



THE EFFECT OF DISCOVERY LEARNING MODELS AND COGNITIVE STYLES ON RESULTS OF IPS LEARNING AT SDN 06 KETOL, CENTRAL ACEH

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Abstract

This research purpose to: (1) determine the differences in student learning outcomes using the Discovery Learning model and student learning outcomes using the Direct Instruction learning model; (2) Knowing the differences in learning outcomes of students who have a Field Independent (FI) cognitive style with students who have a Field Dependent (FD) cognitive style; (3) Knowing the interaction of Discovery Learning models with learning styles in students in increasing learning outcomes. The sample in this study were the fourth grade students of SD Negeri 06 Ketol, Aceh Tengah Regency, in the academic year 2020/2021 as many as 40 students. Collecting data in this study through cognitive style tests and social studies learning outcomes tests. Hypothesis testing is done by using the Two Way Anova test. The results showed that: (1) The social studies learning outcomes of students taught by discovery learning model were higher than direct instruction learning models ($F_{count} = 15.681$ and $sig. 0.000 > 0.05$); (2) Social studies learning outcomes of students who have a field independent cognitive style are higher than students who have a field dependent cognitive style ($F_{count} = 4.395$ and a $sig. 0.043 > 0.05$) and (3) There is an interaction between the learning model and the cognitive style. in influencing

student social studies learning outcomes (Fcount = 7.696 and sig. 0.009 > 0.05).

Keywords: *Discovery Learning, Cognitive Style, Learning Outcomes*

A. Introduction

In the aim of improving the quality of education, there must be efforts from various parties, one of which is elementary school teachers. Primary school teachers have a very important role in shaping the character of students. The success of education must have cooperation between all levels of elements, such as government, school principals, teachers and parents. Primary school teachers must be able to know the conditions, problems and characteristics of students, if the teacher is able to solve existing problems, the percentage of success in education will be high. The success of education is inseparable from the choice of approaches, learning strategies, learning methods, learning styles and learning models that are varied so that learning will be meaningful for students whose outputs are educational goals that are expected to be realized and run well.

Each child is unique, has its own characteristics and strengths and weaknesses. Some are responsive and fast in receiving information during learning and some are slow in receiving information. This causes the learning objectives will not be optimal if the teacher does not pay attention to the characteristics of their students. Students who are fast in receiving information must be honed through active and independent learning in order to hone their abilities and there are also students who are slow to receive information by giving special treatment.

Social Sciences (IPS) is the study of how humans interact with their surroundings (Yusrizal, 2020). The ideal conditions expected from social

studies learning outcomes in schools are not in accordance with expectations, because student activities in social studies learning are very necessary because in principle learning is to act to change attitudes and behavior by carrying out activities. (Yusrizal & Fatmawati, 2020). Initially, the study of Social Sciences (IPS) entered Indonesia from the United States. The background of the application of Social Science learning in the curriculum cannot be separated from the situation of the Republic of Indonesia at that time, which was in chaos, one of which was in the field of education. Meanwhile, the purpose of social studies learning is to help students develop social skills and to believe in their own life amidst physical and social strengths in society. So it is hoped that the future social studies learning objectives can make students able to become good citizens, having character, responsibility and loving the Unitary State of the Republic of Indonesia (NKRI) with all their hearts. Therefore, social studies learning is very important to be applied at the Elementary School (SD) level,

Learning outcomes are the output of educational goals, namely obtaining knowledge, mastery of skills, and attitude formation. Therefore, the teacher should ideally design a learning process that is able to make all students actively involved in the learning process being carried out (Yusrizal & Fatmawati, 2020). Low learning outcomes can be caused by several factors, namely internal factors and external factors. Internal factors include: illness due to unhealthiness, low interest and talent in learning. While external factors include: lack of family attention to learning, the learning model used does not vary, teachers do not understand the characteristics of students and the social environment affects learning difficulties.

