Cognitive Process Of Students In Solving Mathematical Problem Judging From Cognitive Style Of Field Independent And Field Dependent In Junior High School

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Abstract. This study aims to describe Field Independent (FI) students and Field Dependent (FD) students in solving mathematical problem of triangular. The type of research used in this study is a descriptive qualitative with data collection techniques namely conducting interviews and Group Embedded Figure Test (GEFT) tests and first to each subject given a problem solving test. The GEFT test was given to 31 students and then examined the results of these tests to determine 6 research subjects, namely 3 subjects who were cognitive in Field Independent (FI) and 3 subjects who were cognitive in Field Dependent (FD). Then given a problem solving test to the subject and interviewed the 6 subjects to find out the cognitive processes that occur in solving mathematical problems. The results show that cognitive processes that are cognitively styled by Field Independent (FI) are able to recall, understand problems, calcify, analyze and evaluate in solving problems while cognitive processes that are cognitive-style Field Dependent (FD) are able to recall, understand problems but not can classify, analyze and not evaluate problems.

1. Introduction

In solving mathematical problems, loyal people have different ways and styles of thinking because not everyone has the same thinking ability. Everyone has special ways of acting, which are expressed through consistent perceptual and intellectual activities [1]. Perceptual and intellectual aspects reveal that each individual has different characteristics from other individuals. In accordance with the review of these aspects, it was stated that individual differences can be expressed by cognitive types known as cognitive styles. Cognitive style is the way a person processes, stores and uses information to respond to a task or various types of environment. In this study, researchers chose to focus on the type of cognitive style of the Field Independent-Field Dependent. The fundamental difference between the two cognitive styles is in terms of how to see a problem. Based on several studies in the field of psychology, it was found that individuals with Field Independent cognitive styles tend to be more analytical in seeing a problem than individuals with a cognitive style in the Field Dependent. The basic characteristics of both cognitive styles are very suitable to be applied in research that involves the process of cognition in solving mathematical problems.

Based on observation, interviews with subject teachers and experience of researcher, in solving mathematical problems it was found that there were students who showed excellent abilities, there

were students who showed ordinary abilities, and there were students who experienced difficulties. In solving problems, almost most students write systematic steps, namely starting with writing down what is known and being asked and then solving the problem. Although it shows similarities in writing systematic problem solving steps, the differences are seen in terms of identifying what is known and asked from a problem solving problem which has implications for differences in solving problems. This fact shows that there are different cognitive factors among students that affect problem solving abilities.

Based on the above background, the formulation of the problem in this study is: How are the cognitive processes of students with cognitive styles of Field Independent (FI) and Field Dependent (FD) in solving the mathematical problem of triangular material? Then the purpose of this study is: To describe the cognitive style of the Field Independent (FI) and the Field Dependent (FD) in solving the mathematical problem of triangular material.

2. Understanding of Cognitive

The term "Cognitive" comes from the word cognition meaning understanding, understand. Definition of the extent of cognition (cognition) is the acquisition, structuring, and use of knowledge. In the next development, the term cognitive became popular as one of the areas of human psychology / one general concept that includes all forms of recognition which includes every mental behavior associated with problems of understanding, paying attention, giving thought, consideration, processing information, solving problems, consideration, imagining, estimating, thinking and belief. This includes the mentality centered on the brain which is also related to konasi (will) and affection (feeling) related to taste. According to the soul experts of cognitiveist, a person's behavior is always based on cognition, namely the act of recognizing or thinking about situations in which behavior occurs.

Cognitive is a thinking process, namely the ability of individuals to connect, assess, and consider an event or event. So the cognitive process is related to the level of intelligence (intellegence) that marks a person with a variety of interests especially aimed at learning ideas [2]. Some psychologists define cognitive with various terms including Pamela Minet [3] defines cognitive as the development of the mind, which is a thought process of the brain. While Gardner [4] suggests that intelligence capabilities are the ability to solve problems or to create works that are valued in a culture or more. Similar but not the same as Colvin [3] defining cognitive is the ability to adjust to the environment. While Piaget defines cognitive as extensive knowledge, reasoning power, creativity (creativity), language skills, and memory. At the conclusion of cognitive is the process of thinking children in solving problems with their environment so as to create a work that is valued by the environment and culture. The cognition process itself includes aspects of perception, memory, thought, symbol, reasoning, and problem solving.

