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DIDACTICAL ANALYSIS OF STUDENT'S MATHEMATICAL LITERACY COMPETENCE BASED ON LEARNING OBSTACLE CHANGE AND RELATIONSHIP CONTENT

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ABSTRACT

Mathematical literacy is one of the important competencies that students must master today. One is about the competency content of algebraic literacy or Change and Relationship. But in fact, this competency is still difficult for students to master. Many things cause students' low mathematical literacy competence, one of which is related to learning obstacles. This study aims to analyze students' mathematical literacy competencies based on learning obstacles on Change and Relationship content. The research method used in this study is qualitative research using the didactical design research framework, which focuses on studying learning obstacles. The subjects in this study were students of class VII B JHS 3 Sungguminasa. Data were collected using algebraic literacy tests, interviews, and documents. The data analysis technique carried out in this study was carried out in three stages, namely reducing data, presenting data and drawing conclusions. The results showed that students' mathematical literacy competence was still classified in the moderate to low category. Furthermore, there are types of learning obstacles experienced by students, namely not mastering the steps of solving, not writing known and asked, not writing conclusions, students' lack of understanding of the context of information from the problems given in the form of mathematical sentences, and not being accustomed to working on reasoning-type problems. The important implication that can be given in designing teaching strategies is that teachers should be more creative in providing teaching so that students are more active in the learning process, especially problems involving literacy-based problems.

Keywords: Change and relationship; didactical design research; learning obstacles; mathematical literacy

1. INTRODUCTION

Education is the most important thing in human life, this means that every Indonesian citizen has the right to get it and is expected to always develop in it. In general, education in Indonesia has evolved over time. Starting from before knowing the script until now, with the rapid development of technology. So that education is also very good and developing (Yasir et al., 2022). Education will never end. Education in general means a life process in developing each individual to be able to live and continue life. Education is also defined as all learning activities that take place throughout the ages in all situations of life activities (Mukodi, 2018). Alpian et all., (2019) also added that the first educational environment obtained by every human being is in the family environment (Informal Education), school environment (Formal Education), and community environment (Nonformal Education). So it can be concluded that education is a place to build a process of learning knowledge and skills, as well as a conscious effort to form a good image in humans in order to develop the potential of all their potential.

The role of education is very large in preparing and developing reliable human resources who are able to compete healthily and also have a sense of community with fellow humans. There is also the role of education as a learning experience from various aspects of life, as well as understanding different perspectives and trying to apply them in everyday life. The Indonesian nation does not just emit the sheen of the importance of education, but how the Indonesian nation is able to realize the concept of education by fostering, training and empowering Indonesian human resources in a sustainable and equitable manner (Inanna, 2018). The science of education is one of the branches of science that is practical in nature because the science is addressed through practices and actions that affect students (Rahman et al., 2022). Teachers have an important role in producing a quality education implementation process. This is in line with the opinion of Abdullah et all., (2023) where professional teachers grow according to their competence and facilitate the achievement of educational goals. Education personnel have a tremendous obligation to help students develop to achieve their goals in life. The responsibilities of a teacher in school include serving their students to become students who are in accordance with the school's goals. Teachers influence social, cultural and economic aspects through education (Normina, 2017). So it can be concluded that this teacher or educator is a person who educates and fosters students both physically, mentally, spiritually, and human resources in the form of science, where the location of the success of a teacher or educator is not measured from after students finish school but is seen from how far the students humanize themselves and others. Throughout the educational process, teachers play an important role as educators. One of the most important subjects in education is mathematics.

Mathematics is a universal knowledge that plays a role in developing other sciences and solving real-life problems. Mathematics has become a science that is not common for students in the world, which is the most difficult science among other sciences. Mathematics subjects are given to all students starting from elementary school to equip students with the ability to think logically, analytically, systematically, critically, and creatively, as well as the ability to work together. These competencies are needed so that students can have the ability to obtain, manage, and utilize information to survive in an ever-changing, uncertain, and competitive situation (Sholehah et al., 2018). Although math has benefits for other fields of study as well as for everyday life, there are still many opinions from some students who think that math is a difficult subject. This can affect the character of students who feel unsure of their competence in learning mathematics and even solving problems in everyday life that use the application of mathematics (Ningrum, 2019). One of the things that makes students consider math difficult is because of the many formulas contained in mathematics learning which causes low student mathematical literacy competence. Therefore, one of the important cognitive aspects to be developed is students' mathematical literacy competence.

