Application of Stad Type Learning Models to Improve Activity and Student Learning Outcomes

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A B S T R A C T

This research is motivated by the low activity and student learning outcomes in learning. One alternative that is used to overcome the low activity and learning outcomes of social studies subjects is by using the Student Team Achievement Division (STAD) type of cooperative learning model with LKPD assistance. The purpose of this study was to analyze student learning activities and outcomes using the STAD type cooperative learning model assisted by Student Worksheet (LKPD). This research was an experimental study using the Pre-Test Post-Test Control Group Design. The data used consists of primary and secondary data. The data were collected using test results of learning and observation sheets to determine student learning activities. The total population was 348 people with a sample size of 78 people with a purposive sampling technique. The method of analysis used the independent sample t-test. The results showed that the student's learning activity was declared active with a high category as long as the cooperative learning model type STAD was assisted by LKPD and the learning outcomes obtained a significance value of 0.000 with a significance level of 0.05. It can be concluded that there is an increase in student activity and learning outcomes using the STAD type cooperative learning model assisted by LKPD.

1. Introduction

Education is a reflection of the progress of a nation, the higher the culture of a nation, the higher the level of education of that nation. A great nation is a nation that pays attention to the education of its citizens (Utami, 2015). The teaching principle is the teacher's effort to create and condition teaching and learning situations so that students carry out learning activities optimally. Ginanjar (2019) stated that as the spearhead of education, teachers face to face with students who are required to have adequate competence. The use of teaching principles can be

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planned by the teacher during the teaching and learning process, especially when student learning conditions have deteriorated (Faqih, 2012).

In the teaching and learning process, teachers as teachers and students as learning subjects are demanded for changes in knowledge, abilities, attitudinal values, and personal characteristics, so that the process takes place effectively and efficiently (Zaidah et al., 2012). The teacher as the core of education must be able to provide direction and motivation as well as facilities for students to advance education. Therefore, the teacher's role is very important to support the success of a student in every subject taught. Maharini (2013) states that on various experiences in the field, the causes of learning barriers to students are very complex so that the problems that arise are also complex such as models or learning methods, student learning activity problems, how about groups of students who have low ability and motivation and how about groups that have high ability and high motivation and others, which in the end as a benchmark is student learning outcomes.

Nanang (2010) revealed that learning activities are a learning process that must involve all psychophysical aspects of students both physically and spiritually so that the acceleration of behavior change can occur quickly, precisely, easily and correctly, both with regard to cognitive, affective and psychomotor aspects. In learning activities it can also include communication skills, emotional skills, language skills, group skills, ethics, morals, courage and spiritual skills (Junita, 2018)

Through the results of preliminary observations carried out at SMP Negeri 26 Pekanbaru, student learning activities in less active learning. Data obtained from preliminary observations were that the average student learning activity was 49 or 25%. These results are in the less active category. While student learning outcomes were obtained, from 39 students there were only 10 students (26%) who completed learning, namely obtaining a value of ≥78. Meanwhile, 29 students (74%) have not completed or scored <78. The learning outcomes of students are still categorized as low.

This is because the teacher has not used a learning model that can stimulate student learning activities. Mutia (2020) finds that the selection of the right, innovative and varied media will be able to attract students' interest in learning. Learning is still centered on the teacher (teacher centered), causing boredom and passivity of students in learning. Therefore, to overcome the problems that arise, teachers need to apply a learning model that can increase student learning activities so that learning outcomes can be achieved optimally. One alternative that is used to overcome the low activity and learning outcomes of social studies subjects is by using the Student Team Achievement Division (STAD) type of cooperative learning model with the help of LKPD, which is expected to increase learning activities and student learning outcomes.

STAD is a learning model that prioritizes group competition so it is very suitable to be applied to students to instill character and as an effort to vary the use of learning models (Setiogohadi, 2014). In addition to using the learning model, a
media that can be varied in the STAD-type cooperative model is also needed, namely the student worksheet (LKPD).