Based on some severe opinions of the experts above the researchers concluded that cognitive is conscious mental activity, such as thinking, remembering, learning and using language. Cognitive function is also the ability of attention, memory, consideration, problem solving, and abilities such as planning, assessing, monitoring and evaluating.

3. Cognitive Style

The definition of cognitive style was stated [5] that "Cognitive Style is the control process or style which is self-generated, transient, situationally determined conscious activity that the learner uses to organize and to regulate, receive and transmit information and ultimate behavior." Cognitive style is a control process or style that is self-management, as a situational intermediary to determine conscious activities so that a student is used to organize and organize, receive and disseminate information and ultimately determine the behavior of the learner.

One of the characteristics of students is cognitive style. According to Keefe [6] "cognitive style is a typical way students learn, both related to the way of receiving and processing information, attitudes towards information, and habits related to the learning environment. States that cognitive style is an important variable that influences student choices in the academic field, the continuation of academic

development, the way students learn and the way students and teachers interact in class [7]. According to Witkin [8] cognitive style is a characteristic of the cognitive style that serves to express the overall perceptual and intellectual activity in a high consistent and diffuse manner.

Cognitive style of each individual has different characteristics. Therefore, the way someone behaves, judges, and thinks will be different. According to [9] persistent interpersonal differences in how to compile and manage information and experiences obtained are called cognitive styles.

A consistent way done by a student in capturing stimulation or information, how to remember, think, and solve problems is known as cognitive style [8]. Cognitive style is one of the condition variables which is one of the considerations in designing learning, knowledge of cognitive style is needed to design or modify learning material, learning objectives, and learning methods [6].

Based on the expert's severe opinion above the authors conclude that cognitive style is cognitive style is the way a person processes, stores, and uses information to respond to various types of environmental situations.

4. Cognitive Style Field Independent (FI) and Field Dependent (FD)

FI cognitive style is an individual characteristic that tends to view objects consisting of discrete parts and separate from the environment and able to analyze in separating elements from the context more analytically. While cognitive style FD is a characteristic of individuals who tend to organize and process information globally so that the perception is easily affected by environmental changes [10].

Cognitive style is divided into two fields, independent and field dependent [11]. Field independent cognitive style is the style of the students who tend to state a loose picture of the background of the picture and able to distinguish objects from the actual context and not influenced by the environment, while the field dependent cognitive style is a style that has students who receive something more globally and have difficulty separating themselves from their surroundings or being more influenced by the environment [12].

People with independent field cognitive style are people who are able to overcome disturbing background elements when they try to isolate an aspect in certain situations, whereas someone with a field dependent cognitive style cannot free themselves from the disturbing surrounding elements [13]. The fundamental difference between the two cognitive styles is in terms of how to see a problem [14]. A person with independent field cognitive style will more easily decipher complex things and more easily solve problems, learning natural science and mathematics is not too difficult, whereas someone with field dependent cognitive style is stronger in remembering information or interpersonal conversations, easier study history, literature, language and social science [15].

On the basis of his research [16] distinguishing cognitive styles based on psychological aspects is divided into two types, namely: field dependent style and field independent style.
1. Field dependent style, people with this style tend to perceive a pattern as a whole, it is difficult for him to focus on one aspect of the situation or analyze a pattern into various parts.
2. Field independent style, this stylish person tends to perceive separate parts of a pattern according to its components.

Based on the expert opinion above, the researcher concludes that field independent (FI) is the student's perception to obtain information that is influenced by the surrounding environment, while field dependent (FD) is a characteristic of students who are not affected by the surrounding environment.

