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Analysis Problem Solving in Mathematical Using Theory *Newman*

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ABSTRACT

In this context, several recent studies have focused on the ability to understand a problem and difficulties regarding the solving as a means of improve students' mathematical problem-solving abilities. Design of research explores types and factors of mistakes students in solving mathematical problems. The instrument used is problem solving test. Data from Indonesia secondary school students (N = 147) who were about 15 years old were analyzed using theory *Newman*. Procedure *Newman* includes: reading errors, comprehension errors, transformation errors, process skill errors and enconding errors. The results indicate to reading errors of 4.35%, comprehension errors of 17.39%, transformation errors of 34.78%, process skill errors of 23.91%, and enconding errors 19.57%. Factors errors students' is not to absorb information well, not understanding the transformation of the problem, not following the material thoroughly, and comprehension mathematical of weak concepts.

Keywords: problem solving, *Newman's* theory, types and factors of error

INTRODUCTION

Mathematics is a science that has an important role in effort to mastery of science, technology and also in everyday of our life. This is similar to that expressed Cockroft (1982) argues that: "Mathematics should be taught to the Students because of (1) is always used in all facets of life, (2) all areas of life require the appropriate mathematical Skills, (3) is a powerful means of communication, concise, and clear, (4) can be used to present information in a Variety of ways, and (5) give satisfaction to attempt to solve a challenging problem. "However, many students see Mathematics as a field of study that is difficult to understand. This happens because of the mathematics Presented in a form that is less appealing and seems difficult for students to learn; As a result, students often feel Bored and do not respond well lesson. In addition, the methods of learning undertaken by teachers is less varied and Tend to restrict students to be creative while learning to express his thoughts so that students are less interested in Learning math and learning outcomes are less than optimal. As a result, students do not understand what the Significance of mathematics in everyday life and students are less interested and less motivated to learn Mathematics so that students are more passive when learning mathematics, reluctant, afraid or shy in expressing Its ideas in mathematical problem solving. This is in accordance with the opinion of Abdurahman (2009) that: "Of the various fields of study that are taught in school, mathematics is a field of study that is considered most Difficult by the students, both are not learning disabilities, and especially for the students who are learning Disabilities ". NCTM affirms that problem-solving ability as one of the important aspects in making students a literature in mathematics. As stated in the Curriculum 2013, the Indonesian government also sees the importance of problem solving in mathematics learning. Analysis errors is needed to find out how students solve mathematical problems. The purpose of this study is to determine the types of errors and error factors that students do in solving student math problems. This article covers mathematical problem solving, *Newman* stages and factors causing students to make mistakes.

MATHEMATICAL PROBLEM SOLVING

Lester (2003) affirmed "Problem solving is the heart of mathematics" which means his heart of mathematics is problem solving. Bell (Sugiman & Kusumah, 2010) defines problem solving as follows: Mathematical problem

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Contribution of this paper to the literature

- This study aimed at determine the type of errors and factor errors that the student did in solving the student's mathematical problem. In this context, stages students in the problem solving was investigated.
- The results indicate the types of mistakes made by the students is a mistake to reading errors of 4.35%, comprehension errors of 17.39%, transformation errors of 34.78%, process skill errors of 23.91%, and of enconding errors 19.57%, while factor of the occurrence of error is students' are not to absorb information well, not understanding the transformation of the problem, not following the material thoroughly, and comprehension mathematical of weak concepts.
- Our study points out that more research on problem solving focusing on the application of learning methods and development of teaching materials to improve student problem solving rather than identifying and finding the student's own factor errors.

solving is the resolution of a situation in mathematics which is regarded as a problem by the person who resolves it. Thus a situation is a problem for a person if he is aware of a problem in the situation, knowing that the problem needs to be resolved, feels like to do and solve it, but not necessarily solve it. Kantowski (1975, in Webb, 1979) problem solving is the interaction between knowledge and application process errors that use cognitive and affective factors in problem solving. Problem solving by learning mathematics by Anderson (1996) as most solve common problems. Someone stores knowledge information in his memory, just as when one wants to solve problems related to mathematics. It can be concluded that problem solving is an attempt to find a way out of a difficulty, achieving goals that are not immediately attainable and closely related to the error of the error process error, thinking, learning, memory, transfer, perception and motivation. While the ability to solve problems in learning Mathematics is one's attempt to solve routine math problems with those taught in the classroom and non routine problems by using logic and reasoning in solving problems.

