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ANALYZE NUMERACY LITERACY SKILLS IN TERMS OF LEARNING STYLE ON THE MATERIAL OF LINEAR EQUATIONS OF THREE VARIABLES

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ABSTRACT
This study was conducted with the aim of analyzing how the numeracy literacy skills possessed by students of SMAN 9 Jambi City represented by several subjects with visual, auditorial, and kinesthetic learning style categories. This research is an analytical research, so the method used is qualitative with the discussion described in descriptive form. Sampling in this study using Purposive sampling with the number of samples used was 3 students from 31 students in the E1 phase of SMAN 9 Jambi City who were categorized into the VAK learning style type. This research was conducted by giving a learning style questionnaire, then correcting and determining the subject, then giving tests given to three subjects who met the criteria for visual, auditorial, and kinesthetic learning styles, then conducting interviews on the results of the tests conducted, and data processing. The results obtained show that subjects with visual learning styles are at the highest level of numeracy literacy skills, subjects with auditory learning styles are at a moderate level of numeracy literacy skills, while subjects with kinesthetic learning styles are at a low level of numeracy literacy skills. The results of this study are expected to be used as a reference in improving numeracy literacy that must be possessed by students.
Keywords: learning style; literacy-numeracy skills; spltv

ABSTRAK
Penelitian ini dilakukan dengan tujuan untuk menganalisis bagaimana kemampuan literasi numerasi yang dimiliki oleh peserta didik SMAN 9 Kota Jambi yang di wakili oleh beberapa orang subjek dengan kategori gaya belajar visual, auditorial, dan kinestetik. Penelitian ini merupakan penelitian analisis, sehingga metode yang digunakan adalah kualitatif dengan pembahasan yang dijabarkan dalam bentuk deskriptif. Pengambilan sampel dalam penelitian ini menggunakan Purposive sampling dengan jumlah sampel yang digunakan adalah 3 orang siswa dari 31 orang siswa fase E1 SMAN 9 Kota Jambi yang dikategorikan kedalam type gaya belajar VAK. Penelitian ini dilakukan dengan pemberian angket gaya belajar, kemudian dilakukan pengkoreksian dan penentuan subjek, lalu pemberian tes yang diberikan kepada tiga subjek yang memenuhi kriteria gaya belajar visual, auditorial, dan kinestetik, kemudian dilakukan wawancara terhadap hasil tes yang dilakukan, dan dilakukan pengolahan data. Hasil penelitian yang diperoleh menunjukkan bahwa subjek dengan gaya belajar visual berada pada tingkat tertinggi kemampuan literasi numerasi, subjek dengan gaya belajar auditori berada pada tingkatan sedang kemampuan literasi numerasi, sedangkan subjek dengan gaya belajar kinestetik berada pada tingkatan kemampuan literasi numerasi yang rendah. Hasil dari penelitian ini diharapkan dapat dijadikan sebagai acuan dalam meningkatkan literasi numerasi yang harus dimiliki oleh peserta didik.
Kata kunci*: gaya belajar; kemampuan literasi-numerasi; spltv*

Introduction

Rohaeti (2012) suggests that in the era of the 21st century, students are required to master three skills, namely character quality, competence and literacy. One of the literacies that is closely related to the ability to think and reason is numeracy literacy. Literacy is the mastery and ability to letters and numbers that are followed up with a continuous habituation process. While numeracy is the ability to count mathematically to provide solutions to human problems in everyday life.

According to Han et al., (2017), numeracy literacy is the knowledge and skills to understand reading and utilize various numbers and use various symbols which will be useful for solving problems in various contexts of daily life. According to Maulidina (2019), numeracy literacy is defined as the ability of a learner to describe information related to numbers or mathematics that will be formulated into a problem, analyze the problem, and find a solution to the problem. In line with this statement Ekowati (2019), also defines numeracy literacy as a person's ability to analyze and understand a statement that is packaged through activities in manipulating symbols or language found in everyday life, and expressing these statements through writing and writing. Numeracy literacy skills can be measured through tests to find out how numeracy literacy skills.