5. Criteria for Determining FI and FD

According to [10] the identification of the subject's cognitive style in this study was carried out based on the results of cognitive style tests GEFT (Group Embedded Figures Test) consisting of 25 items divided into 3 parts, where 7 items in part I were exercises and 18 items in parts II and III are the core of GEFT. Each correct answer means that the subject is able to precisely thicken the shape of a simple image hidden in a complex image, given a score of 1. In this study, subjects who scored > 9 were classified as FI and subjects who scored ≤ 9 were classified as FD.

6. Cognitive Indicators According to Bloom's Taxonomy

According to [17] the results of the revision of taxonomy bloom into several dimensions as follows:

Table 1. Dimensions of the Cognitive Process

Cognitive Categories and Processes	Other names	Definitions and examples
1. Remembering - taking knowledge from long-term memory		
1.1. Recognize	Identify	Placing knowledge in long-term memory that is in accordance with that knowledge (for example, recognizing important events in Indonesian history).
1.2. Recalling	Take	Taking relevant knowledge from long-term memory (for example, recalling the dates of important events in Indonesian history).
2. Understanding - Constructing of learning materials including those that are spoken, written, and drawn by the teacher		
2.1. Interpret	Classify, paraphrase, present, translate	Changing one form of image (such as a number) into another form (for example, words), (for example paraphrasing important words and documents)
2.2. Example	Illustrate, give examples	Finding examples or illustrations of concepts or principles (for example, giving examples of the schools of painting).
2.3. Classify	Categorizing, grouping.	Determine things in one category (for example, classifying abnormalities, mental disorders examined or explained).
2.4. Summarize	Abstracting, generalizing.	Constructing a general theme for key points (for example, writing a short summary of the events aired on television.
2.5. Conclude	Shout, extrapolate, interpolate, predict.	Make logical conclusions from information received (for example, in learning a foreign language, conclude the grammar based on examples).
2.6. Compare	Contrast, break, match.	Determine the relationship between two objects, and the like (for example, comparing historical events with current conditions).
2.7. Explain	Make a model	Make a causal model in a system (for example, explain the causes of events).

3. Apply - apply or use a procedure in certain circumstances.

| 3.1. Execute | implement | Applying a procedure to a familiar task (for example, dividing a number by another number, these two numbers consist of several digits) |
| 3.2. Implement. | Use | Applying a procedure to a task that is unfamiliar (eg using using the broad triangle formula in the right context). |

4. Analyzing - breaking up the material into its constituent parts and determining the relationships between the parts and the relationship between these parts and the overall structure or purpose.

4.1. Distinguish	Stuck, choose, focus, choose.	Dissecting the relevant part of the subject matter from the irrelevant, the important part of the unimportant (dissecting between numbers that are relevant to irrelevant numbers in math stories).
4.2. Organize	Finding coherence, integrating, outlining, describing roles, structuring.	Determine how elements work or function in a structure (for example, compiling evidence in historical stories into evidence that supports and opposes a historical explanation).
4.3. Attribute	Deconstruct	Determining the point of view, can, the value or intent behind the subject matter (for example, shows the author's point of view according to the author's political views).

5. Evaluate - Take decisions based on criteria and / or standards

| 5.1. Check | Coordinate, detect, monitor, test. | Finding inconsistencies or errors in a process or product has internal consistency; find the effectiveness of a procedure that is being practiced (for example, checking whether the conclusions of a scientist are in accordance with safe data or |
| 5.2. Criticize | Evaluate | not). Find incoherence between a product and external criteria; find out whether a product has external consistency; find the determination of a procedure to solve a problem (for example, determine the best method of two methods to solve a |

			problem).
6. Creating - Combining parts to form a new one from coherent or to make an original product			
6.1. Formulate	Make a hypothesis.		Making hypotheses based on criteria (for example, making hypotheses about the causes of a phenomenon).
6.2. Plan	Design		Plan procedures for completing a task (for example, planning a research proposal on a particular historical topic).
6.3. Produce	Construct		Creating a product (for example, creating a habitat for a particular species for a purpose.