Mathematics literacy is one of the supporting aspects in better understanding the science of mathematics itself. Literacy will help the perpetrator to be able to obtain more solid and critical information from a case at hand. The term mathematical literacy is a hot topic that is often discussed in discussions of gura and mathematics experts not only in Indonesia but even around the world (Lindawati, 2018). According to Amelia et al., (2023) Mathematical literacy is an individual's ability to formulate, use and also explain mathematics in various contexts. This includes mathematical reasoning and using mathematical concepts, procedures, facts and tools to describe, explain and predict an event. According to Damayanti et al., (2017) Mathematical literacy is related to "real" problems, where problems usually arise in a situation. Students must be able to solve real world problems that require students to use the abilities and competencies that have been obtained through experiences at school and daily experiences. . In other words, mathematical literacy is an ability that has an important role to be able to deal directly with real problems (Samosir et al., 2022). Therefore, mathematical literacy skills are very important for students.

It is certain that mathematical literacy competence is very important because it can help improve the way of thinking and understanding a problem at hand. If mathematical literacy is thought to be reflected in the competent response of an individual to the world, then it is quite understandable that due to the complexity of the challenges of today, there are several definitions of these competencies. These competencies correlate with the so-called competencies of school mathematics. A precise definition of mathematical literacy represents a standard for curriculum design, an analytical tool for assessing the relevance of the curriculum, and a guideline for lesson planning (Kolar & Hodnik, 2021).

The importance of mathematical literacy competence is one of facing future challenges in the 21st century and in this era of disruption. However, the importance of mathematical literacy skills is not in line with mathematical literacy skills in Indonesia (Riyadhotul et al., 2019). This is in line with the opinion of Yanwari et al., (2019) who stated that the importance of mathematical literacy has not been matched by the quality of the quality of education in Indonesia, it can be seen from various types of international level assessments that Indonesia has participated in, one of which is still ongoing today is PISA (Program for International Student Assessment) which measures the literacy skills of reading, mathematics, and science of students aged 15 years or equivalent to junior high school education level. The PISA results show that Indonesian students' math literacy skills are not optimal. In fact, there is a correspondence between literacy and subject content standards because in essence the ability to be achieved in the content standards of mathematics learning objectives is mathematical literacy.

The low mathematical literacy competence of students can also be seen from the results of research conducted by Lilik Sulistyo and Nur Karomah Dwiyanti with the title of their research "Literasi Matematika Indonesia Perlu Bercermin Literasi Matematika Cina : Tinjauan Literatur" where this research seeks to examine the low level of Indonesian mathematical literacy in the Program for International Student Assessment from 2003 to 2018, Indonesia is in the bottom ten positions, in contrast to China in 2012 the first direct participation occupied the first position, continuing until 2018 remained as the first rank. The results of the Program for International Student Assessment in 2018, Indonesia's mathematical literacy with a score of 379, China with a score of 591, and the average Organization for Economic Co-Operation and Development as a world reference with a score of 489, means that the failure to achieve 110 scores below the world average, and 212 scores below China's results. The research objective is how can Indonesia's education improve significantly? By reflecting on China's success in world-level education, fellow Asians, large populations, and similar cultures (Sulistyo & Karomah, 2021). Likewise, research conducted by Ahmad Khoirudian, dkk with the title of his research "Profil Kemampuan Literasi Matematika Siswa Berkemampuan Matematis Rendah dalam Menyelesaikan Soal Berbentuk PISA" where the purpose of his research was to find out the profile or description of how the mathematical literacy skills of low mathematical ability students in solving PISA-shaped problems and to find out the factors that influence the high and low mathematical literacy skills of students. The results of this study were obtained with the category of low mathematical knowledge ability only up to level 1. These results are also influenced by several factors including: 1) the material chosen, 2) the learning provided by the teacher, 3) the classroom environment, 4) the support of the family environment, 5) readiness for the test and 6) the ability of each student himself (Khoirudin et al., 2017). Seeing the importance of literacy skills in mathematics learning, students are required to have this ability.

