

# Effect of Group Investigation Model and Cognitive Style on History Learning Outcomes After Controlling Students' Initial Ability

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## ABSTRACT

This study aims to determine the effect of the Group Investigation learning model and cognitive style (Field Independent and Field Dependent) on the learning outcomes of history after controlling the students' initial abilities. This research was conducted at SMA Negeri 1 Kisaran, Asahan Regency in the even semester of the 2020/2021 academic year. The sample of this study was 36 people who were taken by cluster random sampling technique. The results showed that (1) the students' history learning outcomes who had Field Independent cognitive styles were higher than those who had Field Dependent cognitive styles after controlling for students' initial abilities, (2) There was an interaction effect between the Group Investigation learning model and cognitive styles on the results of learning history after controlling the students' initial abilities. The results of this study are addressed to the Asahan District Education Office so that it is necessary to continuously provide direction, training, and assistance in managing history learning activities for teachers. It is necessary for teachers and students to be equipped with guidebooks for using the Group Investigation model, to use the Group Investigation learning model, socialization in the History MGMP forum, seminars, and efforts to improve the ability to write journals related to education and student learning outcomes is necessary.

**Keywords:** *Initial Knowledge, Group Investigation Model, Cognitive Style, History Learning Outcomes.*

## 1. FIRST LEVEL HEADING (HEAD 1)

Facing global developments, Indonesian people must have their own identity. That the identity of the nation is still inadequate in Indonesian society. The current condition is that our nation is uneducated, stupid, apathetic, and poor. While the identity of the nation many a can be created if our nation educated adequate, economically necessities of life has basically been met, people educated, better and prosperous, so they are willing to participate actively and responsibly in the life of society, nation and state (Winataputra 2010: 1).

The results of Margaret's research (2010: 344) show that successful social learning is learning in which teachers help students to learn to understand starting from their own region or country from a complex level, in the form of abstract concepts such as the relationship between the past history of their country, current conditions, and the future development of the country,

will be more meaningful for the future integrity of the region or country where students live.

SMA Negeri 1 Kisaran is a school in Asahan Regency, also has the responsibility to prepare graduates to be able to compete in continuing to higher education. which seeks to encourage students to be independent, creative, critical and innovative, able to communicate and be able to compete.

From the observation data conducted by researchers on students of SMA Negeri 1 Kisaran, Asahan Regency, which relates to the implementation of History learning, it is concluded that the learning process in the classroom carried out by the teacher is still not optimal. The paradigm adopted still tends to be *teacher centered*, with a conventional model with the assumption that knowledge can be transferred from the teacher's mind to the student's mind. The teacher acts as

an active subject and students act as passive objects and are treated as not being part of what they are being taught. The learning process is dominated by the teacher, so that it only focuses on emphasizing content recitation, without giving enough time for students to reflect on the material presented, students only receive, store, and perform other activities in accordance with the information provided by the teacher, so that student activity in learning becomes low which has an impact on low interest and learning outcomes in history subjects.

The low learning outcomes of history are influenced by various variables from within and from outside students. According to Reigeluth (III, 1983:8-15) that there are three variables that need to be considered in the learning process, namely: (1) learning conditions, or factors that influence the effect of using the model in an effort to improve learning outcomes, (2) the model, is a way of -methods that can be used under certain conditions to achieve learning outcomes, and (3) learning outcomes, which are effects that can be used as indicators of the value of using a model under different conditions. Conditions and learning outcomes are learning variables that cannot be manipulated; only model variables can be manipulated. In other words, to achieve optimal learning outcomes, the Hasur model is adapted to the existing learning conditions.

In addition to the model, there are factors that come from within students that affect one's learning. Characteristics of students are important factors to consider because they are unique from one student to another. One of the characteristics that need to be considered is the student's cognitive style. According to Witkin (1971:17) cognitive style is a consistent way that is done by students in capturing stimulus or information, how to remember, think and solve problems. According to Keefe (1987:3) that cognitive style describes behavior habits that are relatively fixed in a person in receiving, thinking, solving problems, as well as in storing information.

