STUDENT LEARNING OUTCOMES ON THE APPLICATION OF TGT LEARNING MODEL THROUGH DEVELOPMENT MEDIA SNAKES LADDERS

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Abstract

This research is motivated by the low learning outcomes of students caused by several factors, such as the use of learning models and the development of learning media that are appropriate and in accordance with the needs of students. This study aims to determine differences in student learning outcomes through the application of the Teams Games Tournament (TGT) learning model through the development of snakes and ladders media on fractional arithmetic operations. The method used is a form of true experimental research with a posttest only control design. This research was conducted in two classes, namely Class VB as an Experimental class with a total of 15 students and Class VA as a control class with a total of 29 students. This research instrument uses student learning outcomes tests. Data analysis to determine differences in learning outcomes using t-test statistics. The results showed that the average post-test score for the experimental class was 86.5 and the control class average was 72.9, and the combined standard deviation was 12.96. Then the calculated \( t \) is 2.918 and we get \( t_{table} = 2.056 \). Thus \( t_{count} > t_{table} \). It was concluded that there were differences in student learning outcomes on fractional arithmetic operations material by applying the Teams Games Tournament (TGT) learning model through the development of snakes and ladders media which was better than student learning outcomes on fractional arithmetic operations material by applying conventional learning models without using media.

Keywords: Learning Outcomes, Teams Games Tournament, Snakes and Ladders Media, Fraction Counting Operations

A. Introduction

The aim of education is to create someone with quality and character so that they have a broad outlook to achieve an expected goal and are able to adapt quickly and appropriately in various environments. Because education itself motivates us to be better in all aspects of life. In accordance with Law no. 14 of 2005 concerning teachers and lecturers that "teachers must have pedagogic competence," where teachers must be able to master the learning process, in the
sense that teachers master learning strategies and are able to create innovative learning media as needed in the process of learning activities in class (Aziz, 2018; Mandasari et al., 2020).

Mathematics is a global field of science. He lives in a limitless world. No country rejects its presence and no religion prohibits studying it. He doesn't want to do politics and doesn't want to be politicized. Its existence in the world is needed and its life continues to develop in line with the demands of human needs, because there is no human activity/behavior that is separate from mathematics. Mathematics has become the queen and servant of other sciences (Kamarullah, 2017).

In fact, mathematics makes a positive contribution to achieving an intelligent and dignified society through critical thinking and logical thinking. In addition, most students consider mathematics to be a difficult lesson and think that in its delivery most of it is not related to real life or everyday life. The teacher is also less active in giving examples of real events that are related to the material being taught so that they become bored.

Term fractions can used for refer something number which written in $\frac{a}{b}$ and numbers $\frac{a}{b}$ Where $b \neq 0$. A fraction is a symbol of the fulfillment of an ordered pair of integers $p$ (numerator/numerator) and $q$ (denominator/denumerator). Need noticed use the symbol as number or number. For example, If we state that the number above is called the quantifier and the number below is called the denominator, then the fraction that we mean there is a symbol or number. However, if we say “Add up $\frac{1}{3}$ And $\frac{1}{2}$ ” then what we mean is a fraction as a number (Kristanto, 2016).

Starting from the things above, the author intends to take action to find solutions and overcome problems formulated in the form of research. The research activities carried out aimed to determine the differences in student learning outcomes regarding the implementation of the Teams Games Tournament (TGT) learning model through the development of Snakes and Ladders media on Fraction Counting Operations material on the learning outcomes of Class V students at SDN 5 Unggul Tapaktuan.

One of the innovative learning models that is in great demand by students is Game Based Learning (GBL). According to Annie Pho (2015) GBL refers to the use and application of game principles in the learning process to increase user or student engagement.

This is in line with the opinion of Maiga (2009: 198), who said that playing is an important part of the learning environment because it can increase learning
experiences that are easy to remember, improve mood, and make learning effective. GBL itself is considered suitable for application in the learning of today's generation of children because of several factors such as, 1) competition and teamwork can increase student motivation, 2) fast feedback allows students to look for other alternatives in solving problems, and 3) creates learning environment that is cool and fun so that it increases the enthusiasm and motivation of students.

