STUDENTS' NUMERACY SKILLS IN SOLVING THE FOURTH LEVEL OF MINIMUM COMPETENCY ASSESSMENT QUESTION DEVELOPMENT ON RATIO AND PROPORTION

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Abstract

Minimum Competency Assesment measures two basic competencies, namely reading literacy and numeracy literacy. PISA results showed that the Indonesian students' ability in the mathematics category is relatively low. Numeracy is an ability to use mathematics to solve daily life problems. One of the closely related to everyday life mathematical topics is ratio and proportion. However, there are still many students' difficulties in solving problems related to ratios and proportions which are basically the basis concept for mathematical knowledge and science understanding. Therefore, it's necessary to conduct a students' numeracy skills analysis related to ratios and proportions in order to facilitate the process in improving students' abilities. This study aims to describe students' numeracy skills in solving the AKM questions development on ratio and proportion with a qualitative descriptive approach. The subjects of this study were 8th grade students who participate in AKM. Researcher used test and interviews as collect data techniques which was then analyzed in three stages, namely data reduction, data presentation, and verification. The result showed that there are students' numeracy skills indicators that haven't been fully achieved, including students' ability to analyze information presented in various forms (diagrams, tables, etc.) and to interpret the analysis results to make decisions. While the most often appear indicator is the students' ability to use various kinds of numbers or symbols to solve daily life problems. The results of this study can be used as a basis for adjusting learning models and strategies as an effort to improve students' numeracy skills.

Keywords: numeracy skills, AKM, ratio and proportion.

Abstrak

Asesmen Kompetensi Minimum mengukur dua kompetensi mendasar, yakni literasi membaca dan literasi numerasi. Hasil PISA menunjukkan bahwa kemampuan siswa Indonesia dalam kategori matematika relatif rendah. Numerasi merupakan kemampuan seseorang dalam menggunakan matematika untuk menyelesaikan permasalahan dalam kehidupan sehari-hari. Salah satu topik matematika yang berkaitan erat dengan kehidupan sehari-hari adalah rasio dan proporsi. Akan tetapi, masih banyak ditemukan kesulitan yang dialami oleh siswa dalam menyelesaikan permasalahan terkait rasio dan proporsi yang pada dasarnya merupakan konsep dasar untuk pemahaman konsep pengetahuan matematika maupun sains. Oleh karena itu, perlu dilakukan suatu analisis terhadap kemampuan numerasi siswa terkait rasio dan proporsi guna memfasilitasi proses dalam meningkatkan kemampuan siswa. Penelitian ini bertujuan untuk mendeskripsikan kemampuan numerasi siswa dalam menyelesaikan pengembangan soal AKM pada subdomain rasio dan proporsi dengan pendekatan deskriptif kualitatif. Subjek penelitian ini adalah siswa kelas 8 yang terpilih sebagai peserta AKM. Peneliti menggunakan tes dan wawancara sebagai teknik untuk mengumpulkan data yang kemudian dianalisis dengan tiga tahapan, yakni reduksi data, penyajian data, dan verifikasi data. Hasil penelitian menunjukkan bahwa terdapat indikator kemampuan numerasi siswa yang belum sepenuhnya tercapai, yakni kemampuan siswa dalam menganalisis informasi yang disajikan dalam berbagai bentuk (grafik, diagram, tabel, dan sebagainya) dan kemampuan siswa dalam menafsirkan hasil analisisnya untuk mengambil keputusan. Sedangkan indikator yang paling sering muncul adalah kemampuan siswa dalam menggunakan berbagai macam angka atau simbol untuk menyelesaikan kehidupan sehari-hari. Hasil penelitian ini dapat digunakan sebagai dasar untuk penyesuaian model dan strategi pembelajaran sebagai upaya untuk meningkatkan kemampuan numerasi siswa.

Kata Kunci: kemampuan numerasi, AKM, rasio dan proporsi.

INTRODUCTION

Education in Indonesia has always been developing along with the needs of society in an increasingly advanced era. This is important to do in order to improve the quality of education in Indonesia. The implementation of education aims to develop the potential of students to become competent, independent, creative, and critical thinkers (Sari et al., 2019). Hence, education requires a variety of thorough preparations in order to achieve the expected goals.

