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Research Article

The Influence of Discovery Learning Model on Student Activeness and Sociology Learning Outcomes

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ABSTRACT

The identified issue is the limited engagement and learning results of students, attributed to a lack of diverse and student-centered teaching methods. Therefore, implementing an innovative and interactive learning model like Discovery Learning is essential for enhancing student engagement and comprehension. The main goal of this study is to evaluate how discovery learning models affect grade XI IPS Sociology students of MA Bilingual Batu's involvement. Identify the effect of the discovery learning model on the learning outcomes of grade XI IPS Sociology students at MA Bilingual Batu is second goals. The study used a quantitative method based on a quasi-experimental design using a non-equivalent control group structure. The process of data collection involved administering an activeness questionnaire alongside pretest and posttest assessments to measure student learning outcomes. The resulting data underwent a series of analyses, including normality tests, homogeneity tests, N-Gain tests, and Independent Samples t-Tests. The results indicated that the application of the Discovery Learning model significantly impacted the increase in students' activeness. Discovery Learning also significantly influences student learning outcomes. For the upcoming research, it is suggested to examine other more diverse variables that can affect the effectiveness of the Discovery Learning model, using the latest theories so that the findings produced are more relevant to the times. Additionally, research can broaden its scope by including various educational levels and different subjects to determine how widely the Discovery Learning model can be effectively utilized.

Keywords: Discovery Learning; Student Activity; Learning Outcomes; Sociology

1. INTRODUCTION

When it comes to enhancing the calibre of human resources, education plays a crucial role. The success of a student's educational experience is highly dependent on how actively they participate in classroom activities. This activeness can be seen through the activities that students do, ranging from physical activities such as practice and discussion, to non-physical activities such as thinking and solving problems (Hasanah & Himami, 2021). All these activities help students develop their potential and achieve the desired learning outcomes. Teachers have a major impact on their pupils' ability to participate in class. Students' timidity or fear may get in the way of their desire to participate in class if teachers don't encourage and guide them (Hapsari et al., 2021). Activeness not only determines the success or failure of a learning process, but also affects student learning outcomes. This is in line with the Student Engagement Theory proposed by Kearsley and Shneiderman (1998) explaining that student involvement behaviorally, emotionally, and cognitively encourages better understanding. Students who actively ask questions, discuss, and participate tend to be more confident and have high learning motivation. This habit trains critical thinking and improves social skills. Activeness in learning not only impacts academic achievement, but also helps students develop themselves as a whole (Rahman & Aslamiah, 2023).

The problem found in education in Indonesia is the low quality of literacy and academic ability of students, as shown by the results of the 2018 and 2022 PISA surveys. In 2018, Indonesia's reading literacy score was only 371, while mathematics and science were 379 and 396 respectively (Pusat Penilaian Pendidikan Badan Penelitian dan Pengembangan, 2019). By 2022, these scores dropped to 359 for literacy, 366 for math, and 383 for science, far behind the global average (OECD, 2023). Critical thinking, problem-solving, and higher-order thinking abilities (HOTS) are crucial in the modern world, yet the findings show that people don't fully grasp them. Relying on out-of-date learning techniques, having teachers of varying quality, and failing to prioritized the development of higher-order thinking abilities are all contributors to education's problems (Mardhiya et al., 2021). In addition, there has been learning loss due to the limitations of distant learning methods, which has been exacerbated in recent years by the COVID-19 epidemic (Zaharah et al., 2020). Therefore, to improve the

quality of education, it is necessary to change the approach to learning that not only focuses on academic outcomes, but also encourages student activeness, interesting teaching variations, and student involvement in the learning process in a more interactive manner.