Tests that measure numeracy literacy skills are PISA and TIMSS. Know & Do (2019), stated that PISA results from year to year show that the numeracy literacy skills of students in Indonesia are still low. PISA 2022 results show that the PISA reading score in 2022 decreased by 12 points to 359 from 2018 with a score of 371. In fact, in the National Medium-Term Development Plan (RPJMN) in 2024, the target reading score is 392. The PIS score in math dropped 13 points to 366 from 379 previously, while in the 2024 RPJMN the target is 388. The science score dropped 13 points to 383 from 396, while the RPJMN target science score is 402 (OECD, 2022).

Measuring students' numeracy literacy skills requires clear indicators that can describe their abilities. The coverage that must be possessed by students is as follows: (1) Using various kinds of numbers and symbols related to basic mathematics to solve practical problems in the context of everyday life; (2) Analyzing information displayed in various forms (graphs, tables, charts, etc.); (3) Using the interpretation of the results of the analysis to predict and make decisions (Darmastuti et al., 2024).

According to Mahmud & Pratiwi (2019), literacy and numeracy skills can be honed by using story problems as instruments in tests. Baskorowati (2021), stated that in story problems there are many everyday problems that are often encountered in the material of the system of linear equations of three variables. In the same statement, Baskorowati (2021) also added that story problems contained in the three-variable linear equation system material usually ask students to change the problem into a mathematical model that is equated with variables.

Based on the results of observations that have been made by researchers on E1 phase students of SMAN 9 there are difficulties in overcoming problems related to numeracy literacy on the material of the system of linear equations of three variables. These problems can be seen through the answers of students who have difficulty in solving description problems. One of the factors that support students' difficulties in learning is learning style.

The correct learning style will help students absorb the information obtained. Learning style is a way that learners have to capture information, how to remember, think, and solve problems consistently which is done every time they carry out the learning process (Wassahua, 2016). According to Yuliza et al., (2024), learning style is how learners manage the information they get in a way that they believe is correct and can be easily accepted by

themselves so that the learning they do becomes fun. Rambe et al., (2020), stated that each learner has a different learning style, their learning style will affect learning, management, and learner communication.

While understanding personal learning styles does not automatically increase intelligence, it does allow individuals to design learning strategies that best suit their preferences (Wahyuni, 2017). Various scientific studies have confirmed that each person has a unique approach to processing information and developing understanding (Wahyuni, 2017). In general, human learning styles are divided into three major groups, namely visual learning styles, auditory learning styles, and kinesthetic learning styles.

According to Pratama et al. (2024), visual learning style is the process of receiving new information through the sense of sight (eyes). Visual learning style has characteristics, namely like to read (like / enjoy reading), like watching television, watching movies, guessing puzzles or filling in TTS, preferring to read rather than be read (Mulyati, 2015). Auditory learning style is a learning style that tends to prioritize the sense of hearing (Ula, 2013). Hamzah (2010) states that the characteristics of the auditory learning style are that all information can only be absorbed through the sense of hearing. Kinesthetic learning style is a learning style that involves direct interaction of students with the surrounding environment (Wiedarti, 2018).

The relationship between learning styles and learners' literacy and numeracy skills has been the subject of previous research. Some studies show a correlation between learners' learning styles and their numeracy literacy skills. Previous research, namely Hartatik (2020), shows that the lowest numeracy literacy skills of learners are found in difficulties in using symbols and numbers related to basic mathematics. Previous research that discussed numeracy literacy skills was Hanifah & Novaliyosi (2023), where the conclusions obtained showed that in general, grade VIII students had sufficient numeracy literacy skills in solving algebra problems with an average score of 55%.

Research conducted by Setiawan et al., (2023), also showed that the average numeracy literacy test score of 25 students reached 84.7, showing a good level of understanding; students with the highest scores were able to master two to three indicators, while students with the lowest scores were only able to fulfill one indicator. Nursyifa & Masyithoh (2023), through the research they have done, concluded that there is an effect of numeracy literacy on student learning outcomes. this statement is in line with Oktaviana et al., (2022), which states that the higher the numeracy literacy skills of students, the impact on their learning outcomes will also increase.

Based on the problems that have been described, researchers are interested in conducting research with the focus of the goal is to analyze numeracy literacy skills in terms of learning styles on the material of linear equations of three variables.

Research Methods

This research was conducted at SMAN 9 Jambi City in the odd/even semester of the 2023/2024 academic year. This research uses descriptive qualitative research. The description presented in this study is related to how the numeracy literacy skills of students are viewed from visual, auditory, and kinesthetic learning styles. The data sources in this study consisted of main data sources and supporting data sources.