In one of the *Merdeka Belajar* (Freedom of Learning) program policies, it has been stated that the National Examination will be reformed into National Assessment (AN) which is consisting of Minimum Competency Assessment (AKM), Character Survey, and Learning Environment Survey. Minimum Competency Assessment (AKM) is an assessment of basic competencies for students in order to develop self-capacity and participate positively in society (Pusmenjar, 2020). AKM is mentioned as one of the form of government preparations for the 21st century, which students have the opportunity to have Critical thinking and problem solving, Creativity, Communication skills, and Collaboration (Andiani, 2021). AKM measures two basic competencies, namely reading literacy and numeracy literacy. The scope of competencies assessed includes skills in sorting and processing information, logical-systematic thinking skills, and reasoning skills using concepts and knowledge possessed. By using these two competencies, students are expected to be able to solve problems in the various contexts presented (Pusmenjar, 2020). This indirectly shows that the student's literacy and numeracy competencies will affect how wise students are in making decisions in daily life.

However, in reality, the numeracy skills of Indonesian students are still far from satisfactory. The statement refers to the results of the literacy and numeracy test in PISA, as an official international activity under the auspices of the Organization for Economic Cooporation and Development (OECD) which measures the literacy and numeracy abilities of students aged around 15 years. The test results showed that Indonesia's achievement is still relatively low, especially in the aspect of numeracy. Based on the results of PISA 2018, Indonesia is ranked 73 of 79 countries with an average score of 379 for the mathematics category (OECD, 2019). The PISA results are also a reflection of the mathematics learning process in Indonesia, especially to see how far the learning approach in Indonesia in improving students' numeracy skills.

Numeracy is an individual's ability to use various kinds of numbers and symbols related to basic mathematics in the context of daily life and to analyze information presented in various forms (graphs, tables, charts, etc.) for decisions making (Han et al., 2017). Meanwhile,

according to the Center of Ministry of Education and Culture for Assessment and Learning (2020), numeracy is defined as the ability to think in using concepts, procedures, facts, and mathematical tools to solve problems in various types of contexts that are relevant to individuals in daily life. Numeracy skill is an ability to use, interpret, and communicate symbols, numbers, and everything related to mathematics to solve problems in daily life. Numeracy is an ability to understand the mathematics use in real world and to apply it for making the best possible decisions. Numeracy skills focus on skills in analyzing, giving reasons, expressing ideas, formulating problems, solving problems, and interpreting mathematical problems in various situations in real life (Hartatik, 2020). Numeracy skills can be demonstrated through a person's ability in using and processing numbers, basic arithmetic operations, and other mathematical symbols to solve real-life problems. In addition, numeracy skills can also be demonstrated through a person's ability in reading and analyzing information in pictures, graphs, tables, and so on to be used as a basis and reason for making a decision. A person's numeracy skill can be said to be good when this individual is able to interpret these abilities to solve and obtain solutions for real problems in everyday life.

Numeracy in AKM consists of several contents being tested, including numbers, geometry and measurement, data and uncertainty, and algebra. These four contents will be further divided into 2 to 3 subdomains for each level. In AKM Numeration Learning Level 4, algebraic content is divided into 3 parts, namely equations and inequalities, relations and functions, and ratios and proportions. Ratio and proportion are the topics in mathematics that is often referred to as difficult and too complex material, not only for students, but also for teachers (Behr et al., 1992; Lamon, 2007; Ekawati et al., 2014). For students, ratio and proportion are mathematical topics that are very complicated to understand. As for teachers, ratio and proportion are mathematical topics that are quite complicated to teach.

Related to numeracy skills, Mahmud and Pratiwi (2019) conducted a study which aimed to explore the students' numeracy literacy skills in solving unstructured problems. A similar study was also conducted by Hartatik (2020) which aimed to analyze the numeracy skills of elementary school teacher professional education students in solving mathematics problems. Sari et al. (2021) also conducted research on students' numeracy skills related to algebraic topics using the PISA framework. Recently, research related to AKM has also become a highlighted topic for research studies, but there is no research that discusses about the students' numeracy skills in solving

AKM questions development on the ratio and proportion subdomain.

