type Cooperative Learning Model with Low Initial Ability
For students who were taught using the Jigsaw-Type Cooperative Learning Model and low initial ability, the average or mean score was obtained (= 15.20; variance (= 2,696; standard deviation (s) = 1.642.

3.2 Discussion

a. First Hypothesis Testing (H1)

The sig value is known. for the influence of X1 (learning model) is equal to 0.005; ($0.05 < 0.05$) and the results of the value of $F_{count} = 8.354$ and F_{table} for $k = 2$ and $n = 60$ ($F(2; 58) = 3.16$; $8,354 > 3,16$ $F_{count} > F_{table}$; then H_0 is rejected and H_a is accepted, namely: there is a significant effect on student learning outcomes taught using the STAD learning model with the jigsaw learning model.

Second Hypothesis Testing (H2)

The sig value is known. for the effect of X2 (initial ability) is 0.000 ($0.000 < 0.05$) Sig. < 0.05 ; and the result of $F_{count} = 40,820$; $F_{table} = 3.16$; $40,820 > 3,16$ then $F_{count} > F_{table}$; so it can be concluded that H_0 is rejected and H_a is accepted, meaning that there is a significant difference in the learning outcomes of students who have high initial abilities and students with low initial abilities.

b. Third Hypothesis Testing (H3)

Based on the output above, it is known that the sig value. for the effect of X1 (learning model) and X2 (initial ability) simultaneously on Y (student learning outcomes) is 0.650; ($0.650 > 0.05$); Sig. > 0.05 ; and the results of the value of $F_{count} = 0.208$ and $F_{table} 3.16$; ($0.208 < 3.16$) $F_{count} < F_{table}$ so that it can be concluded that H_0 is accepted, which means that there is no simultaneous interaction between the learning model and the students' initial ability level on student learning outcomes. Because the simultaneous influence between the two factor variables (learning model * no initial ability to the dependent variable student learning outcomes), the post hoc test is no longer done.

Based on the results obtained in testing the hypothesis, a description and interpretation of the research data will be described. Descriptions and interpretations are carried out on the STAD learning model, the Jigsaw learning model, the students' initial abilities, the interaction between the STAD learning model and the students' initial abilities, and the interaction between the Jigsaw learning model and the students' initial abilities.

1. The effect of differences using the STAD learning model and the Jigsaw learning model on learning outcomes

Based on the results of research conducted, that the learning outcomes taught using the STAD learning model are better than the learning outcomes of students taught with the Jigsaw learning model. For learning outcomes that are taught using the STAD learning model, the average score or mean (= 18.68) is obtained while for the learning outcomes of students taught using the Jigsaw learning model, the average or mean score is obtained (= 17.35. The learning outcomes that are taught using the STAD learning model can be understood by students, because the STAD learning model is related to a certain context (atmosphere or situation).

Based on the description above, it is clear that the use of the STAD learning model and the Jigsaw learning model gives different results. The application of the STAD learning model in class is quite easy, this is influenced by factors such as: 1) Getting students used to solving problems, 2) making knowledge meaningful and relevant to students, 3) giving students the opportunity to find and apply their own ideas, and 4) students realize that applying the STAD learning model makes learning independent.

2. The effect of differences in students' initial abilities on learning outcomes

Entry Behavior is an ability a student has acquired before acquiring certain new terminal abilities. Initial ability shows the current status of knowledge and skills of students to get to the future status that the teacher wants students to achieve. With this ability, it can be determined where teaching should start. Terminal ability is the direction toward which teaching ends. So, teaching takes place from initial ability to terminal ability which is the responsibility of the teacher.

The results of hypothesis testing show that the learning outcomes of students who have high initial abilities and low initial abilities are different. From the research results, it was found that students who had high initial abilities with an average score or mean (= 20.15, while students with low initial abilities, obtained an average or mean score (= 15.88. Students with high initial abilities) tends to have higher learning outcomes than students who have low initial abilities.

Thus, based on the above discussion, it can be concluded that the differences in learning outcomes that have high initial ability and low initial ability are due to the following factors: 1) student characteristics are one of the variables of teaching conditions, namely talents, interests, attitudes, learning motivation, learning styles, 2) thinking skills and initial abilities (learning outcomes) that they have, 3) lesson planning really requires identification of needs and characteristics, and 4) paying attention to students' abilities and experiences, both as a group or individually.

3. The interaction between cooperative learning models and students' initial abilities

Based on testing the research hypothesis, that learning outcomes are influenced by the STAD learning model and students' initial abilities. The STAD learning model has an influence on learning outcomes compared to the Jigsaw learning model.

V. Conclusion

Based on the research results that have been described, it can be concluded:

1. To influence the learning model with the results of the value of $F_{\text{count}} = 8.354$ and $F_{\text{table}} = 3.16$; obtained that $F_{\text{count}} > F_{\text{table}}$; then H_0 is rejected and H_a is accepted, that is, there is a significant difference in student learning outcomes taught through the STAD learning model with the jigsaw learning model.
2. To influence the initial ability with the results of the value of $F_{\text{count}} = 40.820$; $F_{\text{table}} = 3.16$; then $F_{\text{count}} > F_{\text{table}}$; so it can be concluded that H_0 is rejected and H_a is accepted, meaning

- that there is a significant difference in the learning outcomes of students who have high initial abilities and students with low initial abilities.
- Based on the output above, the sig value is known. For the effect of learning models and initial abilities simultaneously on student learning outcomes with the results of $F_{\text{count}} = 0.208$ and $F_{\text{table}} 3.16$, then $F_{\text{count}} < F_{\text{table}}$ so that it can be concluded that H_0 is accepted which means there is no difference in learning model and initial ability simultaneously on student learning outcomes.

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