Recent research draws attention to the importance of cognitive skills that underlie capacity to solve word problems. In this case, the following skills have been reported: the ability to understand a problem (Koedinger & Nathan, 2004), the capacity to apply appropriate resolution methods (Gerjets et al., 2004) and skills to build mental abstract models (Scheiter, Gerjets, & Schuh, 2010). Some scientists also mention the error of procces skills that cause domain errors related to performance in troubleshooting; for example, visual spatial domains, associated with the creation of inner representations through visual schemes (Krawec, 2010) and semantic-linguistic domains that allow individuals to connect different sections of text to achieve problem solutions (Van der Schoot, Bakker Arkema, Horsley, & Van Lieshout, 2009). On a separate issue, current research also reports the following difficulties regarding problem-solving word-solving skills skills (Ng & Lee, 2009): lack of understanding of the meaning of algebraic symbols; barriers to accurately transform data provided by natural language into mathematical equations; misinterpretation of the structure of semantic text and, consequently, a misunderstanding of the relationship between numbers and, finally, the difficulty of bringing semantic evidence from phrase to mathematical equations.

THE NEWMAN'S THEORY MISTAKE ANALYSIS STAGES

Newman (Abdul, 2015) suggests that there are five stages in the solution mathematical problems, namely (a) reading error is the ability of students to read mathematical problems given and to identify sentences and mathematical symbols used, (b) comprehension errors of the ability of students to understand math problems, (c) transformation errors that is the ability of students to determine the method of mathematical solution, (d) process skill errors that is the ability of student in doing process skill errors of mathematics correctly or not, and (e) enconding errors that is student ability to write enconding errors according to question. Polya (1985) states that in solving the problem solving, there are four steps to be taken: "(1) to understand the problem, (2) plan for completion, (3) do the problem according to plan, and (4) to re-examine for all steps are done. In the PISA mathematics literature, the problem-solving stage is to formulate (identify and identify opportunities to use mathematical problem solving), to form into the mathematical model, and finally to get the solution plan.

In general, of the three opinions, we can see that the element of the step between the three frames relates to each other. Specifically, steps of understanding problem and devising strategies, simultaneously, has likely similar idea with steps of reading, comprehension, and transformation errors in Newman analysis, while this idea also appear on mathematical literacy, i.e. formulate. As early stages in solving mathematical task, they end up with determining precise mathematical model or strategies before performing further steps of solving problem. Likewise, each idea of carrying out step in Polya's procces skill errors, process skill errors in Newman, and employ in PISA's mathematical literacy deals with undertaking mathematical to find mathematical results, such as performing arithmetic computations, solving equations, making logical deductions from mathematical assumptions, performing symbolic manipulations, or extracting mathematical information from tables and graph. Furthermore, the last step of Polya's, i.e. looking back, corresponds to final stage of Newman analysis, i.e. encoding and PISA's

mathematical literacy, i.e. interpretation. The idea of this stage is interpreting the mathematical result to the initial problem such as checking the reasonableness of the answer or considering other strategies and solution of the problem. The difference, obviously, only appear on the type of the tasks examined where PISA's mathematical literacy specifies on contextual task (OECD, 2013), while Polya and Newman respectively deals with general mathematical problem (Polya, 1973) and written mathematical task (Clements,1980). Comparing those three frameworks, it is known that Polya's problem solving steps, which was introduced before the other two frameworks, have an agreement with both Newman analysis and PISA's mathematical literacy. Thus, the category of Newman errors that researchers will use to analyze the level of student performance in solving problem-based mathematics context problem solving.

FACTORS OF ERROR IN MATHEMATICAL PROBLEMS

Abdullah (2015) "there are two factors that make the students unable to produce correct answers, namely: problems in the fluency of languages and understanding concepts, and problems process skill of mathematics (understanding, transformation errors, process skill and writing answers)". According to Ismail (Abdullah, 2015), "student misconduct in completing mathematics deals with the following characteristics: (a) cognitive activity, (b) metacognitive ability, (c) attitudes, and (d) knowledge possessed by them. Various levels of characteristics have caused different errors in each student and different abilities for them to solve math problems. The problem-solving process skill errors is one of the cognitive and skill strategies that the individual must plan for achieving the goal. Therefore, for low-ability students, they do not have a strategy to solve the problem. Such a situation would be more difficult if students did not understand the given problem and could not identify mathematical operations".

