

Student Errors Analysis on the Subject of Class VII Algebraic Form Based on Nolting's Theory

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*Student Errors,
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ABSTRACT

Tujuan penelitian ini adalah mendeskripsikan jenis dan faktor penyebab kesalahan yang dialami siswa kelas VII dalam bentuk aljabar berdasarkan Teori Nolting. Metode penelitian yang digunakan adalah deskriptif kualitatif. Subyek penelitian terdiri dari 10 siswa yang diambil secara acak, kemudian 2 siswa yang memenuhi 6 indikator tipe kesalahan Nolting diwawancarai. Berdasarkan hasil penelitian diketahui bahwa persentase jenis kesalahan yang dialami siswa adalah 50% mengalami misread direction errors, 20% mengalami careless errors, 10% mengalami concept errors, 25% mengalami application errors, 32,5% test taking errors, dan 7,5% mengalami study errors. Faktor penyebab kesalahan siswa adalah tidak memiliki referensi yang lengkap, kurang memperhatikan penjelasan guru, kurang mampu menangkap makna kata penting dalam soal, salah memahami soal, kurang memperdalam materi bentuk aljabar terutama dalam penerapan konsep operasi bentuk aljabar ke dalam bentuk soal cerita matematika, kurang melakukan latihan soal kontekstual, kurang teliti, terburu-buru, tidak mampu mengatur waktu pengerjaan.

The purpose of this study is to describe the types and factors that cause errors experienced by class VII students in algebraic form based on Nolting's Theory. The research method used is descriptive qualitative. The research subjects consisted of 10 students who were taken randomly, then 2 students who met the 6 indicators of the Nolting error type were interviewed. Based on the results of the study, it is known that the percentage of types of errors experienced by students is 50% experiencing misread direction errors, 20% experiencing careless errors, 10% experiencing concept errors, 25% experiencing application errors, 32.5% test taking errors, and 7.5% experienced study errors. The factors that cause student errors are not having complete references, paying less attention to the teacher's explanations, not being able to capture the meaning of important words in questions, misunderstanding the questions, not deepening algebraic form material, especially in applying the concept of algebraic operations into the form of math story questions, not doing enough. contextual practice questions, less thorough, in a hurry, unable to manage the processing time.



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INTRODUCTION

Education is one of the important aspects assessed in the development of a country. The higher the quality of education in a country, the higher the quality of human resources in that country. To determine the quality of education can be seen from the results of student achievement in the learning process. The teacher is the person in charge of delivering learning material, and trying to make students achieve learning goals. Of course, this requires support from the selection of learning strategies/models, learning media, and other supporting facilities that are useful for developing students' potential in mastering the material.

The biggest challenge for teachers is educating students in learning mathematics. Mathematics is one of the subjects that has very little interest in learning, because students perceive mathematics as a complicated subject with so many formulas and calculations. This is in line with the opinion of Fitriana & Aprilia (2021) which says that mathematics is considered a difficult subject because

students have developed the mindset that mathematics is difficult and complicated because it is always related to numbers, formulas and calculations.

The basic problem that often causes students to experience difficulties is the inability of students to understand mathematical concepts, so that students are prone to errors and do not even find solutions to material problems (Ulpa et al., 2021).

According to Young & O'shea (in Prianto et al., 2019), errors in mathematics are a form of deviation from the correct solution, from a problem both conceptually and in the problem solving process. One of the sub-materials that often makes students experience errors in determining the solution to the problem is algebraic forms. Based on Cahyani & Sutriyono (2018) research regarding learning algebraic operations material in class VII Christian Middle School 2 Salatiga, it was found that there were still many students who experienced errors in solving algebraic operations questions.

Algebra is one of the key components of learning mathematics, because this material is a prerequisite material for advanced learning (Muda et al., 2021). This material is generally presented in the form of math word problems related to students' daily lives (Jun et al., 2022). But in reality, there are still many students who experience difficulties in solving algebraic word problems. As a result, students tend to make mistakes in solving word problems (Hasibuan, 2015).