According to Ausubel (1997: 53-54), students' initial ability is an ability that has been possessed before learning takes place which is a prerequisite for following the next learning process. Early abilities play an important role in the learning process. Initial ability also describes the readiness of students to accept new subject matter that will be given by the teacher in a higher class.

Based on the opinion above, it can be seen that the learning process is not optimal because the model used is not in accordance with the

characteristics of the subject, while on the other hand students have different cognitive styles. In this case, students need the right model so that learning becomes more meaningful. Meaningful learning will occur by implementing a model that can connect or link new information in relevant concepts contained in a person's cognitive structure (Dahar, 1991:112)

The research was conducted as an effort to conduct experimental research on the effect of the cooperative model, namely the *Group Investigation* (GI) model, which is expected to improve student history learning outcomes. As a comparison of the consequences of the application of the cooperative model, as well as how it relates to cognitive style (*Field Independent and Field Dependent*) and initial ability in improving history learning outcomes for students of class XI SMA Negeri 1 in the even semester 2020/2021.

### **1.1. Identification of Problems**

From this phenomenon will arise various questions regarding the background, the low student history learning outcomes are caused, among others:

1. Is the Group Investigation model and the delivery of history teaching materials less attractive to students?
2. Is the history learning technique used not in accordance with the characteristics of the students?
3. Is there any influence of the Group Investigation model and students' cognitive style with the students' history learning outcomes?
4. How does the level of education or human resources of history teachers affect the acquisition of history learning outcomes?
5. How is the acquisition of student history learning outcomes, if the model applied by the teacher is not in accordance with the student's cognitive style?
6. How is the influence of the Group Investigation model on student history learning outcomes?
7. Is there a significant relationship between the model and student learning styles ?
8. Is there a significant effect between the Group Investigation model and student history learning outcomes?
9. Is there a significant effect between the Group Investigation model and students' cognitive style on students' history learning outcomes?

### **1.2. Restricting of Problems**

With regard to the research location, this research is limited to SMA Negeri 1 Kisaran , Asahan

Regency, which involves class XI (eleven) students in the even semester of the 2020/2021 school year, and is carried out from January to February 2021.

The independent variable in this study is the cooperative model, namely the Group Investigation (GI) model. The moderator variable is the student's cognitive style, which consists of Field Independent (FI) and Field Dependent (FD) cognitive styles obtained using a written test presented in the form of the Group Embedded Figure Test (GEFT). The dependent variable is the result of learning history obtained from the results of the formative exam in the even semester of the 2020/2021 academic year. The results of learning history are limited to the cognitive domain.

### **1.3. Formulation of the Problems**

Based on the background of the problem, problem identification, and problem limitation, the formulation of the problem in this study are:

1. Do h acyl learn the history of the group of students who have a style of cognitive *Field Independent* (FI) higher compared with students who have a style of cognitive *Field Dependent* (FD) se have been using a model *Group Investigation*?
2. Is there an interaction between the Group Investigation model and cognitive style on history learning outcomes after controlling students' initial abilities?

### **1.4. Research Purposes**

This research generally aims to obtain an overview of the influence of the Group Investigation model and cognitive style on students' history learning outcomes, after controlling for students' initial abilities. In addition, this study will also determine whether there is an interaction between the two independent variables that affect the learning outcomes of history.

Specifically, the objectives to be achieved in this research are to find out:

1. History learning outcomes of students who have a *Field Independent* (FI) cognitive style are higher than the group of students who have a *Field Defendant* (FD) cognitive style after using the Group Investigation model.
2. The interaction between the Group Investigation model and cognitive style on students' history learning outcomes after controlling for students' initial abilities.

### **1.5. Research Benefits**

The results obtained in this study are expected to be useful theoretically and practically as follows:

1. Theoretical Benefits  
As a contribution of thought and reference material for teachers, managers, developers, educational institutions and further researchers who want to examine in more depth the results of the application of the *Group Investigation* (GI) model, as well as its influence on historical learning outcomes.
2. Practical Benefits.
  - a. For teachers, the results of this study can be used as an alternative for consideration and to implementing n model of cooperation.
  - b. For students, benefit from the variety of models applied to history learning, which are adapted to the cognitive style and initial abilities of students.
  - c. For institutions, the results of this study can be used as another alternative in choosing the cooperative model to be used, especially history learning.
  - d. For researchers, the results of this study are a useful experience in adding insight, knowledge and skills.