In the Fourth Level of AKM, competence measured is student's ability in solving social arithmetic problems related to ratios/percentages (Pusmenjar, 2020). Several previous studies have shown various difficulties faced by students of junior high school in solving ratio and proportion problems, one of which is the difficulties in solving social arithmetic problems related to ratios/percentages. Some of them are students who tend to have difficulty in understanding and interpreting the questions presented, determining completion procedures, performing appropriate calculations, and drawing conclusions from answers (Dila & Zanthy, 2020). Especially during the pandemic, students tend to experience many obstacles in learning, causing students to find it more difficult to accept and understand the material provided by the teacher. Because of these difficulties, students also tend to have low ability in solving the real world problems related to ratio and proportion. Whereas ratio and proportion is a basic concept for understanding concepts in mathematics and science in everyday life.

The fact that some of the difficulties faced by students in using mathematical knowledge, especially ratios and proportions in various fields of daily life, directly shows that efforts need to be made by teachers to facilitate the process for students to achieve good numeracy skills. Therefore, also as a form of preparation in facing AKM, it is necessary to conduct an analysis of students' numeracy skills in solving problems on the fourth level of AKM questions development related to ratio and proportion. Therefore, this study aims to describe the numeracy skills of students in solving the fourth level of Minimum

Competency Assessment question development on ratio and proportion so that adjustments can be made to the approach and strategies of learning in order to improve the students' numeracy abilities.

RESEARCH METHOD

This type of research is a descriptive research with qualitative approach that aims to describe the numeracy skills of 8th grade students in solving the fourth level of AKM development questions related to ratio and proportion. In this level, the competence measured is the student's ability to solve social arithmetic problems related to ratios/percentages. The subjects of this research were selected by using purposive sampling technique. The subjects taken were 15 students of 8th grade who were selected as AKM participants. The research procedure carried out by the researcher is by giving a written test in the form of AKM development questions related ratio and proportion and conducting an unstructured interview. The instruments used in the research were the development of the fourth level of AKM questions related to ratio and proportion that measure students' ability to solve social arithmetic problems related to ratios/percentages. These questions were adapted from examples of AKM questions by the Assessment and Learning Center which were then validated by expert lecturer. Ratio and proportion topics were choosed based on several previous studies which showed that there were various difficulties faced by students in solving social arithmetic problems in the topic of ratios and proportions. The test instrument consists of 5 questions containing three indicators of numeracy skill, including:

Table 1. Indicators of Numeracy Skill (Han et al., 2017; Hartatik, S., 2020)

Code	Indicator of Numeracy Skills	Assesment			
		3	2	1	0
1	Able to use various kinds of numbers or symbols related to basic mathematics in solving daily life problems	Student is able to use various kinds of numbers or symbols related to basic mathematics in solving daily life problems and the answer is correct	Student is quite able to use various kinds of numbers or symbols related to basic mathematics in solving daily life problems and the answer is correct	Student is quite able to use various kinds of numbers or symbols related to basic mathematics in solving daily life problems and the answer is incorrect	Student isn't able to use various kinds of numbers or symbols related to basic mathematics in solving daily life problems and the answer is incorrect
2	Able to analyze information presented in various forms (graphs, tables, diagrams, charts, and etc.)	Student is able to analyze information presented in various forms	Student is quite able to analyze information presented in various forms	Student is quite able to analyze information presented in various forms	Student isn't able to analyze information presented in various forms

		(graphs, tables, diagrams, charts, and etc.) and the answer is correct	(graphs, tables, diagrams, charts, and etc.) and the answer is correct	(graphs, tables, diagrams, charts, and etc.) and the answer is incorrect	(graphs, tables, diagrams, charts, and etc.) and the answer is incorrect
3	Interpret the result of the analysis to predict and make decisions	Student is able to interpret the result of the analysis to predict and make decisions and the answer is correct	Student is quite able to interpret the result of the analysis to predict and make decisions and the answer is correct	Student is quite able to interpret the result of the analysis to predict and make decisions and the answer is incorrect	Student isn't able to interpret the result of the analysis to predict and make decisions and the answer is incorrect

The data collection techniques used in this research are through test and interview. The researcher carried out several stages in the preparation of the test, including: 1) Determination of the indicators of questions based on the competency indicators to be measured; 2) Arranging the grid of the test; 3) Arranging the draft of questions for test; 4) Justification of questions or tests by Educational Evaluation Experts, and conducting trials on respondents who are not the subjects of this study. The data analysis techniques used by the researcher are data reduction, data presentation, and data verification (Sugiyono, 2013). The first step taken is data reduction, where the researcher selected, categorized, focused, and simplified the data obtained. At this stage, the researcher discarded unnecessary data so that there is no accumulation of student data or information. Through this stage, data will be more systematic and focused on research objectives.