The subject selection technique used was purposive sampling by taking 3 students from 31 students who met the learning style criteria. The selection of the subject was carried out based on the consideration of the results of the learning style questionnaire, with the criteria of students who had the highest score in one of the learning style categories.

Another consideration also made in the selection of subjects is students who show intermediate abilities in SPLTV material based on the results of daily tests conducted previously. Based on these considerations, 3 people were obtained who were used as subjects who were divided based on their learning style categories, with the provision that each learning style was fulfilled by 1 subject.

The instruments used in this study consisted of three, namely: (1) Mathematics questionnaire based on numeracy literacy indicators consisting of one essay-shaped question; (2) Learning style questionnaire proposed by Depoter & Henacki (2007), in the book Quantum Learning: Getting Used to Learning Comfortably and Fun; (3) Interview guidelines. To measure the validity and validity of the research instruments used, validation was carried out by two experts in their fields. The learning style questionnaire instrument used in this study consists of 30 questions with the provision of 4 choices of approval levels that describe the learning style of students, with each learning style category divided into 10 items. The numeracy literacy test instrument used in this study consists of 3 description questions which are arranged based on numeracy literacy indicators, namely: (1) Use of numbers and symbols; (2) Analysis of information in tabular/graphic form; and (3) Decision making based on interpretation. The interview guideline instrument in this study used a semi-structured interview consisting of 20 questions, with reference to numeracy literacy indicators.

Learning style data analysis was carried out using a Likert scale which aims to examine a person's attitudes, perceptions, and opinions towards certain phenomena. The Likert scale used in this study is presented in Table 1. as follows:

Table 1. Likert scale weight

Statement	Weight Likert Scale
Strongly Agree (SS)	5
Agree (S)	4
Undecided (RG)	3
Disagree (TS)	2
Strongly Disagree (STS)	1

Data collection techniques in this study were carried out by means of observation (observation), questionnaires, written tests by giving questions in the form of essays, unstructured interviews, and documentation. Data validity testing was carried out using triangulation techniques and triangulation methods.

Data analysis techniques are carried out by observing the following steps: data collection, data reduction, data presentation, and conclusion drawing. With the research procedure carried out consisting of three steps, namely the pre-field stage, the implementation stage, and the report preparation stage.

Results and Discussion

The process of analyzing numeracy literacy skills was preceded by giving a questionnaire of visual, auditory, and kinesthetic learning styles by Depoter & Henacki (2007). Through the learning style questionnaire, researchers found results where there were 12 students with visual learning styles, 5 students with auditory learning styles, and 8 students with kinesthetic learning styles. The description is explained in Table 2. below:

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Table 2. Percentage of learning style questionnaire results

Learning Style	Frequency	Percentage
Visual	12	48%
Auditory	5	20%
Kinesthetic	8	32%
Total	**25**	**100%**

After obtaining the results of the learning style questionnaire, the researcher then determined the subjects used in this study. The subjects in this study consisted of 3 students who met the desired criteria. The list of research subjects is presented in Table 3. below:

Table 3. List of research subjects

Subject Code	Learning Style Questionnaire Score	Learning Style Type
SGV	63	Visual
SGA	58	Auditory
SGK	61	Kinesthetic

Based on Table 3. Above, it is known that the selected subject in this study has the highest score for each indicator. Furthermore, the data described are data obtained from the results of the numeracy literacy test and the results of interviews that have been conducted.

Analysis of Subjects with Visual Learning Style – SGV

In the test conducted, subject SGV took 18 minutes 43 seconds to solve the problem on the test given. When the test was conducted, SGV subject seemed to have difficulty in determining the information in the problem, but after several times of analyzing the problem, SGV subject was able to understand the data and information in the problem. Subject SGV analyzed the picture and then compared the three information given in the picture. SGV subject thought about finding the price value of each item to find out which package product is better chosen by Mr. Juana.