Gunawan (2016: 47) states that IPS is an integrated study material

that simplifies, adapts, selects and modifies the concepts and skills of History, Geography, Sociology, Anthropology and Economics. According to Supardi (2011: 182) Social Sciences is a study of integration of various branches of social sciences and humanities, social studies learning is integrated design so that the application process will be meaningful and contextual. according to Awan Mutakin (Trianto 2009: 176) the objectives of social studies include: (1) Having awareness and concern for society and its environment, through understanding historical values and community culture, (2) understanding basic concepts and being able to use methods adapted from various sciences - social science so that it is able to solve social problems,

Webster's (2004) states that the individual means that it cannot be divided (undivided) and cannot be separated, its existence and can be said to be a single being and has distinctive characteristics. What determines the difference between one individual and another is seen from their special characteristics. Individual characteristics obtained from the environment tend to be influenced by friends, relatives and even society. Without realizing it, heredity and the characteristics that are influenced by the environment are separate. However, it will carry over simultaneously starting from childhood, adolescence, even towards adulthood. Meanwhile, according to Sunarto & Hartono (2013: 4) that each individual has his own characteristics, traits or inherent characteristics (heredity) and characteristics obtained from the influence of his environment.

B. Method

This type of research is an experimental study with a 2x2 factorial design. This research was conducted in SD Negeri 06 Ketol District Central

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Aceh. The sample in this study were students of class IV which consisted of 2 classes with 20 students each. Data collection techniques used in this study were cognitive style tests and student social studies learning outcomes tests. The data analysis technique used in this research is descriptive and inferential statistical techniques. Hypothesis testing is done by using the Two Way Anova test with a significant level of 0.05. Before the Two Way Anova test is carried out, first the analysis requirements test is carried out, namely the normality test and the homogeneity test of the data. The normality test was performed using the Shapiro-Wilk test, while the data homogeneity test was carried out by the Levene test with a significant level of 0.05.

C. Finding and Discussion

1. Research result

a. Student Social Studies Learning Outcomes Taught with the Discovery Learning Learning Model

Based on the data obtained and the results of statistical calculations, it is known that the social studies learning outcomes of students who are taught with the Discovery Learning model get the lowest score, namely 73, and the highest score, namely 100, with an average of 87; the variance was 62.78 and the standard deviation was 7.92. The frequency distribution of the social studies learning outcomes of students taught by the Discovery Learning model is visually shown in the form of the following histogram image:

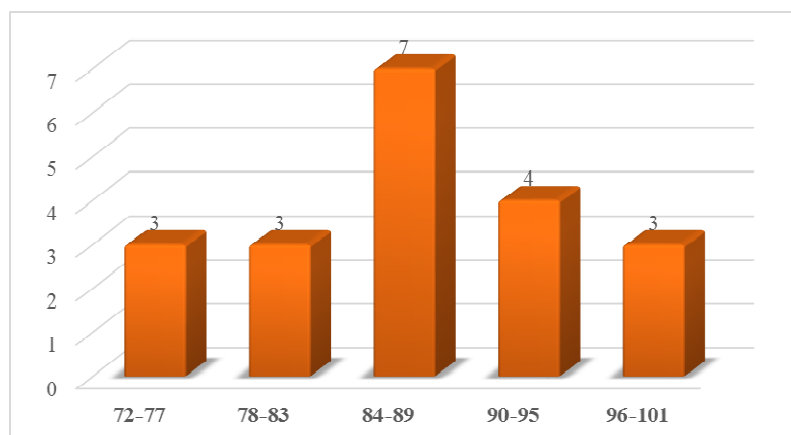


Figure 1. Histogram of Student Social Studies Learning Outcomes Taught with the Discovery Learning Learning Model

b. Student Social Studies Learning Outcomes Taught by Direct Instruction Learning Model

From the data obtained and the results of statistical calculations, it is known that the social studies learning outcomes of students who are taught with the Direct Instruction learning model get the lowest score, namely 64, and the highest score, namely 96, with an average of 78; the variant is 74.78 and the standard deviation is 8.65. The frequency distribution of the social studies learning outcomes of students taught with the Direct Instruction learning model is visually shown in the form of the following histogram image:

