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Statistical Literacy of Senior High School Students in Solving Problems With Model of AKM of Content Data and Uncertainty in Terms of Mathematical Ability

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ABSTRACT

This study investigates the statistical literacy of high school students in solving AKM model problems on data content and uncertainty. The research involved 36 students from eleven X classes at SMA Negeri 1 Taman Sidoarjo, each with high, medium, and low mathematical abilities. The study used mathematics ability tests and AKM model problem solving tests validated by two mathematics education lecturers and senior mathematics teachers. The results showed that high mathematics ability students met all indicators of statistical literacy, including understanding statistical data, presenting statistical data, and presenting the result of data processing. Students with moderate mathematics ability only fulfilled two indicators, understanding and presenting statistical data. Students with low mathematics ability struggled with understanding data, presenting data, and providing arguments related to statistical concepts. The study concluded that high mathematics ability students met all indicators of statistical literacy, while medium mathematics ability students could only determine answers through peer discussion and could not provide suitable arguments. Students with low mathematics ability struggled to understand the characteristics of the presented statistical data.
Keywords: *Statistical literacy, high school students, AKM model questions, athematical ability.*

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INTRODUCTION

The high school mathematics curriculum in Indonesia helps a variety of subjects such as algebra, geometry, calculus, and statistics. The curriculum may vary from institution to institution, but generally aims to provide high school students with a solid foundation in mathematical concepts and problem-solving skills. The curriculum is designed to prepare high school students for higher education and equip them with the mathematical knowledge and skills needed for various fields. Merdeka SMA curriculum as a new curriculum in Indonesia, and all schools in Indonesia will adopt it fully by 2024.

One important aspect of this curriculum is the emphasis on statistical literacy, given the importance of understanding statistics in facing global demands and rapid technological development. Statistical literacy is the basic ability to understand data, create graphs and tables, represent data, and understand basic statistical calculations. Without the use of statistics, it is very difficult to make decisions based on the data that has been collected from a study (Watson, 2013).

Statistical literacy is needed so that a person can read and interpret and infer, read, and present data in tabular and graphical form (Schield, 2011), understand the meaning, navigate, and interpret information in the form of tables, diagrams, or graphs (Gal, 2002) As for students, statistical literacy includes the ability to apply, interpret, and formulate mathematics in various contexts, including the ability to think statistically and use statistical concepts, facts, and techniques to describe, explain, or predict an event (Hidayati, et al., 2020)

Statistical literacy is an important component in learning statistics (Sharma, 2017). Students are said to have statistical literacy if they are able to read and represent data in both tabular and graphical form (Schield, 2011) able to read (understand); analyze; interpret; and represent data in tabular or graphical form (Hafiyussholeh et al., n.d.). Representing (presenting) data is a person's ability to describe data in the form of certain tables or diagrams/plots in accordance with the information to be communicated (Goldin, 1998).

UNESCO shows that Indonesia faces challenges in literacy, ranking 60th in low literacy levels. The literacy movement in schools is needed as a solution in increasing interest in reading and habituation to have a culture. In addition, the development of new work procedures and business processes requires additional qualifications in HR competencies and the development of sectoral statistics strengthens collaboration by accelerating the transformation of statistical business processes through the integration of statistical activities. Statistical literacy plays a very important role in everyday life in making decisions whose information is based on data (Garfield & Ben-Zvi, 2005).

The reason why statistical literacy is so important is that high school students can recognize trends, patterns and relationships in data so that they can make informed and rational decissions (Maryati, 2021). In addition, it can help high school students sort out accurate and relevant information so that critical and analytical thinking skills can be honed (Indah Hadiastuti & Soedjoko, 2019). This allows high school students to look beyond the numbers and question how the data are represented and the conclusions drawn (Mooney, 2002).

In the context of developing analytical and problem-solving skills,

statistical literacy can help high school students solve problems related to data and information (Samosir & Abdul Aziz, 2023) Therefore, measuring the statistical literacy of high school students is very important to ensure that high school students have sufficient ability to understand and analyze data and information, so that they can develop better analysis and problem solving skills (Priyambodo & Maryati, 2019).

As well as the ability to solve problems of the Minimum Competency Assessment (AKM) model applied in class XI semester 1 which became a public concern because it became a measure of student literacy in Indonesia replacing the UN when the independent curriculum began to be implemented in schools (Pusmendik, 2022) The Minimum Competency Assessment (AKM) is a commonly used measurement instrument to measure reading literacy and numeracy as cognitive learning outcomes of high school students in Indonesia. This model question consists of two parts, namely an assessment of the ability to reason using language or reading literacy and an assessment of the ability to reason using numbers or numeracy. The AKM model questions aim to set minimum standards that must be met by high school students in reading and math skills (Pusmendik, 2022).