Subject SGV solved the problem by first making a memorization to simplify the work. The memorization made is related to the objects seen in the picture using the letters x, y, and z, where the memorization is presented in Figure 1 below:

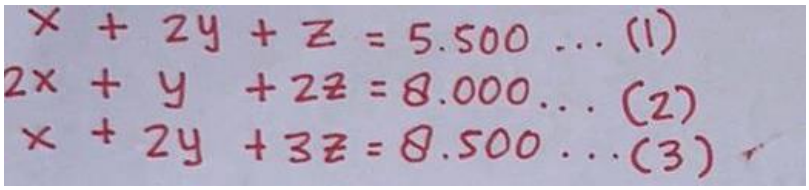

Figure 1. SGV's Answer in Using Numbers and Symbols

Figure 1. above shows that students are able to convert the numbers and symbols they get in the problem into mathematical form. This statement is also supported by the results of interviews with subjects who explained the reasons for changing the problems given into the form of equations. The subject explained that the change was because the subject could solve the given problem using the elimination-substitution method.

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Based on the test results, the SGV subject then explained the strategy used in solving the problem used. The steps used by the SGV subject are displaying the data and the information presented is converted into a diagram. The steps are presented in Figure 2:

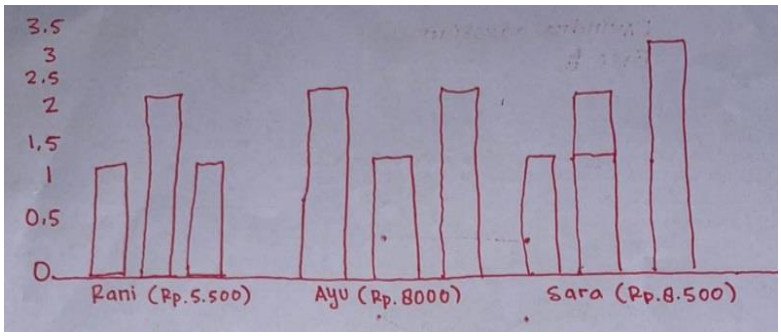

Figure 2. SGV's Answer in Analyzing Information

Based on Figure 2. it can be seen that the subject is able to solve the problem by displaying data in the form of diagrams, the treatment carried out by this subject is able to fulfill one of the numeracy literacy indicators, namely analyzing information in the form of tables/graphics. The results in Figure 2. are supported by the results of interviews conducted with subject SGV who explained his reasons for choosing the step of changing the data into a diagram. Subject SGV stated that the changes made were intended to make it easy for subject SGV to analyze the information obtained from the problem that had been given.

Furthermore, the step that will be used by SGV subject is to solve the system of linear equations of three variables using the elimination and substitution methods. The first elimination method performed is by eliminating equation 1 and equation 3 with the value obtained is z = 1500. The description of the elimination method is presented in Figure 3 below:

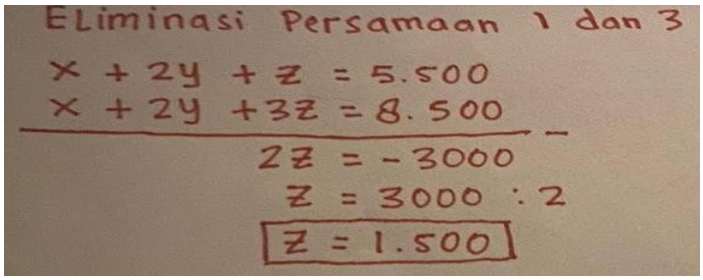

Figure 3. Explanation of Subject SGV's First Strategy Results

The next step taken by subject SGV is to perform the elimination method on equation 1 and equation 2, with the result obtained being y = 1000. The description of what was done can be seen in Figure 4. following:

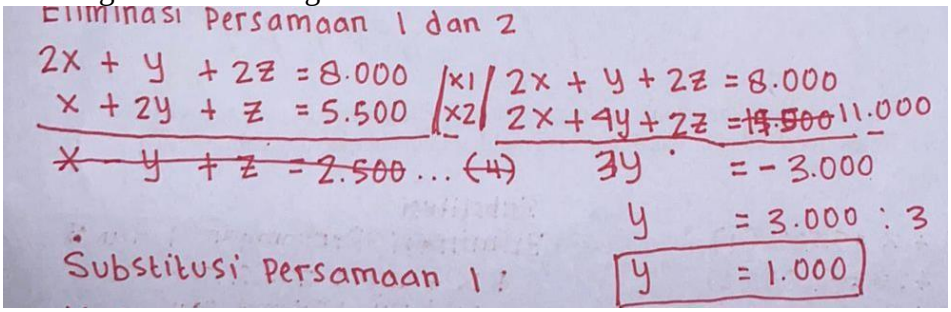

Figure 4. Explanation of the Second Strategy Results of Subject SGV

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The next step taken by subject SGV was to use the substitution method. Based on the results of the substitution, SGV subject obtained the value x = 2000. The description of the solution done is presented in Figure 5. below:

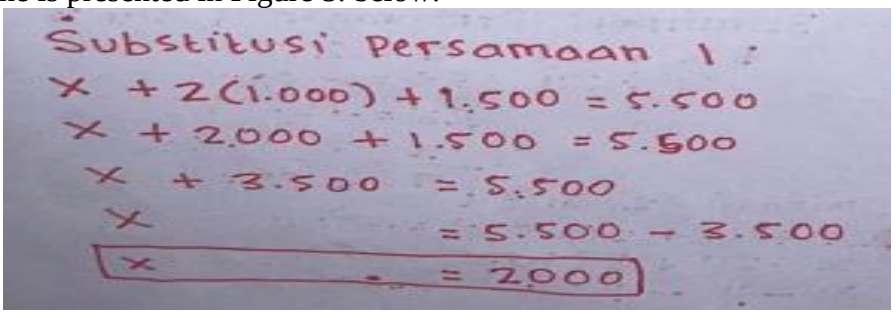

Figure 5. Explanation of the Results of the Third Strategy of Subject SGV

Furthermore, after obtaining the values of x, y, and z, SGV subject then analyzed in making conclusions. The conclusions made are related to the better price package chosen by Mr. Juana. The results obtained are presented in Figure 6 below:

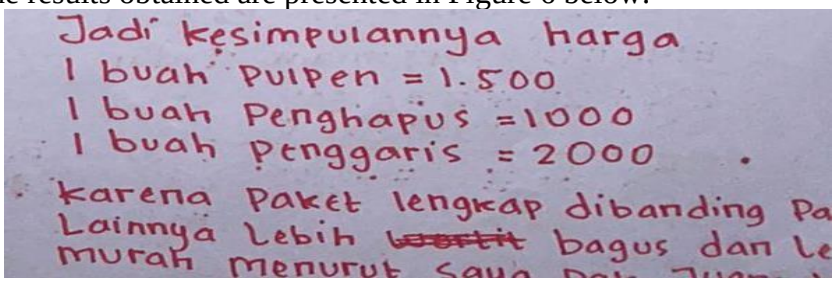

Figure 6. Explanation of Subject SGV's Conclusion Results

Based on Figure 6. above, it is known that the SGV subject solved the problem given. In the interview conducted, subject SGV also explained the conclusion he made, namely because the price of the package chosen by Mr. Juana is a complete package that is better and cheaper. This reason indicates why the SGV subject chose the package price by Mr. Juana.

Based on the results of the numeracy literacy test that has been carried out by subject SGV, it can be seen that subject SGV fulfills the three indicators of numeracy literacy. Based on the research results obtained, subject SGV can use numbers and symbols related to basic mathematics to solve problems, subject SGV can analyze the information presented in the form of diagrams and subject SGV can use the interpretation of the results used to make conclusions. So based on this description, subject SGV is said to have high numeracy literacy skills.

Analysis of Subjects with Auditorial Learning Style – SGA

Based on the results of the research conducted, it is known that the SGA subject took 23 minutes 47 seconds to solve the problem. Based on the research conducted, SGA subject thought about the data and information presented in the problem about matching items to solve the problem. The SGA subject then made a memorization obtained from the picture presented. The memorization made by the SGA subject used the variables x, y, and z to create a mathematical equation. The memorization is presented in the following Figure 7:

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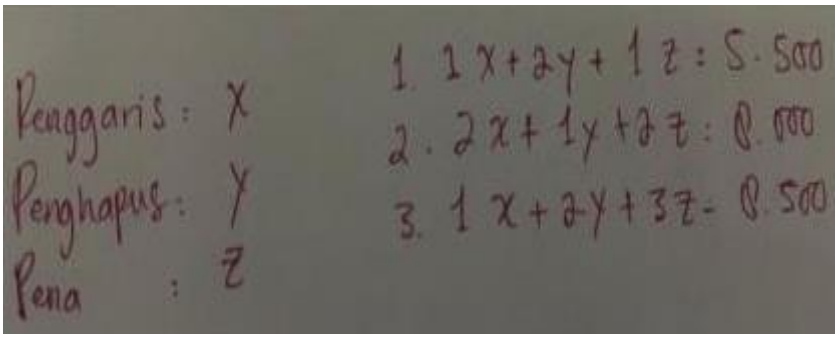

