Junior High School Students' Conceptual Understanding of Prerequisite Material in Solving SPLDV Questions in View of Students' Cognitive Style

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Anastasya Bella Putri anastasyabellaputri@gmail.com **Keywords:** concept understanding; prerequisite material; cognitive style	Understanding of students' mathematical concepts plays a very important role as a factor to support learning activities. In studying a concept students must understand previous mathematical material as a prerequisite material. Students' conceptual understanding of a material can be influenced by several factors, one of them is the cognitive style factor that has different for each student. Different cognitive styles can be seen from the field independent and field dependent cognitive styles. The importance of understanding students' mathematical concepts of a material that is influenced by students' cognitive styles, it is necessary to analyze students' understanding of mathematical concepts. This qualitative research aims to determine students' conceptual understanding of the prerequisite material and its relationship with students' cognitive styles, and the ways students use in solving existing problems. The results in this study showed there was a significant relationship between the cognitive style of each student and the understanding of mathematical concepts towards the prerequisite material. This is because the field independent cognitive style has a good level of conceptual understanding while the field dependent cognitive style has a low level of conceptual understanding, because they have different levels of conceptual understanding so each student has their own way to solve existing problems.

INTRODUCTION

One of the important things in learning mathematics is understanding mathematical concepts. Radiusman (2015) states that understanding concepts is an important factor in learning activities. Therefore, learning mathematics needs to be strengthened in understanding the concepts needed to encourage students' mathematical thinking. Mathematics learning needs to be improved in understanding concepts that will help people think clearly and thoroughly about mathematics based on logical and systematic rules (Wahyuningsih & Nissa, 2019).

According to Purnama Putri et al (2014) "Basic concepts are generally used continuously to study higher concepts. Therefore, in studying mathematical concepts, one must be able to understand a mathematical topic previously as a prerequisite material. The prerequisite material must be truly understood by students in order to understand the next material. Usman & Kristiawati (2022) argued that students could be declared of mastering prerequisite material if they are able to apply basic problem-solving concepts to more complex material.

The provision of prerequisite material to students in order to know and understand the basic concepts of the material provided by the teacher, so that students who have initial knowledge can follow the learning process (Usman & Kristiawati, 2022). Also stated in (Siska et al (2013) students must have initial knowledge to continue the learning process because initial knowledge have an important role in helping students build bridges between new knowledge and knowledge that has been learned. Learning mathematics has a lot of material prerequisites that must be studied, one of them is the SPLDV topic or (System of Two Variable Linear Equations) that has prerequisite material is algebra. Nihayah (2021) states that in the SPLDV it is very important for students to apply algebraic material, because algebra has topics such as vriable, coefficients, constans and algebraic operations to solve SPLDV problems.

Students' ability to understand a concept is influenced by several factors, these factors arise because each student is different, and one of the factors that influence students' understanding of concepts is cognitive style (Hayah et al., 2019). In line with that stated by Devi (2018) students' cognitive style is also a factor that influences students' understanding of mathematical concepts. With different cognitive styles of students can affect students' ability to think and reason in solving problems (Basir, 2015). Identify 3 types of cognitive styles as field dependent (FD), field intermediate (FDI) and field independent (FI). FD students tend to act based on extrinsic motives, such as seeking guidance and direction from others. FDI students tend to be like FD or FI students because FDI is somewhere in between.

The difference between this research and several previous studies, in this study will focus on students' conceptual understanding of the material that has been given or the prerequisite material in the form of a system of two-variable linear equations with algebra as a prerequisite, which will be reviewed and measured using the cognitive style of each student using indicators concept understanding. The purpose of this research is to (1) find out the relationship between junior high school students' cognitive style and conceptual understanding of prerequisite material, (2) find out junior high school students' conceptual understanding of prerequisite material provided by the teacher, (3) find out how students solve SPLDV questions by using their understanding of algebraic material as a prerequisite that has been learned.