Factors that cause errors when viewed from student learning difficulties and abilities are outlined as follows (Abdullah, 2015):

Students are not able to Absorb Information Well

The information contained in the problem is not fully absorbed by the students. Students are confused in determining what is known in the matter, unable to abstract the matter into mathematical patterns, and find no solution formula. In accordance with the opinion expressed Yoong related problems of learning mathematics called students give their own meaning. Some students confuse the meaning of words used in mathematical teaching by giving their own meaning.

The Lack of Experience of Students in Working on the Problem

Students less practice with various variations of the problem, especially the story in the form of narrative without any illustrations and problems that are varied with a more complex form, so that students often confused how to solve the problem. This is in accordance with Yoong related to the problem of learning mathematics is a conformist attitude. Because students are often trained to follow instructions, rarely supported by conceptual justification, they are not used to thinking of alternative solutions to problems that are different from the examples that have been studied.

Students do not Understand the Material Thoroughly

Students do not have a strong concept of the material given. This is dikarnakan siswatidak concentration at the time of following the lesson, and there are also left behind not following the lesson because there are other activities, so that students have not mastered the material. As Yoong disclosed that students are thinking incomplete or unclear. Sometimes students only pay attention to partial teacher explanations as a result of boredom, fatigue, disturbance (there is much preoccupation in the classroom), or a monotone teacher's tone. Furthermore, they can remember only a part of the explanation and then try to equip it with their own false logic.

Weak Ability of the Concept of Prerequisites

Students are not able to do the process because they do not master the prerequisite concepts related to the given material. As per Yoong's expression that students mix rules, that students often mix rules because they do not really have a relational understanding of what they are doing.

Negligence or Carelessness of Students

Students are not careful and not careful in the process of workmanship, either at the time of writing the formula or when doing the count. In this study, students tend to rush through the process of working without first reviewing the right concepts to solve the problem, and did not examine the answers that have been written.

METHOD

Research Goal

Related to the data, purpose, and usefulness of this research, this type of research is a type of qualitative research and research method used is descriptive qualitative research method, because researchers describe the results of research descriptively based on the results of written tests in completing math problems, Also conducting interviews to the students to be studied. Qualitative because the data to be analyzed in the form of qualitative data that is in the form of student error in solving system problem of linear equation two variable according to Newman theory. Qualitative research is a study that intends to understand the phenomenon of what subjects experience, such as behavior, perception, motivation, action, and others holistically, and by way of description in the form of words and language, in a special context that is natural and By utilizing various natural methods (Moleong, 2011). Qualitative descriptive research is not studying the truth of the theory, but building based on the data obtained and developing concepts and collecting facts but not testing hypotheses.

Sample and Data Collection

In this study subjects are students of grade SMPN 1 Buay Bahuga class 9.3 to 9.6, amounting to 147 students of the academic year 2016/2017. The subjects used in this study are 4 students taken from all students class 9.3 and 9.6. The selected subject is the student who made a mistake and worked on the problem completely. Subject taking in this research is using purposive sampling technique. Purposive sampling is a technique of sampling data sources with certain considerations (Sugiyono, 2013). Purposive sampling is a deliberate sampling according to the required sample requirements. That is, the researchers determine their own samples taken because there are certain considerations, so the sample is not taken at random, but determined by the researchers themselves. Subjects used in this study amounted to four students 9.3 grade and 9.6 SMPN 1 Buay Bahuga even semester of the academic year 2016/2017. Four students are students who make mistakes and work. The location of the research will be conducted by the author in SMPN 1 Buay Bahuga. The author conducts research at SMPN 1 Buay Bahuga because the school has never done any research on the error analysis of students using the Newman theory on the material system of two linear equations.

The main data source in this research is the data of the written test and the data of the interview based on the subject of the research subjects are students of SMPN 1 Buay Bahuga class 9.3 and 9.6

Data collection techniques in this research are:

Observation

In this research, writer choose passive participation observation because writer will only observe and record student activity in solving math problem and not involved in student activity in solving math problem. In addition, the authors also observed during the process skill errors of teaching and learning activities in the classroom to know the activity of students in learning mathematic.

Test

In this study, the test used is a description test to determine the completion of students in a problem (matter). The form of test used as an instrument is diagnostic. In determining the validity of this test, the authors use content validity. Content validity is a validity test by using the instrument grid in which there is an indicator as the benchmark and the number of questions that have been described by the indicator and to test the validity further then consulates to someone who is considered expert in the field (Sigoyono, 2013). In this study, the instrument validator is a lecturer of mathematics education UIN Raden Intan and mathematics teacher SMPN 1 Buay Bahuga.