The results of the AKM model questions can be used to identify areas that require improvement or provide feedback to the assessed high school students. The AKM model questions can also assist teachers in building high school students' statistical literacy skills and improving high school students' analytical and problem-solving skills related to data and information. Therefore, AKM model questions have urgency in measuring the statistical literacy of high school students in Indonesia (Hafiyussholeh, et al.)

The AKM model question includes data and uncertainty content that assesses the ability of high school students to analyze and interpret data. The ability of high school students to analyze and interpret the data taken is included in the data content and uncertainty in the AKM model question. Therefore, the AKM model problem can be used as a commonly used measurement instrument to measure the ability of high school students in analyzing and interpreting data, as well as in developing the statistical literacy skills of high school students in Indonesia.

The challenge faced by high school students in solving statistical problems, especially those related to data content and uncertainty is that high school students often have difficulty in understanding basic statistical concepts, such as data collection, data processing, and representation of statistical results (Gundlach et al., 2015). Statistical literacy is the process of organizing, compiling, and displaying statistical data in a form that is easy to understand and can be interpreted. Important aspects of statistical literacy skills are analyzing data and compiling statistical results correctly, collecting and processing data descriptively such as making tables, graphs and diagrams (Irwandi et al., 2022). In addition, the ability to present data in the form of brief descriptions, charts, relationships between categories, flowcharts and triangulate data with sources and techniques to obtain data validity (Mahmudah & Setianingsih, 2022).

To address some of the challenges of high school students' difficulties with data, it is important to strengthen statistics learning that is based on applying concepts in real contexts, and

actively engaging high school students in data analysis and interpretation. In an article, it was mentioned that understanding statistics can improve the ability to understand the information or data obtained, so high school students who are proficient in statistics will be easier to make quantitative decisions in the workplace and better able to make decisions about quality issues in their lives (Fadillah et al., 2021).

Mathematical ability and statistical literacy are related (Widakdo, 2017). Statistical literacy is the ability to understand problems, interpret data, and evaluate information to be able to draw conclusions and make decisions from existing problems. Statistical literacy depends on mathematical ability, because statistics is part of mathematics used to understand and analyze data (Gunawan, et al., 2022) In education, statistical literacy is considered an ability adapted from mathematics in the process of problem solving and decision making.

This study aims to describe empirical-scientific data related to the statistical literacy of high school students in solving Problems AKM Model on Data Content and Uncertainty in View of Mathematical Ability. If a problem is given to high school students, the statistical literacy of high school students in this context includes understanding the data, representing the data and representing the result of the data processing of the given problem (Nahdi et al., 2021). In this study, it is expected to be revealed with comprehensive empirical data on the statistical literacy of high school students with mathematical ability levels, especially in solving AKM model problems related to data content and uncertainty.

METHOD

This study uses a qualitative descriptive method, which aims to describe empirical-scientific data related to the statistical literacy of high school students in solving AKM model problems on data content and uncertainty in terms of mathematical ability. This research involves analysis related to statistical literacy which involves three aspects, namely: understanding statistical data, presenting statistical data, presenting the result of statistical data processing from the results of written model problems and think aloud of high school students.

This research was conducted at SMA Negeri 1 Taman Sidoarjo, which has 11 classrooms for class X. Based on class documents from the school (Principal and mathematics teaching teacher) and direct observation by the researcher, one class was purposively selected as the research sample, namely class X-E8 consisting of 14 male students and 22 female students. The selection of one class was based on the researcher's observation, the majority of students were interactive, responsive and could follow the learning well.

In this study, two instruments were used: (i) Mathematics Ability Test (TKM) consists of 4 description questions with statistics material that students have learned at the previous level, and (ii) Problem Solving Test (TPM) consists of 3 Problem Solving Test questions, where each Problem Solving Test consists of three items, with questions in the form of multiple choice, true false and open ended mathematical problems with statistics material sub-material of data concentration measures, measures of data distribution and data location in statistics. Both instruments were declared valid by two senior lecturers in

mathematics education from Surabaya State University and a senior mathematics teacher from SMA Negeri 1 Taman Sidoarjo. Using a Likert scale-4 and 9 items of content validation and feasibility, the three validators stated that the TKM was valid and feasible to use. As for the TPM, using a Likert-4 scale and 9 items of content and feasibility validation, the three validators stated that the TPM had also met content validity and feasibility. The results of logical validation (content and feasibility) are presented in Table 1 below.