RESEARCH METHOD

The approach that will be used in this research proposal is a qualitative research approach with a qualitative descriptive. In this qualitative research, the data formed is in the form of sentences, words or pictures related to the observed phenomena using scientific logic. The reason the author uses a qualitative research approach is because it has two reasons, that is: first, it makes it easier to make adjustments to reality which has multiple dimensions. Facilitate direct presentation of the principal relationship between researchers and research subjects. While the reason the researcher uses a descriptive approach is because it intends to describe a situation that is being studied and describes actual facts and events accurately. So, through this research the researcher was able to describe the results of understanding the concept of algebraic prerequisite material by students. The type of research used by researchers with a qualitative approach in this study is a type of case study research.

Researchers used a case study approach in this study in order to adjust between empirical facts and true theory to present relevant research results.

This research took place at MTS Surya Buana Malang in Indonesia. The subject of this study was taken from students of class VIII, totaling 14 female students who were grouped into the cognitive style categories field independent(FI) and field dependent (FD) based on the results of the GEFT test, and were taken from each category cognitive style that is 2 student in field independent and 2 student in field dependent.

Table 1. Field independent and field dependent cognitive scoring categories

Category Student Score
Field independent cognitive style $9 < x \leq 18$
Field dependent cognitive style $0 \leq x \leq 9$

Wicaksono (2021)

There are several steps in the stages of research conducted so that the research is more optimal, such as:

1. Identifying Problems
    In this step the researcher identifies the problem from the subject matter that has been selected and wants to be studied. Researchers identify problems by revealing problems related to the topic to be studied.

2. Gathering Information
    At this stage after identifying problems related to the topic of research, the researcher then collects various information that can be used as research planning material that can be used as a reference to solve problems related to research.

3. Research Licensing
    In the next stage the researcher sent a research permit letter to the school, starting with asking for a research permit letter from the campus. Then the permit letter was forwarded to the school at Mts Surya Buana Malang.

4. Determining Research Methods
    After determining the topic of the research, the researcher determines the method that can be used in this research. The title of this study is " Junior High School Students' Conceptual Understanding of Prerequisite Material in Solving SPLDV Questions in View of Students' Cognitive Style" which will use a research method in the form of a qualitative method. Because in this study will discuss related to students' understanding of concepts with material related to each student's cognitive style.

5. Data collection
    At this stage the researcher collects data by meeting data sources and using techniques from data collection that are appropriate to the type of research being conducted. Data collection techniques carried out in this study were in the form of cognitive style tests, concept comprehension test and interviews.

6. Data processing
    The next stage in this research is to perform data processing. In this case the data will be processed by classifying or grouping data from the results of data collection to identify which data needs to be used and which data will be

deleted. Data that is considered important will be included in the research while data that is not important will be deleted by the researcher.

7. Data analysis

   At this stage the researcher conducted an analysis of the data that had been obtained from the Mts Surya Buana Malang.

8. Reporting of Research Results

   The last step in this study is a report on the results of the research that has been carried out by researchers. The report on the results of this research is the responsibility of the researcher after carrying out research data collection activities declared to have been completed. In this case the research report will be tested, evaluated and then revised if there are deficiencies and errors in the research.

The test instrument used in this study is a description test which will be given to students with one question number consisting of 1a, 1b and 1c. The preparation of the items according to the indicators used as a benchmark for student understanding is as follows.

Table 2. Students' Concept Understanding Test

Question
1. Adit bought an apple and 5 oranges for Rp. 33,000.00   Ayu bought 5 apples and 4 oranges for Rp. 60,000.00   a. Make an algebraic form of the statement above!   b. Explain each algebraic component that you have made!   c. Calculate the price of each fruit!

The interview instrument used in this study as a guideline for interviewing students refers to the results of the concept understanding test, so the interview instrument is an unstructured interview.