Based on the table of numeracy skill indicators, each indicator has a maximum score of 3 and a minimum score of 0. Thus, each question has a minimum score of 0 and a maximum score of 9. The maximum total score that can be obtained by students for all questions is 45. The test score scale is then used to group students into three levels of numeracy ability, namely low ability, medium ability, and high ability. Based on the data categorization guidelines in Azwar (2012), the following is a table of students' numeracy ability levels categorizing based on the interval scores obtained.

Table 2. Categories of Students' Numeracy Skill Level

Intervals	Categories
$X < 15$	Low Ability
$15 \leq X < 30$	Medium Ability
$X \geq 30$	High Ability

The presentation of the data is conducted to see in more depth about the problem being studied. In this study, researchers will present data with narrative texts clearly and systematically, to facilitate researcher in drawing conclusions. The conclusions drawn are expected to be able to answer the problems that have been stated previously. Data verification in this study are based on the data presented in order to draw conclusions about students' numeracy skills on each indicator. To test the validity of the data obtained, a triangulation process was carried out by comparing the results of the written test with the results of students' interviews with low, medium, and high numeracy abilities. This needs to be carried out to be more careful and accurate in drawing conclusions from the research conducted.

RESULT AND DISCUSSION

Based on the results of the numeracy skills test on 15 students of 8th grade who participate in AKM, it was found that 3 students with low numeracy abilities, 5 students with medium numeracy abilities, and 7 students with high numeracy abilities. The following are the results of the students' numeracy skills analysis in solving the fourth level of AKM on ratio and proportion of students with low, medium, and high numeracy skills.

Student with Low Numeracy Skill (SLN)

Student with low numeracy skills wasn't able to use various kinds of numbers or symbols related to basic mathematics in solving the given problem. This could be shown through the student's answer sheet in solving the problems given in the questions.
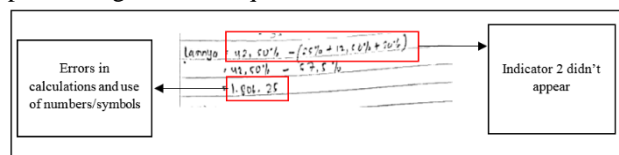

Figure 1. SLN's Answer Sheet for Problem Number 2

SLN wasn't able to understand the information as well as the use of the percentage symbol (%) contained in the questions so that student has difficulty in solving the problems given. Student tends to try making sense of

mathematical symbols and signs that student sees, rather than trying to understanding what student's actually doing. According to Elbrink (2007), the search for the meaning of symbols as carried out by SLN leads in misinterpretations that in turn result to mathematical errors.

Table 3. Interview with SLN for Problem Number 2

T	: "*Can you explain your process?*"
SLN	: "*Confused, Miss. Actually I forgot how.*"
T	: "*Did you understand the problem?*"
SLN	: "*I understood. We were asked to calculate the total costs that must be incurred by the farmer. But I'm confused, I don't understand how to calculate the percentages in the circle. Confused what to do. So I just subtract the largest percentage with the smallest percentage.*"
T	: "*Then, what do you mean with 1806.25? How come?*"
SLN	: "*I don't know, Miss. I forgot. I'm sorry, honestly, I can't solve it. It's difficult.*"

Based on the result of these interviews, it was concluded that student isn't able to relate the information of the percentage of farm land division shown through the pie chart presented. Student has difficulties in analyzing the information presented through pie chart and table. This also caused student to be unable to predict or draw conclusions to solve the problems given in the questions. In the next problem, SLN is still unable to optimally use numbers or symbols related to basic mathematics to solve the problems given. In this problem, student is quite able to calculate the price of *serum* and *moisturizer* after a discount given, but there is still error in calculating the total price of *serum* and *moisturizer* at the *lovelyshop_unique* store.
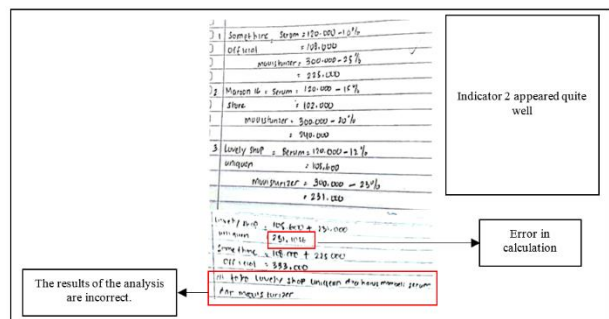