The use of a longer period of time which is a drawback of the cooperative model type STAD can be overcome by providing LKPD so that students can work and learn effectively and efficiently. LKPD can be in the form of a guide for cognitive aspect development exercises as well as a guide for the development of all aspects of learning in the form of an experimental or demonstration guide. The use of student worksheets can improve student achievement in stoichiometric material (Nuriyawan, 2016). The same thing was said by Lindarti, et al. (2010) that the application of cooperative learning is proven to improve physics learning outcomes. This is evident from the results of the calculation of the gain index difference test between the experimental and control groups obtained $t$ count of 4.506 with $p = 0.000$ below 0.05, indicating the gain index of the two groups is significantly different.

Atna (2013) suggests that the application of STAD type cooperative learning can increase learning activities and students' cognitive physics abilities, which is seen from the increase in learning activities from 65.7% to 75.47% and the average value of learning outcomes from 60.83 to 81.25. Subrata (2016) states that there is an increase in the activity and learning outcomes of students. The purpose of the study was to describe the application of the STAD type cooperative learning model assisted by LKPD in increasing student activity and learning outcomes.

2. Methodology

This research was an experimental study using a pre test post test control group design. The research design can be seen in table 1.

<table>
<thead>
<tr>
<th>Table 1. Pre-Test Post-Test Control Group Design Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Experiment</td>
</tr>
<tr>
<td>Control</td>
</tr>
</tbody>
</table>

Sugiyono (2010)

The research was conducted at SMP Negeri 26 Pekanbaru in the odd semester of the 2019/2020 school year. The study population was all students of class VIII, amounting to 348 people with a sample size of 78 people with a purposive sampling technique where 39 people from class VIII.1 were the experimental class and 39 people from class VIII.3 as the control class. Data analysis techniques for student activities were carried out by direct observation, which was analyzed using descriptive analysis. The student activity was measured by a percentage based on Sudijono's introductory statistical book (in Murni 2011). The formula for the percentage of student learning activities used for the direct observation sheet can be seen below:
Information

\[ P = \left( \frac{f}{N} \right) \times 100\% \]

\( P \) = percentage of student activity per meeting  
\( f \) = frequency of learning activities that often appear  
\( N \) = number of students present

After obtaining the percentage of students who carry out activities, the activity category is based on the percentage that has been obtained. These categories can be seen in Table 2.

Table 2 Categories of student activity

<table>
<thead>
<tr>
<th>No</th>
<th>Implementation value (%)</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>81-100</td>
<td>Very active</td>
</tr>
<tr>
<td>2</td>
<td>61-80</td>
<td>Active</td>
</tr>
<tr>
<td>3</td>
<td>41-60</td>
<td>Pretty active</td>
</tr>
<tr>
<td>4</td>
<td>21-40</td>
<td>Less active</td>
</tr>
<tr>
<td>5</td>
<td>0-20</td>
<td>Not active</td>
</tr>
</tbody>
</table>

Source: Riduwan (in Wahyu et al, 2017)

For learning outcomes using the N-Gain calculation after the pretest and posttest values are obtained from the scoring results, the N-Gain normalization acquisition is classified into three categories can be seen in table 3

Table 3. Classification of N-Gain values

<table>
<thead>
<tr>
<th>g</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>( g &gt; 0.70 )</td>
<td>High</td>
</tr>
<tr>
<td>( 0.30 \geq (g) &lt; 0.70 )</td>
<td>Moderate</td>
</tr>
<tr>
<td>( g &lt; 0.30 )</td>
<td>Low</td>
</tr>
</tbody>
</table>

Source: Hake (in Risa, 2016)

Normality test

The normality test used the Chi Square test (Kolmogorov-Smirnov test) with the help of SPSS 22 for windows at the 5% significance level. The decision to test for normality can be taken with the following criteria: 1) if the significance value is \( > 0.05 \) then the data is normally distributed, 2) if the significance value is \( < 0.05 \) then the data is not normally distributed. The homogeneity test uses the Levene’s test of error variance with the help of SPSS 22 for windows. The significance level used is 5% or 0.05 and the data is said to be homogeneous if the p-value (sig.) \( > 0.05 \).