## **2. DISCUSSION**

Gagne (1985:174) states that learning is a natural process that can bring about changes in human dispositions/capabilities that persist over a long period of time and are not the result of growth. Learning gives birth to the skills, knowledge, attitudes and values that humans acquire. According to Kemp (1977:19), one's learning condition is related to one's ability to concentrate, absorb and store information.

Driscoll in Reiser (2012:36) defines learning as a consequence of changes in abilities that come from the learner's experience and interaction with the world. According to Schunk (2012:39) learning is a change in behavior or a change in behavioral capacity in a certain way that lasts a long time. The change in question results from practice or other forms of experience.

According to constructivist theory, learning is a process of forming (construct) knowledge by the learner himself (Suparman, 2012:20). But the teacher must also introduce scientific conventions that students cannot discover through experience. This goal can be achieved

through questions in the form of reasoning (Margaret, 2011:25).

Learning outcomes are the most important part of learning. According to Reigeluth (III, 1983:8-15) classifies learning outcomes into 3 parts, namely: 1) effectiveness, 2) efficiency, and 3) attractiveness. The effectiveness of learning is measured based on the level of achievement of the learner. The effectiveness of learning outcomes is described by careful mastery of the learned behavior. The efficiency of learning outcomes is measured by observing the tendency of students to keep learning. Attractiveness is closely related to the time used and or the cost required. Attractiveness is closely related to the attractiveness of subjects by students and the quality of learning outcomes greatly affects it.

According to Keller (2004:77), learning outcomes can be seen from changes in the results of personal input in the form of motivation and hope to succeed. The input is in the form of the design and management of motivation which does not directly affect the amount of effort devoted by students to achieve learning objectives. .

Learning outcomes in the context of this study were measured from student history learning outcomes based on learning objectives using the *Group Investigation* (GI) model, the level of achievement of student competencies which has a function for preparing reports on progress of learning outcomes and improving the learning process through assessment activities carried out consistently. , systematic, and programmed so that changes in cognitive aspects appear (Bloom, 1979: 67). Anderson's taxonomy is shown in Table 2.1. following,

Understanding history is knowledge and study of various events or events that have occurred in the past. This opinion is in line with the opinion of Sjamsuddin (2012: 6) which states that in general and in simple terms, history is the study of the human past. Humans are of course the main characters here, history occurs because of human behavior that causes various events and events to occur. Historical events studied in history are observed from various historical relics such as artifacts, written evidence, and cultural documentation.

History is a branch of science that systematically examines the overall development of the process of change and dynamics of people's lives with all aspects of their lives that occurred in the past (Kuntowijoyo, 2013: 18). Kuntowijoyo also argues that history is a matter that presents facts diachronically (related to time), ideographic (telling something), unique (different from one another), and empirical

(based on something that has been experienced by humans).

According to Kartodirdjo (1982 : 12) History is a description of the human past and its surroundings as social beings that are scientifically compiled and complete. Things that are arranged include a sequence of facts with interpretations and explanations that provide understanding and understanding of what has passed. According to Carr (1982 : 30) argues that history is a process of endless interaction between historians and the facts that exist in them; an endless dialogue between the present and the past.

From the many cooperative models developed by experts, the author chooses Model *Group Investigation* (GI). Model selected by researchers because the model is very suitable for subjects of history. Understanding the subject of history as an analysis, requires students' understanding in group investigations. The *Group Investigation* (GI) model is categorized as a group investigation model. According to Joyce, Weil and Calhoun (2011:320-323-324) the group model needs to be described in the form of: 1) syntax, 2) social system, 3) reaction principle, 4) support system, 5) instructional impact and accompaniment impact.

The GI model, developed by Sharan and Sharan in the 1970s at Tel Aviv University (Israel), has philosophical, ethical and psychological roots in writing which corresponds to Dewey's view of cooperation in the classroom as a prerequisite for being able to face life's problems. The teacher's role in the GI model is as a resource person and facilitator who directs the process that occurs in the group (Slavin, 2006:217).

