

Analysis of Metacognitive Ability Analysis Based on Information Processing Theory Material Linear Equations and Linear Inequalities in one Variable in Students With Field Dependent and Field Independent Learning Styles

Rosita¹, Nizlel Huda², Jodion Siburian³

Universitas Jambi, Indonesia

*Email: rosita.jambi2016@gmail.com, nizlel.huda@unja.ac.id, jodion.siburian@unja.ac.id

ARTICLE INFO	ABSTRACT
<p>Keywords: Metacognitive Ability, Field Dependent, Field Independent, Information Processing Tresearch gap heory</p>	<p><i>In learning activities, of course students cannot be separated from mathematical problems which are focused on efforts to train students' thinking patterns in using their thinking potential. Apart from that, learning Mathematics aims to equip students with solving skills problem, Literacy Numeracy, logical, reasoning, abstract, systematic and creative. Facts in the field, researchers found problems with students' metacognitive abilities in Field Dependent and Field Independent learning styles based on information processing theory. This research is a type of qualitative research that uses descriptive research methodology. These subjects were selected using purposive sampling (purposeful sampling). This research was conducted at SMP-IT Ash-Shidiqi Batanghari in the odd semester 2022/2023. The subjects were 4 research subjects. The instrument used in this research was the GEFT (Group Embedded Figures Test) to find students' learning styles including the filed category dependent or filed independent, after that students are given a test question sheet. Then, based on the question sheet, the researcher conducted interviews to research subjects. The data obtained were analyzed using steps (1) transcribe data obtained from think aloud and interviews, (2) reduce data, (3) coding data, and (4) describing information processing on students' metacognitive abilities in linear equations and inequalities material linear one variable. Based on the results of the research and analysis that has been carried out, it can be concluded that students' metacognition in solving problems consists of four indicators, namely Tacit use (use of thinking without awareness), Aware use (use of thinking with awareness), Strategic use (use of strategic thinking) Reflective use (use reflective thinking).</i></p>

INTRODUCTION

Mathematics is important to learn because mathematics is a basic science that makes a big contribution and plays a role. important in the development of science and technology. In learning activities, of course, students will not be separated from mathematical problems a which are focused on efforts to train students' mindsets in using their thinking potential. In addition, mathematical problems a measure the extent to which students have achieved the expected basic competencies (Alifah et al., 2018 :505).

Mathematics is one of the needs for all of us, because mathematics is related to everyday life. In addition, learning mathematics aims to equip students with problem-solving skills, Numeracy Literacy, logical, reasoning, abstract, systematic and creative. Therefore, studying mathematics for students as a quality and quality resource (Sirait, 2016:37) .

In order to design an appropriate learning strategy, teachers need to understand students' *learning styles* . Learning style is an approach that explains how individuals learn or the way each person concentrates on the process and masters difficult and new information through different perceptions. One of learning styles are *Field Independent* and *Field Dependent*. Various tendencies in student learning can be identified in student learning. and classify whether students tend to have independence of view or is it included in the *Field Dependent style* whose way of thinking is dependent on view (Nur et al ., 2014 :42)

Metacognition is the awareness of what is known and what is not known. If this awareness is realized, a person can start his thinking by designing, monitoring and assessing what is learned. Metacognition is the ability

to think where the subject of thinking is the thinking process that occurs in oneself. Metacognition is also a form of cognition or two or more thinking processes that involve control over cognitive activities, therefore metacognition can be said to be one's own thinking or one's cognition about one's own cognition (Wahyu Lestari et al., 2019 :99).

Metacognitive ability is a knowledge procedure. This is what someone does intentionally to control cognition. Metacognitive ability is part of what is called the "executive process" or "metacognitive strategy". This metacognitive ability includes activities such as orientation/monitoring understanding of task requirements, planning steps taken for the task process, checking and regulating cognitive processes if failure occurs, and evaluating the results of the process. Metacognitive ability as part of the self-regulation process, although we are aware that self-regulation cannot be reduced to metacognitive ability. (Parwati, 2017 : 68)

The knowledge that students have is stored in long-term memory and short-term memory where at any time when needed it can be recalled to be used in solving mathematical problems, both verbal and non-verbal. This kind of information or knowledge storage process is called information processing theory. (Parwati, 2017 :95).

Information processing theory is a cognitive learning about learning that explains the processing and recall of knowledge from the brain. How someone obtains a certain amount of information and can be remembered for a long time. Therefore, it is necessary to apply a certain learning strategy that can facilitate all information to be processed in the brain through several senses. In information processing, there is an interaction between internal conditions and external conditions of the individual. Internal conditions are conditions within the individual that are needed to achieve learning outcomes and cognitive processes that occur in individuals, while external conditions are stimuli from the environment that influence individuals in the learning process (Parwati, 2017 :91).

Based on the results of initial observations conducted by the author on Friday, April 8, 2022 in class VII of SMP IT Ash-Shidiqii Batanghari, the researcher found problems with students' metacognitive abilities in the *Field Dependent* and *Field Independent learning styles* based on information processing theory. This can be seen from the answer of one of the students who has a *Field Dependent* and *Field Independent learning style* that students have not been able to use their metacognitive abilities properly in solving math problems.

Field Independent (FI) style students do not meet the *strategic use indicators*, this can be seen when students solve problems. *Field Independent (FI)* style students are able to understand problems correctly, are able to write problem-solving strategies and solve problems correctly, but do not master the concept of linear inequality of one variable related to the problem given. These students cannot improve and evaluate so that *strategic use* is not met. This can be seen in Figure 1.1

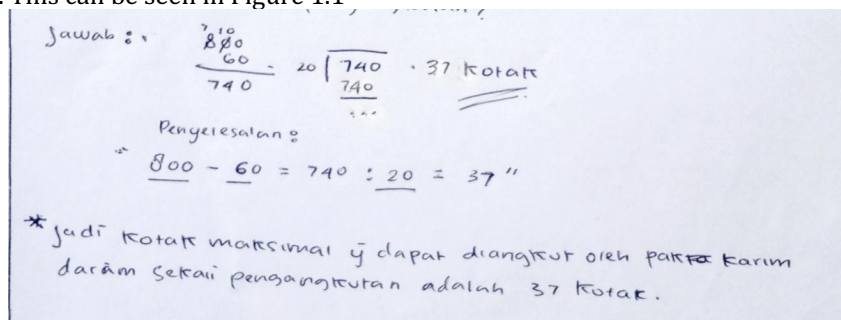


Figure 1. Student Answers *Field Independent (FI) Strategic Use Indicator*

In the metacognitive ability indicator *aware use* for students with *Field Independent (FI)* style is not fulfilled because students do not understand the concept of the known questions and are less able to determine the intended formula from the question. This can be seen from the results of students' answers in Figure 1.2.

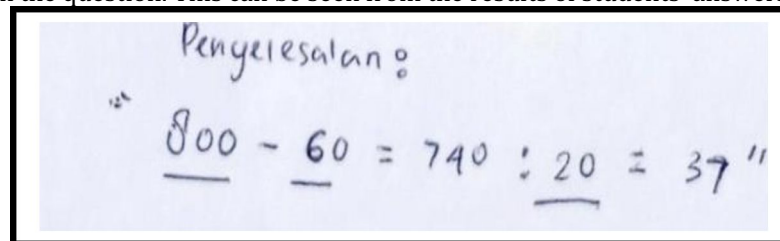


Figure 2. Student Answers *Field Independent (FI) Aware Use indicator*

Field Independent (FI) style students were found with *tacit use indicators* because these students were able to provide an explanation of the meaning of the question. *Field Dependent (FD)* style students do not meet the *strategic use indicators*, this can be seen when students solve problems. *Field Dependent (FD)* style students are unable to understand the problem correctly, do not write down problem-solving strategies and do not solve problems correctly and do not master the concept of linear inequality of one variable related to the problem given. students are unable to improve and evaluate so that *strategic use* is not met. For metacognitive abilities, *aware use*

for *Field Dependent* (FD) style students also not fulfilled because determine the formula in question. This can be seen in figure 1.3

The image shows a handwritten mathematical calculation on a light blue background. The text reads: "Jawab: 800 + 60 = 740 kg". Below this, there is a vertical addition: "20" is written above a horizontal line, and "720" is written below the line. A horizontal line is drawn under "720".