Hypothesis testing

Hypothesis testing using statistical analysis program SPSS 22 for windows. Hypothesis testing using the independent statistical sample T-test with the testing criteria if sig \( < 0.05 \) then H1 is accepted and if sig \( > 0.05 \) then H1 is rejected.

3. Results and Discussion

Cooperative Learning Model type STAD Assisted by LKPD
LKPD is a guide that is often used by students to carry out investigative activities or problem solving. LKPD can be in the form of a guide for cognitive aspect development exercises as well as a guide for the development of all aspects of learning in the form of an experimental or demonstration guide. In learning the teacher divides students into 8 groups with heterogeneous abilities, there are high, medium, and low abilities which are divided based on the data of the students' daily test scores on the previous material. Each group consists of 4 or 5 students. After students occupy their positions, the teacher asks a representative from each group to take the LKPD. The teacher explains to students how to work on the LKPD and asks students to discuss and work together with group members to solve problems that exist in the LKPD. This LKPD is given to make it easier for students to achieve learning goals. The LKPD used in social studies lessons with material on ethnic diversity can be seen in Figure 1.

**Figure 1. Student Worksheet**

**Student Learning Activities**

Student learning activities towards cooperative learning model type STAD assisted by LKPD will be analyzed using descriptive statistics. Student learning activity data were obtained through observation sheets. The student learning activities that were observed were listening to the subject matter delivered by the teacher, discussing the material and working on the LKPD that was given in a discussion, Presentation of discussion results, giving comments or responses during the discussion, doing quizzes with their own abilities, making awards and concluding the material that had been given. The increase in the percentage of activity in the experimental class and control class can be seen clearly in Figure 2 below:
Based on Figure 2, the learning activities of students in the experimental class and the control class have increased. There is a difference in student learning activities between the experimental class and the control class, where the learning activities of the experimental class students increase higher than the control class. It can be concluded that there is an increase in student learning activities by applying the STAD type cooperative learning model assisted by LKPD.

**Student Learning Outcomes**

In this study, descriptive statistical analysis is intended to describe the level of achievement of learning outcomes by applying the STAD type of LKPD-assisted cooperative learning model. The results of statistical analysis based on the learning outcome scores obtained by students by applying the STAD-assisted LKPD type cooperative learning model can be seen in table 4 as following:

**Table 4. Data on the Results of Descriptive Statistical Analysis on Student Learning Outcomes**

<table>
<thead>
<tr>
<th>Statistik</th>
<th>Learning outcomes in the experimental class</th>
<th>Learning outcomes in the control class</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pretes</td>
<td>Postes</td>
</tr>
<tr>
<td>Average</td>
<td>34,15</td>
<td>85,77</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>11,42</td>
<td>7,06</td>
</tr>
<tr>
<td>Range</td>
<td>44</td>
<td>28</td>
</tr>
<tr>
<td>Maximum Value</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Minimum Value</td>
<td>16</td>
<td>72</td>
</tr>
<tr>
<td>Variance</td>
<td>130,40</td>
<td>49,87</td>
</tr>
<tr>
<td>Total Student</td>
<td>39</td>
<td>39</td>
</tr>
</tbody>
</table>

Source: Processed Data (2020)

Based on table 4, it shows that the learning outcomes of the participants' class have increased using the STAD type cooperative learning model assisted by LKPD with an average of 85.77 when compared to the control class, which is 73.28. The distribution data and frequency of students' scores in the experimental
class and control class in increasing the value of student learning outcomes using the gain normalization equation can be seen in table 5 below:

Table 5. Distribution of Gain Normalization Difference (Gain Score) Value of Learning Outcomes Experiment class and control class

<table>
<thead>
<tr>
<th>Gain Normalization Category</th>
<th>Experiment class</th>
<th>Control class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient</td>
<td>%</td>
<td>Frequency</td>
</tr>
<tr>
<td>G ≤ 0,3</td>
<td>Low</td>
<td>0</td>
</tr>
<tr>
<td>0,3 ≤ g ≤ 0,7</td>
<td>Moderate</td>
<td>0,15</td>
</tr>
<tr>
<td>G ≥ 0,7</td>
<td>High</td>
<td>0,85</td>
</tr>
</tbody>
</table>

Source: Processed Data (2020)

In table 5, it can be seen that the average $\text{Ngain}$ score for the experimental class is 0.8, which means that the experimental class has a relatively high increase in learning outcomes, while the control class gets a $\text{NGain}$ score of 0.6 which means that the increase in learning outcomes in the control class is classified as moderate. So it can be concluded that there is an increase in student learning outcomes using the STAD type cooperative learning model assisted by LKPD.

**Normality Test**

The normality test was performed using the Kolmogorov-Smirnov test. Normality testing is also calculated using the SPSS 22 for windows application at the significance level $\alpha = 0.05$. The normality test can be seen in table 6.

Table 6. The results of the pretest and posttest data normality test for the experimental class and the control class

<table>
<thead>
<tr>
<th>Class</th>
<th>Variabel</th>
<th>Significance value</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eksperimen</td>
<td>Learning outcomes</td>
<td>0,242</td>
<td>0,453</td>
</tr>
<tr>
<td>kontrol</td>
<td>Learning outcomes</td>
<td>0,808</td>
<td>0,272</td>
</tr>
</tbody>
</table>

Source: Processed Data (2020)

Table 6 above shows that the calculated L value in the control class in the pretest and posttest is 0.808 and 0.272 then $H_0$ is accepted, which means that the data is normally distributed. Likewise in the experimental class where the pretest and posttest with $p$ value 0.242 and 0.453 $> 0.05$ then $H_0$ is accepted, which means that the data is normally distributed. Because all control and experimental classes in the pretest and posttest were normally distributed, the normality assumption was fulfilled.

**Homogeneity Test**

This test was carried out using Levene's test of error variance using the help of SPSS 22 for windows. The significance level used is 5% or 0.05 and the data is said to be homogeneous if the $p$-value (sig.) $> 0.05$ can be seen in table 7.
Table 7. Test of Homogeneity of Variances

<table>
<thead>
<tr>
<th>learning outcomes</th>
<th>Levene Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.580</td>
<td>1</td>
<td>76</td>
<td>.062</td>
</tr>
</tbody>
</table>

Source: Processed Data (2020)

From the post-test data in the two sample classes using the Levene's test of error variance, a significance value of 0.062 was obtained. So it can be concluded that the post-test of the two sample classes is homogeneous.

**Hypothesis Testing**

Hypothesis testing is done using the independent sample t-test. From the calculation results obtained a significance value of 0.000 with a significance level of 0.05. Because 0.000 < 0.05, Ho is rejected and Ha is accepted, so it can be concluded that there is an effect of the application of the STAD type of LKPD-assisted cooperative learning model on student learning outcomes.

**Discussion**

Application of the STAD Type Cooperative Learning Model assisted by LKPD Cooperative learning model type STAD assisted by LKPD has an influence on student learning outcomes and student learning activities. That the average student learning outcomes with the cooperative learning model type STAD assisted by LKPD get results above the KKM while student learning activities are classified as active with a high level of activity. STAD type cooperative learning emphasizes activities and interactions between students to motivate and help each other in mastering the subject matter so that the collaboration that occurs will involve all group members (Karim, 2012). In the STAD type of cooperative learning model with LKPD assistance requires students to have the ability to communicate and group process skills.