One of the media in the GBL learning model is Snakes and Ladders. This Snakes and Ladders media was prepared by the teacher along with various questions related to learning in class. In this learning, students are required to be active individually or in groups. This learning media uses the principle of dice cards in snakes and ladders game. In this learning media, teachers are asked to create question cards, score stars, and snake and ladder game board designs whose designs use the learning base of elementary school students. The images that are entered on the game board are images related to the concepts of student learning in elementary school. This media is intended to invite students to play while learning, either in groups or individually. After using the Snakes and Ladders media, it is hoped that students can better understand the subject matter.

Snakes and ladders media is media that is often played by children, especially elementary school children. The media game snakes and ladders on the theme of our friend's environment is made to invite students to play while answering existing questions and understanding the information available so that learning activities are not monotonous and students do not feel bored while studying (DAMAYANTI & PAKSI, n.d.).

This Snakes and Ladders media should be played in groups (or group representatives). It is hoped that students can discuss in groups to answer the questions that have been prepared for each snakes and ladders box. After all the instruments are prepared for this media, starting from 1) switch: determining who plays first, the teacher gives an opening question. Those who can answer have the right to determine the order of the members' playing. 2) When the dice box is thrown, each participant representative is obliged to answer the question in each column that has been prepared. If the answer is correct, the student is entitled to an orange star (score 10) and if wrong he gets a red star (score 5). 3) The game continues until the next groups. 4) Then the teacher gives an evaluation of the results of the learning method using the snakes and ladders game. 5) The teacher determines the conclusion of the learning concept.

From the description above, it can be concluded that learning using the GBL method with Snakes and Ladders media will foster student creativity and increase
student motivation in learning. Children’s creativity will grow and develop with fun education, adequate facilities, freedom from pressure, and encouragement both at home and at school. The most important thing is to ensure that the GBL method is appropriate to the characteristics of the students, learning objectives and the readiness of the existing infrastructure at the school. So that when applied this method can be more optimal, effective, and meaningful.

B. Research Methods

The type of research used by researchers is experimental research. This research is in the form of an experiment specifically designed to find the data needed to answer research questions. There are several forms of experimental design, namely: (1) pre-experimental (non-design), which includes one-shot case study, one group pretest-posttest, intec-group comparison; (2) true-experimental, including posttest only control design, pretest-control group design; (3) factorial experimental; and (4) Quasi experimental, including time series design and nonequivalent control group design (Adnan & Latief, 2020). This research design is truly experimental in the form of a posttest only control design.

This study used 2 classes, each of which was randomly selected (R), the first group was given treatment (X) called the experimental group, and the group that was not given any treatment was called the control class, namely VA as the control group and VB as the experimental group.

<table>
<thead>
<tr>
<th>Group</th>
<th>Treatment</th>
<th>Measurement (Post Test)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment (R)</td>
<td>X</td>
<td>O₁</td>
</tr>
<tr>
<td>Control (R)</td>
<td></td>
<td>O₂</td>
</tr>
</tbody>
</table>

Information:
O₁: Posttest value that was treated
O₂: Posttest value that is not given treatment

This research was conducted at SD Negeri 5 Unggul Tapaktuan, Jln. Habib Mustafa Gampong Lhok Bengkuang Tapaktuan District which was held on The odd semester is October, 2021/2022 academic year. The population in this study were students of SDN 5 Unggul Tapaktuan in the 2021/2022 academic year. The sample in this study consisted of 2 classes as research samples, 15 VB classes students as the experimental class while VA, totaling 29 students, as the control class. The data analysis technique uses learning outcomes test questions. The test was given to the control class and experimental class after the learning process was complete. The aim is to determine the level of mastery of the material by students after the teaching and learning process takes place. The test questions that will be used
must first be validated on class VI students at SDN 5 Unggul Tapaktuan. The data analysis technique uses t test statistics.

C. Result and Discussion

The learning outcomes of experimental class students are known by analyzing the results of the post-test given to students after the implementation of the Teams Games Tournament (TGT) learning model through the development of snakes and ladders media on fraction counting operation material is completed. Meanwhile, the learning outcomes of the control class students were known from the analysis of the post-test questions given after learning the fraction counting operation material using the conventional learning model without using media was completed.