Figure 2. SLN's Answer Sheet for Problem Number 4

Elbrink (2007) stated, "Carelessness and lack of attention can result in calculation errors.". SLN accidentally did this when adding up the prices of *serum* and *moisturizer* at *lovelyshop_unique* store. SLN rewrote the price of the *moisturizer* without adding it up first with the price of the *serum* at the *lovelyshop_unique* store.

Table 4. Interview with SLN for Problem Number 4

T	: "*How did you do to solve this problem?*"
SLN	: "*I knew that this is about discount, right? So, I kind of understand. The percentages of discount were multiplied by the initial price, then it is subtracted. After that I summed up the prices, it turned out to be the cheapest is in the third store.*"

Through these interviews, it was concluded that student is quite able to analyze the information in the table of prices and discounts presented even though the final answer obtained is incorrect. Error in the calculation made by SLN caused the result of the analysis to be inaccurate so that the answer given is incorrect. Consequently, SLN can't draw conclusion for this problem well.

Student with Medium Numeracy Skill (SMN)

Student with medium numeracy skills is quite able in using numbers and symbols related to basic mathematics to solve the problems presented in the questions.
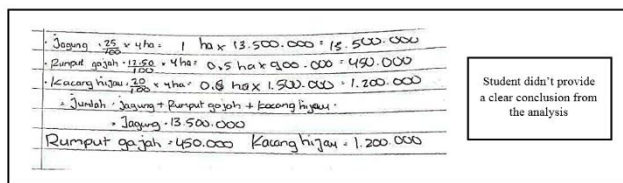

Figure 3. SMN's Answer Sheet for Problem Number 2

Based on the student's work on the answer sheet, SMN is quite able in processing and calculating percentage data as well as analyzing the information presented through pie chart and table to solve problems. First, SMN conducted an analysis of the farm land area needed for each type of plant based on the percentage of farm land division shown in the form of a pie chart. After student obtained the area of farm to be used for each type of plant, SMN connected and processed the data with the information presented in the table to determine the costs required for each type of plant.

Table 5. Interview with SMN for Problem Number 2

T	: "*Once you find the costs required for each type of plant, what did you do?*"
SMN	: "*All has to be summed, Miss.*"
T	: "*So, how much do you think the total cost will be?*"
SMN	: "*I didn't count it.*"
T	: "*Why? So, you couldn't predict the total cost needed, right?*"
SMN	: "*I was in a hurry, Miss. Anyway, all of that will be summed, won't it?*"

Cahyani & Sutriyono (2018) stated that one of the mistakes that students make in solving mathematical

problems is not making conclusions from the results of their calculations, because students assume that the results of their calculations are the solution to existing problems. Based on the result of interviews conducted, SMN isn't able to interpret the result of the analysis obtained to determine the total costs required by farmer. This shows that student is still unable to provide prediction or draw any conclusion to solve the problem given based on the analysis that has been carried out.
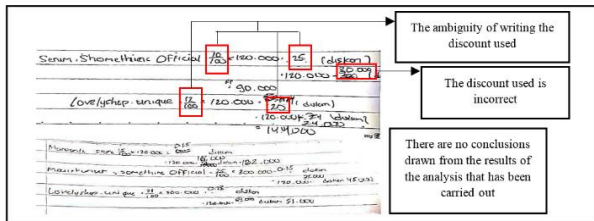

Figure 4. SMN's Answer Sheet for Problem Number 4

In the other problem, SMN still tend to have difficulties in analyzing the information presented in the table. On the answer sheet, student wrote down the discount of *serum* at the *Somethinc Official* store as 10%, but student determined the discounted price by multiplying the *serum* price of Rp120.000,00 with the percentage of the *moisturizer* discount of 25%.