Figure 3. Answer *Field Dependent* (FD) students' *Strategic Use* and *Aware Use* indicators

While existing studies have explored students' metacognitive abilities in relation to their learning styles, limited research has been conducted to specifically analyze metacognitive abilities based on information processing theory within the context of solving mathematical problems involving linear equations and inequalities. Furthermore, previous studies often focus on either *Field Dependent* or *Field Independent* learning styles independently, rather than comparatively analyzing their influence on metacognitive processes. This gap highlights the need for a comprehensive approach that bridges these learning styles and their cognitive frameworks to provide deeper insights into student performance.

This study introduces a novel perspective by applying information processing theory to evaluate and compare the metacognitive abilities of students with *Field Dependent* and *Field Independent* learning styles when solving mathematical problems. The integration of sensory, short-term, and long-term memory processes in this research provides a unique framework for understanding how these cognitive mechanisms interact with metacognitive strategies in different learning styles, which has not been thoroughly examined in prior research.

Based on the observation results, no students with a *Field Dependent* (FD) style were found with *tacit use indicators*. because the student can provide an explanation of the meaning of the question. To further see the problem of students' metacognitive abilities in *Field Dependent* and *Field Independent learning styles* based on the theory of information processing in answering questions, the researcher conducted a study entitled " Analysis of Metacognitive Abilities Based on Information Processing Theory of Linear Equation Material and Linear Inequalities of One Variable in Students with ***Field Dependent* and *Field Independent Learning Styles*** ".

This study aims to obtain data and information related to metacognitive abilities based on information processing theory on the material of linear equations and inequalities of one variable, both in students with field dependent and field independent learning styles. The results of this study are expected to provide practical benefits in the form of input to improve and perfect mathematics learning according to students' learning styles, both field dependent and field independent. In addition, this study can also be a consideration in designing learning that is in accordance with students' learning styles to improve the effectiveness of mathematics learning.

METHOD

This research is a type of qualitative research that uses descriptive research methodology. According to Creswell (2016 : 4) qualitative research is a method for exploring and understanding the meaning that a number of individuals or groups of people consider to come from social or humanitarian problems. The process of questions and procedures, collecting specific data from participants, analyzing data inductively from specific themes to general themes, and interpreting the meaning of the data.

The thing described in this proposal is to analyze the metacognitive abilities of field dependent and field independent learning style students based on the theory of information processing on the material of linear equations and inequalities of one variable. This description is traced through direct observation of the research subjects in solving mathematical problems, namely by observing the steps taken by the research subjects in solving mathematical problems. In addition, this description is also carried out through semi-structured interviews with the research subjects.

The interview in this study aims to reveal metacognitive abilities in working on questions in the form of words, so this study is qualitative. So this study categorized as qualitative-descriptive research.

RESULT AND DISCUSSION

Instrument Validation Result Data Description

This research instrument used is a mathematics question instrument on the material of linear equations and inequalities of one variable. This mathematics question instrument consists of two questions, the first question is the material of linear equations of one variable and the second question is the material of linear inequality of one variable. To measure the validity of the mathematics question test instrument, the researcher validated the questions. On the validation sheet, there are three assessment criteria, namely assessment of question construction, assessment of question language and assessment of question material. Where each criterion consists of sub-criteria, and for each sub-criteria of this assessment, an assessment scale is given which is stated in the form of an assessment scale in the form of statements of agreement (s) and disagreement (ts).

The math problem sheet has been validated by a mathematics expert lecturer/mathematics education PMIPA FKIP Jambi University. This validation is to see students' metacognitive abilities. The first validation result is that there are improvements or revisions related to the material, after making the revision the validator agrees with the material instrument without revision and is suitable for use. The results of the validation of the

metacognitive ability test question instrument based on information processing theory are in Figure 4.1 below:

No	Soal
1.	Suatu kolam renang berbentuk persegi panjang memiliki lebar 7 kurangnya dari panjangnya dan keliling 86m. Tentukan ukuran panjang dan lebarnya.
2.	Pak Bobi memiliki mobil box pengangkut barang dengan daya angkut tidak lebih dari 800 kg. Berat Pak Bobi adalah 60 kg dan dia akan mengangkut kotak barang yang setiap kotak beratnya 20 kg. Tentukan pertidaksamaan dari situasi di atas. Tentukan banyak kotak paling banyak yang dapat diangkut oleh Pak Bobi dalam sekali pengangkutan!

Figure 4. Validation of metacognitive ability test instrument questions

Furthermore, before the interview was conducted, the research instrument in the form of an interview guideline was first validated by a mathematics/mathematics education expert lecturer at PMIPA FKIP Universitas Jambi. The interview guideline instrument is so that the validity and data obtained are as expected. On the validation sheet, there are three assessment criteria from the validator, namely an assessment of the interview guideline construction, an assessment of the question language and an assessment of the interview material. Where each criterion consists of sub-criteria, and for each sub-criterion of this assessment, an assessment scale is given which is expressed in the form of an assessment scale in the form of statements of agreement (s) and disagreement (ts).

Validation of the interview guideline instrument was used to see metacognitive abilities based on information processing theory. The validation results showed that the validator had not agreed and there was improvement, after the improvement the validator agreed with the interview guideline instrument without revision and fit for use. The interview guideline instrument is in Figure 4.2 below:

Teori Pemrosesan Informasi	Kemampuan Metakognitif	Deskriptor	Item Pertanyaan
Long term memory	Reflektive Use	- Siswa memeriksa rumus yang digunakan apakah sudah benar atau belum	1) Apa yang kamu pikirkan setelah menggunakan strategi yang kamu pilih?
		- Siswa memeriksa langkah-langkah apakah sudah benar atau belum	2) Apa yang kamu pikirkan setelah selesai semua strategi yang kamu pilih?
		- Siswa memeriksa kesesuaian hasil pemecahan masalah dengan pencapaian tujuan masalah yaitu apakah solusi yang ditemukan menjawab masalah	3) Apa yang kamu pikirkan setelah menyelesaikan permasalahan soal tersebut?
Sensory Register	fact use dan Aware Use	- Siswa memikirkan masalah yang diketahui dari soal	1) Apa yang kamu pikirkan ketika kamu membaca permasalahan soal tersebut?
		- Siswa memikirkan masalah apa yang ditanyakan dari soal	2) Apa yang kamu pikirkan setelah membaca pertanyaan soal tersebut?
Short term memory	Strategic Use	- Siswa menyusun rencana penyelesaian untuk menemukan solusi dari masalah	1) Apa yang kamu pikirkan setelah mengetahui apa yang dimaksud dalam soal tersebut?
		- Siswa memecahkan masalah dengan langkah-langkah solusi yang dipilih	2) (Jika siswa memiliki strategi penyelesaian) Apa yang kamu pikirkan setelah menemukan strategi yang kamu pilih?

Figure 5. Validation of interview guideline instrument

After all the instruments were validated by the validator, the instruments were used by researchers in conducting research at SMP As-Shidiqi Batanghari.

Research Results

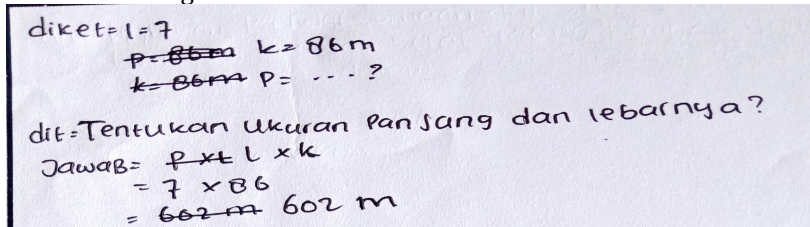
This research was conducted at SMP-IT Ash-Shidiqi Batanghari in the odd semester of the 2022/2023 academic year. Data collection was carried out by giving the *Group Embedded Figures Test* (GEFT) on October 31, 2022, as many as 29 students of grade VIII to obtain *field dependent* and *field independent learning styles*. From the 29 students, 4 research subjects were taken with details of 2 two students with *field dependent learning styles* and 2 students with *field independent learning styles*. then gave a metacognitive ability test to 4 students of SMP-IT Ash-Shidiqi Batanghari. The researcher gave a metacognitive ability test to see how information processing was done by *field dependent* and *field independent students* on the material of linear equations and inequalities of one variable. The way to do the test is by doing *think aloud* or students express what they are thinking to complete the test. Furthermore, the researcher will interview students regarding the test questions given then the researcher sees and analyzes students' metacognitive abilities based on information processing theory.

In the research, 4 students were conducted as subjects consisting of subject 1 (S1), subject (S2), subject 3 (S3) and subject 4 (S4). This research was conducted in several meetings. The first meeting was conducted with student, the next meeting was conducted with 1 student at each meeting.

