The Influence of Discovery Learning Model on Students' Learning Outcomes in Social Studies

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Abstract

This research aimed to determine the influence of the discovery learning teaching model on the learning outcomes of seventh-grade students in the subject of Social Studies. The study employed a quantitative approach with a quasi-experimental design, involving both a control group (lecture-based teaching model) and an experimental group (discovery learning model). The research yielded results that indicated no significant influence of the lecture-based learning model on learning outcomes, as evidenced by the paired sample t-test with a two-tailed significance value of 8.728, which is higher than 0.05. Furthermore, the study demonstrated a significant influence of the discovery learning teaching model on students' learning outcomes, as confirmed by the Wilcoxon test, which showed a two-tailed significance value of 0.016, lower than 0.05. This research finding also indicated a significant impact of the discovery Learning teaching model on learning outcomes, with an effect size of 0.977, categorizing it as a medium effect.

Keywords: Discovery Learning, students' learning outcomes, Social Studies learning

Introduction

Social studies education is considered less engaging because teachers lack teaching variety (Budiwibowo, 2016), making the learning experience dull (Monawati. & Fauzi., 2018). The conventional teaching model is often used by teachers (Fahrudin et al., 2021). Conventional teaching, primarily lecture-based teaching model, can lead to student boredom, as evidenced by attitudes such as laziness, lethargy, inattentiveness to the teacher's explanations, and reluctance to complete assignments (Novialistra et al., 2022). This causes students to struggle to grasp the presented material (Veloo & Chairhany, 2013) and can lead to a decline in learning outcomes (Novialistra et al., 2022).

To address these issues, teachers can employ a variety of teaching models to engage their students (Pesona, 2021). Using diverse teaching methods can capture students' interest, as indicated by their focused attention on the teacher's explanations, serious attitude, completion

(**Dea Tami Restu Bumi**, Sri Buwono, Venny Karolina , Hadi Wiyono, Thomy Sastra Atmaja)

of assignments, staying in class during lessons, and asking questions (Yahya, 2014). With these behaviors, students can more easily comprehend the subject matter (Delisda & Sofyan, 2014).

In this research, the researcher has chosen to investigate the advantages of implementing the discovery learning model in the context of Social Studies education. Discovery learning is an educational approach that encourages students to actively participate in the process of seeking and directly discovering knowledge (Ramdhani et al., 2017).

The primary objective is to stimulate student interest and, ideally, foster a deeper and more meaningful understanding of the subject matter (Susilo, 2020). The discovery learning model places a strong emphasis on improving students' critical thinking skills and their ability to make informed decisions when solving problems within the realm of education (Nugrahaeni et al., 2017). This approach involves several key stages, including providing stimulation to ignite interest, formulating and identifying problems, collecting and analyzing data, verifying findings, and drawing meaningful conclusions and generalizations from the acquired knowledge (Susmiati, 2020).

Several previous researchers have examined the impact of using discovery learning in the science and social studies education processes. Prilliza et al. (2020) conducted a study on the effectiveness of applying the discovery learning model to improve science learning outcomes in Grade VII at SMP Negeri 14 Mataram. This research employed a quantitative, experimental approach. After implementing the discovery learning model in the experimental group and a conventional model in the control group, the average pretest results for the control group were 74, while the experimental group scored an average of 79 (p=0.047).

The study showed that the discovery learning model was effective in enhancing Science learning outcomes for Grade VII students at SMP Negeri 14 Mataram.

Furthermore, research by Kristin & Rahayu (2016) provided evidence of the positive impact of using the discovery learning model on the Social Studies learning outcomes of fourth-grade students at SD Negeri Koripan 01. Their findings indicated a significant effect with a two-tailed significance level of 0.00, which is less than 0.05, as determined through Independent sample testing. This demonstrates that the use of the discovery learning model significantly improved the Social Studies learning outcomes for the students.

Although the discovery learning model has proven beneficial in improving social studies learning outcomes in various schools, its impact on Social Studies learning outcomes for secondary school students, has not been examined in Pontianak. Therefore, this research aimed to investigate whether the discovery learning model influences student learning outcomes in Grade VIII at public secondary school Number 2 Sungai Raya Pontianak, particularly in the context of the "Natural Resources of Indonesia" topic. The research questions were formulated as follows:

1) Does the conventional teaching model have (lecture-based teaching model) an impact on the Social Studies learning outcomes?

2) Does the discovery learning model have an impact on the Social Studies learning outcomes?

3) Is there a difference in Social Studies learning outcomes between the conventional teaching model (lecture-based teaching model) and the discovery learning model?

Method

This research employs a quantitative approach with a quasi-experimental method, involving two classes: a control group and an experimental group, and non-randomly selected samples (Sugiyono, 2017). The samples used in this research were determined through purposive sampling technique because the samples were chosen based on specific reasons; the two sample classes were chosen because they have the same cognitive abilities, as evidenced by their daily test results.The samples in this study consisted of two classes at SMP 2 Sungai Raya, Pontianak: class VIII E as the control group using the lecture-based teaching model and class VIII G as the experimental group using the discovery learning model. Each class comprised 30 students.

This research utilized a data collection tool consisting of 20 multiple-choice quiz items related to the social science learning materials on the topic of "Indonesia's natural resources". The data collected in this study were analyzed using SPSS software version 25.