7. Research Methods

The type of research used in this study is descriptive qualitative research, because the data is extracted and obtained through interviews, tests, then the data is presented in the form of sentence elaboration. In this study, the researcher will describe the cognitive process of students in solving mathematical problems in terms of the cognitf Field Independent style (FI) and Field Dependent (FD).

The study was conducted in 2017-2018 Academic Year at Kanisius Kalasan Middle School. Subjects in this study were seventh grade students of Kanisius Kalasan Junior High School, Yogyakarta, who had 3 cognitive styles and 3 students who had FD cognitive styles. The subject selection was determined using purposive sampling technique, which is a sampling as a data source with certain considerations. The choice of the research subject was based on the consideration that the subject had first known the cognitive style by using the GEFT test and students could answer all the thinking process test questions. The determination of subjects in this study was carried out based on the results of cognitive style tests using valid and reliable Group Embedded Figures Test (GEFT).

The object in this study is the cognitive style of Independent Field (FI) and Field Dependent (FD) in solving mathematical problems. The instruments in this study are grouped into two, namely:

1. Cognitive style analysis instrument in the form of Group Embedded Figure Test (GEFT) test consisting of 25 questions.

2. Instrument analysis of students' cognitive processes in the form of problem solving test questions on triangular material as much as 2 questions. GEFT test questions are a set of psychomotor tests designed to determine students' cognitive style. GEFT examines the ability of research subjects by identifying simple forms that are in complex patterns. Based on the GEFT test results can be determined whether the subject has a field independent or field dependent cognitive style.

The data in this study are in the form of qualitative data, namely data obtained from the results of interviews, the results of the Group Embedded Figure Test (GEFT) and the results of the Problem Solving Test. Data collection in this study was conducted using the interview method and Group Embedded Figure Test (GEFT) test conducted by the researcher himself as the main instrument for each subject. Before the interview is conducted, firstly each problem test is given.

Data analysis in qualitative research was carried out through data arrangement logically and systematically, and data analysis was carried out from the beginning the researcher plunged into the research location until the end of the study (data collection). Qualitative data analysis uses words that are always arranged in a text that is expanded or described [17]. The steps of data analysis in this study follow model data analysis [17], namely: data reduction, data display (data exposure), drawing conclusions and verification.

1. Data Collection

The data collected by researchers is in the form of data in the form of written notes, voice notes and photographs. The data collected is very numerous and varied from various research subjects. This data is then transcribed into descriptive notes and some descriptive notes and some notes or opinions from researchers during the research that relate to the object of research.

2. Data reduction

    After the data collection is done, in the next stage the researcher chooses and sorts, makes summaries and indexes data that are considered important or data that is considered to fulfill the research objectives. In addition, in this data reduction, data is also separated from relevant data and irrelevant data, separated from the same data units that are similar, or similar are grouped into data categories.

3. Data exposure

    In data presentation activities, data that has been separated in data reduction is then presented so that it is easy to see and easily find patterns or trends, and easily compared. In this study, the data exposure uses a brief description.

4. Withdrawal of Conclusions and Data Verification

    The data that has been well described is then examined to draw conclusions. Before the final conclusion is concluded, the conclusions drawn must first be verified.

8. Results and Discussion

8.1. Description of the Research Prosess

This research was carried out on seventh grade students of Kalasan Kanisius Middle School Yogyakarta with the following process:

8.1.1. First Meeting

a. Students Awarded Group Embedded Figures Test (GEFT)

Learning the first meeting took place on May 3, 2018 At the first meeting, 31 students in class VII participated. Students are given questions about the ability to find simple forms hidden in a complex image pattern.

b. Students Complete the GEFT Test

After the students were given the GEFT Test by the researcher, the researcher checked the results of the tests that had been collected to get the subject that had an Independent Field cogonitive style and the cognitive style of the Dependent Field.

c. After the researchers examined the cognitive style test results, the researcher selected the Field Independent cognitive style subject and the cognitive style of the Dependent Field based on the score obtained from the subject. Then the researchers coordinate with subject teachers to determine FI and FD subjects based on student achievement in class to test problem solving abilities and be interviewed.