Subject Data Exposure Field Dependent Learning Style First (S1) Question Number 1

In answering the metacognitive ability test questions, the first subject (S1) needed about 17 minutes. The following is S1's *think aloud* when completing the questions.

S1 reads the question with *think aloud*, namely a rectangular swimming pool has a width of 7 less than its length and a circumference of 86m. Determine the length and width. After reading the question, S1 writes down what is known, namely $l = 7$ And $k = 86m$. Next, S1 wrote down what asked, namely determine the length and width. Then S1 makes the answer results with the formula $l \times k = 7 \times 86 = 602m$. S1 receives information from senses and store it in the near and short term and it is stored in memory for no more than one second, namely by mentioning what known and asked from the question so that it can be said to be a *sensory register*. This can be seen in the results of S1's work in Figure 4.2 below:



Next, S1 with *think aloud* writes down the formula for the length and width, namely then entering the numbers with $l = 7$ and $k = 86$ the final form $l \times k = 7 \times 86 = 602m$. S1 thinks about the information or says it repeatedly, over time the information will enter the storage for about 20 seconds, namely by entering the numbers and the final form so that it can be said to be *short term memory*. Matter This can be seen in the results of S1's work in the image in figure 4.3 below:

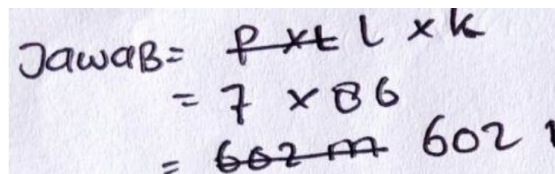


Figure 6. Results of S1's work on question number 1 for step 2

Furthermore, based on *think aloud*, S1 did not identify important information from the questions well so that students were unable to find solutions to the problems presented by applying appropriate strategies, in addition, students did not have the ability to provide explanations for the answers written. S1 thought about the information or said it repeatedly, over time the information will enter the storage for about 20 seconds, namely by entering numbers and their final form so that it can be said to be *short term memory*. This can be seen in Figure 4.5 below:

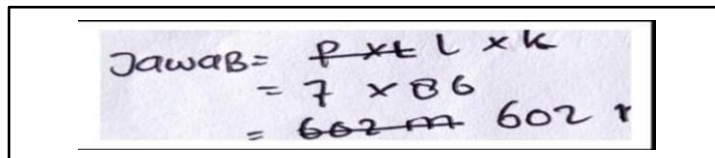


Figure 7. Results of S1's work on question number 1 for step 3

Based on the research results, S1 can explain what is known and what is asked, and students can explain the problems. From this, students show awareness of what is being monitored and students are not aware of errors in the concepts and results obtained. S1 does not conduct an evaluation or if they do, they will appear confused or unclear about the results obtained.

S1 knows what is known and the problems in the question, but experiences difficulties and confusion because he thinks about the concept (formula) of problem solving that must be used, and is only able to explain a small part of what is written on the answer sheet. S1 experiences confusion because he cannot continue what he will do, students are aware of conceptual errors (formulas) and how to calculate but have difficulty in correcting them. students do not evaluate or if they do evaluate they will appear confused because S1 feels unsure about the evaluation results that have been obtained.

S1 is not yet able to understand the problem and cannot express the problem clearly, is not yet able to overcome the difficulty in finding the formula and also confusion in the calculation process, and also does not have the ability to explain most of what is written. S1 knows when making mistakes in applying concepts and how to calculate, at this stage does not yet have a good ability to provide reasons that can support his thinking. Sometimes S1 does not evaluate at this level or when evaluating still seems confused because of doubts that still arise regarding the evaluation results obtained.

S1 did not identify important information from the questions well so that he was unable to find solutions to

the problems presented by applying appropriate strategies, besides that he also did not have the ability to provide explanations for the answers written. S1 did not have the ability to apply the same strategy to different problems, if he made a mistake there were two possibilities, namely not being able to correct the mistake or writing an answer according to the concept they thought. S1 did not evaluate and was confident in the results.

To dig deeper into the field dependent metacognitive abilities of S1, an interview was conducted, with the following transcript:

- P1 : What do you think when you read the problem statement?
 FDS1 : First, I have to understand the problem, ma'am, and think about what the formula is. and after that I wrote down what I knew $l = 7$ And $k = 86m$ ma'am.
 P2 : What do you think after you read the question? the?
 FDS1 : At first I was still confused ma'am, after rereading it I... make the length and width measurements.
 P3 : What do you think after knowing what is meant? in that matter?
 FDS1 : immediately makes known $l = 7$ and $k = 86m$ ma'am. Then write $l \times k = 7 \times 86 = 602m$

From the interview it was seen that S1 was less able to state the correct answer to the question on the first target problem in the second attempt during the interview.

S1 could not find the answer correctly according to his concepts. S1 could make what was known and what was asked in the question. Furthermore, S1 knew the meaning of the question, but did not master the concepts of the problem. S1 checked the formula used but did not know whether the formula used was correct or wrong so he was less able to correct his answer during the interview.

Subject Data Exposure Field Dependent Learning Style First (S1) Question Number 2

In answering the metacognitive ability test questions, the first subject (S1) needed about 13 minutes. The following is S1's *think aloud* when completing the questions.

S1 reads the question with *think aloud*, namely Mr. Bobi has a box car for transporting goods with a carrying capacity of no more than 800 kg. Mr. Bobi's weight is 60 kg and he will transport boxes of goods, each box weighing 20 kg. Determine the inequality of the situation above. Determine the maximum number of boxes that can be transported by Mr. Bobi in one shipment. After reading the question, S1 writes down what is known, namely 800 kg, weight = 60kg and weight = 20 kg. Next, S1 writes what is asked, namely determine the inequality of the situation above and determine the maximum number of boxes that can be transported by Mr. Bobi in one transport. S1 receives information from the senses and stores it in the near and short time and is stored in memory for no more than one second, namely by mentioning what is known and asked from the problem so that it can be said as a *sensory register*. This can be seen in the results of S1's work in the picture. This can be seen in the following picture 4.6:

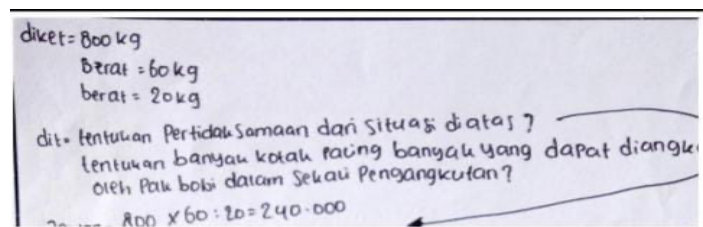


Figure 8. Results of S1's work on question number 2 for step 1

Next, S1 writes down the answer directly using *think aloud*. without using the concept (formula) namely. S1 thinks about information or saying it repeatedly, over time the information will enter storage for about 20 seconds, namely by writing so it can be said to be *short term memory*. This can be seen in the results of S1's work in Figure 4.7 below:

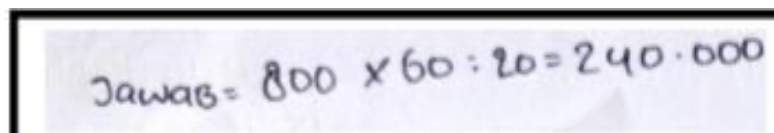


Figure 9. Results of S1's work on question number 2 for step 2

Based on the research results, S1 knows what is known and the problems in the question, but experiences difficulties and confusion because he thinks about the concept (formula) of problem solving that must be used, and S1 is only able to explain a small part of what is written on the answer sheet. S1 experiences confusion because he cannot continue what he is going to do, realizes the wrong concept (formula) and how to calculate but has difficulty in correcting it. S1 does not evaluate or if he does evaluate, he will appear confused because he feels unsure about the evaluation results that have been obtained.

S1 is not yet able to understand the problem and cannot express the problem clearly, is not yet able to overcome the difficulty in finding the formula and also confusion in the calculation process, and also does not have the ability to explain most of what is written. S1 knows when making mistakes in applying concepts and how to calculate, at this stage does not yet have a good ability to provide reasons that can support his thinking. Sometimes S1 does not evaluate at this level or when he does evaluate he still seems confused because of doubts that still

arise regarding the evaluation results obtained.