Based on the results of initial observations by interviewing seventh grade mathematics teachers at SMPN 9 Pasuruan, it was found that students still experienced difficulties in learning algebraic material. This can be seen from the results of students' daily tests which tend to be low on the material. Algebraic form material is one of the materials that is difficult to teach to students because this material contains abstract symbols, namely in the form of variables contained in algebraic forms (in Suprihatiningsih, 2015). So that in studying this material requires a deep understanding of the meaning of each symbol contained in the material.

As for some of the difficulties of students in solving story problems in algebraic form, namely students have

difficulty changing story questions in the form of mathematical modeling, difficulties in understanding the concept of algebraic form operations, and difficulties in applying the concepts of algebraic operations (in Puspitasari et al., 2015). From some of the difficulties experienced by these students, errors were made by students in solving algebraic story problems. This student error needs to be analyzed further by conducting an error analysis study.

Brown & Skow (in Rahmania & Rahmawati, 2016) say that error analysis activities are an effective method that is useful for identifying the types of mathematical errors experienced by students. So it is very important for teachers to develop research related to student error analysis in order to be able to review and identify the types of errors experienced by students.

Many error analysis studies that can be used in analyzing student errors. However, this study will analyze student errors based on the Nolting Theory classification of error types (in Nuraini et al., 2017), which consists of 6 types of student errors, namely 1) Misreading directions, 2) Careless errors, 3) Conceptual errors, 4) Application errors 5) Mistakes working on questions, 6) Learning mistakes. This study

redeveloped the Nolting error types indicators from from several previous researchers (Ulpa et al., 2021; Hanifaturrochmah & Azizah, 2021) and was also guided by Paul D. Nolting entitled Math Study Skills Workbook Fourth Edition. So that in this study can analyze the types of errors and factors that cause student errors in more detail and depth.

Based on the description above, the researcher's interest arises to take the title "Student Errors Analysis On The Subject of Class VII Algebraic Form Based On Nolting's Theory" which aims to describe the types and factors that cause student errors in solving problems on the subject of algebraic.

METHODS

The type of research used in this research is descriptive qualitative. The purpose of this study was to describe the types and factors that cause errors made by

class VII students in the subject of algebraic forms based on the Nolting Theory. This research was conducted from June 17 to June 18 2022, with the research subjects being class VII C students of SMP Negeri 9 Pasuruan, a total of 10 students who were taken by simple random sampling and were in the even semester of the 2022/2023 academic year.

The instrument used in this study was a written test in the form of 4 mathematical word problems in algebraic forms and interviews. Then the results of the written test were corrected so that 2 students who met the 6 indicators of the Nolting error type were found to be asked for an interview. Data collection techniques were obtained from the results of written tests and student interviews. The indicators that will be applied in analyzing the types of errors experienced by students in algebra subjects can be seen in Table 1 .

Table 1
Type of Error Based on Nolting's theory

Error Type	Indicator
Misread direction errors (MD)	<ul style="list-style-type: none"> • Students cannot read and interpret the symbols in the questions. • Students miss important information in the questions (key words). • Students cannot write down all the meanings of the words asked in the questions. • Students miswrite the known and asked components in the problem. • Students misunderstand the implied meaning of the question.
Careless errors (CA)	<ul style="list-style-type: none"> • Student are wrong in writing the symbols in the problem. • The student wrong in writing the units and operation signs in the problem.

	<ul style="list-style-type: none"> • Students are wrong in determining the results of the calculation operations in the problem. • The student wrote incorrectly the final result of the calculation.
Concept errors (CO)	<ul style="list-style-type: none"> • Students do not know the mathematical concepts that will be used to work on the problems. • Students do not understand the properties of algebraic operations. • Students incorrectly apply the concept or formula that will be used in solving the problem.
Application errors (AP)	<ul style="list-style-type: none"> • Students are wrong or inappropriate in changing the important information in the problem. • Students do not change the important information on the problem into the form of a mathematical model. • Students wrongly plan solutions in solving problems.
Test taking errors (TT)	<ul style="list-style-type: none"> • Student blank answer. • Students do not continue the completion process (can't think). • Students do not complete the answers to the end. • Students do not continue the computation process because of the wrong concept. • Students can not conclude the final result of the answer in accordance with the wishes of the question.
Study errors (ST)	<ul style="list-style-type: none"> • Students are wrong in studying the type of material • Students rarely practice contextual story problems • Making misread direction errors and concept errors