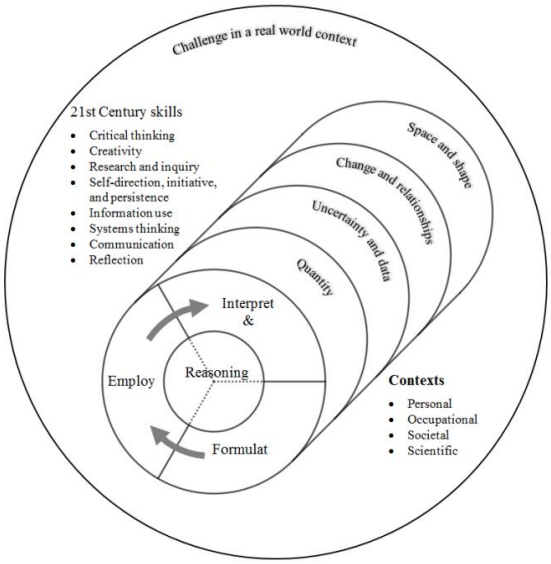

Figure 1. PISA 2021 Mathematical Literacy: The Relationship Between Mathematical Reasoning, Problem Solving, Mathematical Content, Context, and 21st Century Skills

Based on Figure 1, it is known that PISA 2021 mathematical literacy links the relationship between mathematical reasoning, problem solving, mathematical context, context, and 2021 century skills. As reported by (Masfufah & Afriansyah, 2021) that mathematical literacy competency in accordance with PISA 2021 literacy is one of the high-level competencies that can compete with other countries. Mathematical literacy also requires students to communicate and explain the phenomena they face in everyday life (Habibi & Suparman, 2020). One of the contents that are part of the PISA 2021 mathematical literacy study is algebraic content (change and relationship) (OECD, 2021).

As part of mathematics, algebra has an important role in the learning process because algebraic material is part of mathematics which is closely related to everyday life (Aditya et al., 2018). But in reality, as said Rohimah (2017) in his research concerning algebra material, there are still many *learning obstacle* experienced by students, such as one example, students cannot use the context of more complex problems, especially in story problems. This is in line with the results of preliminary observations made by researchers of class VII students of SMPN 3 Sungguminasa showing the following results:

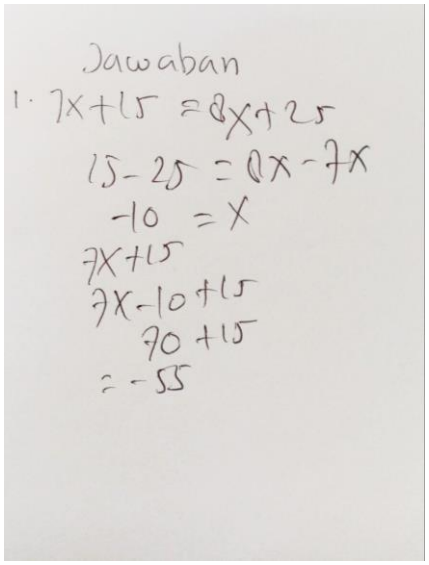

Figure 2 Answer to Question 1

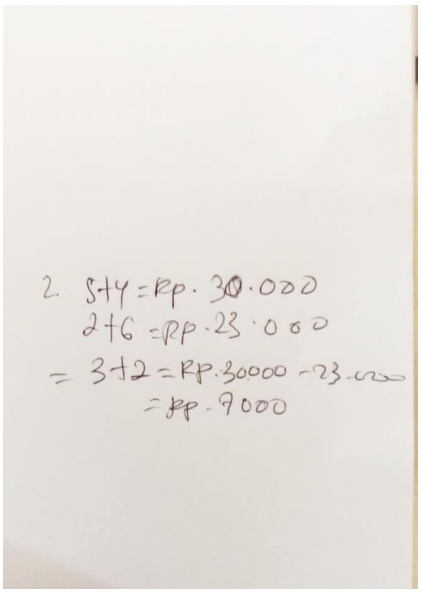

Figure 3 Answer to Question 2

Based on the answers above, it is found that students still have difficulty in solving algebraic literacy-based problems One Variable System of Linear Equation (OVSLE) so that there are still many mistakes in solving the problems given. This shows that there are learning obstacles experienced by students in participating in learning, especially learning mathematics OVSLE material. This finding is also based on the results of an interview conducted with one of the mathematics teachers who said that this learning difficulty was caused by several factors including students' understanding of the context of the information from the problem given in the form of mathematical sentences which resulted in students not mastering the steps of solving from initialization to conclusion. In addition, students have difficulty in distinguishing between coefficients, variables and constants.