To dig deeper into the field dependent metacognitive abilities of S1, an interview was conducted, with the following transcript:

- P1 : What do you think when you read the problem in question 1 ?
 FDS1 : First, I have to understand the problem, ma'am, and think about what the formula is. and after that I wrote down what I knew 800 kg and $\text{weight} = 60\text{ kg}$ ma'am.
 P2 : What do you think after you read the question? the ?
 FDS1 : At first I was still confused ma'am, after rereading it I... make $800 \times 60 : 20 = 240.000$.
 P3 : What do you think after knowing what is meant? in that matter?
 FDS1 : makes it known immediately 800kg and $\text{weight} = 60\text{kg}$, $\text{weight} = 20\text{kg}$ ma'am. Then write $800 \times 60 : 20 = 240.000$

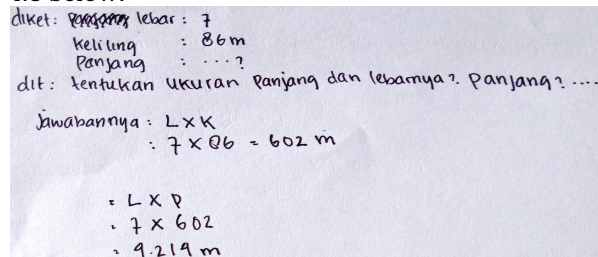
From the interview it was seen that S1 was less able to state the correct answer to the question on the first target problem in the second attempt during the interview.

S1 could not find the answer correctly according to his concepts. Students can make what is known and what is asked in the question. This can be seen when S1 answered the first and second interview questions. Furthermore, S1 knows the meaning of the question but does not master the concepts of the problem. S1 checked the formula used but did not know whether the formula that had been used was correct or wrong so he was less able to correct his answer during the interview.

Subject Data Exposure Field Dependent Learning Style Second (S2) Question Number 1

In answering the metacognitive ability test questions, the second subject (S2) needed about 17 minutes. The following is S2's *think aloud* when completing the questions.

S2 reads the question with *think aloud*, namely a rectangular swimming pool has a width of 7 less than its length and a circumference of 86m. Determine the length and width. After reading the question, S2 writes down what is known, namely width = 7 and circumference = 86m. Next, S2 writes down what is asked, namely determine the length and width. Then S2 makes the answer results with a formula. S2 receives information from the senses and stores it in the near and short term as well stored in memory for no more than one second, namely by mention what is known and asked from the question so that it can be said as a *sensory register*. This can be seen in the results of S2's work in Figure 4.8 below:



Next, S2, using *think aloud*, writes down the formula for the length and width $l \times k$, then enters the numbers with $l = 7$ and $k = 86$ and the final form $l \times k = 7 \times 86 = 602\text{m}$ and writes down the formula $l \times p$ and enters it. the numbers are $l = 7$ and $p = 602$ and the final form is $= 7 \times 602 = 4.214\text{m}$. S2 thinks about the information or says it repeatedly, over time the information will enter the storage for about 20 seconds, namely by entering the numbers with $l = 7$ and $k = 86$ and finally $l \times k = 7 \times 86 = 602\text{m}$ and write the formula $l \times p$ and enter the numbers are $l = 7$ and $p = 602$ and its final form $l \times p = 7 \times 602 = 4.214\text{m}$ so it can be said as *short term memory*. This can be seen in the results of S2's work in Figure 4.9 below:

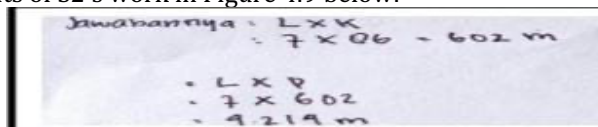


Figure 10. Results of S2's work on question number 1 for step 2

Furthermore, based on *think aloud*, S2 did not identify important information from the questions well so that he was unable to find solutions to the problems presented by applying appropriate strategies, in addition, S2 did not have the ability to provide explanations for the answers written. S2 thought about the information or said it repeatedly, over time the information will enter the storage for about 20 seconds, namely by entering the numbers with and its final form as well as write the formula and enter the number, namely u, and the form Finally so that it can be said to be *short term memory*. This can be seen from the results of S2's work on Figure 4.10 below:

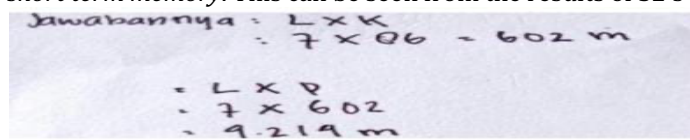


Figure 11. Results of S2's work on question number 1 for step 3

Based on the research results, S2 can explain what is known and what is asked, and can explain the problem. From this, students show awareness of what is being monitored and are not aware of errors in the concepts and results obtained. S2 does not conduct an evaluation or if they do, they will appear confused or unclear about the results obtained.

S2 knows what is known and the problems in the question, but experiences difficulties and confusion because he is thinking about the problem-solving concept (formula) that must be used, and is only able to explain a small part of what is written on the answer sheet. S2 experiences confusion because he cannot continue what he is going to do, S2 realizes the wrong concept (formula) and how to calculate but has difficulty in correcting it. S2 does not carry out an evaluation or if he does, he will appear confused because the student feels unsure about the evaluation results that have been obtained.

S2 is not yet able to understand the problem and cannot express the problem clearly, is not yet able to overcome the difficulty in finding the formula and also confusion in the calculation process, and also does not have the ability to explain most of what is written. S2 knows when making mistakes in applying concepts and calculating methods, at this stage does not yet have good ability to provide reasons that can support his thinking. Sometimes S2 does not evaluate at this level or when evaluating. S2 still seems confused because of the doubts that still arise regarding the evaluation results obtained.

S2 did not identify important information from the questions well so that he was unable to find solutions to the problems presented by applying appropriate strategies, besides that he also did not have the ability to provide explanations for the answers written. S2 did not have the ability to apply the same strategy to different problems, if he made a mistake there were two possibilities, namely not being able to correct the mistake or writing an answer according to the concept they thought. S2 did not evaluate and was confident in the results.

To dig deeper into S2's field dependent metacognitive abilities, an interview was conducted, with the following transcript:

- P1 : What do you think when you read the problem statement?
 FDS2 : At first I was confused, ma'am, then I read the question. by repeating it so that you can understand.
 P2 : What do you think after you read the question?
 FDS2 : I thought about the answer ma'am after reading the question from the exam.
 P3 : What do you think after knowing what is meant? in that matter?
 FDS2 : What I thought after knowing the question, ma'am, I... think about what formula to use.
 P4 : What do you think after finding the strategy you want? choose
 FDS2 : make the answer ma'am, first do it then write the final result with $7 \times 602 = 4.214m$

From the interview it was seen that S2 was less able to state the correct answer to the question on the first target problem in the second attempt during the interview.

S2 could not find the answer correctly according to his concepts. S2 could make what was known and what was asked in the question. Furthermore, S2 knew the meaning of the question but did not master the concepts of the problem. S2 checked the formula used but did not know whether the formula that had been used was correct or wrong so he was less able to correct his answer during the interview.

Data Presentation of Field Dependent Learning Style Subjects Second (S2) Question Number 2

In answering the metacognitive ability test questions, the second subject (S2) needed about 18 minutes. The following is S2's *think aloud* when completing the questions.

S2 reads the question with *think aloud*, namely Mr. Bobi has a box car for transporting goods with a carrying capacity of no more than 800 kg. Mr. Bobi's weight is 60 kg and he will transport boxes of goods, each box weighing 20 kg. Determine the inequality of the situation above. Determine the maximum number of boxes that can be transported by Mr. Bobi in one shipment. After reading the question, S2 writes down what is known, namely the carrying capacity = 800 kg, Mr. Bobi's weight = 60 kg and transporting goods = 20kg. The following are the results of S2's *think aloud* writing down what was asked, namely determining the inequality of the situation above and determining the maximum number of boxes that can be transported by Mr. Bobi in one transport, S2 receives information from the senses and stores it in a short and short time and is stored in memory for no more than one second, namely by stating what is known and asked from the problem so that it can be said to be a *sensory register*. This can be seen in the results of S2's work in the image. This can be seen in the following image 4.11:

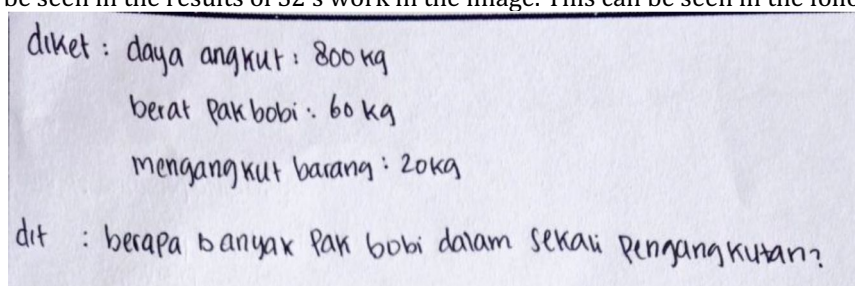


Figure 12. Results of S2's work on question number 2 for step 1

Next, S2, with *think aloud*, wrote the answer without using the concept (formula) which was not yet correct, namely. After that S2 continues to write down the answer. S2 thinks. about information or saying it repeatedly, over time the information will enter storage for about 20 seconds, namely by writing the results the answer so it can be said to be *short term memory*. This can be seen in the following figure 4.12:

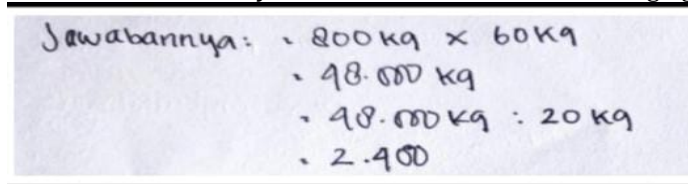


Figure 13. Results of S2's work on question number 2 for step 2

Based on the research results, S2 knows what is known and the problems in the questions, but experiences difficulties and confusion because he is thinking about the concept (formula) of problem solving that must be used, and S2 is only able to explain a small part of what is written on the answer sheet. S2 experiences confusion because he cannot continue what he is going to do, realizes the wrong concept (formula) and how to calculate but has difficulty in correcting it. S2 does not evaluate or if he does evaluate, he will appear confused because he feels unsure about the evaluation results that have been obtained.

S2 is not yet able to understand the problem and is not able to express the problem clearly, is not yet able to overcome the difficulty in finding the formula and also the confusion in the calculation process, and also does not have the ability to explain most of what is written. S2 knows when making a mistake in the application concepts and how to calculate, at this stage students do not yet have good ability to give reasons that can support their thinking. Sometimes S2 does not carry out evaluation at this level or when carrying out evaluation still seems confused because of doubts that still arise regarding the evaluation results obtained.

To dig deeper into the metacognitive abilities of field dependent S2 students, an interview was conducted, with the following transcript.

- P1 : What do you think when you read the problem statement?
 FDS2 : At first I was confused, ma'am, then I read the question. by repeating it so that you can understand it.
 P2 : What do you think after you read the question?
 FDS2 : I thought about the answer ma'am after reading the question. from the question
 P3 : What do you think after knowing what is meant? in that matter?
 FDS2 : What I thought after knowing the question, ma'am, I... think about what formula to use.
 P4 : What do you think after finding the strategy you want? choose?
 FDS2 : make the answer ma'am, first do it then write the final result with $40.000kg \setminus 20kg = 2,400$

From the interview it was seen that S2 was less able to state the correct answer to the question on the first target problem in the second attempt during the interview.

S2 could not find the answer correctly according to his concepts. S2 could make what was known and what was asked in the question. This was seen when S2 answered the first and second interview questions. Furthermore, S2 knew the meaning of The question is just that he does not master the concepts of the problem. S2 checked the formula used but this student did not know whether the formula used was correct or wrong so he was less able to correct his answer during the interview

First Independent Field Learning Style Subject Data Exposure (S1) Question Number 1

In answering the metacognitive ability test questions, the first independent field subject (S1) takes about 10 minutes. The following is the S1 field independent *think aloud* when completing the questions. S1 reads the question with *think aloud*, namely a rectangular swimming pool has a width of 7 less than its length and a circumference of 86m. Determine the length and width. After reading the question, S1 writes down what is known, namely $l = 7$ cm and $p = 86$ m. Furthermore, S1 receives information from the senses and stores it in a short and short time and is stored in memory for no more than one second, namely by stating what is known, namely $l = 7$ cm and $p = 86$ m and is asked from the question so that it can be is said to be *a sensory register*. This can be seen in the results of S1's work in Figure 4.13 below:

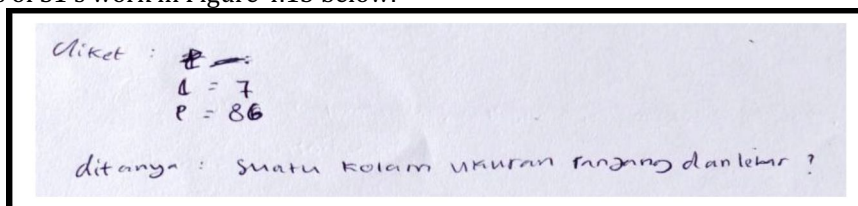


Figure 14. Results of S1 work on question number 1 for step 1

Next, S1 with *think aloud* again writes the formula for the length and width, namely then enters the numbers with and and the final form and writes the formula and enters the numbers, namely and the final form.

S1 thinks about the information or says it repeatedly, over time the information will enter the storage for about 20 seconds, namely by writing the formula and entering the numbers, namely and the final form so that it can be said as *short term memory*. This can be seen in the results of S1's work in the following image in Figure 4.14:

Figure 15. Results of S1's work on question number 1 for step 2

Furthermore, based on *think aloud*, S1 did not identify important information from the questions well so that he was unable to find solutions to the problems presented by applying appropriate strategies, in addition to not having the ability to provide explanations for the answers written. S1 thinks about the information or says it repeatedly, over time the information will enter the storage for about 20 seconds, namely with write $l=7$ and $p=86$ so it can be said to be *short term memory*. This can be seen in Figure 4.15 below:

Figure 16. Results of S2's work on question number 1 for step 3

Based on the research results, S1 can explain what is known and is less precise in writing what is asked, and S1 is less able to explain the problem. From this, S1 shows no awareness of what is being monitored and is not aware of errors in the concept and results obtained. S1 does not conduct an evaluation or if he does, he will appear confused or unclear about the results obtained.

S1 knows what is known and the problems in the question, but experiences difficulties and confusion because he is thinking about the concept (formula) of problem solving that must be used, and is only able to explain a small part of what is written on the answer sheet. S1 experiences confusion because he cannot continue what he is going to do, realizes the error in the concept (formula) and how to calculate but has difficulty in correcting it. S1 does not evaluate or if he does evaluate, he will appear confused because he feels unsure about the evaluation results that have been obtained.

S1 is not yet able to understand the problem and cannot express the problem clearly, is not yet able to overcome the difficulty in finding the formula and also confusion in the calculation process, and also does not have the ability to explain most of what is written. S1 knows when making mistakes in applying concepts and how to calculate, at this stage S1 does not yet have a good ability to provide reasons that can support his thinking. Sometimes S1 does not carry out an evaluation at this level or when carrying out an evaluation the student still seems confused because of doubts that still arise regarding the evaluation results obtained.

S1 did not identify important information from the questions well so that he was unable to find solutions to the problems presented by applying appropriate strategies, besides that he also did not have the ability to provide explanations for the answers written. S1 did not have the ability to apply the same strategy to different problems, if he made a mistake there were two possibilities, namely not being able to correct the mistake or writing an answer according to the concept they thought. S1 did not evaluate and was confident in the results.

To dig deeper into the field independent metacognitive abilities of S1, an interview was conducted, with the following transcript:

- P1 : What do you think when you read the problem statement?
 FIS1 : I feel that the question is difficult, ma'am, even though I have... read it over and over again.
 P2 : What do you think after you read the question?
 FIS1 : I'll think about it first, ma'am, what is the meaning of the question and what are the formulas? will be used later
 P3 : What do you think after knowing what is meant? in that matter?
 FIS1 : I'm still thinking about the answer, ma'am, then... write it with
 P4 : What do you think after finding the strategy you want?
 choose?
 FIS1 : First I wrote $l=7$, $p=86$ then wrote what was known, namely the length and width of a pool, after that I wrote the answer, ma'am, namely

From the interview it was seen that S1 was less able to state the correct answer to the question on the first target problem in the second attempt during the interview.

This S1 cannot find the answer correctly according to its concepts. S1 can make what is known and what

is asked in the question. Furthermore, S1 knows the meaning of the question, but does not understand the concepts of the problem. The S1 checked the formula used but this S1 did not know whether the formula that had been used was correct or wrong so he was unable to correct his answer during the interview.

Data Presentation of Subjects of First Independent Field Learning Style (S1) Question Number 2

In answering the metacognitive ability test questions, the first field independent subject (S1) needed about 23 minutes. The following is S1's *think aloud* when completing the questions.