Data analysis in this study used qualitative data analysis with three stages, namely data reduction, data presentation, and drawing conclusions (Rijali, 2019). Data reduction in this study was in the form of correcting the results of student work by counting the number of students who answered incorrectly on each item. Furthermore, the errors experienced by students in each item were identified according to the Nolting error type indicator to find out the types of errors made by students. The presentation of data in this study is in the form of data exposure in the form of tables and figures. Conclusions in this study are in the form of

a description of the types of errors and the factors that cause student errors in algebraic forms based on Nolting's Theory.

The percentage of types of errors experienced by students in algebraic forms based on Nolting's Theory using the formula:

$$P_{jk} = \frac{J_{pk}}{n \times N} \times 100\%$$

Where:

P_{jk} = Percentage of the number of students who experience errors

J_{pk} = Number of errors made by students

n = Number of questions

N = Number of students

RESULT AND DISCUSSION

Based on the results of the error analysis conducted by the researcher based on the Nolting error type indicator (Nolting, 2012) it was found that some students did not complete the test questions completely, and some did not complete the test questions in accordance with the story

problem solving procedures (known, asked, answered, and given a final conclusion).

Then it was also found that most of the students could not write down the known and asked components in the questions, so they tended to rewrite the questions. To find out more details about the types of errors made by students in algebraic form, see Table 2.

Table 2
Type of Error Based on Nolting's Theory

Student Initials	Type of Errors			
	No.1	No.2	No.3	No.4
AGAM	MD, CA, TT	MD, TT	MD	-
APPR	-	TT	MD, AP	TT
ANS	MD, CO	MD	AP	AP
BS	CA, TT	CO	MD, ST	AP
DAM	MD, CA	-	-	MD, CO, ST
DM	CA	MD, TT	MD, AP	AP
FADY	MD, CA	TT	MD, AP	TT
KNNR	MD	MD, CA	CA, AP	TT
MBNA	MD,TT	MD, TT	MD, AP	MD, TT
MIM	CA	TT	MD, AP	CO, ST

Table 3
Recapitulation of Student Error Percentage Based on Nolting's Theory

Error Type	Many Students Make Mistakes				Total Error	Error Percentage
	No.1	No.2	No.3	No.4		
MD	6	5	7	2	20	50%
CA	6	1	1	0	8	20%
CO	1	1	0	2	4	10%
AP	0	0	7	3	10	25%
TT	3	6	0	4	13	32,5%
ST	0	0	1	2	3	7,5%

The form of recapitulation of the percentage of students' errors in solving

algebraic story questions based on Nolting's Theory can be seen in Table 3.

Based on the results of the recapitulation table of student errors in solving algebraic story questions based on Nolting's Theory, it was found that 50% of students experienced misread direction errors, 20% of students experienced careless errors, 10% of students experienced concept errors, 25% of students experienced application errors, as many as 32.5% of students experienced test taking errors, as many as 7.5% of students experienced study errors.

As for a more detailed description of the types of errors and the factors that cause student errors in the algebraic form material will be explained more clearly by 2

students who meet 6 types of Nolting error indicators as follows.

Description of Written Test Results and Interview (BS)

Question Number 1

Based on Figure 1, it is known that the BS performs careless errors and test taking errors. The form of careless errors experienced by BS is less thorough in calculating algebraic operations. While the test taking errors carried out by the BS do not continue the calculation results until the end. The following are interview excerpts regarding careless errors and test-taking errors experienced by BS.