Figure 7. SGA's Answer in Using Numbers and Symbols

Based on the answers obtained by the SGA subject in Figure 7, it can be seen that the SGA subject can use the numbers and symbols given correctly to solve the problems in the given problem. The next step carried out by SGA subject used the elimination-substitution method. The description of the solution carried out by the SGA subject is presented in Figure 8 below:

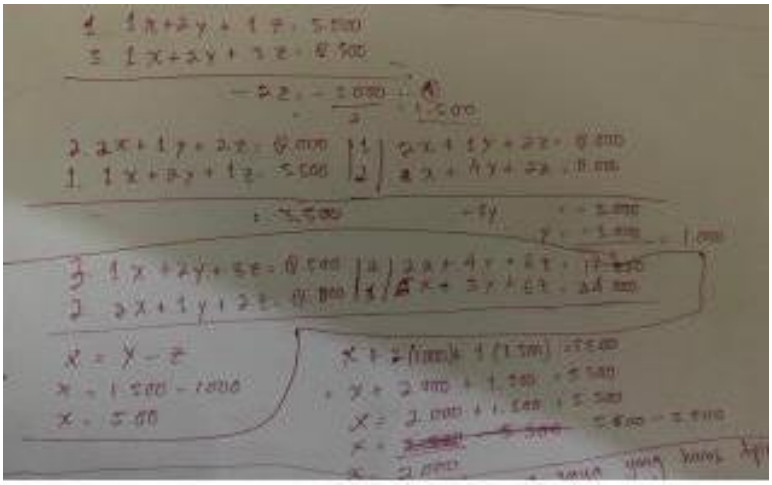
Figure 8. Explanation of the Results of Subject SGA's First Strategy

Based on Figure 8, it is known that SGA subject obtained the values $x = 2000, y = 1000$, and $z = 1500$. In determining this step, SGA subject did not use tables, diagrams, or pictures, because SGA subject felt able to solve the problem without the help of tables, diagrams, or pictures.

After solving the problem using the elimination-substitution method and obtaining the values of x, y, and z. The next step done by SGA subject was to make a conclusion. Based on the results obtained, the SGA subject concluded that the selection of a complete package is more suitable to use, this is because in the complete package there are more pens which are the most needed items by students. the statement is explained in Figure 9. following:

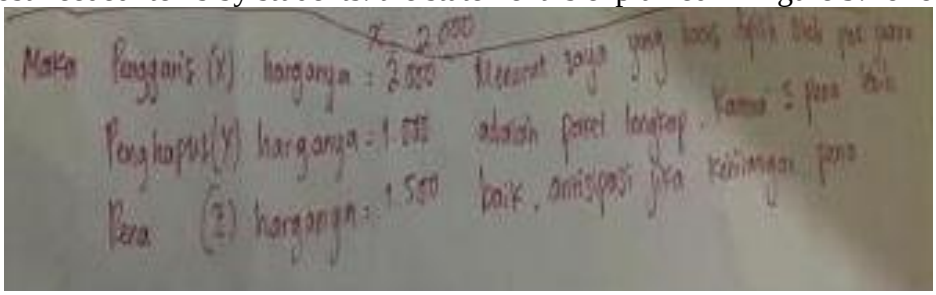
Figure 9. Explanation of Subject SGA's Decision Making

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Based on the description described in Figure 9, it is known that the SGA subject is able to understand the problem given well, this is evidenced by the use of mathematical numbers and symbols that can be used by the SGA subject as well as the results of interviews that show similar answers. SGA subject was said to fulfill the first indicator, namely using numbers and symbols. SGA subject was said to be unable to fulfill the third indicator of numeracy literacy ability, namely analyzing information presented in the form of graphs, tables, charts, or images. SGA subject was able to draw conclusions from the solution, thus proving that SGA subject fulfilled the third indicator of numeracy literacy ability.