Table 1. Guidelines for scoring students' ability in problem solving

No.	Stages Analysis Newman	The Reaction of The Students Against the Reserved	Score
1	Reading Errors	Identify information and mathematical symbols with complete	3
		Identify information and precise mathematical symbols	2
		Wrong in determining information and mathematical symbols	1
		Don't answer	0
2	Comprehension Errors	Write down what is known and asked a question on demand	3
		Write down what is known and not in accordance with the request asked the question	2
		Wrong in determining what is known and asked question	1
		Don't answer	0
3	Transformation Errors	Write down the mathematical model correctly	3
		Write down the mathematical model but not complete	2
		Wrong in determining mathematical model	1
		Don't answer	0
4	Process Skills Errors	Using a particular procedure right and the answer is true	3
		Using a particular procedure right but the answer wrong	2
		Using a particular procedure is wrong and the answer wrong	1
		Don't answer	0
5	Enconding Errors	The conclusion is rendered right	3
		Conclusion given less precise	2
		Conclusion given the wrong	1
		Don't answer	0

Table 2. Instrument guidelines interviews

Problem-Solving Aspect Of *Newman*	List Of Interview Questions
1. Reading Errors	1) Can you read this question?
	2) What information do you get after reading the question?
	3) What are the mathematical symbols contained on such a matter?
2. Comprehension Errors	1) Try you mention what is known on the matter?
	2) Try you mentioned what is asked on the matter?
	3) If there is difficulty in determining what is known and the asked question?
3. Transformation Errors	1) Do you understand mathematical modeling?
	2) Can you mention the stage of mathematical modeling on the answer that you have completed?
	3) Are there any difficulties at the moment working on mathematical modeling?
4. Process Skills Errors	1) Explain how what used to resolve the problem?
	2) Whether to use that you do right?
	3) Is there any difficulty in performing the machining process and calculation?
5. Endconding Errors	1) Conclusion what have you gained from the machining process questions have you done?
	2) Are you sure you answer with the results final?
	3) Is there any difficulty in determining the enconding errors?

Interview

The interview that will be used in this research is semi structured interview. This type of interview has been included in the category of *in-depth interview*, which in its implementation is more free when compared with structured interviews. The interview list in this study contains questions that will be tailored to the test questions. While follow-up questions tailored to the results of student answers. Framework implementation and outline the list of questions planned in the interview process is manifested in the form of interview guidelines.

ANALYZING OF DATA

In this study, the authors used the technique of observational persistence and triangulation data.

Improved Persistence Observations

In this study, the authors make improvements to the persistence of data completion techniques to find out the mistakes that occur in mathematics math problems. In this case, the authors re-check whether the temporary

findings are appropriate and describe the specific research context, whether the findings have fully described what is the student's mistake in solving the math problem.

Triangulation Data

This triangulation is conducted by comparing the data of verified written test results with interview data by the author. According to Miles and Huberman argued that the activity in the analysis of qualitative data is done interactively and lasted continuously and completely, so the data is saturated. Activity in data analysis, i.e. data reduction, data display, and image / verification conclusion (Sugiyono, 2013).

Data reduction

In this study, after collecting data from data technique test result data, then analyzed the error in the matter of Newman theory to be achieved the subject of research.

Data display

In this study, after the authors reduce data and classify data according to data engineering data, observation, tests, interviews, the authors present the data in a narrative. Based on the data collected and after analyzed, then can be known errors experienced by students in solving math problems. Every error encountered in the student is described and described what are the mistakes experienced by the students during the math problem solving using the Newman theory.

Conclusion drawing / verification

In this activity later writer will make final conclusion from result of research related to mathematics in matter of math by using Newman theory.

RESULTS AND DISCUSSION

Problems solving based on Newman's theory, has 5 stages of completion, which are questions, problems, questions, Japan process skill errors, (Sugiyon, 2015). Here is the presentation of the results of the analysis of each subject about the problem of Newman theory, that is:

The subject of research I called Mayang Fitriaya Loka with the initials MF. Question number 1, the subject does not meet indicator of the transformation of matter, the subject cannot determine the mathematical model with complete, this happens because the subject matter did not understand completely. The subject does not meet indicator process skills, the subject of the use of systematic resolution of less appropriately, this happens due to a lack of experience in working on the subject matter of the story. Question number 2, the subject does not meet indicator subject matter, determine the transformation mathematical models but not complete, this means that the subject did not understand the material thoroughly. Question number 3, the subject does not meet indicator subject matter, determine the transformation mathematical models but not complete, this means that the subject did not understand the material thoroughly.