According to Zingaro (2013:1) the GI model is built from four original theories, namely Dewey's educational philosophy, group dynamics, constructivist psychological cognition and motivation theory. Dewey's educational theory emphasizes that the goal of education is to build a responsible society that is able to work together to solve problems and build knowledge. Group dynamics show learning and solutions to problems that arise when working in groups. The constructivist perspective asserts that knowledge is obtained through one's interaction with the environment and the people around him. Intrinsic motivation makes the GI model different from ordinary learning. The purpose of learning the GI model is to make students learn because they are interested in the material not because of external demands (Zigaro, 2013: 1)

One of the condition variables that affect student learning outcomes is the characteristics of the students themselves. Characteristics can be in the form of talent, motivation, learning style, thinking ability,

interest, attitude, initial ability, intelligence and so on. The characteristics of students are things that need to be identified by the teacher to be used as a guide in developing learning programs (Uno, 2008:143). Cognitive style is one of the student characters that is widely studied by experts and grouped based on different points of view.

According to Witkin (1971:17) that *cognitive style* is a *cognitive characteristic mode of functioning that reveal our perceptual and intellectual activities in a highly consistent and protective way*. Furthermore, Messick stated that *cognitive style represents a person's typical of perceiving, remembering, thinking, and problem solving*. Meanwhile, Vernon gives limits to cognitive styles, namely: *Cognitive style is a superordinate construct which is involved in many cognitive operations, and which accounts for individual differences in a variety of History*.

Woolfolk and Lorrence distinguish cognitive styles based on the dimensions of differences in psychological aspects and the time of understanding the concept. Cognitive style that is based on the psychological aspect is the force *Field-Independent* (FI) and *Field-Dependent* (FD). While the cognitive style based on the time of understanding the concept is an impulsive and reflective style (Anita, 2008:195-198). To measure the dimensions of cognitive style *Field-Independent* (FI) and *Field-Dependent* (FD) has developed an instrument that is shaped image (Witkin, 1971: 21). In this instrument, the subject is asked to look for a simple image in a more complicated and complex pattern. This instrument is called the *Group Embedded Figure Test* (GEFT).

The initial ability of students is not only related to knowledge or certain subject matter. However, the initial ability in question can be knowledge in different dimensions, such as metacognitive processes and *self-understanding*. Knowledge is basically not just a commodity that can be transferred from one mind to another without any transformation (Berger, 2011: 7). Transformation here means the acquisition of meaning or new knowledge by using knowledge or experience that has been previously obtained by students. The prior knowledge and experience possessed by students reflects the importance of early abilities in learning.

Based on the explanations of the experts above, what is meant by initial ability is a set of abilities possessed by students at this time (before taking lessons) in the form of understanding, experience, prerequisite knowledge and serves as a reference or main input for teachers before carrying out learning,

especially for setting goals. learning and design of meaningful learning for students.

This research was conducted at SMA Negeri 1 Kisaran Jalan Madong Lubis No. 5 Postal Code Range 21233 District City Kisaran Timur Asahan Regency, Telephone 0623-42878 Fax 0623-345221. The implementation is in the even semester of the 2020/2021 school year starting from January to February 2021. The research implementation is adjusted to the lesson schedule at the school where the research is conducted for 8 meetings. The first meeting was to measure the initial ability and cognitive style. Meetings 2 to 7 carried out treatment using the G I model for SMA Negeri 1 Kisaran. At the 8th meeting to measure student learning outcomes.

The population in this study were all students of class XI (eleven) SMA Negeri in Kisaran, namely: SMA Negeri 1 Kisaran, Asahan Regency, which is 10 (ten) classes at SMA Negeri 1 Kisaran, where each class consists of 36 students, so the total all students are 360 people. The sampling technique was done by means of *cluster random sampling*. This technique is used because it is not possible to conduct a simple random sample with the consideration that the sample is already in the group (class).

Factorial design in this study comparing models ( $X_1$ ) is a model of *Group Investigation* (GI) with accompanying cognitive style variable as the independent variable ( $X_2$ ). While the dependent variable is the result of student history learning ( $Y$ ).