S1 reads the question with *think aloud*, namely Mr. Bobi has a box car for transporting goods with a carrying capacity of no more than 800 kg. Mr. Bobi's weight is 60 kg and he will transport boxes of goods, each box weighing 20 kg. Determine the inequality of the situation above. Determine the maximum number of boxes that can be transported by Mr. Bobi in one shipment. After reading the question, S1 writes down what is known. Next, S1 receives information from the senses and store it in the near and short term and store it in memory for no more than one second, namely by stating what is known and asked from the question so can be said to be a *sensory register*. This can see the results of S1 work in figure 4.16 below:

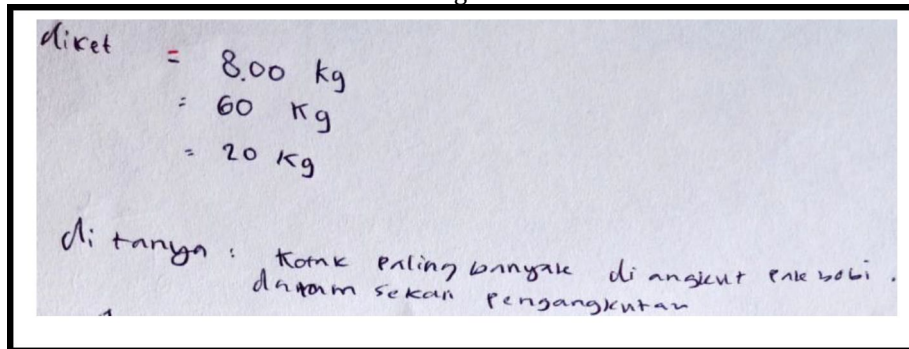


Figure 17. Results of S1's work on question number 2 for step 1

Next, S1, with *think aloud*, writes down the answer directly without using the concept (formula), namely. S1 think about information or say it over and over again times, over time the information will be stored for about 15 seconds, namely write so that can be said as *short term memory*. This can be seen in the results of the work S1 in Figure 4.17 below:

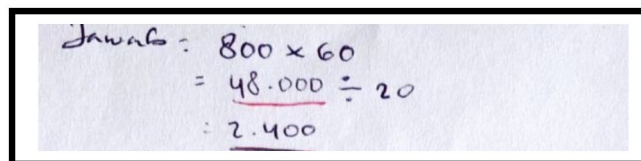


Figure 18. Results of S1's work on question number 2 for step 2

Based on the research results, S1 knows what is known and the problems in the questions, but experiences difficulties and confusion because think about the problem solving concept (formula) that should be used, and only able to explain a small part of what is written on the sheet answer. S1 experiences confusion because he cannot continue what he is going to do, realizes the wrong concept (formula) and how to calculate but has difficulty in correcting it. S1 does not do an evaluation or if he does an evaluation he will appear confused because he feels unsure about the evaluation results that have been obtained.

To dig deeper into the field independent metacognitive abilities of S1, an interview was conducted, with the following transcript:

- P1 : What do you think when you read the problem statement?
- FIS1 : I feel that the question is difficult, ma'am, even though I have... read it over and over again.
- P2 : What do you think after you read the question?
- FIS1 : I'll think about it first, ma'am, what is the meaning of the question and what are the formulas? will be used later
- P3 : What do you think after knowing what is meant? in that matter?
- FIS1 : I'm still thinking about the answer, ma'am, then... write it with

From the interview it was seen that S1 was less able to state the correct answer to the question on the first target problem in the second attempt during the interview.

S1 could not find the answer correctly according to his concepts. S1 could make what was known and what was asked in the question. This was seen when S1 answered the first and second interview questions. Furthermore, S1 knew the meaning of the question but did not master the concepts of the problem. S1 checked the formula used but this student did not know whether the formula that had been used was correct or wrong so he was less able to correct his answer during the interview.

Data Presentation of Second Independent Field Learning Style Subject (S2) Question Number 1

In answering the second independent field subject metacognitive ability test question (S2), it takes about 20 minutes. The following is the S2 field independent *think aloud* when completing the

question.

S2 reads the question with *think aloud*, namely a rectangular swimming pool has a width of 7 less than its length and a circumference of 86m. Determine the length and width. After reading the question, S2 writes down what is known, namely $l = 7$ and $k = 86$ and Next, S2 receives information from the senses and stores it in a short and short time and is stored in memory for no more than one second, namely by mentioning what is known y, namely and and asked from the question so that it can be said as a *sensory register*. This can be seen from the results of S1's work in Figure 4.18 below :

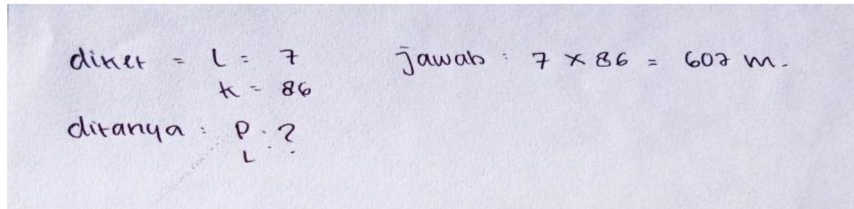
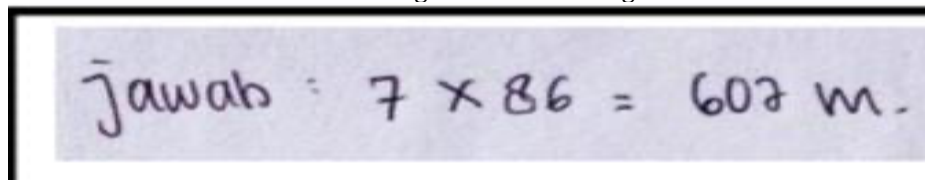


Figure 19. Results of S2 work on question number 1 for step 1

Next, S2 writes the answer with *think aloud*. S2 thinks about the information or says it repeatedly, Over time the information will be stored for about 15 seconds. namely by writing so that can be said to be *short term memory*. This and can be seen the results of the work S2 in figure 4.19 following:



important information from the questions well so that he was unable to find solutions to the problems presented by applying appropriate strategies, in addition to not having the ability to provide explanations for the answers written. S2 thought about the information or said it repeatedly, over time the information will enter the storage for about 15 seconds, namely by writing answers with the wrong concept. so that it can is said to be *short term memory*. This can be seen in the following figure 4.20:

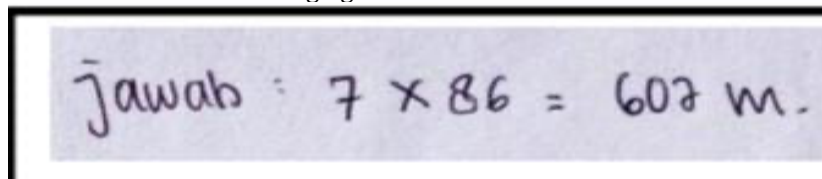


Figure 20. Results of S2's work on question number 1 for step 3

Based on the research results, S2 could not explain what was known and write what was asked, and was less able to explain the problem. From this, it shows that there is no awareness of what is being monitored and is not aware of errors in the concept and results obtained. S2 does not conduct an evaluation or if he does, he will appear confused or unclear about the results obtained.

S2 knows what is known and the problems in the question, but experiences difficulties and confusion because he is thinking about the concept (formula) of problem solving that must be used, and is only able to explain a small part of what is written on the answer sheet. S2 experiences confusion because he cannot continue what he is going to do, realizes the error in the concept (formula) and how to calculate but has difficulty in correcting it. S2 does not evaluate or if he does evaluate, he will appear confused because he feels unsure about the evaluation results that have been obtained.

S2 did not identify important information from the questions well so that he was unable to find solutions to the problems presented by applying appropriate strategies, besides that he also did not have the ability to provide explanations for the answers written. S2 did not have the ability to apply the same strategy to different problems, if he made a mistake there were two possibilities, namely not being able to correct the mistake or writing an answer according to the concept they thought. S2 did not evaluate and was confident in the results.

To dig deeper into the field independent metacognitive abilities of S2, an interview was conducted, with the following transcript:

- P1 : What do you think when you read the problem statement? the ?
- FIS2 : First I think about what formulas will be used.
question number 1.
- P2 : What do you think after you read the question? the ?
- FIS2 : I read the question over and over again, ma'am, so I could understand it. make what is asked in the question.
- P3 : What do you think after knowing what is meant? in that matter?
- FIS2 : makes it known immediately And m ma'am. Then write

P4 : What do you think after finding the strategy you want? choose?
 FIS2 : make the answer ma'am

From the interview it was seen that S2 was less able to state the correct answer to the question on the first target problem in the second attempt during the interview.