Table 6. Interview with SMN for Problem Number 4

T	: "Based on the information, how much is the discount for serum at the Somethinc Official store?"
SMN	: "10%, Miss."
T	: "Then, how did you determine the amount of serum discount at the Somethinc Official store?"
SMN	: "They're multiplied, Miss. The percentage of the discount with the initial price. So 10% multiplied by Rp120,000,-."
T	: "Then, what do you mean by writing 25 here?"
SMN	: "It's the discount, Miss."
T	: "Didn't you just say 10% before?"
SMN	: "Now, I'm confused, Miss. I guess I was using the 25%. But, it should be 10%, shouldn't it?"

A similar error also made by SMN when determining the price of serum at *lovelyshop_unique* store. SMN wrote down two discounts, they are 12% and 20%. This causes student to experience errors in determining the price of serum at *Somethinc Official* and *Lovelyshop_unique* stores after getting a discount. SMN also still tends to make errors in some calculations. Therefore, in this problem, SMN is unable to predict or draw conclusion related to which store provides *serum* and *moisturizer* at the cheapest price. So it can be concluded that student with medium numeracy skills (SMN) isn't able to predict the results of the analysis carried out to make decisions.
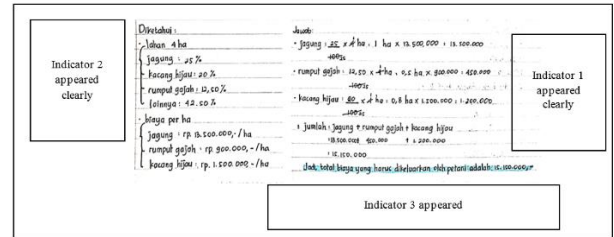

Figure 5. SHN's Answer Sheet for Problem Number 2

Student with High Numeracy Skill (SHN)

Student with high numeracy skills is able to analyze and write down the information presented through pie chart and table in detail. Based on student answer sheet, SHN is able to use numbers and symbols related to basic mathematics to solve the problem.

Table 7. Interview with SHN for Problem Number 2

T	: "What do you think after you read the problem?"
SHN	: "We have to find the area of land that will be used for each type of plant first, Miss. So, I calculated the area used for maize, green peanuts, and elephant grass."
T	: "How did you do to find it?"
SHN	: "Look at the division of land on the pie chart, Miss."
T	: "What did you do then if you already find the area of land for each type of plant?"
SHN	: "I calculated the costs needed for each plant, Miss, so I can know the total cost that must be incurred. There are informations of the cost per ha in the table, so I only need to multiply them."

Based on the result of these interviews, it can be concluded that SHN is able to analyze the information presented through pie chart and table to solve the problem given. SHN is also able to interpret the result of the analysis obtained to predict and draw conclusion regarding the total costs that must be incurred by farmer.
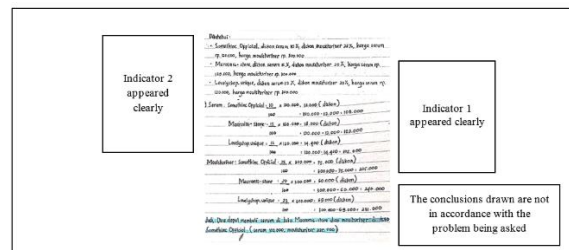

Figure 6. SHN's Answer Sheet for Problem Number 4

Table 8. Interview with SHN for Problem Number 4

T : "*What's the problem in the question?*"

SHN : "*Actually I'm confused, Miss. At first, I thought that it was the store that sell the cheapest serum and which the store that sell the cheapest moisturizer. That's why I chose two stores. Rp102.000,- for serum at Maroon16_store and Rp225.000,- for the moisturizer at Somethinc Official. But after I read it again, there wasn't mentioned for each serum and moisturizer. So, I guess I was wrong. I should have calculated the total price of serum and moisturizer in each store first.*"

In the next problem, SHN has difficulty in understanding the problem given. This affects to the decision-making in determining which store to choose to get the cheapest *serum* and *moisturizer* prices. In this case, buyers can only choose one of the three selected stores to get the cheapest *serum* and *moisturizer* prices. But, in this case, SHN decided to buy the *serum* and *moisturizer* at a different store.