According to interviews and observations conducted with sociology professors on May 3 and October 3, 2024, student engagement in sociology classes is still poor. As far as student participation in the learning process is concerned, it is clear that many students are hesitant to ask or answer questions, and there is also a clear lack of participation in discussion activities. Out of the 25 kids, only a third actively participate in learning, while the other six-eighths do nothing more than sit quietly and listen. In addition, the statistics given by the sociology instructor show that the students' performance in terms of learning outcomes is still below par and ranked low. Most kids still haven't gotten the school's Minimun Completion Criteria (Kriteria Ketuntasan Minimum/KKM) of 77, according to the daily assessments. Of the total 25 students, only 28% or around 7 people managed to meet the Minimun Completion Criteria standard. Meanwhile, 72% or around 18 people are still below the set standard, with an average score of only 52.52. The lack of student engagement was also caused by teacher-centered learning methods, where teaching was dominated by lectures and LKS books without a variety of interesting strategies. As a result, students feel bored, less motivated, and lose interest in learning. Under these circumstances, it is essential to use a more interactive learning strategy that guarantees students' active participation in the learning process and thus ensures they are not just passive listeners.

Discovery Learning is recognised as an effective learning model for enhancing students' active participation. Here, students are encouraged to take an active part in their own education by means of guided self-study and practical application of what they've learnt (Herpratiwi, 2009). According to Bruner, Discovery Learning allows students to build understanding through interaction with the surrounding environment, so that they do not only receive information passively, but also discover concepts independently. This model is not dominantly focused on teacher teaching, but rather provides opportunities for students to conduct experiments and discover learning principles from the results of their experiments (Shucnk, 2012). That way, students understand the material more easily because they are directly involved in the discovery process.

Discovery Learning was initially proposed by Jerome Bruner in the 1960s, grounded in the principles of cognitivism, which highlights that students achieve greater learning outcomes when they actively engage in the educational process. (Alfieri et al., 2011). This model has several stages in the learning process, namely starting with stimulation or providing stimulus through challenging problems or questions to arouse students' curiosity. Furthermore, the problem statement is that students identify the problems given and collect data from various sources, such as literature, observation, interviews, or experiments, in order to understand the context of the problem which is referred to as the data collecting stage (Syah, 2010). After that, students conduct exploration and investigation, both independently and in groups (data processing). The results of the investigation are then reflected and presented to classmates to share knowledge and obtain feedback (verification). The final stage is generalization, where students draw conclusions and evaluate their understanding, followed by reflection for learning improvement (Kemendikbud, 2014).

Discovery Learning offers several benefits, such as fostering critical thinking skills, promoting independence, and enhancing problem-solving abilities. This model encourages students to analyze and find solutions independently, thus increasing their motivation and involvement in learning (Hartati et al., 2020). In addition, students are more active in exploring materials, working together in groups, and understanding concepts more deeply because they find information themselves. This method enhances memory, sharpens cognitive abilities, and offers each learner the chance to progress in alignment with their unique potential (Khasinah, 2021).

This study is related to other earlier investigations. Rahayu and Hardini (2019) found that students' engagement and academic performance in the theme area were significantly improved when the discovery learning approach was implemented. Riyadi and Suwartini (2022) demonstrated that the discovery learning model significantly enhances student engagement, particularly in areas such as questioning, expressing opinions, participating in discussions, and fostering positive relationships with both teachers and peers. Students' understanding of the diversity of Indonesian ethnicities and cultures also increased, which had an impact on the increasing number of students who reached the completion score. This research distinguishes itself from prior studies by concentrating on enhancing the engagement and educational results of grade XI students in Sociology at the Senior high school / Islamic senior high school level, particularly regarding social conflict material, which remains an underexplored area in research. This study incorporates the Merdeka Curriculum, the most recent education policy, and employs various different indicators of learning activeness in the preparation of the questionnaire. The first of the study's two main objectives is to assess the impact of the discovery learning model on the student activeness in Sociology subject for grade XI IPS of MA Bilingual Batu's. The second objective is to examine how the discovery learning approach impacted the learning outcomes of grade XI IPS students doing the same subjects at MA

Bilingual Batu.

This study presents the following hypotheses:

H01 : There is no effect of the Discovery Learning model on student activeness in grade XI Sociology subjects at MA Bilingual Batu.

Ha1 : There is an effect of the Discovery Learning model on student activeness in grade XI Sociology subject at MA Bilingual Batu.

H02 : There is no effect of the Discovery Learning model on student learning outcomes in grade XI Sociology subject at MA Bilingual Batu.

Ha2 : There is an effect of the Discovery Learning model on student learning outcomes in grade XI Sociology subject at MA Bilingual Batu.