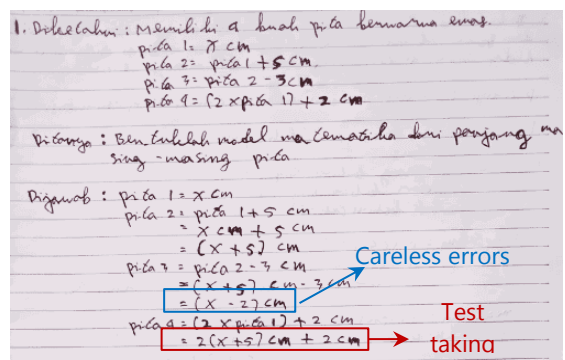


Figure 1. Answer BS Number 1

Careless Errors

P : Do you understand about writing symbols and operating algebraic forms?

BS : Understand sis

P : Have you been thorough in working on the questions?

BS : Not careful

P : Are you in a hurry to work on a problem? If so, why?

BS : Yes sis, because the time to complete the questions is short, while the questions are long

Test Taking Errors

P : What did you not understand about the problem so you only wrote down the known components?

BS : I don't understand how to count the fourth ribbon sis

P : Don't you know the concept of algebraic operations?

BS : I already know sis, but sometimes I'm still confused

P : Why don't you write down the final result of calculating the algebraic form of $2(x + 5)cm + 2 cm$?

BS : I doubt it sis, I'm afraid my answer is wrong

From the results of the interview above, it was found that the careless errors experienced by the BS were caused by not being careful in the calculations, and being in a hurry in working on the questions because they felt that time was short. This is in line with the causes of errors expressed by Swan (in Faturrochmah et al., 2021), namely students lacking concentration, thinking in a hurry, brain memory is full or failing to record something important while studying. This is also in line with the opinion of Novferma (2016) which explains that students feel they lack time to work on questions.

Meanwhile, the test taking errors experienced by BS were caused by a lack of understanding of how to apply the concept of algebraic operations to the questions, and doubts about the answers they got, so they did not continue the calculation of algebraic operations until the final calculation, and did not write down the final conclusions. This is in line with the causes of errors expressed by Hidayat (in Darmawati et al., 2017), namely students make mistakes because they do not provide

complete answers in accordance with the wishes of the questions, so that students' answers are wrong. And it is also in line with the opinion of Puspita (in Aisyah et al., 2019) which explains that the student made a mistake because he did not write a conclusion sentence or the student had written a conclusion but was wrong.

Question Number 2

Based on Figure 2, it is known that BS made concept errors. The form of concept errors experienced by BS is not changing the operation sign of the algebraic form after moving it to the right side. The following is an excerpt from the interview regarding the concept errors experienced by BS.

Concept Errors

P : Do you have complete references?

BS : It's not complete sis, I'm just learning from LKS

P : Do you often do exercises at home?

BS : Never sis, I only study when there is a test. Hehehe..

P : Do you pay attention when the teacher explains in front of the class?

BS : No sis, I sometimes pay attention sometimes I also talk to friends

From the results of the interview above it is known that Concept errors experienced by BS were caused by not having complete references, never doing practice questions, not paying enough attention to the teacher and talking a lot with friends when the teacher explained in front of the class. This

is in line with the causes of errors expressed by Sari et al. (2018), namely students do not have complete references, students do not

practice questions at home, and students talk a lot with friends when the teacher explains.

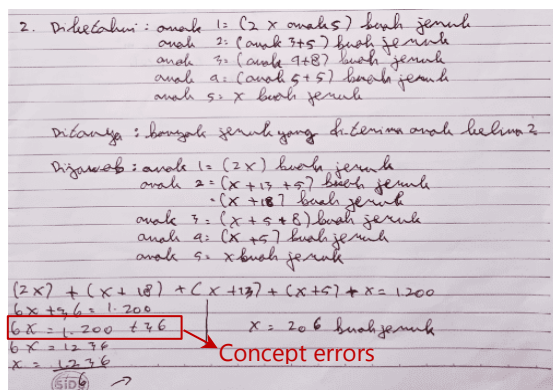


Figure 2. Answer BS Number 2

Question Number 3

Based on Figure 3, Based on Figure 3, it is known that the BS makes misread direction errors and study errors. The form of misread direction errors experienced by BS is not writing down what is known and asked in the questions correctly, but

rewriting the questions incompletely. While the study errors carried out by the BS were answering questions by writing that they did not understand the questions. The following are interview excerpts regarding misread direction errors and study errors experienced by BS.