Based on the result of the interview, SHN did errors in understanding what was asked in the question. This is in accordance with the statement of Cahyani & Sutriyono (2018) that errors in drawing conclusions of mathematical problems can be caused by student carelessness because they didn't pay attention to what is asked in the question. SHN is able to use a various kinds of numbers and symbols related to basic mathematics to solve this problem. SHN tends to be able to complete calculations well. SHN is also able to analyze the information presented through table as a basis for solving problems. However, SHN still tends to have difficulty in drawing conclusion based on the result of the problem analysis carried out. This was caused by SHN's misunderstanding of what was asked in the question. The results of the analysis of numeracy skills on each indicator for each category of students can be briefly seen in the table 9.

Table 9. Results of Students' Numeracy Skills on Ratio and Proportion

Student with Category	Indicators		
	Indicator 1	**Indicator 2**	**Indicator 3**
Low	1. Student understand the concept of discount, but doesn't understand the concept of using percentages symbol well 2. Student still makes some errors in calculation 3. Student can't finish the process to solve the problem	1. Student still can't read and understand the information presented through pie chart 2. Student is good enough in rewriting and analyzing the information given through the table	1. Student can't interpret the results of analysis to make decisions and draw conclusions
Medium	1. Student is good enough in understanding the concept of ratio 2. Student is still experiencing difficulties in using percentages symbol to solve the problem 3. Student still make an error in calculation 4. Student can't finish the calculation well	1. Student is quite able in analyzing information presented through the pie chart 2. Student make an error in rewriting the information of discount from the table	1. Student can't correctly interpret the results of analysis to make decisions and draw conclusions
High	1. Student is able to use various kinds of numbers and symbols to solve problems	1. Student is able to read, understand, and analyze the information presented in various forms such as diagram, table, chart, and so on.	1. Student is still experiencing some difficulties in interpreting the results of analysis to make decisions and draw conclusions

Based on the analysis that has been carried out, the most dominant indicator of student numeracy skills mastered by students is the ability to use various kinds of numbers or symbols related to basic mathematics in solving problems in daily life. But, there are still some students, especially students with low numeracy skills, who tend to have difficulties in performing calculations and understanding the use of the percentage symbol (%) to solve problems related to ratios/percentages. Meanwhile, the indicator of the ability to analyze information presented in various forms (graphs, tables, diagrams, charts, etc.) are quite mastered by some students. Students with medium and high numeracy skills are able to analyze the information presented in the form of pie chart and table to solve the problems given, although some students still tend to have difficulties in analyzing the information presented. The indicator of numeracy skills that is the least appeared is the student's ability to interpret the result of the analysis to predict and make decisions. Both students with low, medium, and high numeracy skills still tend to have difficulties in drawing conclusions based on the result of the analysis that has been carried out. This is caused by some errors in understanding the problem asked in the question. In addition, some errors in calculation that occurred during the process of problem solving were also one of the causes of misinterpretations and inaccuracies in decision making.

CONCLUSION

Based on the result of research conducted on 8th grade students who participate in AKM, it is obtained that the indicator that mostly appeared and mastered by students is the ability to use various kinds of numbers and symbols related to basic mathematics to solve problems in daily life. But, there are still some students who have difficulties in using the percentage (%) symbol to solve the problems given. Some errors in calculation also still often occur in some students during the process of problem solving. Meanwhile, the indicator of the ability to analyze information presented in various forms (graphs, diagrams, tables, charts, and etc.) has not fully appeared on the abilities possessed by students. Students tend to have difficulties in reading and understanding the information presented in the form of a given diagram or table. This causes students to do errors in analyzing so that it affects the ability of some students in making decisions and drawing conclusions. Most students have a low ability to interpret the result of their analysis to predict and make decisions. Both students with low, medium, and high numeracy skills still tend to have difficulties in drawing conclusions based on the result of the analysis that has been carried out. This is due to several factors, such as errors in understanding the problems given, errors in

analyzing the information presented in the questions, calculation errors, and errors in interpreting the result of the analysis obtained during the process.

Therefore, it is necessary to make several efforts, such as adjusting the model and appropriate learning approach to improve students' numeracy skills in solving AKM-equivalent questions as well as a form of preparation for facing AKM in the following years. The result of this study can be used as the basis for more in-depth research related to the learning approach efforts to improve students' numeracy skills, especially related to ratio and proportion subdomain.

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