2. RESEARCH METHOD

A quantitative technique, such as the one used in this research, relies heavily on numerical data at every stage, from data collection and analysis to presenting the findings. This study follows the guidelines laid forth by Sugiyono (2013) and is a quasi-experiment with a non-equivalent control group design. The study was carried out at Islamic Senior High School Bilingual Batu, Indonesia, focussing on a population of grade XI students who selected Sociology as their subject. This comprised two classes totaly 51 students, chosen through purposive sampling. Class XI Social Studies 1, comprising 25 students, was assigned as the control group, whereas class XI Social Studies 2, consisting of 26 students, functioned as the experimental group. Primary data were obtained through questionnaires and tests, while secondary data from literature studies. The research instruments included questionnaires to measure student activeness and pre-test and post-test tests to evaluate learning outcomes. The making of the activity of study questionnaire refers to the theory of Paul B. Dierich, with positive statements with answer options using a Likert scale, with indicators including: a) conducting discussions and observations (visual activities); b) conveying ideas, ideas, opinions (oral activities); c) listening / paying attention to the teacher's explanation (listening activities); d) writing notes or summaries during learning (writing activities); e) conducting experiments or direct practice (motor activities); f) being challenged to think critically (mental activities); g) displaying enthusiasm all during the course of study (interesting pursuits). There were two parts to the evaluation process: the pre-intervention exam and the post-intervention test. The assessment comprised 20 multiple-choice questions derived from Sociology content focused on Social Conflict, each featuring five answer options with one designated correct response. This test aims to assess the degree of comprehension students have regarding the material presented and to identify any observable changes or enhancements in their learning outcomes.

Before being applied, the instruments were tested to ensure validity and reliability using IBM SPSS Statistic 23. According to Sugiyono (2015) a measurement instrument is considered valid if it is truly precise and accurate in measuring the variables to be studied. Reliability is therefore used to assess the degree of accuracy or credibility of the measuring tool utilised in a research. When used often, an instrument is said to be dependable if it produces consistent measurement findings. The test results showed 26 out of 28 liveliness questionnaire statements were valid with Cronbach's alpha reliability of a = 0.892. All 20 test questions were also valid, with Cronbach's alpha reliability of a = 0.765. Then, testing the level of difficulty obtained as many as 15 questions categorized as moderate, and 5 questions categorized as easy. The findings from the differentiating power test indicated that 13 questions were deemed acceptable as good, while 7 questions were classified as sufficiently good for use. The analysis phase utilised IBM SPSS Statistic version 23, incorporating a normality test via the Kolmogorov-Smirnov method to assess data distribution. Then used Levene's Test to see if the variances among the groups were equal. The N-Gain test then was used to evaluate the pupils' improvement in learning results. One has to use the following formula to perform the N-Gain test:

$$\text{N-Gain} = \frac{\text{Score Posttest} - \text{Score Pretest}}{\text{Score Maximum} - \text{Score Pretest}}$$

After understanding the N-Gain test formula, it can refer to the table below to find out the category of N-Gain score improvement obtained.

Table 1. N-Gain Score Effectiveness Interpretation

N- Gain Value	Criteria
$0.70 \leq g \leq 1.00$	Tall
$0.30 \leq g < 0.70$	Medium
$0.00 \leq g < 0.30$	Low
$g = 0.00$	Remain
$-1.00 \leq g < 0.00$	Decrease

Source : (Sundayana, 2018)

The hypothesis was tested extensively using an Independent Samples T-Test to see whether the control and experimental groups were significantly different.

3. RESULTS AND DISCUSSION

3.1 RESULT

3.1.1 The Normalcy Test

To determine whether the data follows a normal distribution, one does the normality test. The significance value (Sig%) is a crucial statistic for deciding whether the data is generally distributed or not. Should the number be higher than 0.05, one would expect the data to show a normal distribution. No normal distribution classification can be made if the significance threshold is not met. fewer than 0.05. The results of this study's evaluation of normalcy using the Kolmogorov-Smirnov technique are shown in the **Table 2**.