In the didactic triangle, the teacher's role is to create a didactical situation so that the learning process occurs in the students (Sulistiawati et al., 2015). In didactical design research (DDR), n order to develop didactical situations, analyze learning situations, and make decisions during the learning process can encourage optimal learning situations, maximum efforts must be made before learning. This effort, known as ADP, is a synthesis of the results of thinking based on the possibilities that are predicted to occur in the learning process. An aspect that must be considered in developing ADP is the existence of learning obstacles. Learning difficulty is a condition in the learning process that is characterized by certain obstacles in achieving learning outcomes. Learning difficulties here are learning difficulties commonly known as learning obstacles.

This research is in line with research conducted by Yumna Hidayah, dkk. With the research title "Kajian *Learning Obstacle* pada Topik Aljabar ditinjau dari Literasi Matematis oleh PISA 2021" states that there are four types of learning obstacles, namely related to difficulties in converting story problems into mathematical modeling, lack of mastery of the application of algebra in the form of story problems, difficulties in converting story problems into geometric models and ignorance and confusion about what to do in completing the test instruments given (Hidayah et al., 2022). In addition, research conducted by Siti Maryam Rohimah with the research title "Analisis *Learning Obstacle* pada Materi Persamaan dan Peridaksamaan Linear Satu Variabel" where this study aims to find learning obstacles contained in the material of one variable linear equations and inequalities. The learning obstacles found in the material of linear equations and inequalities of one variable are categorized into 3 types, namely ontogenic obstacles, epistemological obstacles and didactical obstacles. Ontogenic obstacle was found because of the jump in students' thinking from arithmetic mindset to algebraic mindset. Epistemological obstacle was found due to the limited context of students which Based on the description above, the researcher conducted a study on Didactical Analysis of Students' Mathematics Literacy Competence Based on Learning Obstacle of Change and Relationship Content. By analyzing these obstacles, solutions are given so that students' algebraic literacy can be improved. Where this research will provide benefits in the field of mathematics education by seeing the importance of knowing the obstacles experienced by students in getting good algebraic literacy.

2. METHODS

This research method is included in descriptive research with a qualitative approach. Qualitative research is research with the aim of gaining an in-depth understanding of human and social problems where researchers interpret how subjects derive meaning from the surrounding environment, and how that meaning affects their behavior, and research is conducted in a natural setting (naturalistic) not treatment or manipulation of the variables involved (Fadli, 2021). The research design used is Didactical Design Research (DDR). (Suryadi, 2013) suggests that Didactical Design Research (DDR) basically consists of three stages, namely: (1) analysis of the didactical situation before learning in the form of Hypothetical Didactical Design, (2) metapedidactic analysis, and (3) retrospective analysis. In this study, the main focus of researchers is on stage one, namely the analysis of the didactic situation in the form of didactic relationships (student-material) obtained through students' mathematical reasoning based on learning obstacles.

This research was conducted at JHS 3 Sungguminasa in the 2022/2023 academic year. The main subjects to find out the learning obstacles in this study were students of class VII B and a teacher who taught in the class. The data sources in this study were obtained from test results, interviews, and documents.

The test results are sourced from student results tests in working on algebraic content questions (change and relationship) to measure students' mathematical literacy competencies on the One Variable System of Linear Equation (OVSLE) material and also the results test as an analysis material to identify learning obstacles experienced by students on the material. The test was developed based on the content (change and relationship), cognitive level (understanding, application, reasoning), and context (occupational, personal, socio-cultural, and scientific) of mathematical literacy. Next, interviews were conducted with mathematics teachers when students worked on the test instrument so that information could be obtained about the location of difficulties experienced by students or to deepen information about learning obstacles experienced by students on OVSLE material. Observation and indepth interviews with teachers are very important in data collection. In addition, interviews with teachers were conducted as a supporting element and to obtain information about learning tools, learning processes, and students' mathematical literacy competencies. Meanwhile, documents in the form of photos during research or in the form of books and journals. Data analysis in this study used the Miles and Huberman Model which includes: (1) data reduction, data display, conclusion drawing/verification.

The indicators of algebraic literacy (Sari & Wijaya, 2017);(Rizki & Priatna, 2019);(Susetyawati & Kintoko, 2022) The method used can be seen in tabel 1.