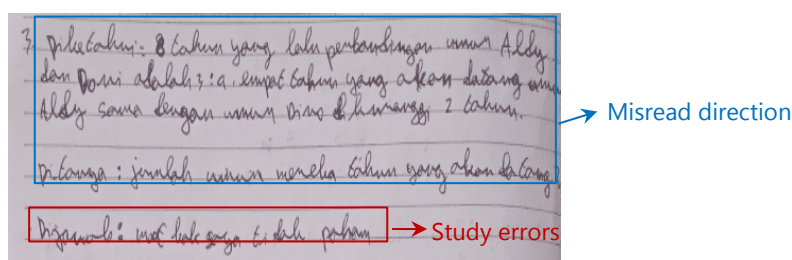


Figure 3. Answer BS Number 3

Misread Direction Errors

- P : What do you understand from the story problem?
- BS : From the questions posed, determine the sum of the ages of Aldy and Doni. but I don't understand about stories like this
- P : What components are known and asked in the problem?
- BS : What is known is, "8 years ago..." (reads the question) and what is asked

is the sum of their ages in the next year.

- P : Why don't you write down what you know in the form of a mathematical model? And what does the sum of their ages in the coming years mean?
- BS : I'm confused about how to change the problem to a mathematical model. And the meaning of the sum of their ages in the coming years... (while re-reading the question). Oh, sorry sis, it turns out I read it wrong, it turns out

that what was asked was the sum of their ages in the next 3 years (smiling).

Study Errors

P : *What keeps you from being able to solve the problem properly?*

BS : *The story is difficult, sis*

P : *Do you feel confused in determining the components in the question?*

BS : *Yes sis, I'm confused about what components are known and asked*

P : *Have you studied deeper after the teacher explained this material?*

BS : *Never sis, I only study when I want to take an exam*

P : *Do you often do contextual questions?*

BS : *Never sis, I don't like long questions like this. Usually work on ordinary questions, not the form of story questions like this.*

From the results of the interview above it is known that the misread direction errors experienced by the BS were caused by a lack of understanding of the questions in the form of story problems, not being able to convert the word problems into mathematical models, not being able to grasp the meaning of important words in the questions, and misunderstanding the meaning of the questions implied. This is in line with the causes of errors expressed by Fathiyah (2020), namely students only write down the final answer without any processing process, misinterpret the wishes of the questions, cannot mention components that are known and asked in the questions, do not know the meaning of the symbols in the questions, and cannot read the information shown in the Figure 3.

Meanwhile, the learning errors experienced by BS were caused by a lack of understanding of the application of the concept of operating algebraic forms into contextual story questions, as well as a lack of deepening of algebraic material and practice questions, especially contextual story questions. This is in line with the cause of the error expressed by Ulpa et al. (2021), namely students rarely do practice questions, especially questions that are contextual in nature, students tend to emphasize memorizing formulas more than understanding concepts, and students do not deepen their understanding of the material and only rely on one incomplete reference to support learning.

Question Number 4

Based on Figure 4, it is known that BS made application errors. The form of application errors made by BS is incorrectly entering the equation for the area of the tea garden (square area) with the coffee garden area (rectangular area). The following are excerpts from the interview regarding the application errors experienced by BS.

Application Errors

P : *Is there anything you don't understand about the language used in the questions?*

BS : *Yes sis, I'm confused about the selling price for the area of tea gardens and the area of coffee gardens*

P : Do you know the use of concepts or formulas in solving this problem?
BS : I know sis, but sometimes I'm still confused

P : What keeps you from continuing the concepts or formulas that you understand?
BS : Because I'm confused which one is included in the formula for the equation