Table 2. Results of the Normalcy Test of Activeness Questionnaire

		Kolmogorov-Smirnov[a]		
		Statistic	df	Sig.
Results	Control Class Sociology Pretest	.135	.135	.200
	Control Class Sociology Posttest	.099	.099	.200
	Pretest Sociology Experiment Class	.096	.096	.200
	Posttest Sociology Experiment Class	.163	.163	.073

Source: Result of Data Analysis in 2025

The results of the normality test provided in the **Table 2** indicate that the students' learning activity questionnaire showed a Sig. value of 0.200 on the control class pretest. The pretest result in the experimental class was 0.200. The control group's posttest results revealed a significance level of 0.200 and experimental group is 0.73. Given the p-value is higher than 0.05, the responses of the learning activity questionnaire show a normal distribution.

Table 3. Results of the Normalcy Test of Sociology Learning Outcomes

		Kolmogorov-Smirnov[a]		
		Statistic	df	Sig.
Results	Control Class Sociology Pretest	.152	25	.140
	Control Class Sociology Posttest	.150	25	.148
	Pretest Sociology Experiment Class	.153	26	.120
	Posttest Sociology Experiment Class	.124	26	.200*

Source: Results of Data Analysis in 2025

According to the results of the Kolmogorov-Smirnov test for normalcy, the control group's pretest had a significance level (Sig.) of 0.140. The control group, on the other hand, had a posttest significance level of 0.148. While the experimental class's posttest shows a significance value of 0.200, the experimental class's pretest shows a value of 0.120 in the same background. Data is deemed to have a regularly distributed distribution when the significance value exceeds 0.05, according to the normality test's stated decision-making criteria. The results of the Sociology pre- and post-tests in both groups meet the criteria for normality, therefore further statistical analysis is possible.

3.1.2 Test of Homogeneity

The homogeneity test was performed to assess whether the samples in this study originated from populations with comparable variances. When the p-value > 0.05, the data may be assumed to be from a homogenous population, according to Levene's Test, which is used for statistical testing. The data likely originates from a non-homogeneous population if the significance value (p) < 0.05. Below is a table displaying the particulars of the homogeneity test:

Table 4. Homogeneity Test Results of Activeness Questionnaire

		Levene Statistic	df1	df2	Sig.
Activeness Questionnaire	Based on Mean	1.081	1	49	.304
	Based on Median	1.168	1	49	.285
	Based on Median and with adjusted df	1.168	1	48.767	.285
	Based on trimmed mean	1.089	1	49	.302

Source: Results of Data Analysis in 2025

The student learning activity questionnaire has a significant value (Sig.) of 0.304 computed from the mean, according to the SPSS test results output **Table 4**. The significance value exceeding 0.05 indicates that the research data exhibits a homogeneous distribution, suggesting that the variance between the two groups is consistent.

Table 5. Homogeneity Test Results of Sociology Learning Outcomes

		Levene Statistic	df1	df2	Sig.
Learning Outcomes	Based on Mean	2.720	1	49	.105
	Based on Median	2.372	1	49	.130
	Based on Median and with adjusted df	2.372	1	47.122	.130
	Based on trimmed mean	2.662	1	49	.109

Source: Results of Data Analysis in 2025

According to the data presented in the table above, the significance level is indicated. The mean value is 0.105, indicating that it exceeds 0.05. The data on Sociology learning outcomes in this study demonstrate equal variance across the two groups. The findings indicate that the distribution of scores between the control and experimental groups is not significantly different, suggesting that the data can be regarded as homogeneously distributed.

3.1.3 N-Gain Test

This study looked at how student involvement and learning results improved using the N-Gain test. Assessments both pre- and post-learning were place utilising tests and questionnaires respective. The pretest is meant to evaluate students' degree of interest and fundamental knowledge before the session; the posttest is meant to indicate how much they have changed afterwards. To determine the level of improvement, which was subsequently categorised as low, medium, or high, the study primarily focused on assessing the variance between the pretest and posttest scores. The results of the N-Gain test may be used to assess how well the learning strategy was executed. The N-Gain test findings are summarised in **Table 6.**