8.1.2. Second Meeting

a. Problem Solving Test

The meeting was held on May 5, 2018. The test was given to 6 subjects consisting of 3 subjects who had an Independent Field cogonitive style and 3 subjects who had a Field Dependent cognitive style.

b. Interviews of the subject matter of the Field Independent cogonitive style and Field Dependent cognitive style were held on March 10, 2018 to determine the cognitive processes of each subject.

9. Overview of FI and FD Research Subjects

GEFT examines the ability of research subjects by identifying simple forms that are in complex patterns. Based on the GEFT test results can be determined whether the subject has a field independent or field dependent cognitive style. Based on the results of the GEFT test, 6 grade VII students of Kanisius Kalasan Middle School, Yogyakarta were selected, consisting of 3 subjects who had independent cognitive field style and 3 subjects who had a field dependent cognitive style.

Characteristics of individuals who have FI cognitive styles are as follows: 1) have the ability to analyze to separate objects from the surrounding environment, so that the perception is not affected when the environment changes, 2) has the ability to organize objects that have not been organized and reorganize objects that have been organized, 3) tend to be less sensitive, cool, keep distance from others, and individualistic, 4) choose a profession that can be done individually with more abstract material or requires theory and analysis, 5) tends to define one's own goals; and 6) Tends to work with intrinsic motivation and is more influenced by intrinsic reinforcement.

Characteristics of individuals who have a cognitive style of FD are as follows: 1) tend to think globally, view objects as a whole with their environment, so that their perceptions are easily affected by environmental changes, 2) tend to accept existing structures because they lack restructuring ability, 3) have social orientation, so that it looks kind, friendly, wise, kind and loving towards other individuals, 4) tends to choose professions that emphasize social skills, 5) tend to follow existing goals; and 6) tend to work by prioritizing external motivation and more interested in external reinforcement, in the form of gifts, praise or encouragement from others.

10. Results of Cognitive Process Tests

The test questions used to determine students' cognitive processes are triangular material description questions which consist of 1 question and are supported by interviews that aim to get more in-depth information about the process of solving triangular questions. The question chosen is a type of story problem that requires analysis in the process of the process with the aim that researchers obtain information about students' cognitive processes. Based on the results of tests and interviews conducted on the six subjects, cognitive processes can be analyzed. The following are the results of the cognitive process analysis of the subject on the question number.

Indicator 1: Calculates the Area of a Triangle that is known as the base and height.

Problem: A table will be carved with 4 carvings like the picture on the side. How much time is needed to complete the engraving? (ket: carvings covering $100 \ cm^2$ can be completed within 60 minutes).

Table 2. Results of Analysis of Students' Cognitive Processes

Based on the answer to the FI 1 subject can not say what is known in the problem, the base and height of the triangle. But in the interview the subject can say 20 is the base and 8 is the height of the triangle. The cognitive process of the F1 subject can recall the steps in solving mathematical problems and can write the triangle area formula that has been studied before.

From the answer the subject FD 1 cannot say what is known in the problem, the base and height of the triangle. But in the interview the subject can say the base of the triangle is 20 and 8 is high. The cognitive process of the subject FD 1 can recall the steps in solving a mathematical problem and can write the triangle area formula that has been studied before. Furthermore, the FD subject interprets the way to determine the area of the triangle and

Furthermore, the FI subject interprets the way to determine the area of the triangle and classifies the area of the engraving and the time of completion, so that FI subject 1 has understood what is known and what is asked in the matter. The FI 1 subject can implement by applying the triangle area formula to get the area of the triangle and apply the base and height into the triangle area formula to solve the problem in the problem. The FI 1 subject can explain the area of the triangle with the time needed, subject FI 1 analyze by finding the area of the triangle that has a base and height, then determine how long it takes to complete the engraving. FI 1 subjects evaluate the way of solving by describing the settlement idea and using the multiplication concept and the division to calculate the time needed to complete the engraving, meaning that the subject is unable to use the concept that has been learned to solve the problem and the outcome of the solution is correct.