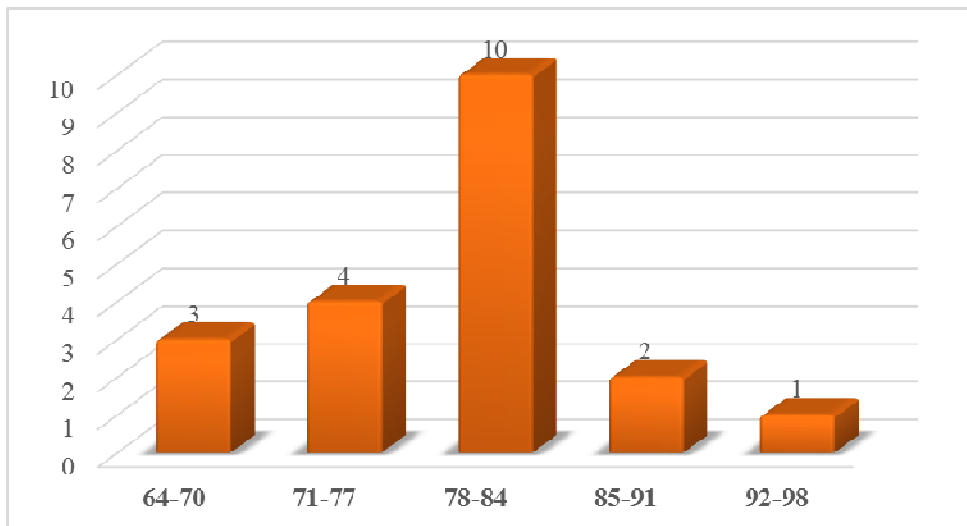


Figure 2. Histograms of students social studies learning outcomes taught by the Direct Instruction Learning Model

c. Social Studies Learning Outcomes of Students with Field Independent Cognitive Style

From the data obtained from the results of statistical calculations, it is known that the social studies learning outcomes of students who have the Field Independent cognitive style get the lowest score of 64, and the highest score is 100, with an average of 84.67; the variant is 100.24 and the standard deviation is 10.01. The frequency distribution of students social studies learning outcomes who have the Field Independent cognitive style is visually shown in the following histogram image:

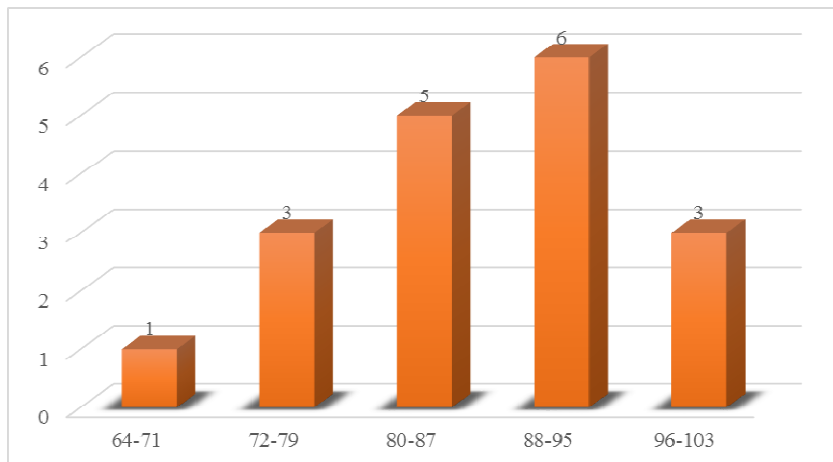


Figure 3. Histograms of Student Social Studies Learning Outcomes with Field Independent Cognitive Style

d. Social Studies Learning Outcomes of Students with Field Dependent Cognitive Style