Table 6. N-Gain Test Results of Activeness Questionnaire

	Experimental Class			Control Class		
	Pretest	Posttest	N-Gain	*Pretest*	Posttest	N-Gain
Mean	99.03	108.77	0.4692	96.56	101.00	0.2068
Min	87.00	95.00	0.11	80.00	88.00	-3.00
Max	111.00	120.00	1.00	110.00	111.00	1.00

Source: Results of Data Analysis in 2025

The **Table 6** indicates that the experimental class's N-Gain analysis of the activeness questionnaire reveals a notable enhancement, with an average score of 108.77 on the posttest compared to 99.03 on the pretest. The outcome is categorised as moderate ($0.30 \leq g < 0.70$) with an N-Gain of 0.4692. The control group recorded average scores of 96.56 before the test and 101.00 after the test. The result yielded an N-Gain of 0.2068, categorising it within the lower spectrum of values ($0.00 < g < 0.30$). The findings indicate that, in contrast to the control group, participants in the experimental group demonstrated a higher level of engagement in the learning process.

Table 7. N-Gain Test Results of Sociology Learning Outcomes

	Experimental Class			Control Class		
	Pretest	Posttest	N-Gain	Pretest	Posttest	N-Gain
Mean	57.69	80.00	0.5508	56.00	68.80	0.3740
Min	35.00	60.00	0.27	25.00	40.00	0.10
Max	80.00	100.00	1.00	80.00	95.00	1.00

Source: Result of Data Analysis in 2025

The N-Gain calculation results for sociology learning outcomes indicate that the experimental class experienced an increase, with an average pretest score of 57.69 and a posttest score of 80.00. The outcome is an N-Gain of 0.5508, classifying it as moderate ($0.30 \leq g < 0.70$). On the other hand, the control group's N-Gain was 0.3740 after they improved from an average pretest score of 56.00 to a posttest score of 68.80. This indicates a slight enhancement, yet one that is not as pronounced as observed in the experimental group. The findings demonstrate that the instructional approach employed in the experimental group significantly improved sociology learning outcomes compared to the control group.

3.1.4 Test of Hypothesis

The research hypothesis test is conducted to offer a provisional response grounded in the formulation of research problems, and its validity necessitates additional examination. According to the findings of the precondition analysis test, which looked at homogeneity and normalcy, the data is both homogeneous and distributed normally. Consequently, the study moves further by making use of parametric statistical techniques, namely the Independent Sample T-Test, and the results are shown below:

Table 8. Independent Samples T-Test Test Results of Activeness Questionnaire

		t-test for Equality of Means				
		t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference
Activeness Questionnaire	Equal variances assumed	-4.543	49	.000	-7.769	1.710
	Equal variances not assumed	-4.527	46.909	.000	-7.769	1.716

Source: Result of Data Analysis in 2025

To determine whether there is a significant difference between the means of two separate groups, researchers conduct hypothesis testing. According to the results of the Independent Sample t-Test, significant value (Sig. 2-tailed) of the test findings is 0.000, which is lower than the threshold of 0.05. It is clear that there is a significant disparity in the levels of student participation between the control and experimental courses, since H_{a1} has been approved and H_{01} has been refused. When comparing the two classes, the experimental one uses a discovery learning model, which considerably increases student engagement over the control one's conventional learning approach.

Table 9. Independent Samples T-Test Results Learning Outcomes

		t-test for Equality of Means				
		t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference
Learning Outcomes	Equal variances assumed	-3.262	49	.002	-11.200	3.434
	Equal variances not assumed	-3.244	44.687	.002	-11.200	3.453

Source: Result of Data Analysis in 2025

The data shows that Sig. 2-tailed is 0.002, which is significantly lower than the significance level of 0.05, according to the findings of the study. Consequently, reject H02 and uphold Ha2, showing that the two groups' sociology learning results are significantly different. Applying the discovery learning model in the experimental class yields better learning outcomes than the control class's conventional way.

3.2 DISCUSSION

3.2.1 The Effect of The Discovery Learning Model on Student Learning Activeness

The data indicates that the implementation of the Discovery Learning model significantly enhances student learning activeness. The greater increase in activeness observed in the class utilising this model, in contrast to the class employing the conventional learning method, is clearly demonstrated. The implementation of Discovery Learning resulted in heightened student activity in discussions, enquiries, and independent exploration of the material, leading to a notable increase in engagement. Overall, Discovery Learning demonstrated a greater effectiveness in promoting active student engagement in the learning process.