Testing the normality of the sample data was carried out by being studied with the Lilliefors test.<sup>3</sup> The hypothesis that will be tested for normality is

- $H_0$  : Data comes from a normal contributing population
- $H_1$  : Data derived from a population that does not contribute to normal

The test criteria are to accept the null hypothesis ( $H_0$ ), if  $L_{count} \leq L_{table}$ , and vice versa if  $L_{count} > L_{table}$ , then the null hypothesis ( $H_0$ ) is rejected at  $\alpha = 0,05$ .

Table 1 Summary of Normality Test Calculation Results

Group	N	$L_{count}$	$L_{table}$	Information
$A_1$	36	0.1183	0.1476	Normal Distribution
$B_1$	36	0.1034	0.1476	Normal Distribution
$B_2$	36	0.1392	0.1476	Normal Distribution
$A_1 B_1$	17	0.1832	0.2148	Normal Distribution
$A_1 B_2$	19	0.1791	0.2032	Normal Distribution

The data in Table 1 above, shows that all groups of History learning outcomes that were tested were taught by the Lilliefors test giving a smaller  $L_{arithmetic}$  value than the  $L_{table}$  value in  $\alpha = 0,05$ .

Based on this, it can be concluded that all history learning outcomes in this study were sourced from a normally distributed population, thus the data normality requirements can be met and further analysis can be carried out, namely analysis of variance.

The homogeneity test of the data was carried out using two techniques, namely the F test to test the homogeneity of two sample groups (between A and between B), and the Bartlett test to test the homogeneity of four sample groups (  $A_1 B_1, A_1 B_2$  ).<sup>5</sup>

**a. Data Homogeneity Test in Group A<sub>1</sub>**

The calculation results obtained that the calculated F value = 1.23 and the F table value  $F_{table} (\alpha = 0,05)_{(35,35)} = 1,757$ . The test criteria are to accept  $H_0$  if  $F_{counts} \leq F_{table}$  and on the other hand reject  $H_0$  if  $F_{counts} > F_{table}$ . The F test for group A<sub>1</sub> shows that the calculated F is smaller than the F table, meaning that  $H_0$  is accepted. The conclusion is that between group A<sub>1</sub> has the same or homogeneous variance.

**b. Data Homogeneity Test between Groups B<sub>1</sub> and B<sub>2</sub>**

The calculation results obtained that the calculated F value = 1.71 and the F table value  $F_{table} (\alpha = 0,05)_{(35,35)} = 1,757$ . The test criteria are to accept  $H_0$  if  $F_{counts} \leq F_{table}$  and on the other hand reject  $H_0$  if  $F_{counts} > F_{table}$ . The F test for groups B<sub>1</sub> and B<sub>2</sub> shows that the calculated F is smaller than the F table, meaning that  $H_0$  is accepted. The conclusion is that between groups B<sub>1</sub> and B<sub>2</sub> have the same or homogeneous variance.

Testing the homogeneity of variance was carried out through an examination of the variance of the learning outcomes scores. The hypothesis to be tested for homogeneity is

$$H_0 : \sigma_1^2 = \sigma_2^2 = \sigma_3^2 = \sigma_4^2$$

$$H_1 : \sigma_1^2 \neq \sigma_2^2 = \sigma_3^2 = \sigma_4^2$$

The test criteria are a to accept the null hypothesis ( $H_0$ ), if  $\chi^2_{calculated} \leq \chi^2_{table}$  and vice versa if  $\chi^2_{calculated} > \chi^2_{table}$ , then the null hypothesis ( $H_0$ ) is rejected at  $\alpha = 0,05$ .

**Table 2.** Summary of the calculation results of the homogeneity test <sup>8</sup>

Combined Variance	B	Dk	Price		Conclusion
			$\chi^2_{calculate}$	$\chi^2_{table}$	
14,03	87,17	3	0,51	7,82	Homogeneous

Based on the results in Table 2 above, it shows that the value  $\chi^2_{hitung}$  is smaller than the value  $\chi^2_{tabel(0,05;3)}$  which means that  $H_0$  is accepted. The conclusion is that the variances of the four data groups ( $A_1 B_1, A_1 B_2$ ) are the same or homogeneous.