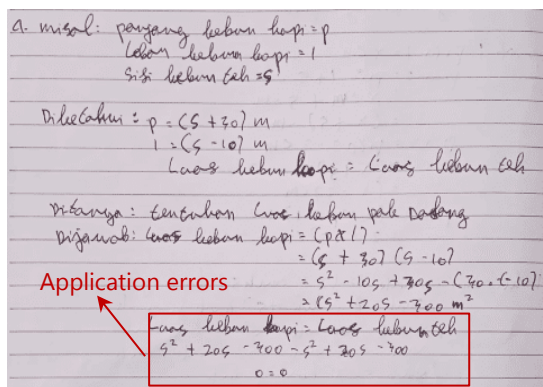


Figure 4. Answer BS Number 4

From the results of the interview above it is known that the application errors experienced by BS are caused by a tendency to memorize formulas without understanding the meaning of the symbols in the formulas, and not doing enough practice questions to improve ability in applying concepts and formulas to questions. This is in line with the causes of errors expressed by King Eng (in Sukmawati & Amelia, 2020), namely students do not know the meaning of symbols or terms in the problem questions, students do not understand the meaning of the problems, students cannot make problem solving procedures sequentially and correctly, and students do not answer in accordance with the wishes of the questions.

Description of Written Test Results and Interview (MIM)

Question Number 1

Based on Figure 5, it is known that MIM performs careless errors. The form of careless errors performed by MIM is less precise in calculating algebraic operations.. The following are excerpts from the interview regarding the careless errors experienced by MIM.

Careless Errors

P : Do you understand about writing symbols and operating algebraic forms?
MIM : I understand sis, but when I was doing it I forgot a bit
P : Have you been thorough in working on the questions?
MIM : No sis, I feel there is something wrong with my work
P : Are you in a hurry to work on a problem? If so, why?

MIM : Yes sis, because the time given to you to do the problem is not long enough

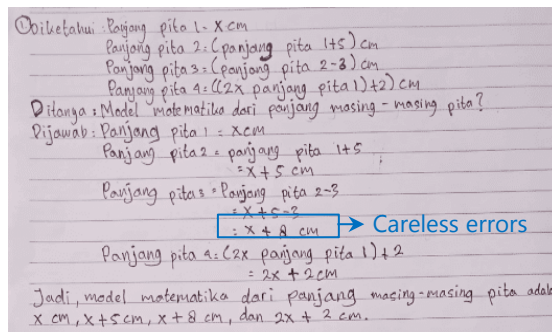


Figure 5. Answer MIM Number 1

From the results of the interview above it is known that the careless errors experienced by MIM were caused by a lack of thoroughness in observing signs of algebraic operations, rushing in working on story problems and feeling

a lack of time when working on questions. This is in line with the causes of careless errors expressed by Aroysi (2018), namely students are not careful and are too hasty in doing questions for fear of running out of time.

Question Number 2

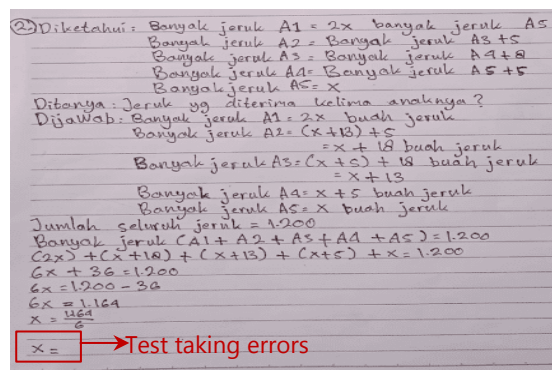


Figure 6. Answer MIM Number 2

Based on Figure 6 it is known that MIM made a test taking error. The form of error taking the test carried out by MIM is not continuing the calculation results from $x = \frac{1.164}{6}$. The following are excerpts from

the interview regarding the test taking errors experienced by MIM.

Test Taking Errors

P : What did you not understand about the problem so you only wrote down the known components?

MIM : I don't understand how to count the fourth ribbon sis

- P* : Don't you know the concept of algebraic operations?
MIM : I already know sis, but sometimes I'm still confused
P : Why don't you write down the final result of calculating the algebraic form of $2(x + 5)cm + 2 cm$?
MIM : I doubt it sis, I'm afraid my answer is wrong

From the results of the interview above it is known that the test taking errors experienced by MIM were caused by not being able to manage the time when working on the questions, so they could not complete the calculation results. This is in

line with the causes of errors expressed by Fitriani et al. (2021), namely students make mistakes in tests because students feel they are running out of time in working on questions.