This study aligns with the findings of Faan et al. (2021), which indicate that the discovery learning model effectively enhances student engagement in science education by actively involving them in the comprehension of the material concepts. In this model, students are invited to find concepts and solve problems independently, which makes them more excited and motivated to learn. Ardelina et al. (2021) also revealed that students engaged in Discovery Learning with the aid of audiovisual media tend to exhibit increased activity. This is attributed to the opportunity provided for them to search, find, and discuss necessary information, leading to greater involvement in the learning process. Heryana (2022) found that students' learning activities were significantly improved after using the Discovery Learning methodology. The rise is evident in their capacity to gather information, evaluate data, and convey the outcomes of the discussion. Furthermore, students demonstrated heightened engagement through their active discussions and enquiries, reflecting a deeper level of participation and comprehension. Safitri and Azizah (2023) proposed that implementing the Discovery Learning has the potential to enhance student engagement throughout the social studies learning process. This model succeeded in changing the classroom atmosphere to be more dynamic, students were more focused when the teacher explained, actively discussed, dared to ask about material they did not understand, and were involved in solving problems related to social studies lessons.

The increase in student activeness in classes using the Discovery Learning model can be explained through the main characteristics of this model, namely students are given the opportunity to discover concepts independently through teacher guidance. This model requires students to actively ask questions, discuss, and search for information relevant to the learning material. This is different from conventional methods, where students receive more information directly from the teacher (teacher centered) without a deep exploration process. Thus, Discovery Learning creates a more interactive learning environment and encourages students to be more active in every stage of learning. The constructivism theory put forth by Jean Piaget holds significant relevance to the findings of this study. According to Piaget (1976), individuals actively construct knowledge through their interactions with the environment and the experiences they face. In the framework of Discovery Learning, students are provided with the chance to uncover and construct their own understanding through exploration and problem-solving activities. This is in line with the basic principles of constructivism, where students do not just passively receive information, but they play an active role in building their own understanding through interaction with the environment. With this model, students are invited to structure their understanding through direct experience, which helps them remember and understand the material more deeply.

Furthermore, Silberman (2014) has argued that students learn best when they take an active role in their own education by contributing to class discussions, working together on projects, or investigating topics on their own. The Discovery Learning approach follows this active learning principle by involving students directly in activities like group discussions, experiments, and problem solving. Students' activeness in asking questions, discussing and solving problems with their peers improves their understanding of the concepts taught. In addition, this approach also builds students' confidence in learning, as they are given the freedom to find answers and solve problems on their own. The Discovery Learning approach focuses on a more interactive learning process compared to conventional methods, which tend to be more teacher-centered. Students in this model are given the opportunity to discover concepts independently through exploration and problem solving. Thus, students do not just receive information from the teacher, but they actively seek out and discuss to build their own understanding of the material being taught. In contrast, conventional methods tend to focus more on the delivery of material by the teacher directly through lectures or structured explanations. This approach often makes students more passive, as they only act as listeners or recipients of information, not as discoverers or problem solvers.

However, in its application, the Discovery Learning model also has its own challenges. One of the obstacles found in this study is that not all students are ready to be actively involved in discovering concepts independently. Some students

who are accustomed to passive learning methods have difficulty adjusting to this model, so they need more intensive guidance from the teacher. This is in line with the research of Ayu et al. (2023), showed that in the application of Discovery Learning, success is highly dependent on students' readiness to learn independently and the teacher's ability to guide students during the exploration process. In comparison to the conventional method, the time needed to apply the discovery learning model is longer because students need to go through the exploration process and discover the concept by themselves before understanding it thoroughly. Although the application of Discovery Learning takes a longer time compared to the conventional method due to the more in-depth exploration process, the results achieved in terms of increasing student activeness show that this model is very effective. Increased student participation in Sociology learning shows that this model can create a more meaningful learning experience and can help students understand the material more deeply.