Table 1. Algebraic Literacy Indicators (Change and Relationship)

No.	Indicator	Sub Indicators
1.	Understand and formulate situations mathematically by creating a mathematical model of a problem.	1). Understand mathematical problems and formulate effective problem-solving strategies. 2). Represent information or problems in an appropriate mathematical form. 3). Use mathematical models to draw a concrete state of a problem.
2.	Apply mathematical concepts, facts, procedures, objects and reasoning to solve problems.	1). Identify mathematical concepts relevant to the given problem. 2). Use relevant math facts or procedures in performing calculations to solve problems. 3). Apply effective mathematical problem solving strategi.
3.	Interpret, use, evaluate and interpret the results that have been obtained mathematically.	1). Evaluate the accuracy of the mathematical results that have been obtained. 2). Communicate mathematical results in a clear and structured manner.

	3). Interpret the relevant meaning of the mathematical results obtained in the context of the given problem or situation.

After compiling the indicators of algebraic literacy (chage and relationship), then a lattice is compiled for the questions to be made. The test grid can be seen in table 2.

Table 2. Lattice of Linear Equation Problem One Variable

Indicator	Cognitive Level	Context	Question No.
Identify equations and non-equations of linear one variable	Understanding	Jobs	1
Solve linear equations of one variable using the properties of arithmetic operations	Application	Personal	2
Solve linear equations of one variable using the properties of arithmetic operations	Application	Social Culture	3
solve real problems related to linear equations of one variable	Reasoning	Scientific	4
solve real problems related to linear equations of one variable	Reasoning	Personal	5

After obtaining student answers, the researcher examined the results of the students' mathematical literacy competency tests based on the assessment rubric in table 3.

Table 3. Assessment Guidelines

Aspects	Indicator	Criteria	Score	Maximum Score
Understand and formulate situations mathematically by creating a mathematical model of a problem.	Students understand the problem completely, determine what is given and the goal, and create the required mathematical model correctly according to realistic assumptions.	Proficient	3	3
	Students understand the problem completely, determine what is given and the goal, and create a correct mathematical model based on partially acceptable assumptions.	Medium	2	
	Students partially understand the problem, determine the given and	Low	1	

	objective to some extent but create an incomplete/incorrect mathematical model based on partially acceptable assumptions.			
	Students did not understand the problem, did not determine what was given and the objective, and did not create, or incorrectly create, a mathematical model.	NSI	0	
Apply mathematical concepts, facts, procedures, objects and reasoning to solve problems.	Students reach the correct mathematical solution based on the correctly created mathematical model.	Proficient	3	3
	There are shortcomings/errors in the correct solution of the mathematical model.	Medium	2	
	There are shortcomings / student errors in solving mathematical models that are made incompletely / incorrectly	Low	1	
	Students did not present a mathematical solution, incorrectly solved the model created, or tried to solve the wrong mathematical model.	NSI	0	
Interpret, use, evaluate, and interpret the results that have been obtained mathematically	Students correctly and completely interpret mathematical solutions in real life context.	Proficient	3	3
	Students incompletely interpret mathematical solutions in real-life contexts.	Medium	2	
	Students misinterpret mathematical solutions in real-life contexts.	Low	1	
	Students do not interpret mathematical solutions in a real-life context.	NSI	0	
	Total Score			**9**

Based on the table above, a research test instrument consisting of five questions designed based on algebraic literacy indicators (Change and Relationship) can be arranged where the students' answers after working on the questions will be seen the category level and learning obstacles experienced by students.

3. RESULTS AND DISCUSSION

Data on students' mathematical literacy competence can be seen from the results of the mathematical literacy competency test which consists of 5 items of mathematical

literacy description questions which aim to determine the category level and learning obstacles experienced by students in solving story problems on the material of the system of linear equations of one variable. In the mathematical literacy test questions, students are asked to solve 5 description questions according to their competence. The process of solving the problem will show the level of the student's mathematical literacy competency category based on the criteria for the level of the mathematical literacy category and the learning obstacles experienced by students in the material.

Students with mathematical literacy competence in the low category, if students partially understand the problem, determine what is given and the goal to some extent but make incomplete/incorrect mathematical models based on partially acceptable assumptions, then there are deficiencies/student errors in the solution of mathematical models made incompletely/incorrectly, and students misinterpret mathematical solutions in real life contexts. Students with mathematical literacy competence in the moderate category, if students understand the problem completely, determine what is given and the goal, and make correct mathematical models based on partially acceptable assumptions, then there are deficiencies/errors in the solution of mathematical models made correctly, and students interpret incomplete mathematical solutions in real life contexts. Meanwhile, students with mathematical literacy competencies belonging to the advanced category, if students understand the problem completely, determine what is given and the goal, and make the required mathematical model correctly according to realistic assumptions, then students reach the correct mathematical solution based on the mathematical model made correctly, and students interpret correctly and completely the mathematical solution in the context of real life. The results after the mathematical literacy competency test for students at JHS 3 Sungguminasa can be seen in the following table:

Table 4 Test Results of Students' Mathematical Literacy Competency

Category	Number of Student
Low	7
Medium	4
Proficent	0

Based on the data obtained in the table, students in class VII B of JHS 3 Sungguminasa belonged to the low category as many as 7 students, the medium category as many as 4 students, the advanced category had no students belonging to that category, and the other 4 students did not belong to the low, medium, or advanced categories. Therefore, it can be seen that the mathematical literacy competence of students in class VII B of JHS 3 Sungguminasa is still in the medium to low category.

Based on the results of student work in solving mathematical literacy-based problems, students are still low. The difficulty of applying facts, procedures, concepts, and mathematical reasoning to find solutions to given problems, as well as solving problems related to real context situations is still an obstacle for students.

Analysis of the data obtained in this study shows that the mathematical literacy competencies of JHS 3 Sungguminasa students are mostly in the moderate to low category, because most students only meet these categories. The following is an explanation of students' mathematical literacy competencies including the learning obstacles experienced by students. In addition, based on the results of an interview by one of the mathematics teachers who taught in class VII, it was mentioned that one of the learning obstacles felt was that students were still not proficient in distinguishing between variables, coefficients, and constants.

One of the students who answered question number 1 stated S1, one of the students who answered question number 2 stated S2, one of the students who answered question number 3 stated S3, one of the students who answered question number 4 stated S4, one of the students who answered question number 5 stated S5. So that the answers from the participants obtained the following results:

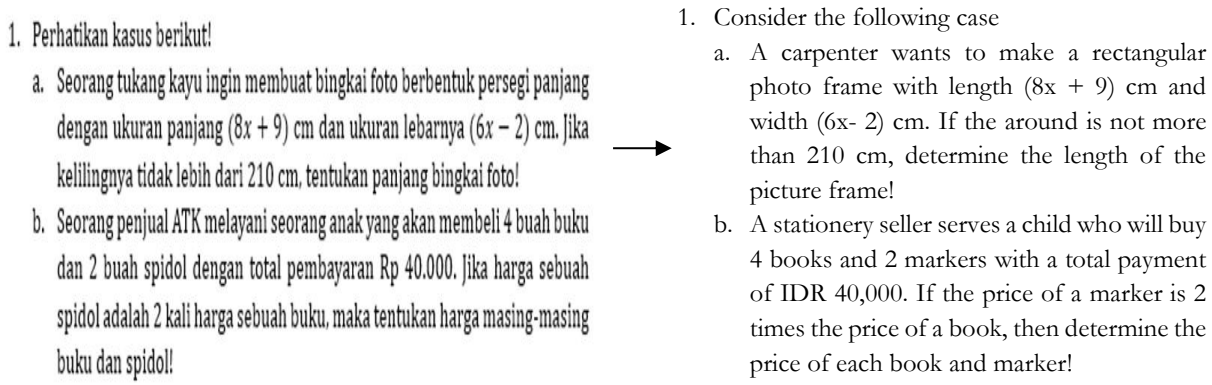

Figure 4. Problem 1

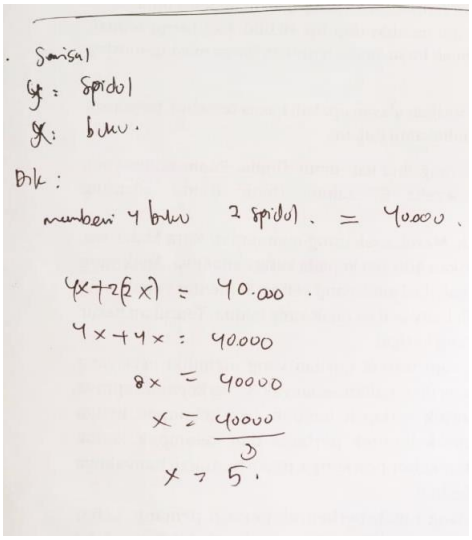

Figure 5. S1's Answer

Based on Figure 1, S1 is able to fulfill the moderate category of mathematical literacy competence, namely S1 is able to make correct mathematical models based on acceptable assumptions and can interpret incomplete solutions to mathematical models in real life contexts. The learning obstacle where S1 made a mistake was not mastering the solution steps of the whole problem given, so that students could not finish until the final stage, namely concluding what was asked by the problem.