The subject does not meet indicator process skills, the subject does not determine the proper settlement with systematics, this happens because of the negligence and carelessness in the conduct of the subject of the machining process. Question number 4, the subject does not meet indicator of the transformation errors, this happens because the subject matter did not understand completely. The subject does not meet indicator process skills, the subject is not complete, with the calculation of operte this happened due to negligence and carelessness in the conduct of the subject of the machining process. The subject does not meet the writing indicator enconding errors, the subject can determine conclusion but it is wrong to define the enconding errors on part b, this happens because of the negligence and carelessness in the conduct of the subject of the machining process.

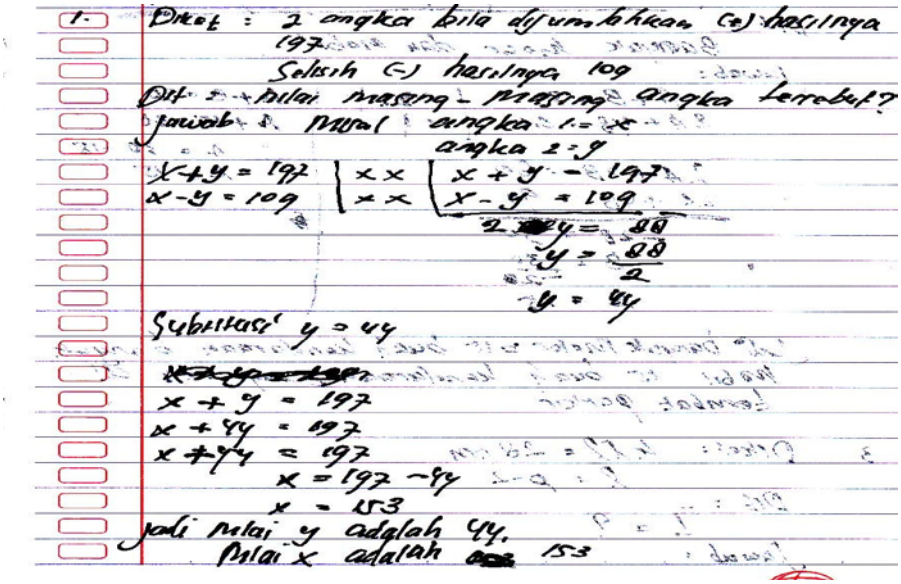

Figure 1. Student answers MF on question 1

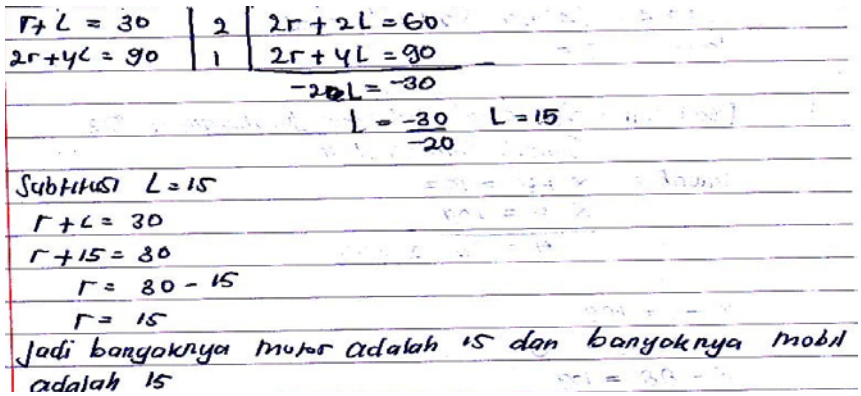

Figure 2. Student answers SV on question 2

The subject of research II named Salwa Shaika Vinanti with the initials SV. Question number 1, the subject cannot meet indicators to comprehension errors, determine what is known on the matter, but the subject does not determine what is asked in the question, this happens because of the negligence and carelessness of the subject. the subject does not meet indicator of the transformation errors, the subject did not write down the mathematical model, this happens because the subject is not able to absorb information properly. The subject does not meet indicator process skills, the subject of the SV does not do the machining process correctly, this happens because of the negligence and carelessness in the conduct of the subject of the machining process. the subject does not meet the writing indicator enconding errors, the subject can determine conclusion but wrong in determining the enconding errors, this happens because of the negligence and carelessness in the conduct of the subject of the machining process.