Regression linearity test was conducted to test whether the covariate (X) regression equation model on the dependent variable (Y) was linear or not. The regression linearity test for the covariate variable (X) on the dependent variable (Y) was carried out because the inverse statistical test with anacova requires that the covariate (X) regression equation model on the tricate variable (Y) must be linear. The results of the calculation of the linearity of X against Y are presented in Table 3.

**Table 3.** Regression Linearity Test

Source Variance	Dk	JK	RJK	F <sub>count</sub>	F <sub>table</sub>
					( $\alpha = 0,05$ )
Total	36	-	-	-	-
Regression (a)	1	493355.6	493355.6	10,19	4.020
Regression (w/a)	1	181.5	181.5		
Remainder	34	1246.9	17.8		
Tuna Match	8	189.6	23.7	1,39	1,773
Error	28	1057.3	17.1		

Based on the calculation shows  $F_{count} 1.39$   $F_{table} (\alpha = 0,05)(8,62) = 1.773$  so it can be concluded that the regression model influences students' initial abilities on history learning outcomes with a linear pattern.

Testing the significance of the regression effect is intended to determine whether the students' initial ability as a covariate variable (X) has a significant effect or not on history learning outcomes (Y).

The test is carried out by means of the regression coefficient test which is  $\hat{Y} = a + bX$  learned by the F-test. Based on the results of calculations on the regression line in Table 4.12, it is obtained that the F

calculated value = 10.19 > from  $F_{table} = 4.020$ , so it can be concluded that the covariate variable (initial ability) has a significant influence on the dependent variable (History learning outcomes).

Based on the calculations, the value of  $F_{arithmetic} = 1.1 < F_{table} (\alpha = 0,05; 3,71) = 2.734$ . Thus, it can be concluded that groups  $A_1 B_1, A_1 B_2$ , have homogeneous regression coefficients ( *slopes* ), or the four regression lines are assumed to be parallel. The results of the calculation of the regression coefficients for each group are presented in Table 4.

**Table 4.** List of Regression Coefficients for Each Group

No.	Group	Regression Coefficient
1	$A_1 B_1$	$Y = 52,83 + 0,437 X$
2	$A_1 B_2$	$Y = 44,52 + 0,451 X$

**Differences in History Learning Outcomes Between Students Who Learned with FI and FD Thinking Styles, After Using the Group Investigation Model . (main effects)**

Hypotheses tested:

$$H_0: \mu_{A_1 B_1} = \mu_{A_1 B_2}$$

$$H_1: \mu_{A_1 B_1} > \mu_{A_1 B_2}$$

The results of the further test using the Scheffe test in Table 4 show that the comparison of students' history learning outcomes who have FI and FD cognitive styles in students who are taught with the GI model obtained  $F_{count} = 9.43 > F_{table} = 2.740$  in  $\alpha = 0,05$ , then  $H_0$  rejected and  $H_1$  accepted. Thus, it can be said that the history of students who have the FI cognitive style is higher than the students who have the FD cognitive style in students who are taught the *group investigation* (GI) model after controlling for initial abilities.

Based on the results of the average residual test (Table 3), the value is  $\underline{Y}_{(res)A_1 B_1} = 87.61 > \underline{Y}_{(res)A_1 B_2} = 80,14$ . This shows that the history learning outcomes of students who have the FI cognitive style tend to be higher than the learning outcomes of students who have the FD cognitive style in students who are taught the *group investigation* (GI) model. These results also indicate that students who have the FI cognitive style are more appropriate to apply the GI learning approach. Furthermore, the research hypothesis which states that the history learning outcomes of students who have the FI cognitive style are higher than students who

have the FD cognitive style in students who are taught by the *Group Investigation* (GI) model after controlling for students' initial abilities, has been **verified**.