Table 1. Results of Logical Validation and Eligibility of TKM and TPM from Three Validators

No	Validator	Skor Validation (Max. 5)		Categorization	Suggestion
		TKM	TPM		
1	1st Validator	4,05	4,47	Valid & Eligible	Minor revision is on the question
2	2nd Validator	4,47	4,05	Valid & Eligible	Minor revision is on the question redaction
3	3rd Validator	5,00	5,00	Valid & Eligible	Approved without revision suggestions
	Rerata	4,51	4,51	Valid & Eligible	Valid if the skor > 3,50

After making minor improvements and refinements to the two instruments, by accommodating some suggestions and input from the three validators, the readability test of the two instruments was carried out by a mathematics teacher and two grade X students from SMA Negeri 1 Taman, who came from classes not as research samples. The results of the readability test recommended that both instruments were declared feasible and with sentence wording that was easily understood by grade X students.

Furthermore, on April 23, 2024 and April 30, 2024, 36 students in the research sample were asked to complete the TKM and TPM, whose implementation was directly supervised by the main researcher and assisted by a mathematics teacher. The results of grouping the mathematical abilities of grade X students, based on NR, TKM, and TPM data are presented in Table 2.

Table 2: Categories of ability of high school students in grade X

No	Rentang Skor	NR	TKM	TPM	Kategori
1	$Skor \geq 80$	6	3	6	Tinggi
2	$60 \leq Skor < 80$	13	12	14	Sedang
3	$Skor < 60$	17	21	16	Rendah
	Jumlah	36	36	36	

Based on the descriptive data of the two instruments (Arikunto, 2018) using the Pearson product moment test, Alpha Cornbach test with $\alpha = 0.01$ and SPSS version 26.0, the empirical validity results are presented in Table 3 and Table 4 below.

Table 3. Empirical Validation Results of TKM and TPM

No.	Empirical Validation Aspects	TKM	TPM	Category
1	The Average of Problem Difficulties	0,49	0,55	Easy
2	Average of	0,36	0,34	Very Good
3	Score of Empirical Validiy Test	0,77	0,83	Valid
4	Score of Reliability Test	0,83	0,73	Reliabel

Thus both instruments were categorized as valid, reliable, significantly easy, and with excellent discriminating power. By combining the results from NR, TKM, TPM, and statistical literacy ability data, one student each was selected who met the following criteria: (i) the TKM score, TPM-1 score and NR data were in a consistent and equal ability group, i.e. all three were in the high category or all three were in the medium category, or all three were in the low category (ii) had an active-communicative attitude, (iii) the answers from the TPM met at least one of the statistical literacy indicators, and (iv) were willing to take part in the interview outside formal lesson hours. From the data recapitulation, there were high ability students where 2 students were female and medium ability students where 10 students were female, then one student from each group was selected to be the research subject. Semi-structured interviews were developed and conducted based on the answers on the TPM, and aimed to further explore complementary data that support the statistical literacy of grade X students in solving open-ended mathematics problems. The interviews were conducted by conditioning the atmosphere of a calm and relaxed interview process to further explore the achievement of statistical literacy indicators: understanding statistical data, presenting statistical data, presenting the result of statistical data processing. In this study, the criteria of students who fulfill the statistical literacy indicators based on the worksheet was used. Table 4 states the descriptive data of statistical literacy of grade X students.

Table 4. Statistical Literacy of High School Students of X Grade

Indicator	TPM-1	TPM-2	TPM-3
Understanding the statistical data	80,093%	75,463%	62,037%
Presenting the statistical data	48,457%	54,938%	49,383%
Presenting the result of data processing	21,297%	27,777%	30,093%

Description:
f_i : The number of students fulfilling the Statistical Literacy indicator.

In this study, the method triangulation mode was also used to ensure the validity of the statistical literacy data, namely by asking the three selected research subjects to be interviewed after 7 days of TPM work. From the interview results, each research subject remained consistent and did not move from the initial ability group, which remained in the high group and medium group. The two selected research subjects are presented in Table 5 as follows:

Table 5. Data of Research Subjects for Interview

No	Label	Initial	NR	TKM	TPM	Category	Problem 1	Problem 2	Problem 3
1	ST	HS	92	97	100	High	UDCL	UDCL	UDCL
2	SS	EAS	69	73	72	Medium	UDC	UDC	UDC
3	SR	RNA	42	38	50	Low	-	-	-

Remarks:

U : Indi**c**ator **of** *Understanding statistical data* pada *Understanding the Problems*
D : Indicator of *Presenting statistical data* pada *Devising a Plan*
C : Indicator of P*resenting the results of statistical data processing* pada *Carrying out the plan*
L : Indicator of *Looking Back*

RESULTS AND DISCUSSION

This section discusses the research findings on high school students' statistical literacy in solving AKM model problems on data content and uncertainty at each stage of problem solving according to Polya which includes understanding the problem, planning problem solving, implementing problem solving plans, and checking back. Students' statistical literacy is described based on understanding the statistical data, presenting the statistical data and presenting the result of data processing.