From the data obtained and the results of statistical calculations, it is known that the social studies learning outcomes of students who have the Field Dependent cognitive style get the lowest score, namely 64, and the highest score is 96, with an average of 80.73; the variant is 68.02 and the standard deviation is 8.25. The frequency distribution of students social studies learning outcomes who have a field dependent cognitive style is visually shown in the following histogram image:

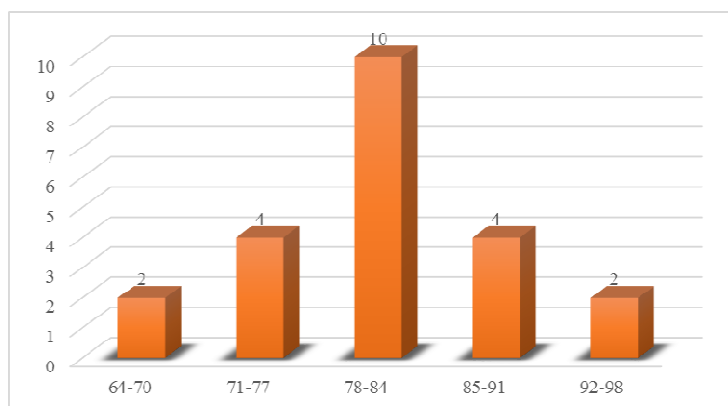


Figure 4. Histograms of students social studies learning outcomes with field dependent cognitive style

e. Normality test

Data normality testing was carried out by using the Shapiro-Wilk statistical test using SPSS version 23. The overall normality test of research data can be seen in the following table:

Table 1. Data Normality Test Results

	Tests of Normality					
	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statisti cs	df	Sig.	Statisti cs	df	Sig.
Standardized Residual for Result Test	,114	40	,200 [*]	,973	40	,455
*. This is a lower bound of the true significance.						
a. Lilliefors Significance Correction						

Based on this table, it can be seen that the results of the post-test data normality test with the Shapiro-Wilk test obtained a probability value or a significant value of $0.455 > 0.05$, thus it can be concluded that the post-test data is normally distributed.

f. Homogeneity Test

After carrying out the normality test, this study also conducted a homogeneity test. The homogeneity test purpose to determine whether the research sample is homogeneous or not. A summary of the homogeneity test calculation can be seen in the following table:

Table 2. Homogeneity Testing of Posts-test Data

Levene's Test of Equality of Error Variances a
Dependent Variable: Learning Outcomes

F	df1	df2	Sig.
1,913	3	36	, 145
Tests the null hypothesis that the error variance of the dependent variable is equal across groups.			
a. Design: Intercept + Learning_ Model + Cognitive_ Style + Learning_ Model * Cognitive_ Style			

Based on the table, it shows that the post-test data homogeneity test obtained a probability value or a significant value of $0.145 > 0.05$, thus it can be concluded that the research data group is relatively the same or is homogeneous.

g. Hypothesis test

Hypothesis testing in this study uses two-way ANOVA with 2x2 factorial, hypothesis testing is calculated with the help of SPSS version 23. Hypothesis testing data can be seen in the following table:

Table 3. SPSS Output ANOVA Calculation Results

Tests of Between-Subjects Effects					
Dependent Variable: Social Studies Learning Outcomes					
Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1320,000a	3	440,000	8,057	, 000
Intercept	270424,384	1	270424,384	4951,820	, 000
Learning model	856,384	1	856,384	15,681	, 000
Cognitive_style	240,024	1	240,024	4,395	, 043
Learning_ Model * Cognitive_style	420,269	1	420,269	7,696	, 009
Error	1966,000	36	54,611		
Total	275536,000	40			
Corrected Total	3286,000	39			
a. R Squared = , 402 (Adjusted R Squared = , 352)					

Table 4. Comparison of Social Studies Learning Outcomes Based on Learning Models

1. Learning Model					
Dependent Variable: Social Studies Learning Outcomes					
Learning approaches	Mean	Std. Error	95% Confidence Interval		
			Lower Bound	Upper Bound	
Discovery Learning Model	87,750	1,687	84,330	91,170	
Direct Instruction Model	78,400	1,652	75,049	81,751	