Based on the calculations in Table 3, the source of variance B shows that the  $F_{calculated}$  value =  $9.049 > F_{table} (\alpha = 0,05)(1,67) = 3.984$ . Thus, it is concluded that there are historical learning outcomes between groups of students who have a higher *Field Independent* (FI) cognitive style compared to students who have a *Field Dependent* (FD) cognitive style after controlling for initial abilities. This means that the magnitude of the  $F_{calculated}$  value generated in testing this hypothesis comes purely from the student's cognitive style because the influence of initial abilities has been purified or controlled systematically.

This is in accordance with the results of the history study group of students who have the FI cognitive style with an average correction of  $\underline{Y}_{(res)B_1} = 84,03$  while the group of students who have the FD cognitive style with an average correction of  $\underline{Y}_{(res)B_2} = 81,53$ . The results of these calculations indicate that the learning outcomes of history between the group of students who have the FI cognitive style are higher than the group of students who have the FD cognitive style after controlling for initial abilities. Thus the FI cognitive style possessed by the students in this study could improve history learning outcomes better than students with the FD cognitive style. This finding also answers the research hypothesis that the historical learning outcomes between groups of students who have a *Field Independent* (FI) cognitive style are higher than students who have a *Field Dependent* (FD) cognitive style after controlling for students' initial abilities.

**The Interaction Between Models and Cognitive Styles on History Learning Outcomes, After Controlling Students' Initial Ability. (interaction effects)**

Hypothesis tested:

$$H_0: \text{Interaksi } A X B = 0$$

$$H_1: \text{Interaksi } A X B \neq 0$$

Based on the results of calculations on the source of variance Interaction AXB shows that the value of  $F_{count} = 43,623 > F_{table} = 3,984$  in  $\alpha = 0,05$ , then  $H_0$  is rejected and  $H_1$  is accepted. This means that the model has an influence on historical learning outcomes depending on the cognitive style after controlling for initial abilities, and vice versa. Thus the research hypothesis which states that there is an interaction between the model and cognitive style on historical learning outcomes has been **proven true**.



Based on the anacova calculation as shown in Table 11, the A x B interaction variance source shows that the calculated F value = 43,623 > F<sub>table</sub> ( $\alpha = 0,05$ )(1,67) = 3,984. Thus H<sub>0</sub> is rejected H<sub>1</sub> accepted. This means that there is an interaction effect between the model (A) and cognitive style (B) on the learning outcomes of history after controlling for students' initial abilities. Furthermore, it can be explained that the student history learning approach depends on the cognitive style after controlling for initial abilities, and vice versa, the cognitive style (FI/FD) effect on students' history learning outcomes depends on the model after controlling the students' initial abilities.

Based on the calculation data above, it can be concluded that the effect of model interaction and cognitive style on historical learning outcomes after controlling for initial abilities is strongly influenced by the given model and differences in students' cognitive styles. This can be seen with the following indications:

- (1) For the group of students who were taught using the *Group Investigation* (GI) model, the students' history learning outcomes with *Field Independent* (FI) cognitive style (A<sub>1</sub>B<sub>1</sub>) were corrected on average 87.61, higher

than the learning outcomes. the history of students who have *Field Dependent* (FD) (A<sub>1</sub>B<sub>2</sub>) cognitive style corrected an average of  $\bar{Y}_{(res)A_1B_2} = 80,14$ ;

The results of the above study indicate an interaction between the choice of the GI model and cognitive style. To improve the learning outcomes of history students who have a *Field Independent* (FI) cognitive style are more suitable to be taught using the *Group Investigation* (GI) model.

### 3. CONCLUSION

Based on the results of research, data analysis, hypothesis testing, and discussion of research results on the effect of models and cognitive styles on student history learning outcomes by controlling students' initial abilities, the following conclusions are drawn.

1. Learning outcomes History of students who have FI cognitive style is higher than students who have FD cognitive style after controlling for students' initial abilities.
2. There is an Interaction effect between the GI model and cognitive style on students' history learning outcomes after controlling for students' initial abilities.

### AUTHORS' CONTRIBUTIONS

The title "AUTHORS' CONTRIBUTIONS" should be in all caps.

### ACKNOWLEDGMENTS

The title "ACKNOWLEDGMENTS" should be in all caps and should be placed above the references. The references should be consistent within the article and follow the same style. List all the references with full details.

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