Analysis of Subjects with Kinesthetic Learning Style - SGK

Based on the results of the research conducted, it is known that subject SGK took 34 minutes 19 seconds to solve the problem given. At the beginning of the work, it was seen that subject SGK could not understand the problem given. Based on the research conducted, it can be seen that subject SGK tried to solve the equation obtained from the problem, but subject SGK was unable to solve it. Subject SGK also made mistakes in the elimination process, but based on the results obtained, subject SGK is said to be able to use numbers and basic mathematical symbols to solve problems. The statement can be seen in Figure 10:

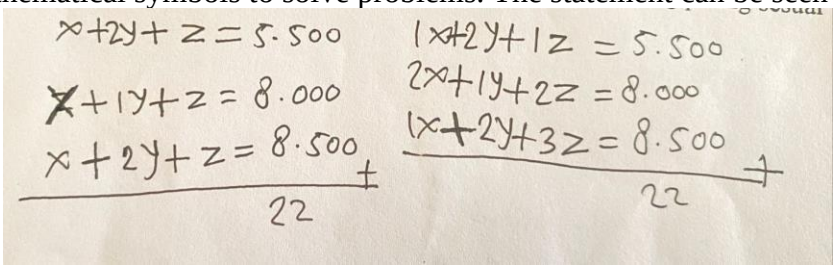

Figure 10. SGK's Answer in Using Numbers and Symbols

Based on the results of the research conducted, it was found that SGK, which is shown in Figure 10, concluded that SGK could not solve the given problem correctly. Subject SGK was only able to use numbers and symbols related to the information in the problem, although the numbers made by SGK subjects in the mathematical equation model were wrong. The interview results also showed the inability of the SGK subject to determine the steps he would take in solving the given problem. Subject SGK is said to fulfill the first indicator, namely using various kinds of numbers and symbols, but cannot fulfill the second and third indicators. Based on this description, subject SGK is said to have low numeracy literacy skills.

Based on the explanation of the results of the research that has been carried out, it can be seen that the three subjects are able to fulfill the first indicator, namely using various kinds of numbers and symbols related to mathematics, although at the beginning of giving the problem the three subjects looked confused and had difficulty in understanding the problems given. This statement is in line with Sidik, et. al. (2019), which states that most students have difficulty in translating the meaning of the given problem into a mathematical model. This statement is also reinforced by Sudirman et. al. (2019), which states that the difficulties experienced by students in working on story problems are caused by the lack of accuracy possessed by students. Sudirman et. al. (2019), also added that dominant students are less careful in reading story problems, causing students to have difficulty in understanding the information given in a problem.

The second indicator of numeracy literacy is analyzing information displayed in various forms in the form of graphs, tables, charts, and images. Based on the results of the research conducted, there was only one subject who fulfilled the second indicator, namely subjects with visual learning styles. While subjects with auditorial and kinesthetic learning styles are known not to have fulfilled the second numeracy literacy indicator. The inability of the subject to fulfill the second indicator of numeracy literacy ability is due to the difficulties the subject has in representing data such as not being able to read data displayed in chart tables or images (Koparan, 2015).

The third numeracy literacy indicator is using the interpretation of analysis results to predict and make decisions. Based on the results of the research conducted, it is known that subjects with visual learning styles and subjects with auditorial styles are able to fulfill the third indicator of numeracy literacy skills by utilizing the elimination and substitution working methods. In contrast to these two subjects, subjects with kinesthetic learning styles are known to be unable to understand the third indicator of numeracy literacy skills. This can be seen from the results of tests and interviews done by subjects with kinesthetic learning styles. In line with this statement Sari (2018), states that the cause of students experiencing obstacles and difficulties in answering questions is the lack of understanding possessed by students in mastering the material, as well as the lack of confidence raised by students while solving the problems given.

Conclusion and Suggestion

Based on the results of the research that has been conducted, it can be concluded that there are differences in numeracy literacy skills owned by subjects with visual, auditorial, and kinesthetic learning styles. In this study, it is said that subjects with visual learning styles are at the highest level of numeracy literacy skills because they fulfill all the existing indicators. Subjects with an auditorial learning style are said to be at a moderate level, because the subject is only able to fulfill two of the three indicators of numeracy literacy skills. While subjects with kinesthetic learning styles only meet one indicator, so the subject is categorized into a low level of numeracy literacy skills.

For future research, it should add the number of subjects to be studied so that the comparisons made are more valid. In addition, future research is also expected to explore more deeply the results obtained from the relationship between numeracy literacy skills in terms of learning styles.

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