Table 5. Comparison of Social Studies Learning Outcomes Based on Cognitive Style

2. Cognitive Style					
Dependent Variable: Social Studies Learning Outcomes					
Cognitive style	Mean	Std. Error	95% Confidence Interval		
			Lower Bound	Upper Bound	
Dependent Field	85,550	1,753	81,995	89,105	
Field Independent	80,600	1,582	77,391	83,809	

Table 6. Comparison of Social Studies Learning Outcomes Based on Cognitive Style

3. Learning Model * Cognitive Style						
Dependent Variable: Learning Outcomes						
Learning model	Cognitive style	Mean	Std. Error	95% Confidence Interval		
				Lower Bound	Upper Bound	
Discovery Learning Model	Dependent Field	93,500	2,613	88,201	98,799	

	Field Independent	82,000	2,133	77,673	86,327
Direct Instruction Model	Dependent Field	77,600	2,337	72,861	82,339
	Field Independent	79,200	2,337	74,461	83,939

- **First Hypothesis**

The statistical hypothesis tested is:

$$H_0 : \mu A1 \leq \mu A2$$

$$H_a : \mu A1 > \mu A2$$

Based on the output SPSS in Table 3, it is found that the value of $F_{count} = 15,681$ and the probability value or significant value of the learning approach is $0.000 < 0.05$. Thus it can be said that there is a significant difference between the average social studies learning outcomes of students who are taught by the discovery learning model compared to the direct instruction learning model. Furthermore, in Table 4, it is found that the average social studies learning outcomes of students taught by the discovery learning model amounted to 87.750. Meanwhile, the social studies learning outcomes of students taught by direct instruction learning model amounted to 78,400. Thus, it can be concluded that the social studies learning outcomes of students who are taught by the discovery learning model are higher than the direct instruction learning model.

- **Second Hypothesis**

The statistical hypothesis tested is:

$$H_0 : \mu b1 \leq \mu b2$$

$$H_a : \mu b1 > \mu b2$$

Based on the SPSS output in Table 3, it is found that the value of $F_{count} = 4.395$ and value probability or significant value of $0.043 < 0.05$. Thus it can be said that there is a significant difference between the average learning outcomes of students who have a field independent cognitive style compared with a field dependent cognitive style. Furthermore, based on Table 5, it is found that the average social studies learning outcomes of students who have an independent field cognitive style are 85.550. While the social studies learning outcomes of students who have a field dependent cognitive style amounted to 80,600. So that the hypothesis testing rejects H_0 and accepts H_a . With the conclusion that the social studies learning outcomes of students who have a field independent cognitive style is higher than students who have a field dependent cognitive style.

- **Third Hypothesis**

The statistical hypothesis tested is:

$$H_0 : A \times B = 0$$

$$H_a : A \times B \neq 0$$

Based on the SPSS output in Table 3, it is found that $F_{count} = 7.696$ and a significant value of 0.009 with $\alpha = 0.05$. Then it can be seen that the sig. $0.009 < 0.05$ so that the hypothesis testing rejects H_0 and accepts H_a . With the conclusion that there is an interaction between learning models and student cognitive styles in influencing student learning outcomes.

2. Discussion

In the conventional learning model the responsibility of the teacher in teaching students is quite large and the role of the teacher in planning learning activities is very large, because in the conventional

learning model teacher-centered learning whereas in the discovery learning model students are stimulated to be able to solve problems, think at high levels, explore information, cooperate and improve communication skills through the role of the teacher as a guide. In this case, learning activities are not entirely dependent on the teacher who is expected to make class conditions interesting and fun.

