Can Think Pair Share Assisted by Mind Mapping Affect Students’ Cognitive Learning Outcomes?

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A B S T R A C T

In the era of globalization, the emergence of learning problems is something that is difficult to avoid, not least in studying the content of social studies lessons. The TPS type cooperative model will be able to maximize student activity in the learning that is carried out. This study aims to analyze the effect of the TPS type cooperative learning model with the help of mind mapping on the acquisition of cognitive learning outcomes for elementary social studies. This research uses a quantitative approach. The research design used a pre-experimental and one group pretest-posttest design. The subjects of this study were 15th grade students who were selected using purposive sampling technique. Research subjects will be given a pretest and posttest. The data from the pretest and posttest were then tested for normality as a prerequisite test for hypothesis testing. In the pretest results, it was found that the average number of students was 53.33 and the posttest increased by 85.77. In the normality test, the significance value of the pretest was 0.179 and the posttest was 0.246, both of which were worth more than 0.05, meaning that the data were normally distributed. Based on the analysis of the hypothesis through the paired sample t-test, a significance value (2-tailed) of 0.000 was obtained, which was less than 0.05. It was concluded that the implementation of the TPS type cooperative learning model with the aid of mind mapping significantly affected the cognitive learning outcomes of elementary social studies.

1. INTRODUCTION

Given the challenges in the era of globalization and the complexity of the problems in social life, a country needs to form human resources who have knowledge in understanding things related to people's lives (Handayani, 2017; Prehanto et al., 2021). The implementation of education can be a way to form and produce quality Human Resources. Education is a crucial part of human resource development efforts (Mihladiz et al., 2011; Nugraha et al., 2018). One of the subjects that learn about people's lives and is given at all levels of education, including the basic education level, is Social Science. Social studies subjects are

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subjects that study, investigate, and analyze signs to the emergence of social problems in social life seen from various life perspectives or their combination (Setyowati & Fimansyah, 2018; Wildawati et al., 2018). Social studies subjects are designed to build abilities and reflect students’ skills in living real life in a society that is constantly developing (dynamically).

The emergence of learning problems is something that is difficult to avoid, not least in learning the content of social studies lessons. The low acquisition of learning outcomes is one of the problems in social studies learning activities (Surya, 2017; Susanti, 2016). The low student learning outcomes in social studies subject matter can be identified from one of the domains, namely the cognitive domain. Learning outcomes in the cognitive domain are behavioral changes that cover all parts of cognition and consist of several levels (Permata et al., 2017; Phaflandita et al., 2022). The cause of low social studies learning outcomes is students’ limited role and the teacher’s dominant role in learning activities (Hamdah & Umayah, 2018; Izati et al., 2018). In addition, social studies learning is also only emphasized on the memorization process. Whereas social studies is a subject that is full or rich in abstract learning material which at the same time requires students to understand it well (Fatmawati et al., 2021; Hidayah et al., 2021). So in social studies learning at this time, most teachers still practice conventional learning. The social sciences Learning is important in the world of education because it can prepare students for life in society. Through social studies subjects in the developmental stage, students will be directed to have concern for social problems that arise in their surrounding life (Rahmi et al., 2021; Rando & Wali, 2018).

The teacher’s role in learning, especially social studies learning is very vital. Teachers must master classroom management, in order to create a pleasant learning atmosphere and involve the participation of all students in it (Mahardika et al., 2018; Putra & Sujana, 2020). Accuracy in choosing and applying learning models can be a solution in achieving the success of social studies learning. There are many choices of learning models that can be practiced by teachers in this era, such as the Think Pair Share (TPS) type in cooperative learning model. The cooperative model is able to make students feel more interesting learning experiences, which will make students more motivated and active in learning (Quysyairi & Sakila, 2018; Tembang et al., 2017). Moreover, through the application of the TPS type, students will have more opportunities to act individually or in groups (Harahap, 2018; Muthoharoh, 2017; Mutia et al., 2020). The advantage of the TPS type is that students can independently formulate and formulate various questions related to teaching materials and are trained to find ways to solve problems (Agustina, 2021; Lesi & Nuraeni, 2021). Based on this description, the TPS type cooperative model will be able to maximize student activities in the learning carried out.

Not only that, the implementation of the learning model is better supported by the application of learning media. This is because, learning media acts as a bridge between giver information and the recipient of information, and stimulates various things in the recipient so that they have the awareness to play an active role in the learning process (Ayuningsih, 2017; Prehanto et al., 2021; Riyanto et al., 2019). Mind mapping media can be an alternative solution to be implemented by teachers in the course of teaching and learning. Mind mapping is a learning tool that is able to explore students’ creative thinking about material that they have not or have received (Nureva & Citra, 2017; Zulfia Latifah et al., 2020). Mind mapping learning media can help students maximize the brain’s ability to think at higher levels and can even explore students’ hidden potential (Buran & Filyukov, 2015; Dadi et al., 2019).