Question Number 3

Based on Figure 7, it is known that MIM makes misread direction errors and application errors. The form of misread direction errors carried out by MIM is rewriting questions on known components and misunderstanding what is being asked in the problem.

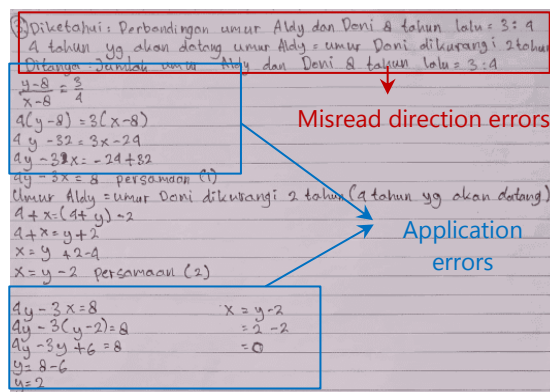


Figure 7. Answer MIM Number 3

Meanwhile, the application error made by MIM is reversed in placing the x and y variables in the equation. The

following are excerpts from the interview regarding the misread direction errors and application errors experienced by MIM.

- Misread Direction Errors*
P : What do you understand from the story problem?
MIM : Ask to find the sum of the ages of Aldy and Doni.
P : What components are known and asked in the problem?
MIM : What is known is, "The ratio of Aldy's age and Doni's age 8 years ago = 3 : 4, then 4 years from now

- Aldy's age = Doni's age minus 2 years. And what is asked is the age of Aldy and Doni 8 years ago = 3 : 4.*
P : Why don't you write down what you know in the form of a mathematical model? And what was asked about the age of Aldy and Doni 8 years ago = 3 : 4?

MIM : I don't understand sis how to turn question number 3 into a mathematical model, because in my opinion everything in the problem is important. I'm also confused about how to make examples. And for those who were asked in the question... (while rereading the problem). It turns out that I misunderstood sis, it turns out that what was asked was the sum of their ages in the next 3 years.

Application Errors

P : Is there anything you don't understand about the language used in the questions?

MIM : No sis, the language is easy to understand

P : Do you know the use of concepts or formulas in solving this problem?

MIM : Yes, I know sis, but I'm still confused about where this goes and where it goes (while pointing to what's in the question)

P : What keeps you from continuing the concepts or formulas that you understand?

MIM : Looks like my job is wrong sis. So I don't continue.

From the results of the interview above it is known that the misread direction errors experienced by MIM was caused by not being able to interpret the meaning of the important words in each sentence of the question, unable to understand the meaning of the questions being asked, and not having practiced the questions. This is in line with the causes of errors expressed by AUFIN & KHUSNIAH (2018), namely students cannot read and recognize symbols in questions, students cannot interpret the

meaning of each word, term or symbol in the question.

Meanwhile the application errors experienced by MIM are caused by not understanding the formulas or concepts that will be used in solving problems and tend to only memorize formulas without understanding the meaning of each symbol in the formula. This is in line with the causes of errors expressed by KHUMAIRO & LUKITO (2019), namely students do not understand the meaning of the questions properly, so they immediately carry out structured operations without paying attention to concepts.

Question Number 4

Based on Figure 8, it is known that MIM makes misread direction errors, concept errors and study errors. The form of misread direction errors experienced by MIM is rewriting questions on known components. Furthermore, the concept errors experienced by MIM were using the formula for the area of a rectangle to calculate the area of a tea garden in the shape of a square. This is in line with SULISTYO'S opinion (in FATURROCHMAH et al., 2021) which states that students make conceptual errors if students cannot use the formula correctly.

Then the form of study error experienced by MIM is misunderstanding

that the formula for the area of a square is $p \times l$. The following are excerpts from the interview regarding the misread direction

errors, concept errors and study errors experienced by MIM.

