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Analysis difficulties students' mathematics problem-solving in material SPLDV at junior high school

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ABSTRACT This study aims to determine the difficulties experienced by students and the factors that cause difficulties in solving mathematical problems in a system of linear equations in two variables (SPLDV) material. The Study method used was qualitative descriptive research with class VIII students at MTs Wali Songo Sukajadi Lampung as the subject. This study uses observation, interviews, and written tests to collect data. Data reduction, presentation, and conclusion are used as data analysis techniques in this research. The results showed several types of difficulties experienced by students, including difficulties in understanding concepts, difficulties in applying mathematical models to problems, and difficulties in applying algebraic operations. Difficulties in applying numerical models to problems and difficulties in applying mathematical tasks. Based on these data, several factors become obstacles for students in solving math problems, including Students who are in a hurry to solve problems, are not careful, do not understand concepts, and lack knowledge of algebraic operations.

1. INTRODUCTION

In curriculum 2013 material, the system of linear equations in two variables (SPLDV) is a subject that is learned and must be mastered at the level Intermediate / Madrasa Tsanawiyah student class VIII. The research by Diana, Nelly, and Risma is based on competence existing basis so the student must be capable of finishing related problems with SPLDV with the use of wrong one method SPLDV settlement, acceptable use method elimination, substitution, and mixture (Nanmumpuni & Retnawati, 2021; Simanjuntak & Imelda, 2019).

SPLDV material connects with life every day, like when we shop, If we want to know something goods, while we only find out the total number of goods (Amelia et al., 2021a) matter This SPLDV material has quite a significant role. Before continuing material among them, SPLTV material (Nurdianti et al,, 2019; Setyaningsih & Mukodimah, 2022), SPLDV constitutes one wrong material to start mastering and as the base in understanding other related materials with linear equations.

However, lots of struggling students in finish SPLDV. Challenging students to handle a problem is difficult circumstances, where students experience obstacles in overcoming problems with method-solving problem mathematics (Purnama & Suparman, 2019). Several factors make it difficult for students to study, including internal and external factors. This is the same as the opinion of Anti Maspupah and Alan Purnama that factors internal difficulty Study student originates from himself, like health body, interest as well as talent from self, as well exists one matter of encouragement (motivation), and existence ability as well as the desire to realize something action. Factor external can be known from family (Meiliasari et al., 2021), school friends (Funes, 2021), and the environment public (Szirmay-kalos, 2020). In the factor, internals and factors, external must there is good cooperation, deep meaning when internal fine but when external his No Good so difficulty Study No will resolve, and vice versa when externally good but internal Alone No support so difficulty neither study will be resolved.

Based on the results of pre-survey researchers in learning math, most students are Still not enthusiastic enough about the lesson. This plus the opinion among students that mathematics is a complicated subject that can only be understood by students with more abilities (Lutfia & Zanthy, 2019).

In the process of learning, there are obstacles experienced by teachers. That is, a student is only silent and does not submit related questions with material, but the student always pays attention and accepts the material taught by a good teacher. In that needed approach, the student can know the difficulty in solving a problem like a student does not enough dominate the material, is less accurate in understanding the material, and is rushed to finish question (Hartati et al., 2019; Putri et al., 2019).

If the difficulty is left and not gotten more attention, the student will later face ongoing difficulties in under-

standing (SPLDV). Thus, the needed expected effort can overcome the problem. The matter triggers the writer to do A study regarding the analysis Difficulty Student in Solve Problems Mathematics Material System Linear Equation Two Class VIII Variable (SPLDV) MTS Wali Songo Sukajadi.

Relevant research in study This is research conducted by Sustenance (Quezada, 2020); results study This state that student experience difficulty based on non-cognitive factors, and cognitive factors in solving problem includes: a) attitude, students not interested enough in learning question in story form; a) metacognition, awareness think students who are still low so that make student tend cannot take advantage knowledge already owned For finish problem math. Factor cognitive includes a) less maximum in mastery draft material; b) students being confused because of the difference between the material and the questions given by the teacher, from nominal terms nor application material (Husna et al., 2019).