S2 could not find the answer correctly according to his concepts. S2 could make what was known and what was asked in the question. Furthermore, S2 knew the meaning of the question, but he did not master the concepts of the problem. S2 checked the formula used but did not know whether the formula used was correct or wrong so he was less able to correct his answer during the interview.

Data Presentation of Second Independent Field Learning Style Subject (S2) Question Number 2

In answering the metacognitive ability test questions, the second subject (S2) needed about 20 minutes. The following is S2's *think aloud* when completing the questions.

After completing the S2 question, read the question with *think aloud*, namely Mr. Bobi has a box car for transporting goods with a carrying capacity of no more than 800 kg. Mr. Bobi's weight is 60 kg and he will transport boxes of goods, each box weighing 20 kg. Determine the inequality of the situation above. Determine the maximum number of boxes that can be transported by Mr. Bobi in one transport. After reading the question, S2 wrote down what is known. The following is the result of S2's *think aloud* writing down what is asked, namely the number of inequality boxes from the situation. S2 receives information from the senses and stores it in a short and immediate time and is stored in memory for no more than one second, namely by mentioning what is known and asked from the question so that it can be said to be a *sensory register*. This can be seen from the results of S2's work in Figure 4.21 below:

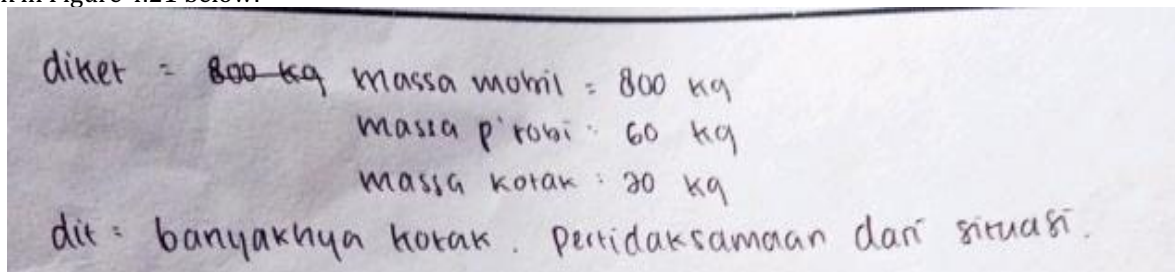


Figure 21. Results of S2's work on question number 2 for step 1

Next, S2, by *thinking aloud*, wrote the answer without using the concept (formula) which was not yet correct, namely S2 thinks about the information or says it repeatedly, over time the information it will be stored for about 15 seconds, namely write the answer with the wrong concept, namely so it can be said to be *short term memory*. This can be seen from the results S2 work in figure 4.22 below:

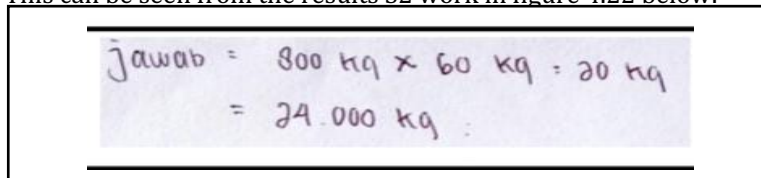


Figure 22. Results of S2's work on question number 2 for step 2

Based on the research results, S2 knows what is known and the problems in the questions, but experiences difficulties and confusion because he thinks about the concept (formula) of problem solving that must be used, and is only able to explain a small part of what is written on the answer sheet. S2 experiences confusion because he cannot continue what he is going to do, realizes the wrong concept (formula) and how to calculate but has difficulty in correcting it. S2 does not evaluate or if he does evaluate, he will appear confused because he feels unsure about the evaluation results that have been obtained.

S2 is not yet able to understand the problem and cannot express the problem clearly, is not yet able to overcome the difficulty in finding the formula and also confusion in the calculation process, and also does not have the ability to explain most of what is written. S2 knows when making mistakes in applying concepts and how to calculate, at this stage does not yet have a good ability to provide reasons that can support his thinking. Sometimes S2 does not do an evaluation at this level or when he does an evaluation he still seems confused because of doubts that still arise regarding the evaluation results obtained.

To dig deeper into the field independent metacognitive abilities of S2, an interview was conducted, with the following transcript:

P1 : What do you think when you read the problem statement?
 FIS2 : First I think about what formulas will be used.
 question number 1.
 P2 : What do you think after you read the question?
 the ?
 FIS2 : I read the question over and over again, ma'am.

From the interview it was seen that S2 was less able to state the correct answer to the question on the first target problem in the second attempt during the interview.

S2 could not find the answer correctly according to his concepts. S2 could make what was known and what was asked in the question. This was seen when S2 answered the first and second interview questions. Furthermore, S2 knew the meaning of the question but did not master the concepts of the problem. S2 checked the formula used but did not know whether the formula used was correct or wrong so he was less able to correct his answer during the interview.

The metacognitive abilities of students with field dependent and field independent learning styles based on information processing theory on the material of linear equations and inequalities of one variable require the stage of determining students' learning styles through *the Group Embedded Figures Test* (GEFT), after which two students were taken from each, then a written test was conducted on the material of linear equations and inequalities of one variable to determine the students' metacognitive abilities. To further determine metacognitive abilities, in-depth interviews were conducted with each student after the written test process was completed.

According to Zakiah (2020), metacognitive abilities consist of four parts, namely *tacit use*, *aware use*, *strategic use* and *reflective use*. In metacognitive abilities, the type of thinking used is related to decision making without thinking about the decision. At this level, students apply strategies or skills in solving problems through trial and error or just answering. For *aware use metacognitive abilities*, the type of thinking used is related to students' awareness of what and why students do the thinking. At this level, students have realized a step in solving the problem by providing an explanation of the use of the step. While *strategic use metacognitive abilities*, the type of thinking used is related to the individual's regulation in their thinking process consciously by using special strategies that can improve the accuracy of their thinking. At this level, students are aware of and able to select special strategies or skills to solve problems. In contrast to *reflective use metacognitive abilities*, the type of thinking used is related to individual reflection in their thinking process before and after or even during the process by considering the continuation and improvement of their thinking results. At this level, students are aware of and correct mistakes made in the problem-solving steps. The discussion of each subject can be stated as follows.

Sensory Register in Field Dependent Learning Style Subject

Based on the indicators for metacognitive abilities of students who have a *field dependent* style, students first use abilities associated with *sensory registers* where information is captured in its original form, lasts for a short time, and the information will be disturbed and replaced by other things such as subjects seen from observing problems and are required to be able to understand problems by providing clear information and writing down what is known and asked.

Based on the data obtained from the written test answers with *think aloud* on the material of linear equations and inequalities of one variable, it can be seen that the first thing that S1 does is read the questions. Information from the questions enters *the sensory register* through *receptors* (sensory organs), namely the sense of sight. Information from the questions enters *the sensory register* and is given attention by S1. This is in line with research conducted by Islamiyah et al. (2021) which states that the first stage that students go through after reading the questions is the *attention stage* where at this stage students can sort out the information that is known and that is asked in the questions. Then with attention, S1 is able to identify problems by sorting out information and writing down what is known according to the sentences in the questions and writing down what is asked from the problems by providing clear information.

In S2, the first stage is observing and reading questions through the sense of sight. After reading the question, the information enters *the sensory register* and S2 immediately writes down what is known, namely making an analogy and S2 can understand the problem by writing it down directly. an example of information that has been given attention.

So, based on the explanation above, it can be concluded that S1 and S2 in the *field dependent style* fulfill the indicators that students have in *the sensory register*, namely the way the subject sees the problem and identifies the problem given by writing down what is known and what is asked.

Sensory Register in Field Independent Learning Style Subject

Based on the indicators of metacognitive abilities of students who have a *field dependent* style, students are able to explain the idea of the problem given in *the sensory register* where information is captured in its original form, lasts for a short time, and the information will be disturbed and replaced by other things such as the subject seen from observing the problem and is required to be able to understand the problem by providing clear information and writing down what is known and asked.

In S1 and S2, identify the problem with what is known according to the sentence in the question and explain what is asked according to the information in the question shown from the results of the S1 and S2 interviews. In S2, identify the problem by explaining what is known, namely making for example, namely and and explaining the reasons for writing directly example using variables shown from the results of the S2 interview.

So, based on the explanation above, it can be concluded that S1 and S2 in the *field dependent style* fulfill the indicators that students have in *the sensory register*, namely the way the subject sees the problem and

identifies the problem given by writing down what is known and what is asked.