The data analysis technique used in the research begins with selecting, analyzing and simplifying all data collected from various sources, including:

1. The researcher corrects the students' answers related to the GEFT test questions that have been given to be able to group students into field independent and field dependent cognitive styles

2. After grouping students into the cognitive style of the researcher gave a test item describing understanding of the concept, then correcting students' answers related to the question to find out students' understanding of the concept according to the grouping of field independent and field dependent cognitive styles from the GEFT test results.

3. The test results of each student were used as raw data research subjects as material for interviewing students.

4. The results of the interviews were simplified and compiled into good language so that they could be processed and used.

The data from the GEFT test results, description tests, interview results and data analysis that have been collected and arranged are presented in order to be able to draw conclusions from the research results that have been obtained.

RESULTS AND DISCUSSION

Following are the results of students' GEFT tests that have been grouped into field independent and field dependent cognitive styles.

Table 3. Students' Cognitive Style

No	Initial Name	Score	Cognitive Style
1	AD	6	Field Dependents
2	NHM	7	Field Dependents
3	JS	17	Field Independents
4	FS	16	Field Independents
5	A	9	Field Dependents
6	KSK	16	Field Independents
7	SN	13	Field Independent
8	HA	17	Field Independents
9	AA	7	Field Dependents
10	HS	9	Field Dependents
11	AF	13	Field Independent
12	IN	8	Field Dependents
13	AN	17	Field Independents
14	MA	3	Field Dependents

To measure students' conceptual understanding, the researcher gave a written test to 4 students from the results of the GEFT test with 2 field independent students and 2 field dependent students. The following is a presentation of research results based on the objectives of this study:

1. The Relationship between Students' Cognitive Style and Conceptual Understanding of Prerequisite Material

   a. Field Independent Concept Understanding Test Results

   Understanding of students' concepts in the category of field independent cognitive style from the results of student tests and unstructured interviews based on student answers. With two independent field category students, that is FI 1 and FI 2 students. The following are their test results:

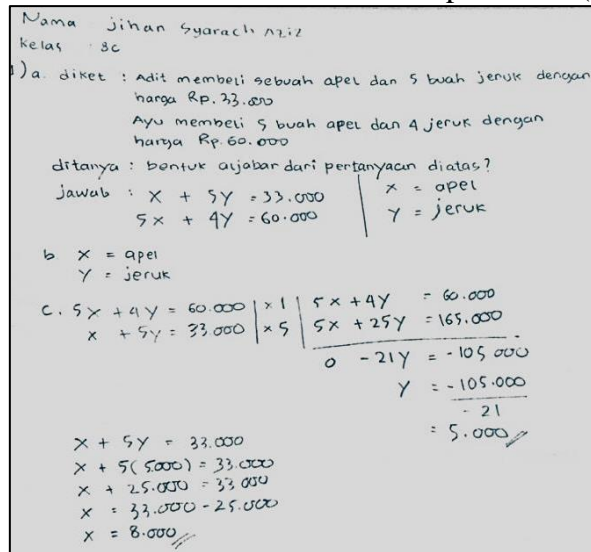Figure 1. Student answer sheet field independent 1 (FI 1)

Figure 2: Student Answer Sheets field independent 2 (FI 2)

Table 4. Achievement of Field Independent Subject Concept Understanding Indicators

Subject Code	Concept Understanding Indicator	Level of Understanding of Subject Concepts
AN (FI1)	1. Restate the concepts that have been learned	Fulfilled
	2. Classify objects according to certain properties according to the concept	Fulfilled
	3. Identify examples and non-examples	Fulfilled
	4. Implement or apply the concept algorithmically	fulfilled
JS (FI 2)	1. Restate the concepts that have been learned	Fulfilled
	2. Classify objects according to certain properties according to the concept	Unfulfilled
	3. Identify examples and non-examples	Fulfilled
	4. Implement or apply the concept algorithmically	Fulfilled