2. Diketahui umur ayah Dinda sekarang dua kali umur Dinda. Enam tahun yang akan datang jumlah umur mereka 87 tahun. Umur Dinda sekarang adalah...tahun.

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2. It is known that the age of Dinda's father is now twice Dinda's age. Six years from now, the sum of their ages will be 87. Dinda's age now is… years

Figure 6. Problem 2

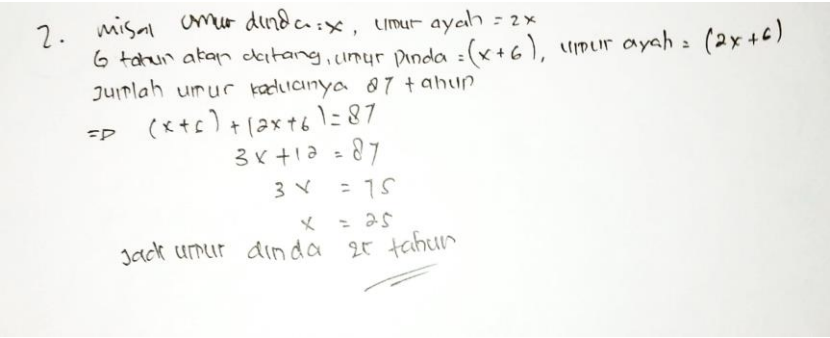

Figure 7. S2's Answer

Based on Figure 2, S2 is able to fulfill the moderate category of mathematical literacy competence, namely S2 is able to understand the problem completely, able to make correct mathematical models based on acceptable assumptions and can interpret incomplete solutions to mathematical models in real life contexts. The learning obstacle where S1 makes mistakes is not writing completely known and asked in the problem and is still incomplete in drawing conclusions.

3. Pak Arif memiliki tiga orang anak. Mereka sekarang menetap di Kota Makassar. Pada suatu hari, Pak Arif memberikan 400 sen kepada ketiga anaknya. Anak yang kedua diberikan 40 sen lebih banyak dari anak yang ketiga. Sementara anak yang pertama mendapatkan 2 kali lebih banyak dari anak yang kedua. Tentukan besar bagian yang diterima oleh anak yang ketiga!

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3. Pak Arif has three children. They now live in Makassar City. One day, Pak Arif gave 400 cents to his three children. The second child was given 40 cents more than the third. While the first child gets 2 times more than the second child. Determine the portion received by the third child!

Figure 8. Problem 3

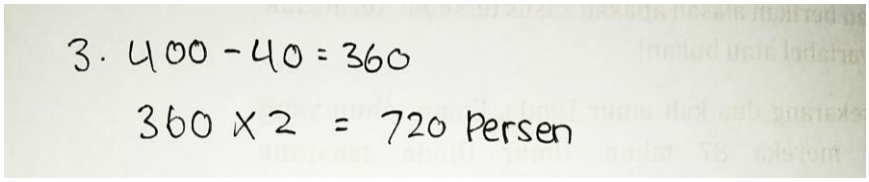

Figure 9. S3's Answer

Based on Figure 3, S3 did not fulfill all three categories of both advanced, moderate, and low mathematical literacy competencies where S3 did not understand the problem given, tried to solve the wrong mathematical model, and did not interpret mathematical solutions in the context of real life. The learning obstacle where students do not understand the context of the information from the problem given in the form of mathematical sentences, so that students misinterpret the meaning of the problem.

4. Andi mempunyai tiga kelompok sapi ternak qurban yang memiliki usia yang berbeda. Suatu ketika, Andi memberikan pakan sebanyak 31 kg kepada sapinya dengan takaran yang berbeda untuk setiap kelompok. Jika kelompok ketiga diberikan 5 kg lebih banyak dari kelompok pertama dan kelompok kedua memperoleh 2 kali lebih banyak dari kelompok ketiga, maka tentukan banyaknya pakan yang diperoleh kelompok kedua!

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4. Andi has three groups of sacrificial cattle that have different ages. Once, Andi gave 31 kg of feed to his cows with a different dose for each group. If the third group is given 5 kg more than the first group and the second group gets 2 times more than the third group, then determine how much feed the second group gets!