Many previous researchers have investigated the effect of various learning models, including the TPS type. A learning model’s influence is typically seen in the acquisition of cognitive domain student learning outcomes. A study states that the TPS learning model has a good impact on student learning outcomes in social studies lesson content (Harumini et al., 2017; Hastuti et al., 2020). Furthermore, there is research which states that learning with the TPS model in collaboration with audio-visual media results will be superior to learning using traditional models (lectures) on the content of social studies lessons (Pitriani et al., 2017). Research that discusses the influence or impact given by the implementation of mind map media on learning outcomes states that mind map learning media can have an influence in the form of increasing outcomes of student learning (Masliani et al., 2019; Soleha et al., 2019). Based on these studies, there are no researchers who have raised a discussion about the impact of collaborating the TPS type cooperative learning model assisted by mind mapping on the cognitive domain of social studies learning outcomes in elementary school. The purpose of this study is to analyze the effect of the TPS type cooperative learning model with the help of mind mapping on the cognitive learning outcomes of elementary social studies.

2. METHOD

The quantitative approach was chosen as the approach in this research. The type of research is pre-experimental. While the research design was chosen One group pretest-posttest design. The use of this
design also shows that in this study only one experimental class is needed and there is no comparison (control) class. Table 1 describes the design description of the research to be carried out.

**Table 1. Research Design**

<table>
<thead>
<tr>
<th>Class</th>
<th>Pretest</th>
<th>Treatment</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>Y₁</td>
<td>X</td>
<td>Y₂</td>
</tr>
</tbody>
</table>

Table 1 shows that $Y₁$ is an initial test that students must do before giving treatment. Treatment (X) in this research is the implementation of the TPS type cooperative learning model with the help of mind mapping. While for $Y₂$ in the form of a test given after the treatment. This study’s population consists of all students enrolled in 5th grade at SD N 1 Pulo. The sample for this study is the entire 5th grade class of SD N 1 Pulo, which consists of 15 students, which includes 7 male students and 8 female students. The determination of the research sample utilizes a method which is part of a non-probability sampling technique in the form of purposive sampling, as the sample or subject selection is based on certain research criteria. The criteria are 5th grade elementary school students, male and female, able to read and understand reading well. This research uses an instrument that can measure students' knowledge or cognitive learning outcomes. Research instrument in the form of pretest and posttest. In both tests, 15 multiple choice questions were used. The standard of assessment is if students receive a score of one for each correct answer and a score of zero for incorrect answers. The preparation of research instruments is based on the level of students' abilities in the cognitive domain according to Bloom's taxonomy. In The research data will be subjected through to a prerequisite test known as normality testing. The SPSS 16.0 application is used to determine the normality test decision based on the Saphiro Wilk test criteria. If the normality test indicates that the data is normally distributed, hypothesis testing can be performed. A paired sample t-test was used to test the hypothesis. The decision making criteria for paired sample t-test is if the acquisition of significance < 0.05 then $H₀$ is rejected and $H₁$ is accepted, whereas if the acquisition of significance is > 0.05 then $H₀$ is accepted and $H₁$ is rejected. As for the documentation technique, the data collected includes photographs during the research activities.

3. RESULT AND DISCUSSION

**Result**

Learning models and media are included in important elements in the learning activity that can help the learning activities Succeed. The acquisition of student learning outcomes, particularly in the cognitive domain, can be used as indicators of learning success. The implementation of learning models and media that are in accordance with student needs will have an influence on the high and low learning outcomes, including cognitive learning outcomes. In order to detect whether or not the implementation of the TPS type cooperative learning model which is assisted by the use of mind mapping on learning outcomes has been conducted, a study was conducted at SD N 1 Pulo. This research makes fifth grade students as research subjects. The subjects taught are Social Sciences, precisely on the material of various economic activities. The data obtained in this study is a list of scores or the acquisition of learning outcomes for each student in the social science subject matter in the realm of knowledge or cognitive. The data comes from test results before giving treatment (pretest) and test results after giving treatment (posttest). Table 2 shows of data on the acquisition of pretest and posttest learning outcomes carried out by students.

**Table 2. Obtaining Pretest and Posttest Scores**

<table>
<thead>
<tr>
<th></th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Std Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pretest</strong></td>
<td>80.00</td>
<td>53.33</td>
<td>65.33</td>
<td>8.43</td>
</tr>
<tr>
<td><strong>Posttest</strong></td>
<td>100.00</td>
<td>73.33</td>
<td>85.77</td>
<td>7.06</td>
</tr>
</tbody>
</table>

Based on the data in Table 2, through the SPSS 16.0 application, the maximum score on the student’s pretest was 80.00 and the maximum score on the student’s posttest was 100.00. Furthermore, the minimum score obtained in the pretest is 53.33 and the minimum score at the posttest is 73.33. Meanwhile, the average obtained in the pretest is 65.33 with a standard deviation of 8.43 and the average value obtained
at the posttest is 85.77 with a standard deviation of 7.06. The following is a presentation of learning outcomes data in the form of a figure.