Based on the results of the FI 1 test in Figure 1, where the answers to (1a) fulfill the indicators for identifying examples and not examples where students can identify examples by writing that *a* and *j* are variables of apples and oranges and writing them in algebraic form as a prerequisite, at points this also fulfills the indicator of restating the concepts that have been learned with students being able to write algebraic forms as a prerequisite for SPLDV questions correctly. In (1b) the student's answer fulfills the indicator of classifying objects according to certain properties in accordance with the concept of algebra as a prerequisite in which students classify objects according to the nature of variables, constants and coefficients correctly and precisely. In (1c) the student's answers fulfill the indicators of applying the concept in an algorithm where students apply the steps to solving the problem

correctly. To support the results of this study the researcher conducted interviews with FI 1 based on the student's answer sheet as follows:
Interview 1. Independent Field Student 1 (FI 1)

Researcher : Why did you take (a) and (j) to be apples and oranges variables?
FI 1 : To make it easier for me to answer questions. However, if you use the x and y variables, that's not a problem, ma'am
Researcher : State the variables, coefficients and constants of the following algebraic forms 5x + 4y – 7!
FI 1 : The variables of the algebraic form are x and y, the coefficients are 5 and 4, the constants are -7
Researcher: Explain the method you used to solve the problem in 1c!
FI 1 : After knowing the algebraic form as in 1a, then I calculate the price of each fruit using the elimination method to find the value (j) then I use the substitution method, namely entering the known value (j) to get the value (a)
Researcher: Why didn't you write down what you know and what you asked on your answer sheet for question 1c?
FI 1 : I forgot, ma'am, because I thought I had written it down in answer 1a, so it is no longer needed to answer questions in 1c
Researcher: Were there any difficulties you experienced when solving the problem?
FI 1 : None ma'am
Researcher: Is the question easy to understand?
FI 1 : yes ma'am

From the results of the answer sheets and FI 1 interviews in interview 1, it can be said that FI 1 students understand well the algebraic form as a prerequisite for SPLDV and its examples so that FI 1 can answer each question well. FI 1 students also understand what methods are used in solving SPLDV problems making it easier to apply the problem solving steps that are arranged sequentially correctly in 1c.

Based on the results of the FI 2 test in Figure 2, where the answers to (1a) fulfill the indicators for identifying examples and non-examples where students can identify examples by writing x and y as variables of apples and oranges and writing them into algebraic form as a prerequisite correctly, on This point also fulfills the indicator of restating the concept that has been learned with students being able to write the algebraic form as a prerequisite for SPLDV questions correctly. In (1b) students answer questions but do not match the objects according to the properties of variables or constants, so unable to fulfill the indicators for classifying objects according to certain properties in accordance with the concept of algebra as a prerequisite. In (1c) the student's answer can fulfill the indicator of applying the concept in an algorithmic that students are able to correctly apply the steps of solving the problem sequentially. To support the results of this study, the researcher conducted interviews with FI 2 based on the student's answer sheets as follows:
Interview 2. Independent Field Student 2 (FI 2)

Researcher : From the algebraic form that you have made, state what is meant by the variables and coefficients!
FI 2 : I don't know ma'am
Researcher: Why don't you write down what is known and asked in question 1c?

FI 2 : I forgot ma'am, but what is known is in accordance with answer 1a and was asked, is the price of each fruit

Researcher: Explain the ways and methods you used to solve the problem in 1c!

FI 2 : The solution method that I use is using SPLDV, for the method I'm confused ma'am

Researcher: In SPLDV there are several methods such as elimination, substitution and mixture, then what method did you use to solve the problem?

FI 2 : I use the elimination method to find the y value and use substitution to get the x value

Researcher: Are there any problems that are difficult to solve?

FI 2 : None ma'am

Researcher: Are the questions easy to understand?