Short Term Memory Subject Learning Style Field Dependent

Based on the indicators for metacognitive abilities of students who have a *field dependent* style, students are able to explain the problems given in *short-term memory* where the information process is in solving problems which can be in the form of a calculation and the results of the calculation after being given *attention* which is shown through several things, namely students can carry out the calculation process in solving problems even though they use the wrong concept.

In S1, the initial step of the solution was to make an example using variables and not make an equation from the information in the question. In the results of the S1 interview, S1 also explained that and on the completion of the made. Then S1 write results the multiplication is visible from the answer sheet and the results with *think aloud* S1.

In S2, identifying questions by making examples from the question information. Then S2 can calculate the answer to the question, but using the wrong concept that can be seen on the answer sheet and the results of S2's *think aloud*.

So, based on the explanation above, it can be concluded that S1 and S2 in the *field dependent style* fulfill the indicators that students have in *short term memory*, namely carrying out calculation processes and solving problems based on the information obtained.

Short Term Memory Subject Learning Style Field Independent

Based on the indicators for metacognitive abilities of students who have a *field independent* style, students are able to explain the problems given in *short-term memory* where the storage place for knowledge needed by *short-term memory* in processing information, which is indicated by the existence of *retrieval* (recalling information) and is shown through the subject explaining and reviewing the steps of the solution made.

In S1 and S2, they cannot use the concept of linear equations and inequalities of one variable that have been stored in *short-term memory*, but write them down with examples and the results of the answers can be seen from the answer sheet and the results of *think aloud*, and the results of interviews because students do not recheck each question they work on.

So, based on the explanation above, it can be concluded that S1 and S2 in the *field independent style* fulfill the indicators that students have in *short term memory*, namely carrying out calculation processes and solving problems based on the information obtained.

Long Term Memory Subject Field Dependent Learning Style

Based on the indicators for metacognitive abilities of students who have a *field dependent* style, students are unable to explain the problems given to *long term memory* in processing information.

In S1 and S2, they were unable to explain and review the steps of the solution carried out by S1 and S2 and did not draw conclusions from the results of the solution that could be seen from the answer sheets and the results of students' *think aloud*. This is also in line with the opinion of Kusaeri (2018) who said that if there are students who cannot explain the answers obtained by students, then not all processes are entered into *long-term memory*.

So, based on the explanation above, it can be concluded that S1 and S2 in the *field dependent style* have not fulfilled the *long-term memory indicator* because S1 and S2 cannot explain the solution steps again and do not write a conclusion.

Long Term Memory Subject Learning Style Field Independent

Based on the indicators for metacognitive abilities of students who have a *field independent* style, students are unable to explain the problems given to *long term memory* in processing information.

In S1 and S2, they were unable to explain and review the steps of the solution carried out by S1 and S2 and did not make conclusions from the results of the solution that could be seen from the answer sheets and the results of students' *think aloud*. This is also in line with the opinion of Kusaeri (2018) who said that if there are students who cannot explain the answers obtained by students, then not all processes are entered into *long-term memory*.

So, based on the explanation above, it can be concluded that S1 and S2 in the *field dependent style* have not fulfilled the *long term memory indicator* because S1 and S2 cannot explain the solution steps again.

CONCLUSION

Based on the results of the research and analysis that have been carried out, several things can be concluded from the research that has been carried out:

Students' metacognitive abilities in solving problems consist of four indicators, namely *Tacit use* (use of thinking without awareness), *Aware use* (use of thinking with awareness), *Strategic use* (use of strategic thinking) *Reflective use* (use of reflective thinking).

Learning style is an approach that explains how individuals learn or the way each person concentrates on the process, and masters difficult and new information through different perceptions. *Field Independent* (FI) style is a process and a unique way of learning that each student does in receiving and capturing information well and

clearly, students who have this *Field Independent* (FI) style are able to find more information, not only referring to existing information and are not influenced by the surrounding environment. *Field dependent* (FD) style is a process and a unique way of learning that each student does in receiving and capturing existing information. The theory of information processing has three indicators, namely sensory memory (the information will be stored in memory for no more than one second), short-term memory (Short - Term/Working memory (MJPd) (every sensory memory whose stimulus gets someone's attention), long-term memory (Long-term memory (LMT) (information that has been stored in LMT is difficult to lose).

REFERENCES

- Alifah, N., & Aripin, U. (2018). Proses Berpikir Siswa Smp Dalam Memecahkan Masalah Matematik Ditinjau Dari Gaya Kognitif Field Dependent Dan Field Independent. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*, 1(4), 505. <https://doi.org/10.22460/jpmi.v1i4.p505-512>
- Creswell, J. . (2016). *Education Research*.
- Djam'an, S., & Komariah, A. (2010). *Metodologi Penelitian Kualitatif*.
- Indarini, E., Sadono, T., & Onate, M. E. (2013). Pengetahuan Metakognitif Untuk Pendidik Dan Peserta Didik. *Satya Widya*, 29(1), 40. <https://doi.org/10.24246/j.sw.2013.v29.i1.p40-46>
- Janah, S. N., Rasiman, R., & Handayanto, A. (2021). Proses Berpikir Siswa Smk Dalam Memecahkan Masalah Matematika ditinjau Dari Gaya Kognitif Field Independent dan Field Dependent. *Imajiner: Jurnal Matematika Dan Pendidikan Matematika*, 3(2), 150–158. <https://doi.org/10.26877/imajiner.v3i2.7487>
- Lestari, W., & Jailani. (2018). Enhancing an Ability Mathematical Reasoning through Metacognitive Strategies. *Journal of Physics: Conference Series*, 1097(1). <https://doi.org/10.1088/1742-6596/1097/1/012117>
- Moleong, L, J. (2010). *Metode Penelitian Kualitatif*. PT.Remaja Rosdakarya.
- Nadia, G. A., & Suhendar, U. (2021). Tingkatan metakognitif Siswa Dalam Menyelesaikan Soal Statistika Ditinjau dari Teori Metakognitif Swartz & Perkins. *Jurnal Pendidikan Matematika*, 20(10), 1–15. [http://eprints.umpo.ac.id/6968/6/GLADISSELA AGMA NADIA_ARTIKEL ASLI.pdf](http://eprints.umpo.ac.id/6968/6/GLADISSELA%20AGMA%20NADIA_ARTIKEL%20ASLI.pdf)
- Nur, G., & Risnawati, R. (2014). *GAYA BELAJAR Kajian Teoretik* (kedua). Pustaka Belajar.
- Nurhayati, N., Huda, N., & Suratno, S. (2020). Analisis Pemecahan Masalah Berdasarkan Teori Pemrosesan Informasi. *Jurnal Ilmiah Dikdaya*, 10(2), 136. <https://doi.org/10.33087/dikdaya.v10i2.169>
- Parwati, N. (2017). *Belajar dan Pembelajaran*. PT RAJAGRAFINDO PERSADA.
- Rifqiyana, L. (2015). *Analisis Kemampuan Berpikir Kritis Siswa Dengan Pembelajaran Model 4K Materi Geometri Kelas Viii Ditinjau Dari Gaya*. 1–377.
- Siahaan, E. M., Dewi, S., & Said, H. B. (2019). Analisis Kemampuan Pemecahan Masalah Matematis Berdasarkan Teori Polya Ditinjau Dari Gaya Kognitif Field Dependent Dan Field Independent Pada Pokok Bahasan Trigonometri Kelas X Sma N 1 Kota Jambi. *PHI: Jurnal Pendidikan Matematika*, 2(2), 100. <https://doi.org/10.33087/phi.v2i2.37>
- Sirait, E. D. (2016). Pengaruh Minat Belajar Terhadap Prestasi Belajar Matematika. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, 6(1), 35–43. <https://doi.org/10.30998/formatif.v6i1.750>
- Tahmir, S., Dassa, A., Matematika, P. P., Pascasarjana, P., & Negeri, U. (2017). 1 1) , 2) , 3). 5(1), 14–26.
- Wahyu Lestari, Fatinatus Selvia, & Rohmatul Layliyyah. (2019). Pendekatan Open-ended Terhadap Kemampuan Metakognitif Siswa. *At-Ta'lim : Jurnal Pendidikan*, 5(2), 184–197. <https://doi.org/10.36835/attalim.v5i2.263>
- Zakiah, N. E. (2020). Level kemampuan metakognitif siswa dalam peLevel kemampuan metakognitif siswa dalam pembelajaran matematika berdasarkan gaya kognitifmbelajaran matematika berdasarkan gaya kognitif. *Jurnal Riset Pendidikan Matematika*, 7(2), 132–147.