Question number 2, the subject does not meet indicator transformation errors, the subject did not write down the mathematical model with complete, this happens because the subject is not able to absorb information properly. Question number 3, the subject cannot meet indicators to comprehension errors, determine what is known on the matter do not comply with the request to question, this happens because the subject is not able to absorb information properly. The subject does not meet indicator subject matter, determine the transformation mathematical models with complete but wrong in determining the mathematical model, this happens because the subject is not able to absorb information properly. The subject does not meet indicator process skills, the subject was wrong in determining the systematic completion and use calculations, this happens because of the carelessness and negligence of the subject. The subject does not meet the writing indicator enconding errors, the subject can determine conclusion but less precise, the subject wrote down the wrong answer, this happened because of the carelessness and negligence of the subject.

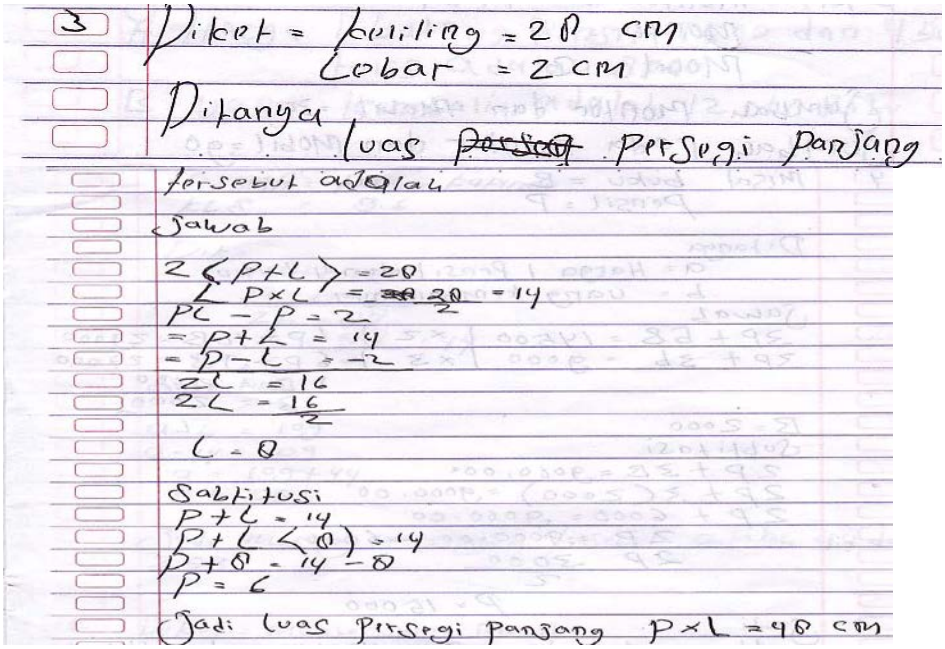

Figure 3. Student answers PK on question 3

Question number 4, the subject cannot meet indicators to comprehension errors, determine what is known in full but determine what is asked is not complete, this happens because of the negligence and carelessness of the subject. The subject does not meet indicator of the transformation errors, the subject did not write down the mathematical model with complete, this happens because the subject is not able to absorb information properly. The subject does not meet indicator process skills, the subject is incomplete and wrong in operte calculation, this happens because the subject is not careful and conscientious in doing the machining process. The subject does not meet the writing indicator enconding errors, the subject determine conclusion incomplete and incorrect in determining the enconding errors, this happens because of the negligence and carelessness in the conduct of the subject of the machining process.

Subject III named Panggih Kapindo with initials PK. on question number 1, the subject does not meet indicator reading errors, subject not identified information and mathematical symbols with complete, this happens because the subject does not absorb information properly. The subject cannot meet indicators to comprehension errors, does not specify what is known and asked, this happens because the subject does not absorb information properly. The subject does not meet indicator of the transformation errors, the subject did not write down the mathematical model, this happens because the subject is not able to absorb information properly. The subject does not meet indicator process skills, subject to determine the settlement with proper systematic but incorrect operte calculation, this happens because of the negligence and carelessness of the subject. The subject does not meet the writing indicator enconding errors, the subject determine inappropriate conclusion, the subject of writing down the wrong answer to the conclusion, this happens because of the negligence and carelessness of the subject.