Figure 1. Pretest and Posttest Results

Figure 1. visualizes the improvement of student learning outcomes on the content of social studies lessons. In which each maximum score, minimum score, and average score of students shows an increase. The acquisition of student learning outcomes in the cognitive domain after being taught with the TPS type cooperative model assisted by mind mapping is higher than before being taught with this model. As a prerequisite test that must be met before testing the hypothesis by using the paired t-test, the data obtained (pretest-posttest) must be tested for normality. Data is said to be normally distributed if acquisition of the significant value exceeds the value of 0.05 and vice versa if the resulting significance value is less than 0.05 then the data is not normally distributed. The following Table 3. shows the results of the normality test for pretest and posttest data:

Table 1. Tests of Normality

<table>
<thead>
<tr>
<th>Statistik</th>
<th>Statistic</th>
<th>Degree of freedom</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre Test</td>
<td>0.918</td>
<td>15</td>
<td>0.179</td>
</tr>
<tr>
<td>Post Test</td>
<td>0.927</td>
<td>15</td>
<td>0.246</td>
</tr>
</tbody>
</table>

Based on Table 3, the normality test using the SPSS 16.0 application with 5% alpha, obtained a value of 0.179 for the pretest significance and a value of 0.246 for the posttest significance. So as the decision criteria in the normality test, the significance value of both pretest and posttest is higher than 0.05, it can be concluded that the research data obtained are normally distributed. After the normality requirements are met, hypothesis testing will be carried out using the paired sample t-test method. This test step determines whether or not there is a significant improvement in outcomes of student learning. The results of hypothesis testing are presented in Table 4.

In Table 4, which is the output of the paired sample t-test using the SPSS 16.0 application above, the resulting significant value (2-tailed) is 0.000. The resulting significance value (2-tailed) is lower than 0.05, so the initial decision (H0) is rejected and the alternative hypothesis (Ha) is accepted. Based on the calculation and analysis of the hypothesis, there is an effect of applying the TPS type cooperative learning model with the aid of mind mapping on the learning outcomes of elementary school students in the cognitive domain of social studies subject matter.

Table 4. Paired Samples T-Test

<table>
<thead>
<tr>
<th>Statistik</th>
<th>Paired Differences</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Standard Error Mean</td>
<td>Lower</td>
<td>Upper</td>
</tr>
<tr>
<td>Pair 1 Pre Test - Post Test</td>
<td>-2.04453E1</td>
<td>9.90928</td>
<td>2.55857</td>
<td>-25.93291</td>
<td>-14.95776</td>
</tr>
</tbody>
</table>
Discussion

The selection of appropriate and effective learning models by teachers can encourage the achievement of successful teaching and learning activities, including the implementation of the TPS type cooperative learning model. The application of the TPS type of cooperative learning model will involve an active role and arouse students’ enthusiasm in studying so that students have convenience in mastering the material (Agustin et al., 2019; Kurniasih, 2018). The provision of a TPS type cooperative model requires every student to participate in learning activities. This is because the TPS type in learning prioritizes collaboration between students (Kurniasih, 2018; Utomo et al., 2020; Widiastuti & Suyitno, 2018). Student activity and learning outcomes are two things that are interconnected and directly proportional. The higher the activeness of students in learning, the higher the achievement of student learning outcomes (Ningsih, 2018; Puspitaningdyah & Purwanti, 2018).

Not only using the TPS type of learning model, this research was also assisted by the use of learning media. This is based on the opinion which states that children’s cognitive abilities are influenced by the media used by the social environment. Learning in this study, using mind mapping media as a tool. Mind mapping is a medium that can facilitate the delivery of teaching materials. This is because the presentation of mind mapping helps students summarize less material or teaching materials so that it is more interesting for students to read (Andari & Al-Wahid, 2020; Merchie & Keer, 2016). The application of mind mapping media will create learning atmosphere that is fun and not boring, especially in learning social studies subject matter. This is consistent with the opinion which states that mind mapping is compatible with the characteristics of elementary school age students who like to play and have fun (Ananda, 2019; Kay et al., 2021).

Through mind mapping media students can express their own ideas and ideas that can trigger the emergence of student creativity (Munasti et al., 2021; Wulandari et al., 2019). In other words, making mind mapping requires students’ skills and creativity in processing information. Mind mapping is able to facilitate the process of delivering and receiving learning material completely and thoroughly, not just memorizing. In addition, the advantages of mind mapping can also make the material last long in students' memories (Annisa et al., 2018; Zulfa Latifah et al., 2020). Therefore, collaboration between cooperative models, especially the TPS type with mind mapping, can be an alternative for solving learning problems. More precisely on the acquisition of student learning outcomes on the content of social studies lessons. Student learning outcomes in the cognitive domain in social studies subject matter can be increased because they are taught using the TPS type cooperative learning model assisted by mind mapping. It is suggested to teachers or educators, especially at the elementary school level, to apply the TPS-type cooperative model with the help of mind mapping in social studies learning materials. The collaboration of learning models and media can maximize student activity in participating in learning and is proven to be able to provide increased student learning outcomes in the cognitive domain.

4. CONCLUSION

Applying the TPS type cooperative learning model with the help of mind mapping affects cognitive learning outcomes for elementary social studies subjects. The positive influence is on improving student learning outcomes in social studies lessons.

5. REFERENCES


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