The validity test results indicated that the calculated Pearson correlation coefficients among test items vary. The pre-test and post-test values ranged from -0.32 to 0.567, with a significance level of 0.05 ($p<0.05$), were found to be higher than the critical value (table r = 0.361), indicating a strong positive correlation among the test items. In summary, the pre-test and post-test questions used in this research are considered valid. Regarding reliability, the pre-test questionnaire has a Cronbach's alpha coefficient of 0.663, demonstrating high internal consistency for both instruments. The post-test questionnaire also has a Cronbach's alpha coefficient of 0.707, indicating high internal consistency for both instruments.

The researcher analyzed the data distribution before the intervention in both classes. Since the sample size did not exceed 100, the researcher used the Shapiro-Wilk test to analyze the data distribution for the pre-test and post-test (Sari et al, 2017). The results of the normality test showed that three datasets followed a normal distribution, while one dataset did not follow a normal distribution, as indicated in Table 1.

Based on these results, the nonparametric Wilcoxon test was used to address research question 1. The parametric Paired Sample T-Test test was used to answer research question 2. Meanwhile, research question number 3 was addressed using the non-parametric Mann-Whitney U test.

Table 1. Test Normality Shapiro-Wilk

Test	Statistic	Df	Sig.
Pretest of Experimental Group	0.974	30	0.648
Posttest Of Experimental Group	0.936	30	0.073
Pretest of Control Group	0.948	30	0.149
Posttest of Control Group	0.880	30	0.003

Results and discussions

The result obtained for the first question indicated that there is no significant difference in students' learning outcomes in the subject of Social Science when using the lecture-based teaching model. The pre-test score (Mean=68) and post-test score (Mean=72.50) have a significance level (Z=-2.418, $p<0.05$) of p=0.016. This suggested that the conventional teaching model, especially teacher-centered instruction, is not effective in improving students' learning outcomes, as shown at table 2.

Table 2. Wilxocon Test

	Posttest Control Group – Pretest Control Group
Z	-2.418
Asymp Sig	0.016

(**Dea Tami Restu Bumi**, Sri Buwono, Venny Karolina , Hadi Wiyono, Thomy Sastra Atmaja)

The result obtained for the second question indicated that there is a significant difference in students' learning outcomes in the subject of social science when using the discovery learning teaching model (t(30) = -16.333, p < 0.05), as demonstrated by the comparison between the pre-test score (Mean=70) and the post-test score (Mean=86.33). This showed that the use of the discovery learning teaching model has an impact on improving students' learning outcomes, as shown at table 3.

Table 3. Paired Sampe T-Test

Group	Pre-Test Mean	Post-Test Mean	SD	Paired Sample T-Test
Experimental Group	70	86.33	10.250	t (30)= -8.725, p<0.05

In relation to the third question, the researchers obtained results indicating a significant difference in students' Social Science learning outcomes (U=185.500, p<0.05) between the conventional model (Mean=74.17, SD=13.77) and the discovery learning model (Mean=86.33, SD= 7.06), as shown in Table 4.

Table 4. Mann-Whitney U Test

Mann-Whitney U	185.500
Wilcoxon W	650.000
Z	-3.967
Asymp. Sig	0.000

Furthermore, to determine the level of significance in the difference in learning outcomes, Cohen's effect size calculation was conducted. The result obtained showed a value of 0.977, indicating that the discovery learning model has a high level of influence. In conclusion, the discovery learning model has a significantly stronger impact than the conventional model (lecture-based teaching model) in enhancing the learning outcomes of 7th-grade students in the subject of Social Studies.

The research findings are discussed as follows. That this study found that lecture-based teaching model did not significantly improve students' learning outcome is consistent with the research conducted by Peranginangin et al (2020), which states that conventional methods cannot enhance students' learning outcomes. The conventional teaching models that focus on the teacher, such as lecture-based teaching model (Fahrudin et al., 2021) makes students uninterested in the learning process. This is indicated by their lazy attitude towards attending classes, lack of focus during teacher explanations, falling asleep during lessons, and neglecting assignments. This discovery aligns with the research conducted by Novialistra et al (2022). The lack of student engagement in learning results in an inability to comprehend the material (Veloo & Chairhany, 2013), leading to no improvement in students' learning outcomes.

In contrast to the conventional model, learning using the discovery learning model can spark students' interest in the learning process (Susilo, 2020). The process of learning with discovery learning involves students in discovering information, analyzing it, and developing problem-solving solutions based on the acquired information. These activities can enhance students' problem-solving and critical thinking skills (Nugrahaeni et al., 2017; Susmiati, 2020).

Previous researchers added that the discovery learning model can increase students' participation in the learning process, as indicated by the presence of competition among students, active engagement with the material, collaboration among students in the learning process (Lestari et al, 2021), and interactions between teachers and students (Sulfemi Bagja, 2019). Students' involvement in the learning process helps

them better understand the presented material, thus improving their learning outcomes (Susilo, 2020).

Conclusion

The researchers' findings led to the conclusion that implementing the discovery learning model in the experimental class significantly improves students' learning outcomes in the subject of Social Studies. In contrast, the traditional lecture-based teaching model, or conventional learning model, was found to have no significant impact on students' Social Studies learning outcomes. Consequently, it can be inferred that the discovery learning model is an effective approach for teaching Social Studies to secondary school students. It's important to note that this study was conducted in a single school, so it is recommended that future researchers involve a larger number of students in their experiments to ensure the results can be generalized to secondary school students as a whole. Furthermore, it is suggested that future researchers employ interviews to explore the strengths and weaknesses of the discovery learning model from the students' perspective. This approach can help educators refine the application of the discovery learning model in the classroom for more effective teaching.

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(**Dea Tami Restu Bumi**, Sri Buwono, Venny Karolina , Hadi Wiyono, Thomy Sastra Atmaja**)

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