FI 2 : Yes ma'am

From the results of answer sheets and interviews 2 with FI 2 it is known that FI 2 students can only correctly write algebraic forms as a prerequisite for SPLDV but do not know any components in algebra as a prerequisite. There was doubt in working on part (1c) because when the researcher asked during the interview the methods and methods used to solve the problem FI 2 answered confused, but when the researcher continued asking by giving a choice of problem solving methods FI 2 students could explain the method well used and applied to solve problems sequentially correctly.

b. Field Dependent Concept Understanding Test Results

Understanding of students' concepts in the category of field dependent cognitive style from student test results and unstructured interviews based on student answers. With two students in the field dependent category, namely students FD 1 and FD 2. The following are the results of their tests:

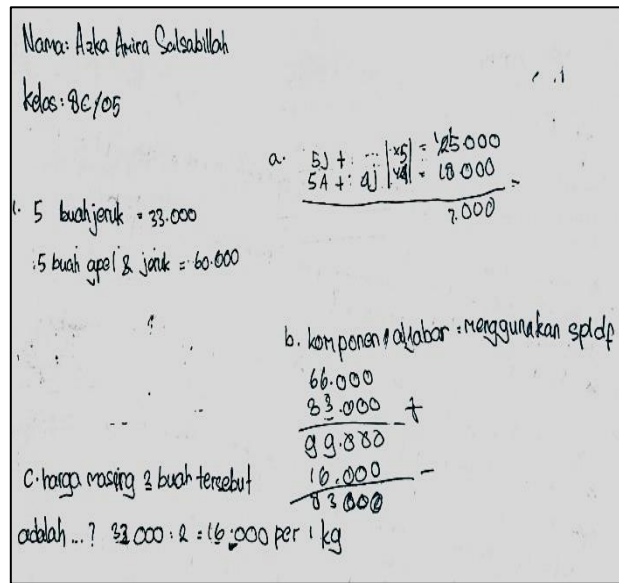Figure 3: Student Answer Sheet field dependent 1 (FD 1)

Figure 4: Student Answer Sheets Field dependent 2 (FD 2)

Table 5. Achievement of Field Dependent Subject Concept Understanding Indicators

Subject Code	Concept Understanding Indicator	Level of Understanding of Subject Concepts
AD (FD 1)	1. Restate the concepts that have been learned	Fulfilled
	2. Classify objects according to certain properties according to the concept	Unfulfilled
	3. Identify examples and non-examples	Unfulfilled
	4. Implement or apply the concept algorithmically	Not yet fulfilled
AA (FD 2)	1. Restate the concepts that have been learned	Unfulfilled
	2. Classify objects according to certain properties according to the concept	Unfulfilled
	3. Identify examples and non-examples	Unfulfilled
	4. Implement or apply the concept algorithmically	Unfulfilled

Based on the results of the FD 1 test in Figure 3, where the answer to (1a) fulfills the indicator to restate the concept that has been learned where students can write the algebraic form as a prerequisite for the SPLDV problem correctly. In (1b) students answered the questions given but did not match the indicators for classifying objects according to certain characteristics, in which FD 1 students could not say which variable or coefficient was meant from the algebraic form that had been made. In (1c) FD 1 students have tried to solve the existing problems however the answers are not in accordance with the completion steps and the answers are worth wrong. To support the results of this study the researcher conducted interviews with FD 1 based on the student's answer sheets as follows:

Interview 3. Dependent Field Student 1 (FD 1)

Researcher: From the algebraic form that you have made, b and x are examples of what values?
FD 1   : I don't know ma'am
Researcher: Then, why did you take the example of the letters b and x in the algebraic form?
FD 1   : Because I just casually took the example, ma'am
Researcher: If b is replaced with a or p, is that okay?
FD 1   : It's okay ma'am
Researcher: Mention what is meant by the variables and coefficients of the algebraic form that you made in 1a!
FD 1   : I don't know ma'am
Researcher: What is the meaning of your answer in 1b?
FD 1   : I don't know ma'am
Researcher: Explain the solution you used in 1c!
FD 1   : I use SPLDV by counting by hand ma'am
Researcher: Then if you use SPLDV to solve this problem, what method do you use?
FD 1   : I'm using the elimination method, it seems ma'am
Researcher: Why don't you write down what is said and known from the problem?
FD 1   : I don't know ma'am
Researcher: Are there any problems that are difficult to solve?
FD 1   : Everything ma'am, because I forgot how to do it
Researcher: Is the question easy to understand?
FD 1   : A little, ma'am

From the results of answer sheets and interviews 3 with FD 1 it is known that FD 1 students can only make algebraic forms as a prerequisite for SPLDV correctly but do not know the values or variables in them. FD 1 students also could not explain what was meant by the variables or coefficients so that FD 1 students could not fulfill the indicators for classifying objects according to certain properties at all. FD 1 students are doubtful about solving the problems they get, however, FD1 has tried to solve the problems even by working randomly.