classifies the area of the engraving and the time of completion, so that the subject FD 1 has understood what is known and what is asked in the matter. The FD 1 subject can implement by applying the triangle area formula to get the area of the triangle and apply the base and height into the triangle area formula to solve the problem in the problem. The FD 1 subject can explain between the area of a triangle and the time taken, the subject FD 1 analyzes by looking for the area of a triangle that has a base and height known, then determining how long it takes to complete the engraving. The FD 1 subject evaluates the way of solving by explaining the settlement idea and using the concept of division and multiplication to calculate the time needed to complete the engraving, meaning that the subject cannot use the concept that has been learned to solve the problem and the result is correct.

FI 2

The FI 2 subject cannot say what is known in the problem, the base and height of the triangle. But in the interview the subject can say 20 is the base and 8 is the height of the triangle. The cognitive process of the FI 2 subject can recall the steps in solving a mathematical problem and can write down the triangle area formula that has been studied before. Furthermore, the FI 2 subject interprets the way to determine the area of the triangle and classifies the area of the carving and the time of completion, so that the FI 2 subject has understood what is known and what is asked in the matter. FI 2 subjects can implement by applying the triangle area formula to get the area of the triangle and apply the base and height into the triangle area formula to solve the problem in the problem. The FI 2 subject can explain the area

FD 2

Based on the answer the subject FD 2 cannot mention what is known in the problem, the base and height of the triangle. But at the time of the interview the subject can say 20 is the base and 8 is the height of the triangle. The cognitive process of the FD 2 subject can recall the steps in solving a mathematical problem and can write down the triangle area formula that has been studied before. Furthermore, FD 2 subjects interpret the way to determine the area of the triangle and classify the area of the engraving and the time of completion, so that the FD 2 subject has understood what is known and what is asked in the matter. The FD 2 subject can implement by applying the triangle area formula to get the area of the triangle and apply the base and height into the triangle area formula to solve the problem in the problem. The FD 2 subject can explain between the area of a triangle and the

of the triangle with the time needed, the FI subject 2 analyzes by finding the area of the triangle that has a base and height, then determining how long it takes to complete the engraving. The FI 2 subject evaluates in a different way, the way to solve it by explaining the solution idea and using a trial and error method to calculate the time needed to complete the engraving, meaning that the subject is unable to use the concept that has been learned to solve the problem. Although the FI 2 subject uses a trial and error method to solve the problem but the results are correct.

FI 3

FI 3 subjects can mention what is known in the problem, namely a table will be carved with 4 carvings. 100 cm2 carving is completed in 60 minutes. The cognitive process of the F1 3 subject can recall the steps in solving mathematical problems and can write the triangle area formula that has been studied before. Furthermore, the FI subject interprets the way to determine the area of the triangle and classifies the area of the engraving and the time of completion, so that the FI 3 subject has understood what is known and what is asked in the matter. FI 3 subjects can implement by applying the triangle area formula to get the area of the triangle and apply the base and height into the triangle area formula to solve the problem in the problem. The FI 3 subject can explain the area of the triangle with the time taken, the FI subject 3 analyzes by finding the area of the triangle that has a base and height, then determining how long it takes to complete the engraving. FI 3 subjects evaluate the way of solving by explaining the settlement idea and using a trial and error method to calculate the time needed to complete the engraving, meaning that the subject is unable to use the concept that has

time taken, the subject FD 2 analyzes by finding the area of a triangle that has a base and height, then determining how long it takes to complete the engraving. The FD 2 subject evaluates in a different way, the way of completion by explaining the settlement idea and using a trial and error method to calculate the time needed to complete the engraving, meaning that the subject is unable to use the concepts that have been learned to solve the problem. Although the FD 2 subject uses a trial and error method to solve the problem but the results are correct.