Data obtained from the post-test were analyzed using the t-test with a significance level of 5% (0.05) or 95%. The results of the analysis of the average post-test score of the experimental class was 86.5 and the average value of the control class was 72.9, and the combined standard deviation was 12.96. Then $t_{\text{count}}$ is 2.918. To find out the $t_{\text{table}}$, the degrees of freedom are determined, with $df = 26$, from the distribution table we get $t_{\text{table}} = 2.056$. Thus $t_{\text{count}} > t_{\text{table}}$. So $H_a$ is accepted. It can be concluded, the learning outcomes of students on fractional arithmetic operations material by applying the Teams Games Tournament (TGT) learning model through the development of snakes and ladders media are better than student learning outcomes on fractional arithmetic operations material by applying conventional learning models without using media. A clearer picture of the results of post-test data processing can be seen in table 2.

<table>
<thead>
<tr>
<th>Class</th>
<th>$\bar{x}$</th>
<th>Combined Standard Deviation</th>
<th>$t_{\text{count}}$</th>
<th>$t_{\text{table}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>86.5</td>
<td>12.96</td>
<td>2.918</td>
<td>2.056</td>
</tr>
<tr>
<td>Control</td>
<td>72.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Data Processing (2021)

Based on the test results, it can be concluded that there are differences in student learning outcomes in fractional arithmetic operations material by applying the TGT learning model through the development of snakes and ladders media is better than student learning outcomes in fractional arithmetic operations material by applying conventional learning models without using media. This shows that
the use of the TGT learning model and snakes and ladders media is very effective in achieving learning objectives.

*post-test scores* for the experimental class and the control class is due to the different learning steps given to each class. In the experimental class, the learning process for fractional arithmetic operations was taught by applying the TGT model and snakes and ladders media, while the control class for the learning process for fractional arithmetic operations was taught by applying conventional models without using media. After being given the test, it was seen that the learning results of the experimental class students were better than the learning results of the control class students. The average *post-test score* for the experimental class was 86.5 and the average *post-test score* for the control class was 72.9.

There is a significant influence on students' learning outcomes using snakes and ladders media, which can be seen in the experimental class where students are given material on operations to calculate fractions using the snakes and ladders game which has been modified by researchers in implementing the learning. Students become more enthusiastic than in the control class. The existence of the snakes and ladders game also increases students' interest in being more focused in implementing learning. Students look enthusiastic when invited to play snakes and ladders game so that they really take part in learning activities well and students are directly involved in the learning process. (Guterres et al., 2018) in his research found that the use of Android-based snakes and ladders media can improve learning outcomes (Guterres et al., 2018: 54).

Statistical analysis using the t-test at a significant level $\alpha = 0.05$ there is a difference in the learning outcomes of fifth grade students at SDN 5 Unggul Tapaktuan by applying the learning model of *teams games tournament* (TGT) through the development of snakes and ladders media on fractional counting operations material as evidenced by the results of the analysis of the average *post-test score* of the experimental class was 86.5 and the average value of the control class was 72.9 and the combined standard deviation was 12.96. Then the calculated $t$ is 2.918. To find out the $t$ table, the degrees of freedom are determined, with $dk = 26$, from the distribution table we get $t$ table $= 2.056$. Thus, $t_{\text{count}} > t_{\text{table}}$, namely $2.918 > 2.056$. So $H_a$ is accepted and $H_0$ is rejected.

"If $t_{\text{Hitung}} \geq t_{\text{Table}}$ then $H_a$ accepted and $H_0$ rejected."
H : There are differences in the learning outcomes of class V students at SDN 5 Unggul Tapaktuan by applying the learning model of teams games tournament (TGT) through the development of snakes and ladders media on fractional arithmetic operations material.

D. Conclusion

Based on the results of the research and discussion, the conclusions in this study are as follows: there are differences in the learning outcomes of class V students at SDN 5 Unggul Tapaktuan by applying the teams games tournament (TGT) learning model through the development of snakes and ladders media in fraction counting operation material as evidenced by the analysis results of the average post-test score for the experimental class being 86.5 and the average value of the control class was 72.9 and the combined standard deviation was 12.96. Then the calculated t is 2.918. To find out the t table, the degrees of freedom are determined, with dk = 26, from the distribution table we get t table = 2.056. Thus, t count > t table, namely 2.918 > 2.056.

References


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