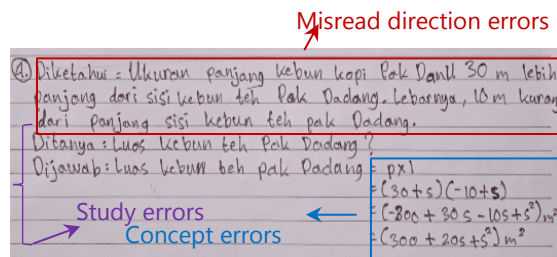


Figure 8. Answer MIM Number 4

Misread Direction Errors

P : What do you understand from the story problem?

MIM : From the question, he was asked to find the area of Pak Dadang's garden.

P : What components are known and asked in the problem?

MIM : The known component is that the length of Pak Danu's coffee plantation is 30 m longer than Pak Dadang's tea garden. Meanwhile, the width is 10 m less than the side length of Pak Dadang's tea garden. What was being asked was the area of Pak Dadang's tea garden.

P : Why don't you write down what you know in the form of a mathematical model?

MIM : Confused how to change it in the form of a mathematical model

Concept Errors

P : Do you have complete references?

MIM : Yes sis, I usually learn from references in LKS

P : Do you often do exercises at home?

MIM : It's rare sis, even though I practice I also avoid story problems like this.

P : Do you pay attention when the teacher explains in front of the class?

MIM : Less sis, I get bored easily. So sometimes I pay attention, sometimes I also enjoy myself scribbling on books.

Study Errors

P : What keeps you from being able to solve the problem properly?

MIM : The story is difficult, sis.

P : Do you feel confused in determining the components in the question?

MIM : Yes sis, I'm confused about determining the known components in the problem.

P : Have you studied deeper after the teacher explained this material?

MIM : No sis, I don't like math so I want to study math again at home lazy

P : Do you often do contextual questions?

MIM : No sis, I even avoid the matter of contextual stories like this

From the results of the interview above it is known that the misread direction errors experienced by MIM was caused by unable to write down the information contained in the questions, and did not work on contextual practice questions. This is in line with the causes of errors expressed

by Fathiyah (2020), namely students only wrote down the final answer without any assignment process, misinterpreted the intent of the question, could not mention the known and asked components in the problem, did not know the meaning of the symbols in the question, and could not read the information contained in the Figure. In line with the opinion of Magfirah et al. (2019), students are not used to solving problems in the form of story questions.

Whereas the concept errors experienced by MIM were caused by having incomplete references, rarely practicing contextual questions, and not paying attention to the teacher's explanation because of boredom. This is in line with the causes of errors expressed by Sari et al. (2018), namely students lack complete references, students do not do exercises at home. This is also in line with the opinions of Awe & Benge (2017) which state that students pay less attention to the material presented by the teacher because they feel bored with the monotonous learning model.

Then, the study errors experienced by MIM were caused by not understanding the application of the concept of algebraic forms into story problems, never studying mathematics because they did not like it, and never practicing questions. This is in

line with the cause of the error expressed by Ulpa et al. (2021), namely students rarely do practice questions, especially contextual questions, students tend to emphasize memorizing formulas more than understanding concepts, and students do not deepen their understanding of the material and only rely on one incomplete reference to support learning. In line with the opinion of Safitri et al. (2019), namely student errors can be caused by the mental weakness of each student, low interest in learning because students do not like learning mathematics.

CONCLUSION

Based on the results of the study, the percentage results for each type of error were 50% experienced misreading of directions because they were unable to grasp the meaning of important words in the questions, misunderstood the meaning of the questions, did not deepen the material, and did not practice contextual questions. 20% experienced carelessness errors due to lack of understanding in writing symbols, not being careful in counting, rushing when working, and not being able to manage the processing time. 10% experienced conceptual errors because they did not have complete references, did not practice contextual

questions, and paid less attention to teacher explanations. 25% experienced application errors due to lack of contextual practice questions, tended to only memorize formulas without knowing the meaning of each symbol. 32.5% experienced errors working on the questions because students felt doubtful about the answers, were not accustomed to giving conclusion sentences at the end of the answers, and were unable to manage the time while working. 7.5% experienced learning errors due to lack of understanding in the application of the concept of operating algebraic forms in the form of story questions, lack of deepening of material and lack of practicing questions in the form of contextual stories.

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