Question number 2, the subject does not meet indicator process skills, the subject of operte calculation with right but wrong in writing out mathematical model, this happens because of the negligence and carelessness in the conduct of the subject of the machining process. The subject can satisfy the writing indicator enconding errors, this means subjects carefully in the process of the calculation. Question number 3, the subject cannot meet indicators to comprehension errors, determine what note does not comply with the request to question, this happens because the subject is not able to absorb information properly. The subject does not meet indicator subject matter, determine the transformation mathematical models and renders mathematical model is not complete, this happens because of the negligence and carelessness in the conduct of the subject of the machining process.

Question number 4, the subject cannot meet indicators to comprehension errors, determine what is asked the question exactly but the subject did not write down what is known on the matter, this happens because the subject is not able to absorb information properly. The subject does not meet indicator of the transformation of matter, the subject renders mathematical model is not complete, this happens because the subject is not able to absorb information properly. The subject does not meet indicator process skills, subject to determine the settlement with precise systematics but in calculation of operte inappropriately, this happens because the subject was sloppy in conducting the machining process. The subject does not meet the writing indicator enconding errors, the subject

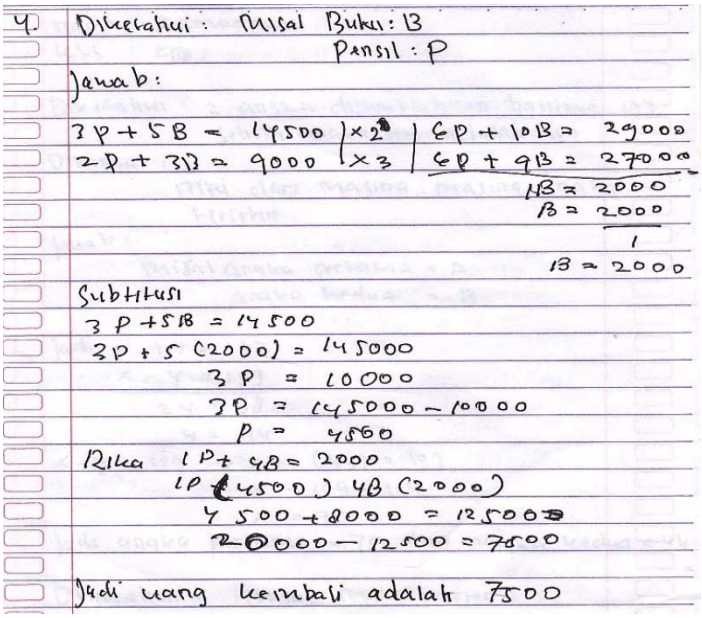

Figure 4. Student answers RD on question 4

can determine conclusion but it is wrong to define the enconding errors, this happens because the subject was sloppy in conducting the machining process.

The subject of research IV named Ramadhani with initials RD. On the question of the number 1, the subject does not meet indicator transformation errors, the subject did not write down the mathematical model with complete, this happens because the subject matter did not understand completely. The subject does not meet indicator process skills, the subject of the use of systematic resolution of inappropriate, can this happen because of the carelessness of the subject in performing the machining process. The subject does not meet the writing indicator enconding errors, the subject is able to determine with precision the conclusion but to determine the enconding errors is not right, this happened because of the negligence and carelessness in the conduct of the subject of the machining process.

Question number 2, the subject can not meet indicators to comprehension errors, determine what is asked the question exactly but determine what note is not appropriate, the subject matter of this happens because the subject is not able to absorb information properly. The subject does not meet indicator of the transformation of matter, the subject did not write down the RD with complete mathematical model, this happens because the subject matter did not understand completely. Question number 3, the subject does not meet indicator transformation errors, the subject did not write down the mathematical model, this happens because the subject matter did not understand completely. The subject does not meet indicator process skills, the subject of the use of certain procedures and the answer wrong, this happens because of weak prerequisite concepts belonging to the subject. The subject does not meet the writing indicator enconding errors, the subject was wrong in deciding conclusion, this happens because of weak prerequisite concepts belonging to the subject.

Question number 4, the subject of the RD can meet the indicator reading errors, this happens because the subject is able to absorb information properly. The subject cannot meet indicators understanding the problem, the subject was wrong in writing down what is known and not write what is asked, this happens because the subject is not able to absorb information properly. The subject does not meet indicator of the transformation errors, the subject did not write down the mathematical model with complete, this happens because the subject matter does not understand completely the subject cannot meet the indicator process skills, subject to determine the settlement system with the right but wrong in operte calculation, this happens because of carelessness, negligence and subject. The subject does not meet the writing indicator enconding errors, the subject was wrong in deciding conclusion, this happens because the subject was sloppy in conducting the machining process.