According to Pretty sustainable in the finish question Linear Equation Two Variable in story form has several types, including: a) aligning what is asked question with material that has been studied; b) deep application about story experience difficulty; c) difficulty in do operation algebra and give a conclusion. The matter is in line with the opinion of Simanjuntak & Imelda (2019) that due process learning is still in online model learning. Hence, the obtained results show that difficulties experienced by students are caused by not enough understanding of SPLDV material inside the story. Students forget about the steps and process solution because process learning less online maximum (Abiyasa et al., 2018).

If the difficulty is left and does not get attention more, the student will later face ongoing difficulties in understanding the material (SPLDV). With this, effort to find location errors so that expected can help overcome the problem (Anggraeni & Haerudin, 2022). This triggers the writer For A study regarding: Analysis Difficulty Student In Solve Problems Mathematics Material System Linear Equation Two Class VIII Variable (SPLDV) MTS Wali Songo Sukajadi.

2. METHOD

The research method used by researchers is a type of qualitative descriptive research. In order to obtain data from the desired source, the researcher acts as a research instrument. The results of this study are presented in descriptive form, with the hope that readers can fully understand the results of this study.

There are several types of errors made by students, namely: a) type A, where the student is wrong in reading the question text and the primary purpose of the question text; b) type B, where the student reads the problem thoroughly but fails to understand the problem; c) type C, where the student cannot apply the mathematical model to the problem; c) type D, where the student has completed the problem according to the procedure but makes an error in the calculation; and d) type E, where the student is wrong in writing the answer and does not show the final result of the answer, and does not provide a conclusion.

The test instrument used in this study consisted of 4 essay questions arranged according to the material on a system of two-variable linear equations. This research was conducted at MTs Wali Songo Sukajadi using the interview method with teachers and class VIII students at MTs Wali Songo Sukajadi to collect data. The authors conducted direct observations in class VIII and added documentation to strengthen the research data. This study uses data reduction, presentation, and conclusion for data analysis. In qualitative research, there are four criteria for testing the validity of the data, namely: credibility test (interval validity), transferability (external validity), dependability (reliability), and confirmability (objectivity).

3. RESULT AND DISCUSSION

Know reason problems experienced related students with material Linear System Two Variables, Researcher analyzes three students where the error is experienced three-person student the Already represent than experienced errors by other friends, where students get mark high, medium and low. Results and discussion can be seen below:

3.1 Result Study

3.1.1 Analysis of Difficulty Students who get the Highest Value (R1)

R1's answer to question number 1 got pulled conclusion error student present in type E when finished question Already by procedure and already understood the material. However, No came to a conclusion end. If this is caused not enough, be careful and haste in the question.

R1 can already do questions by the procedure seen in the applied model learned given, so Not only does it understand the material, but RQ can also conclude the question given.

R1 appears already to understand the material, work questions by the procedure, apply model mathematics to questions with good and faithful, and give point settlement, but on question number 3, subject R1 made a type E error where students do not give a conclusion end on the answer so that rather difficult to be understood. The matter happened Because students did not inspect the results answered before they collected and were less thorough.

Subject R1 makes an error like (number 3) type E where students No give a conclusion end of the answer so that complex For understood. On question number 4, subject R1 looks to understand the material, work questions according to the procedure, apply model math on the problem correctly and accurately, and give point settlement. Matter happens Because students do not inspect the results answer before they are collected and are less thorough in the question.

3.1.2 Analysis of Difficulty Students who get Medium Value (R2)

R2 made several mistakes; first, I typed A and B errors where students were wrong in reading questions and No by the objective main question. On the question, it was written that 3b + 2p = 31,000; however, the student answered with 3b + 2p= 22,000, p because the student was not thorough enough and did not look closely at the excellent explanation question. The second mistake is a type D error, where students Already do the question by the procedure. However, in the calculation where students answered 27,000 - 15,000 = 5000, the correct answer was 7,000. This caused Because students were in a hurry to do

the matter, not thorough, and not inspect the answer before collecting.

R2 appears to understand the material, work questions by procedure, apply model mathematics with right on the question, and deliver point growing solution to become a conclusion.

R2 understands the material, handles the question by strategy, implements model mathematics correctly, and gives the solution to be the conclusion.

R2 that student does question Already in accordance procedure do type D error when answered 5 x 10,000 = 60,000 meanwhile correct answer is 50,000 the because in finish question student rush and less thorough as well as No inspect results answer before collected.