Based on the results of the FD 2 test in Figure 4, it is known that the answers to (1a) students have tried to write down the algebraic form as a prerequisite for the SPLDV question, although it is not entirely correct, so it cannot be said that it fulfills the indicators to restate the concepts that have been learned. In (1b) FD 2 students gave answers but did not match the objects according to the nature of the variables or constants so that they could not fulfill the indicators. In (1c) FD 2 students gave answers that were not in accordance with the sequential problem solving steps, so unable to fulfill the indicators. To support the results of this study the researcher conducted interviews with FD 2 based on the student's answer sheets as follows:
Interview 4. Dependent Field Student 2 (FD 2)
    Researcher : In answer 1a what do the dots mean?

FD 2   : I don't know ma'am
Researcher: Do you think the answer to 1a is meant in algebraic form?
FD 2   : I think it's done ma'am
Researcher: If a and j are replaced with x and y, is that okay? And why?
FD 2   : Yes ma'am, I don't know ma'am
Researcher: 5x + 4y of these forms, explain which one is meant by
*   variables and coefficients?*
FD 2   : I don't know ma'am
Researcher: Explain the method you used to solve the problem in 1c!
FD 2   : I use SPLDV
Researcher: Then what method did you use?
FD 2   : I forgot ma'am
Researcher: Are there any difficult questions to solve?
FD 2   : Yes ma'am, for 1a and 1c
Researcher: Is the question easy to understand?
FD 2   : A little, ma'am

From the results of answer sheets and interviews 4 with FD 2 it is known that FD 2 students still do not understand algebraic forms as prerequisites and their components such as variables and coefficients. FD 2 students also do not know or understand the methods in SPLDV that are used to solve problems correctly. Due to the lack of understanding and ability of FD 2 students to solve problems so that FD 2 students are said to be unable to fulfill all existing indicators.

2. Students' Conceptual Understanding of the Prerequisite Material Given

Figure 1 shows the results of student answer sheets with the initials AN, the results obtained from the research that AN students in question 1a can give the correct answer to make an algebraic form as a prerequisite for the given SPLDV question, AN students also give a separation with variable *a* as an apple and variable *j* as orange. In 1b AN students write answers related to the algebraic component as a prerequisite which includes variables *a* and *j*, coefficients 5 and 4 and constants that the algebraic form does not have. In 1c AN students solve problems related to the price of each fruit correctly and precisely according to the problem solving steps which are arranged sequentially and correctly.

Figure 2 shows the results of student answer sheets with the initials JS. It was found that JS students in question 1a could make an algebraic form as a prerequisite for the SPLDV question given by making an example of the variable *x* as an apple and *y* as an orange. In 1b JS students wrote answers but did not comply with the algebraic components as a prerequisite which included variables and coefficients. In 1c JS students solve problems related to the price of each apple and orange using the steps of solving an algorithm that are arranged sequentially correctly and precisely.

Figure 3 shows the results of student answer sheets with the initials AD. It was found that AD students were able to write the algebraic form as a prerequisite for the SPLDV of the story questions given in 1a correctly. However, AD students gave incorrect answers in 1b to explain the algebraic component as a

prerequisite for the algebraic form that was made in problem 1a. At 1c AD students wrote inaccurate answers and answers that did not match the question on the question regarding the price of each apple and orange.