Based on the description of the subject above, all four subjects have not been able to meet all the indicators of problem solving based on the theory of *Newman*.

At the stage of reading errors, the subject of the MF can meet this indicator, the subject can identify information and mathematical symbols at any granule problem given, this is because the subject can absorb information properly, subject of the SV cannot meet this indicator on the grain problem number 3, the subject does not identify with complete information, it means that the subject is not able to absorb information properly PK, the subject cannot meet this indicator on the grain problem number 1, subject not identified information and mathematical

symbols with complete, this happens because the subject does not absorb the information properly, the subject can satisfy this indicator the RD, the subject can identify information and mathematical symbols at any granule problem given, this is because the subject can absorb information properly.

In the understanding of the subject matter, MF can meet this indicator, the subject is able to determine what is known and asked at any granule problem given, this is because the subject can absorb information properly, subject of the SV cannot meet this indicator, the subject was wrong in determining what is known as well as asked on the grain problem number 1, number 3 and number 4, this is because the subject is not able to absorb information properly and negligence and carelessness in the conduct the subject of machining process PK, the subject cannot meet this indicator, the subject was wrong in determining what is known as well as asked on the grain problem number 1, number 3 and number 4, this is because the subject is not able to absorb information properly, subject of RD cannot meet this indicator, the subject was wrong in determining what is known as well as asked on the grain problem number 2 and number 4 , this is because the subject is not able to absorb information properly.

At this stage of the transformation of matter, the fourth subject cannot meet this indicator, the four subject does not specify a mathematical model with the exact subject, MF are unable to meet these indicators on every grain of the given problem, this happens because the subject matter does not understand the subject thoroughly, SV also cannot meet this indicator at any granule reserved provided, this happens because the subject is not able to absorb information properly PK, the subject cannot meet this indicator on the grain problem number 1, number 3 and number 4, this is because the subject is not able to absorb information properly and negligence and carelessness in the conduct of the subject of the machining process, the subject of RD cannot meet this indicator at any granule reserved provided, this happens because the subject matter did not understand completely.

At this stage of the process, the subject of the fourth skill cannot meet this indicator, the four subjects with systematics and use less precise calculations, the subject of the MF are unable to meet these indicators at any granule problem number 1, number 3 and number 4, this is happening because of the lack of experience of the subject in question and the negligence and carelessness in the conduct of the subject of the machining process, the subject of the SV cannot meet this indicator at any granule reserved number 1 , number 3 and number 4, this happens because of the negligence and carelessness in the conduct of the subject of the machining process, the subject of PK do not meet this indicator at any granule problem number 1, number 2 and number 4, this happens because of the negligence and carelessness in the conduct of the subject of the machining process, the subject of RD cannot meet this indicator at any granule problem number 1, number 3 , and number 4, this happens because of the weakness of the concept of prerequisite subject owned and negligence and carelessness in the conduct of the subject of the machining process.

The stage of writing the enconding errors, the subject cannot determine the conclusion and enconding errors correctly, the subject of the MF are unable to meet these indicators on the grain problem number 4, this happens because of the negligence and carelessness in the conduct of the subject of the machining process, the subject of the SV cannot meet this indicator on the grain problem number 1, number 3 and number 4, this happens because of the negligence and carelessness in the conduct the subject of machining process PK, the subject cannot meet this indicator on the grain problem number 1 and number 4, this happens because of the negligence and carelessness in the conduct of the subject of the machining process, the subject of RD cannot meet this indicator on the grain problem number 1, number 3 and number 4, this happens because of the weakness of the concept of prerequisite subject owned and negligence and carelessness in the conduct of the subject of the machining process.

CONCLUSION

These kinds of errors experienced by students in a math story problem complete systems of linear equations two variables is an reading errors the of 4.35% error, comprehension errors of 17.39%, transformation errors 34.78%, process skills errors 23.91%, and enconding errors of 19.57%.

Factor of error in solving the problem of mathematics system of linear equation of two variables is the student is not able to absorb the information well, the student has not understood the so-called problem transformation, the students do not comprehend the material completely, the weakness of the concept of prerequisite owned by the students, the lack of student experience in doing Problems, and students are not careful and meticulous in the process of workmanship.

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