In order to increase student participation, it is important to create a classroom atmosphere that encourages them to interact more actively (Hulu & Telaumbanua, 2022). Students should be directly involved in every learning process, not just sitting, being quiet and listening. They need to be given the opportunity to ask questions, discuss and share opinions with their friends, so that their understanding of the material deepens (Ali & Julaihah, 2023). According to Nurcahyanti et al. (2023), educators are urged to tap into their creativity when crafting classes to foster critical thinking, inquiry, and the development of students' own knowledge of the subject matter. Especially in sociology classes that need in-depth understanding of ideas, the Discovery Learning model offers a practical way to improve instruction. Student engagement, motivation, and subject matter understanding are all positively impacted by giving them the freedom to investigate ideas on their own. Therefore, it is anticipated that the Discovery Learning model will undergo further development and be broadly implemented in educational settings to enhance student engagement, thereby maximising the quality of learning and achieving optimal educational outcomes.

3.2.2 The Effect Of Discovery Learning Model On Sociology Learning Outcomes

The findings indicated a notable impact of implementing the Discovery Learning model on enhancing student performance in Sociology subjects. The data indicates that students utilising the Discovery Learning model demonstrated a more significant enhancement in their comprehension of the material compared to those engaged in learning methods. This suggests that the learning model demonstrates efficacy in enhancing students' cognitive capabilities. Several prior studies relate to this research, including the findings of Darmawati et al. (2021), It shown that the social studies learning results were significantly improved after using the Discovery Learning model. This viewpoint is supported by Awaru et al. (2023), who confirmed that active learning methods, such as Discovery Learning, demonstrate greater effectiveness in enhancing student learning achievement compared to conventional methods.

Implementing discovery learning successfully improves student learning outcomes, according to another research by Sembiring et al. (2024). Students' participation in asking questions, finding solutions, and contributing to class discussions is largely responsible for this uptick. The incorporation of engaging materials significantly enhances the learning process. The verification stage, in which students substantiate their answers, enhances comprehension significantly. Rasyid et al. (2024) similarly noted that Discovery Learning enhances not only motivation but also student learning outcomes. Internal factors such as learning interest and student independence in exploration activities as well as external factors such as the learning environment and interactive learning strategies also play a role in improving student learning outcomes. In line with this, Ahmad and Amin (2022) also revealed that direct interaction between students and teachers, as well as a supportive learning environment, can increase student motivation, which ultimately affects their academic results. Student learning outcomes are a form of academic achievement obtained through various means, such as completing assignments, actively participating in class, and taking exams. All of these factors play an important role in determining student learning success (Amelia & Nugraheni, 2021).

This study's findings align with the Student Engagement theory put forth by Kearsley and Shneiderman (1998), highlighting the significance of student engagement in the learning process as a crucial element affecting learning outcomes. This theory posits that students engaged in the learning process exhibit increased motivation, enhanced comprehension of the material, and improved critical thinking abilities. The implementation of the Discovery Learning emphasises the active participation of students in knowledge acquisition and problem-solving, aligning with the fundamental principles of this theory. By providing opportunities for students to find answers and interact with learning materials directly, this model creates a learning environment that encourages student engagement, which ultimately impacts their learning outcomes. In

the context of student engagement theory, this study shows that the Discovery Learning model's substantial impact is evident in the knowledge it imparts to students. Students are encouraged to actively participate in the process of knowledge construction via the use of this model. (Yadi et al., 2022). In the learning process, students do not just listen to information delivered by the teacher, but they are directly involved in discovering new concepts and solving problems (Aini & Ramadan, 2024). In this way, students do not just remember information, but they really understand and apply what they have learned.