Figure 4 shows the results of student answer sheets with the initials AA. The results showed that AA students had tried to write down the algebraic form as a prerequisite for the SPLDV of the word problem, although it was not entirely correct. In 1b AA students write answers that are not in accordance with the algebraic component as a prerequisite which includes variables and coefficients. At 1c AA students gave answers even though they were wrong and did not follow the steps of solving the problem sequentially.

3. Ways for Students to Solve SPLDV Problems by Using Their Understanding of Algebra Material as a Prerequisite

In Figure 1 and the results of interviews 1 with AN students, using problem solving begins with writing down what is known and asked from the problem then making an example of a variable and putting it into algebraic form which is a prerequisite for the SPLDV problem. In accordance with the algebraic form, AN students can mention algebraic components as prerequisites including variables and coefficients. After that, AN students reviewed what was known and asked from the next question and then solved the problem using the SPLDV method, such as elimination to find the value of j and then substituting the value of j to get the value of a, so that the price of each fruit was obtained.

JS students, based on the results of the answer sheets in Figure 2 and the results of the interviews 2, are known to use the same problem solving as AN students. By writing down what is known and asked first, then making a variable example for the price of apples and oranges, and entering it into algebraic form as a prerequisite. However, the JS student could not say which one was included in the variable or the coefficient of the algebraic form she had made, so she only stated that the example of x and y was the price of apples and oranges. In the next question, JS students can easily solve the problem using the SPLDV method they have learned, starting with eliminating the x value to get the y value, then substituting the y value to produce the x value.

Based on the results of the answer sheets in Figure 3 and the interviews 3, it is known AD students took the example for the prices of apples (b) and oranges (x) randomly in order to make an algebraic form as a prerequisite. Furthermore, the AD student explained that all the letters and numbers contained in the problem had their own impression, so only wrote the values of b and x as apples and oranges without giving an explanation of which one was meant by the variable or coefficient. AD students try to solve the last problem using the elimination method, but do not complete the calculations to the end to get the price of each fruit.

The results of the answer sheets in Figure 4 and the results of interviews 4 with AA students show that AA students solve related problems to make algebraic forms a prerequisite for the SPLDV problem by using the example of variables a and j for the price of apples and oranges. However, because there is an apple that has a value of one, AA students cannot put it into algebraic form because for feeling confused. After trying to make the algebraic form a

275

prerequisite for the SPLDV question, the AA student gave inaccurate calculations for each problem which then proceeded to do random calculations and immediately add the prices of the whole fruit to get the price of apples and oranges but the value was wrong.

The following is a discussion of the results of the research based on the objectives of this study:

1. The Relationship between Students' Cognitive Style and Conceptual Understanding of Prerequisite Material

    AN subject (FI 1) is a research subject with a very good level of conceptual understanding. This is because subject AN (FI 1) fulfills all indicators of understanding concepts by going through written tests and interviews. In line with the opinion of Ikasari (2017), research subjects with very good levels were able to achieve all indicators of understanding concepts by taking written tests and interviews in the process. The JS subject (FI 2) is a research subject with a good level of conceptual understanding, because the JS subject (FI 2) has been able to fulfill the three indicators of conceptual understanding through written tests and interviews. From the results of the answer sheets and interviews with the two independent field subjects, it was found that the two subjects were able to solve the problem by applying the information that was known to be able to make steps to solve the problem properly and in an orderly. In accordance with Hasan's opinion (2020) In problem solving, students with a field independent cognitive style can apply known information by taking steps to solve problems regularly and appropriately.

    From the results and discussion obtained for the relationship between students' cognitive styles and conceptual understanding of the prerequisite material, the results are different from previous research conducted by Septiani & Pujiastuti (2020) which concluded that students in the field independent cognitive style (FI) category are equally capable achieve all indicators of understanding mathematical concepts. This is because there are differences in understanding algebraic concepts as a prerequisite for the two independent field subjects so that only one subject can fulfill all indicators on the ability to understand mathematical concepts.