3.1.3 Analysis of Difficulty Students who get Low Value (R3)

R3 did type E error already knew the material and followed procedure when doing question, however they No reach conclusion end. Matter This is caused Because students are not enough. Be careful to ask questions and rush in to do questions.

R3 did type D errors in calculations wrong. The student rushed, careless, and did not thoroughly inspect the answer before collecting. Subject R3 also did type B error: student read the question thoroughly, but No can understand the question given.

R3 made errors based on type C, failed to apply questions, and did not understand the draft math. The matter was caused Because students who did not understand the material but did not want to ask about it were only silent and did not do.

R3 made several errors: a) type A error, where the student was mistaken in reading the script question and understanding the main objective of the question; b) type B error: read the question thoroughly but fail to understand the contents; c) type C, where students cannot apply model mathematics to the question. Should subject R3 lists, especially formerly method next/previous use, to know the intended result (Kelly, 2020; Verma et al,, 2020). However, subject R3 only supplied A little answer; even then, results were picked from friends. Subject R3 is inclined to feel Dizzy with the question Confused Want to answer with which formula because subject No understands existing concepts (Othmane et al., 2022), and tends to want to know (Yip et al., 2020).

3.2 Discussion

The researcher gave four questions based on the research results conducted against 35 students from class VIII A MTs Wali Songo Sukajadi Earth Queen Nuban, Central Lampung. Known Types of mistakes made by students, namely:

a. Type A and B difficulties
   Difficulty type A is where students mistakenly read script questions as well as objective main from script question, while type B difficulties where they read questions with Correct but No understand contents. Based on a study by Amelia et al. (2021a); Dack (2019), not enough understanding you have students resulted in errors in interpreting questions given (Agustini & Pujiastuti, 2020).
b. Type C difficulty
   Students cannot apply model math on questions in level Type C difficulty. Based on student answers, students are still confused about implementing models/formulas in mathematics in story questions (Zainudin et al., 2019). Students do not notice when the teacher explains; when No gets it, No submits questions and only shuts up as if No wants to know. Matter This strengthens research by Florence Kolo et al. (Indahsari & Fitrianna, 2020).
c. Type D difficulty
   Type D difficulty is when students finish questions by hinting. However, there is an error in the calculations. It is due to insufficient exercise in the count, hurry up, no thorough, and no inspection repeat before collected on subject teachers. Several real students already have the material and can implement model math. However, because of the mistakes that have been mentioned, they answer student No by procedure settlement. This matter is the same as the research results of (Al Azka et al., 2019).
d. Type E Difficulty
   In writing the answer, no showing results end from the answer, and no give a conclusion. At the moment analyzed, it turns out that students do understand operation algebra well, so it becomes because of how complex it is to finish problem-related math with SPLDV material. Based on the results of a study from lots of students who do not know how to operate algebra from a matter of the story, so do not understand an answer to the end question (Khairunnisa & Aini, 2019)

Mathematics is often time linked with complex problems that exist in the field. So the solutions to problems are: a) Concept mathematics must be taught in simple language by the teacher. Teachers can use parables If needed To help students understand the draft. b) To learn math, teachers should link skills with experienced daily students, well, where they cannot get from the environment around them. c) a teacher should be able to read the character and abilities of students where not all abilities are above average because That lets the Teacher be more patient Again in explaining so that the child can understand. d) The teacher must explain how to count correctly when you finish the question. Give question exercises emphasizing understanding draft students and using formulas that can practice Skills students.

4. CONCLUSION

Based on the goals and results of the research, we conclude that Students face various difficulties, among other things, as follows: a) type A, where students are mistaken in reading script questions as well as objective main from script question; b) type B students read the question correctly but no understand meaning from the question; d) type C where students cannot get in apply model mathematics to questions; e) type D students Already do question by procedure but students Wrong in calculation; f) type E where students Wrong in writing answer, no showing results end from answer, as well No give conclusion. Several students cause the matter in a hurry to answer questions, students who do not understand concepts, and a lack of knowledge of operation algebra. As for how to overcome difficulty with the method, Teachers should use straightforward language to teach draft mathematics to students. A teacher should be

able to read character and abilities child where not all child own ability above average, and equip them with questions and exercises that emphasize the use of formulas. Teachers can use parables If needed to help students understand draft learn.

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