FD 3

Based on the answer the subject FD 3 cannot mention what is known in the problem. But in the interview the subject can find out what is in the problem, the base and height of the problem. The cognitive process of the FD 3 subject can recall the steps in solving a mathematical problem and can write down the triangle area formula that has been studied before. Furthermore, FD 3 subjects interpret the way to determine the area of the triangle and classify the area of the engraving and the time of completion, so that the FD 3 subject has understood what is known and what is asked in the matter. The FD 3 subject can implement by applying the triangle area formula to get the area of the triangle and apply the base and height into the triangle area formula to solve the problem in the problem. The FD 3 subject can explain the area of the triangle with the time required, the subject FD 3 analyzes by finding the area of the triangle that has a base and height, then determining how long it takes to complete the engraving. The FD 3 subjects evaluated the method of settlement by explaining the idea of completion and using a trial and error method to calculate the time needed to complete the engraving, the subject immediately multiplied the area of the triangle obtained with a broad engraving with the multiplication concept and distributed with

been learned to solve the problem. Although the FI 3 subject uses a trial and error method to solve the problem but the results are correct.

a known time of 60 minutes. the subject is less able to use the concepts that have been learned to solve the problem. The FD 3 subject cannot plan to solve the problem at the time needed to complete the engraving, so it does not answer the number two problem properly. Based on these results, it can be interpreted that the subject does not understand the concept and cannot use the concepts that have been learned to solve the problem.

Based on the answers and the interview results of the subject FI 1, FI 2, and FI 3 on problem number 1, the cognitive process is **identified that is able to recall** the process of solving the questions and materials that have been obtained previously. Subject FI 1, FI 2 and FI 3 can **understand the problem** by revealing things that are known and questioned in the problem. The three FI subjects understand the relationship between things that are known in the problem and can plan problem solving, then the subject can **calcify concepts** to solve the problem by using concepts that have been studied and **analyzed** by searching for what is asked and **evaluating** by using concepts that have been learned before to answer questions and get the correct answers, but in the FI 2 and FI 3 subjects even though they have prepared the settlement plan correctly, they use the trial and error method in calculating. Both subjects used a trial and error method to determine the time needed to complete the engraving, which shows that the two subjects actually understood the concept but still not fully.

Based on the answers and interview results of the subjects FD 1, FD 2, and FD 3 on problem number 1, the cognitive process is identified that can **recall the process** of solving the questions and material previously obtained. Subjects FD 1, FD 2 and FD 3 can **understand the problem** by expressing things that are known and questioned in the problem. The three FD subjects understand the relationship between the things that are known in the problem and can plan problem solving, then the subject can be able to **calcify concepts** to solve the problem by using concepts that have been studied and analyzed by searching for what is asked and **evaluating** in a way using a trial and error method in the calculation that has been learned before to answer the question and get the correct answer, but FD 3 is still unable to explain the idea to solve the problem. Both subjects used a trial and error method to determine the time needed to complete the engraving, which shows that the two subjects actually understood the concept but still not fully.

11. Conclusion
 1. The cognitive process that is displayed by the Field Independent subject in solving mathematical problems as follows: can **recall the process** of solving the questions and materials that have been obtained before, can **understand the problem** by revealing things that are known and questioned in the problem. Can understand the relationship between things that are known in the problem and can plan problem solving, then the subject can **calcify concepts** to solve the problem by using concepts that have been studied and **analyzed** by looking for what is asked and **evaluating** by using concepts concepts that have been studied beforehand to answer questions.
 2. The cognitive process displayed in the Field Dependent subject in solving mathematical problems as follows: can **recall the process** of solving the questions and materials that have been obtained before, can **understand the problem** by revealing things that are known and questioned in the problem. Not able to plan problem solving, **cannot calcify concepts** to solve the problem by using concepts that have been studied and cannot analyze and not **evaluate** the concepts that have been studied before.

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