Slavin (2010) mentions the steps in implementing the STAD type of cooperative learning model, namely class presentations, teams, quizzes, individual improvement points and group awards. With the team stage, it provides opportunities for students to interact with each other. Students can work together, discuss with each other to understand the material being studied. During the presentation, group members have their respective roles. This is in accordance with the benefits of STAD that students are taught to be committed to group development and respect and trust each other in their group (Imas, 2014). This is reinforced by Rahmatun's (2014) opinion that group failure and success is the responsibility of each group member. Group awards make students try to be better for their group and try to get the reward or award.

The application of the cooperative model type STAD accompanied by LKPD can also increase good cooperation between students in solving problems given by the teacher, and students have a good attitude of responsibility in completing their
tasks during the learning process. The opinion of the experts above strengthens
the results of this study that the application of the type of STAD cooperative
learning model assisted by LKPD is effective in increasing the activities and
learning outcomes of students.

**Student Learning Activities**

The use of the observation sheet to determine student activities while learning is
in progress. To find out student learning activities, an observation sheet consisting
of several indicators is used, namely listening to the material, discussing the
material and working on student worksheet, percentage of discussion results,
providing comments or responses, doing quizzes.

The increase in student activity was also felt by researchers when students were
asked to discuss and present it in front of their other friends, students looked more
orderly when discussing and were able to present the results of their discussions
using language that was good, concise, clear, and easy to understand, and behaved
politely. Laksmi (2011), said that the characteristics of science that differentiate it
from other learning are providing skills (psychomotor), the ability for scientific
attitudes (affective), understanding, habits and appreciation in finding answers to
a problem.

Based on the results of descriptive analysis, it is known that the learning activities
of students after the application of the STAD cooperative learning model
increased with an average learning activity of 38%, 41%, 48%, 61%, 71% and
88% for the experimental class. Whereas for the control class the increase in
learning activities of students was 34%, 38%, 46%, 52%, 62% and 79%. This
increase in learning activities occurs because of the high active role of students
with the collaboration between one individual and another in a group. Yuli (2016)
argues that the implementation of the STAD model can increase the learning
activities of social studies students. In the first cycle, the average percentage of
student learning activities was 46% with a low level of success, while in the
second cycle the average percentage of student learning activities was 70.4% with
a good level of success. The cooperative learning model type Student Teams
Achievement Divisions (STAD) assisted by worksheets has the character of being
able to increase student learning activities (Atna, 2013).

**Student Learning Outcomes**

Based on the results of inferential statistics using the free sample t-test formula
(independent t-test) that there is an effect of the application of the STAD type
cooperative learning model on student learning outcomes. Based on the
coefficient table (α), the p-value (significance) = 0.003, with a significance level
of 0.05, so comparing the p value and the significance level, it turns out that p-
value = 0.013 <0.05, so Ho is rejected and H1 is accepted. Dwi (2015) reported
that the average student learning outcomes in the trigonometric comparison
material using the STAD type cooperative learning model assisted by LKS had
achieved classical learning completeness.
From all the discussions above, it can be concluded that there is an effect of the application of the STAD type of LKPD-assisted cooperative learning model on the activities and learning outcomes of students, indicating that variations in learning models can affect student learning activities and outcomes so that educators need to apply various other learning models that can provide a positive influence on increasing the activity and learning outcomes of students.

4. Conclusion

This research shows that by applying the cooperative learning model type STAD assisted by LKPD during learning can increase the average learning activities of students. The cooperative learning model type STAD assisted by LKPD during learning can increase the average learning outcomes of students. Cooperative learning model with LKPD-assisted STAD tip can be an alternative learning model that can be applied to increase student activity and learning outcomes, especially related to social studies learning. As a material for consideration in order to improve the quality of education through a learning model that can change student activities and learning outcomes towards a better or increased direction.

References


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