Figure 10. Problem 4

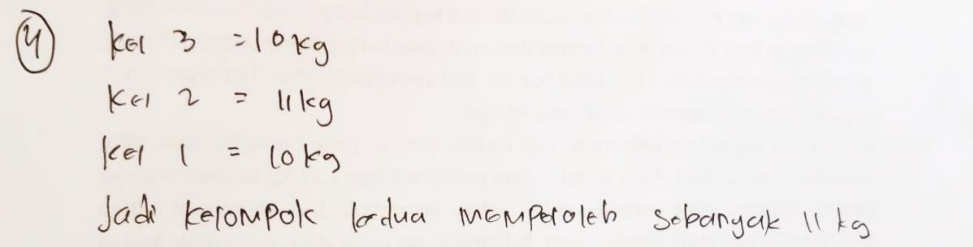

Figure 11. S4's Answer

Based on Figure 4, S4 did not fulfill all three categories of both advanced, moderate, and low mathematical literacy competencies where S4 did not understand the problem given, was wrong in making mathematical models, and did not interpret mathematical solutions in real-life contexts. The learning obstacle where S4 made mistakes was not writing the known and questioned, as well as not writing the conclusion correctly and students' lack of understanding of the context information from the given problem in the form of mathematical sentences.

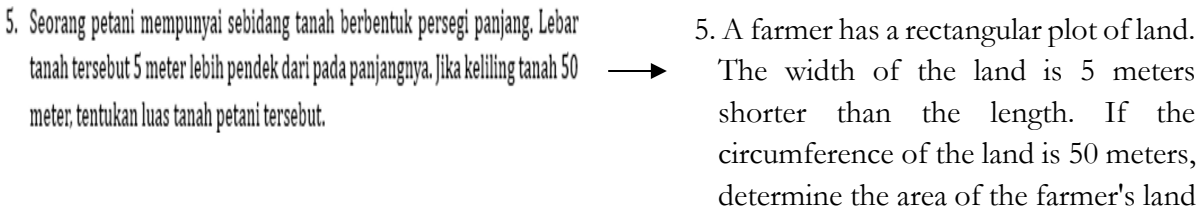

Figure 12. Problem 5

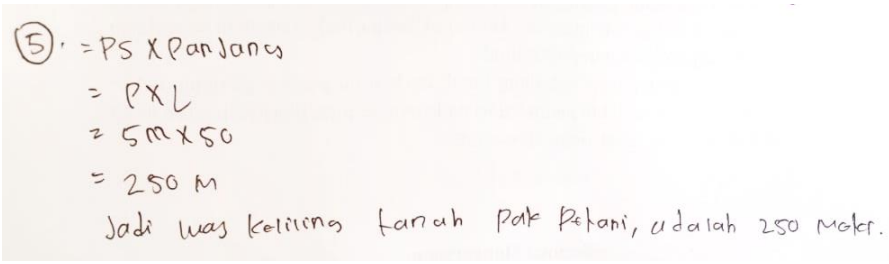

Figure 13. S5's Answer

Based on Figure 5, S5 meets the low category of mathematical literacy competence, namely S5 is incomplete/incorrect in making mathematical models and incorrectly interpreting mathematical solutions in real life contexts. The learning obstacle where S5 makes mistakes is that students just enter the known value of the problem given without understanding the purpose of the problem, so students misinterpret the meaning of the problem, meaning that students are not used to working on reasoning-type problems.

Based on the results of the research and discussion described above, it can be concluded that students' difficulties in solving math story problems are that students have difficulty determining the right algebraic formula, students have difficulty in solving algebraic problems, students have difficulty understanding the meaning of algebraic story problems, difficulty determining what is known and what is asked in algebraic problems, often students do not draw conclusions. From the difficulties experienced due to epistemological factors and psychological factors. Furthermore, to clarify the picture of student learning obstacles, an analysis of learning obstacles is carried out which includes epistemological factors and psychological factors.

a. Epistemological factors, namely: Difficulty converting story problems into mathematical form and problems that are too difficult.

b. Psychological factors, namely: Lack of basic skills from elementary school, for example multiplication, division, etc., students have no interest in learning math, students do not enjoy learning math and students do not understand the concept.

Based on the results of the discussion and conclusions obtained from this study, the authors put forward several implications, namely in learning story problems, teachers are prioritized to direct students to determine what is known, asked and the solution process. Teachers should be more creative in teaching so that students are more active in the learning process, especially problems involving literacy-based problems. This research can be useful for writers, readers, and educators by providing an illustration that students still have many difficulties in solving story problems so that we are required to find the right formula to overcome these difficulties.

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