The Discovery Learning models in this research proved effective in strengthening student understanding and student engagement. During the two meetings, there was high student enthusiasm during the learning process in the experimental class. They did not just passively receive material from the teacher, but actively searched for and understood the concepts taught through exploration activities and group discussions. Inter-student discussions, where they ask each other questions and share their understanding, help clarify and deepen the material being studied. This activeness allows students to connect new knowledge with the understanding they already have, thus strengthening their overall understanding (Ristiani et al., 2022). With this model, students are given the opportunity to solve problems independently, thus increasing their involvement in learning. This activity creates a more interactive atmosphere, where students are not only recipients of information, but also active participants in finding solutions and testing their own understanding (Susiyanti, 2021). For example, when they conduct group discussions, students are not only listening to explanations from the teacher, but also trying to understand the material through direct experience. This discussion allows them to exchange opinions, ask questions, and test their understanding of the material. This process triggers curiosity and motivation to continue to find out more about the concepts learned (Wulandini et al., 2021). In addition, they also gain understanding from their classmates, which broadens their horizons. A more thorough grasp of the subject is fostered by this engagement, which substantially aids in the learning process.

The importance of student-to-student communication in the Discovery Learning model's efficacy was also highlighted. When students are invited to discuss and share knowledge, they not only deepen their own understanding, but also help their classmates in understanding the material. Open discussions give students the opportunity to ask each other questions, give opinions, and discuss more complicated concepts (Suandi, 2022). This is different from the conventional method, where social interaction between students is more limited and tends to focus more on receiving information from the teacher. The research reveals that implementing Discovery Learning diminishes students' reliance on teacher-led lectures and strengthens the teacher's role as a facilitator, guiding students in exploring and comprehending concepts. Students become more independent in learning and more confident in developing their knowledge. This is in line with Syafruddin and Komalasari (2022), which states that teachers are no longer just a source of information, but rather function as mentors who motivate students to keep trying to find their own answers. According to the given explanation, there is a strong relationship between how actively students participate in their learning and the results they achieve. There is a favourable correlation between increased student involvement and better learning results. The higher level of student engagement in learning process, the more likely they are to get better learning outcome. Instead, less than ideal learning results are likely to occur if students do not actively participate in the learning process. Model like Discovery Learning, which promote active student engagement in the learning process, can effectively enhance these two areas.

4. CONCLUSION

According to the findings, the Discovery Learning significantly enhances student engagement. Students get a more thorough understanding of the subject via increased participation in information retrieval, discussion, and problem-solving using this methodology. The experimental group was 76% active, whereas the control group was 71% active, according to the pretest findings. The posttest findings showed a significant improvement after the Discovery Learning was implemented; students in the experimental class achieved 84% engagement, while those in the control class rose to 77%. A two-tailed significance value of 0.000, which is lower than 0.05, was produced by the hypothesis test. This leads us to embrace Ha1 and reject H01. This indicates that Discovery Learning exerts a more significant impact on student engagement than the conventional approach utilised in the control class. In addition, the results of student learning are significantly and noticeably impacted by Discovery Learning. With an average posttest score of 80 compared to 57.69 on the pretest, it is clear that the experimental class significantly improved their learning results. The control group, on the other hand, showed an increase of 56 to 68.8. According to the results of the hypothesis test, the significance level is less than 0.05, with a 2-tailed value of 0.002. Therefore, H_{0k} is not recognised whereas H_{a2} is. This provides additional evidence that Discovery Learning improves

students' academic performance. The results of this study show that students' involvement with the learning process and their final grades are both improved when they use Discovery Learning. Educators are therefore advised to adopt this model to create more engaging and interactive learning environment that encourages students to participate more actively in the learning process. The Discovery Learning is applicable across a range of subjects that necessitate a comprehensive understanding of concepts. As such, this model can be innovative learning alternative to increase student activeness. This method enhances student engagement while simultaneously deepening their comprehension of the subject. It also fosters the development of critical thinking skills, which are essential for sustained learning over time.

RECOMMENDATIONS

It is recommended that further research examine other, more diverse variables that can influence the effective of the Discovery Learning model, using the latest theories so that the findings are more relevant to the times. To find out how broadly applicable the Discovery Learning approach is, researchers may broaden the area of study by include students from a variety of academic backgrounds and levels.

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AUTHOR'S CONTRIBUTIONS

All authors were fully involved in every stage of this research, from planning, data collection, analysis, to the preparation of the discussion. Each author contributed in developing the manuscript, providing input, and revising until the final manuscript was completed and ready for publication.

CONFLICT OF INTEREST

The authors affirm that no competing or conflicting interests existed throughout the compilation of this study.

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