Based on the results of the research conducted, it was found that the average social studies learning outcomes of students who were taught using discovery learning learning models were 87.750. Meanwhile, the average social studies learning outcomes of students taught by the direct instruction approach were 78,400. Therefore, it can be said that in social studies subjects, especially in terms of "natural phenomena (events) that occur in Indonesia and neighboring countries", it is more appropriate to teach using the discovery learning model considering that the average learning outcomes obtained by students are higher than the average. Average student learning outcomes are taught with the direct instruction approach or the approach that has been used by teachers in social studies subjects.

Based on the results of the analysis during the research process, the researcher observed that each student has different abilities in understanding the lesson. The continuity of this research makes researchers closer to the object of the problem. The essence of the problem found was that social studies learning outcomes were not achieved. Therefore, by applying the discovery learning model, it is alleged that it can help students easily understand the concept of natural phenomenon (events) that occur in Indonesia and neighboring countries. Based on these thoughts, it can be said that the students social studies

learning outcomes will be better and increase if the teacher applies the discovery learning model to help the daily learning process.

The results of hypothesis testing using two-way ANOVA for the third hypothesis, namely the interaction between learning models and students cognitive styles in affecting student learning outcomes to get $F_{count} = 7.696$ and a significant value of 0.009 with $\alpha = 0.05$. Then it can be seen that the sig. 0.009 < 0.05 so that the hypothesis testing rejects H_0 and accepts H_a . With the conclusion that there is an interaction between learning models and student cognitive styles in influencing student learning outcomes.

D. Conclusion

Based on the discussion previously described, several conclusions can be drawn including the following:

1. The social studies learning outcomes of students taught with discovery learning learning models are higher than direct instruction learning models ($F_{count} = 15.681$ and sig. 0.000 < 0.05).
2. Social studies learning outcomes of students who have a field independent cognitive style is higher than students who have a field dependent cognitive style ($F_{count} = 4.395$ and sig. 0.043 < 0.05).
3. There is an interaction between learning models and cognitive styles in influencing student social studies learning outcomes ($F_{count} = 7.696$ and sig. 0.009 < 0.05).

Bibliography

Arends, Richard. (2008). *Learning to Teach*. Jakarta: Pustaka Belajar
Degeng. (2001). *Landasan dan Wawasan Pendidikan*. Malang: Lembaga Pengembangan Pendidikan (LP) Universitas Negeri Malang
Gunawan, Rudy. (2016). *Pendidikan IPS Filosofi, Konsep dan Aplikasi*.

- Bandung: Alfabeta
- Joyce, Bruce; Weil, Marsha and Showers, Bweverly. (1996). *Models of Teaching*. Boston: Allyn and Bacon
- Mulyasa. (2014). *Guru Dalam Implementasi Kurikulum 2013*. Bandung: Remaja Rosdakarya
- Saefuddin, Asis. (2014). *Pembelajaran Efektif*. Bandung: Remaja Rosdakarya.
- Sunarto & Hartono. (2013). *Perkembangan Peserta Didik*. Jakarta: Rineka Cipta
- Supardi. (2011). *Dasar-dasar Ilmu social*. Yogyakarta: Ombak
- Suyanti, Nunuk. (2014). Pengaruh Gaya Kognitif terhadap hasil belajar akuntansi keuangan menengah 1. *Jurnal Ilmiah Akuntansi dan Humanika*, 4(1).
- Trianto. (2009). *Mendesain Model Pemmbelajaran Inovatif-Progresif*. Jakarta: Kencana Prenada Media Group
- Webster, Merriam. (2004). *Merriam Webster's Collegiate Dictionary*. United States of America: Merriam Webster Incorporated.
- Yusrizal, Y. (2020). Pengaruh Pendekatan Etnopedagogi dan Motivasi Belajar Terhadap Hasil Belajar IPS Siswa di SD Negeri Panton Luas Baru. *Jurnal Ilmiah Maksitek*, 5(3), 84–92.
- Yusrizal, Y., & Fatmawati, F. (2020). Pengaruh Model Reciprocal Teaching dan Kecerdasan Intrapersonal terhadap Hasil Belajar IPS Siswa. *Jurnal Tematik*, 10(2), 90–95.