    AD subject (FD 1) is a research subject with a low level of conceptual understanding. This is because AD subjects (FD1) can only fulfill one indicator of understanding the concept from the results of tests and interviews. AA subject (FD 2) is a research subject with a very low level because all indicators of conceptual understanding cannot be fulfilled. Based on the results of the test sheets and interviews with the two subjects, it is known that the two subjects were not thorough in solving problems and did not understand the questions or concepts used in solving problems. In line with what was stated by Prasasti et al (2020), conceptual errors occur because students are not careful when working on the questions and do not properly understand the questions or the concepts used to solve the problem. As a result, due to lack of accuracy in answering field dependent subject questions, they also did incomplete problem solving, and were unable to provide proper reasons during interviews to support answers on the test sheet results. This is in accordance with what was

revealed by Fiantika et al (2017) individuals with a field dependent style tend to have difficulty separating incoming information from objects in the surrounding context and are not selective in receiving information.

2.   Students' Conceptual Understanding of the Prerequisite Material Given

Based on the research results of the four subjects, it is known that AN students have a very good understanding of the concept of algebra as a prerequisite for SPLDV. This is evidenced by the achievement of all indicators to measure students' conceptual understanding abilities. JS students have a good conceptual understanding of algebraic material as a prerequisite for SPLDV because they have been able to achieve three indicators for the ability to understand mathematical concepts. AD students have a low conceptual understanding of algebraic material as a prerequisite for SPLDV because they can only achieve one indicator of the ability to understand mathematical concepts. AA students have very low conceptual understanding because they have not been able to achieve one indicator of understanding mathematical concepts.

Lack of student mastery of indicators of understanding concepts is one of the problem factors in learning mathematics. Some students have been able to restate a concept, students are still confused in classifying objects based on their nature, students have difficulty distinguishing examples from non-examples, students have difficulty interpreting questions, especially story questions, and cannot understand the mathematical model of statements. In line with what was stated by (Prasasti et al., 2020) it turns out that there are still many students who have difficulty solving math problems in the form of stories, understanding language, what is asked in questions, and in calculations.

3.   Ways for Students to Solve SPLDV Problems by Using Their Understanding of Algebra Material as a Prerequisite

Each subject in the study has a different way of solving problems. AN and JS students solved problems related to SPLDV questions using an understanding of the concept of algebra as a prerequisite well. This is because AN and JS students have a good level of understanding of concepts according to table 4 and discussion of previous conceptual understandings. Meanwhile, AD and AA students solved problems related to SPLDV questions with doubts about understanding algebraic concepts as a prerequisite. This is because the two subjects have a low understanding of the concept so that it has an impact on how to solve the problem.

CONCLUSION

Based on the results obtained from research at MTs Surya Buana Malang, it can be seen that students' cognitive styles have a relationship that is relevant to students' understanding of concepts. Because students in the independent field cognitive style category have a good level of understanding of concepts, but not all research subjects are able to master algebra material as a prerequisite. This is because the subject has not been able to distinguish the components contained in

algebra. Meanwhile, students in the category of field dependent cognitive style have a low level of understanding of concepts and are unable to master algebra material as a prerequisite. This is because they do not understand algebraic concepts, are confused with the components contained in algebra, and are difficult to calculate substitution or elimination.

Understanding of students' mathematical concepts of the prerequisite material that has been given by the teacher, based on the results and discussion, it can be concluded that students' understanding of mathematical concepts of the prerequisite material is still relatively low. This is because some of the research subjects did not understand algebra as a prerequisite, so they were unable to solve problems related to story problems from SPLDV.

Based on the results and discussion of the research, it was concluded that students had different ways of solving SPLDV questions based on understanding algebraic concepts as a prerequisite. This is because each student has a different understanding of algebraic concepts as a prerequisite for SPLDV.

There are several suggestions based on the results of the conclusions from the research above where for teachers to be able to emphasize understanding of algebraic material, to make it easier for students to understand, study and analyze problems related to algebra. Because algebraic material as a prerequisite can also affect learning outcomes in other materials, especially SPLDV material..

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