Based on the research results, at TPM-1, 14% of students cannot understand what is known and what is asked at TPM-1, so 86% of students who can know related to the data presented and the data asked (U), 74% of students plan to solve the known data and the data asked (D), and 57% of students who can communicate related to how to solve the data asked and the data presented (D). In the planning stage of problem solving, 62% of students who answer questions and whether a statement is true or false by linking the known and questioned data, where 5% of students among them only answer (check a statement is true or false) without calculating in problem solving planning (C), so that only 29.63% of students can provide arguments related to a question and statement in every work that students do (C). In the final stage, looking back at problem solving, 25% of students can connect the data presented, the data asked and the data that students have done (L), and only 12.96% can evaluate the truth of a statement and questions related to the data presented, the data asked and the data that students have done (L).

In TPM-2, 15% of students cannot understand what is known and what is asked in TPM-2, so 85% of students who can know related to the data presented and the data asked (U), 65.74% of students plan to solve the known data and the data asked (D), and 66.57% of students who can communicate related to how to solve the data asked and the data presented (D). In the planning stage of problem solving, 71.30% of students who answer questions and whether a statement is true or false by linking known and questioned data, where 4.73% of students among them only answer (check a statement is true or false) without calculating in problem solving planning (C) so that only 41.67% of students can provide arguments related to a question and statement in each work that students do (C). In the final stage, looking back at problem solving, 26.85% of students can connect the data presented, the data asked and the data that students have worked on (L), and only 13.87% can evaluate the truth of a statement and questions related to the

data that students do (C). In the final stage, looking back at problem solving, 26.85% of students can connect the data presented, the data asked and the data that students have done (L), and only 13.87% can evaluate the truth of a statement and questions related to the data presented, the data asked and the data that students have done (L).

In TPM-3, 33.33% of students cannot understand what is known and what is asked in TPM-3, so 66.67% of students who can know related to the data presented and the data asked (U), 57.4% of students plan to solve the known data and the data asked (D), and 58.33% of students who can communicate related to how to solve the data asked and the data presented (D). In the planning stage of problem solving, 57.41% of students answered questions and the correctness or incorrectness of statements by linking known and questioned data (C), but only 42.60% of students could provide arguments related to questions and statements in each work that students did (C). In the final stage, looking back at problem solving, 32.4% of students can connect the data presented, the data asked and the data that students have done (L), and only 17.593% can evaluate the truth of a statement and questions related to the data presented, the data asked and the data that students have done (L).

From the description above, the recapitulation of student statistical literacy test results based on indicators is presented in the following table:

1. Statistical Literacy of High Mathematics Ability High School Students in Solving AKM Model Problems on Data Content and Uncertainty

   Based on the results of the study, it shows that the statistical literacy of high mathematics ability students in solving AKM model problems on data content and uncertainty is very good. The following is a discussion of the statistical literacy of high mathematics ability students.

   At the stage of understanding the statistical data, high mathematics ability students on AKM questions on data content and uncertainty mention the characteristics of each data presented, the data asked. As in TPM-1, high ability students can explain that the data presented is data on the scores of Indonesian, Mathematics and English subjects from 15 students. High ability students also understand the statistical concepts used to answer each question on TPM-1 are the average score, the frequency that appears most often and the diagram that is suitable for the table presented. At TPM-2, high ability students can explain that the data presented is the age data of star players at the Barcelona, Real Madrid, and Atletico Madrid clubs, each club is presented with the age of 6 players. High ability students also understand the statistical concepts used to answer each question on TPM-2 are the average age of players for each club, average deviation, range, and comparison between one data with other data. At TPM-3, high ability students can explain that the data presented is a graph of ANTAM's gold price in May 2019, a graph of ANTAM's gold price in May 2019, a graph of ANTAM's gold price in May 2019, and a graph of ANTAM's gold price in May 2019, the graph of the comparison of the performance of JCI, Gold, and Inflation in 1985-2010. High ability

students also understand the statistical concepts used to answer each question on TPM-3 is the reading of known data on the graph, linking concepts, frequency related to the graph presented.

At the presenting statistical data stage, high mathematics ability students on AKM questions on data content and uncertainty, can communicate related to statistical concepts that are suitable for solving the data asked and the data presented. As in TPM-1, high ability students were able to explain the statistical concepts used to answer each question in TPM-1 were the average value, the most frequently occurring frequency and the diagram suitable for the table presented. At TPM-2, high ability students can explain the statistical concepts used to answer each question at TPM-2 are the average age of players per club, average deviation, range, and comparison between one data with other data. At TPM-3, high ability students can explain the statistical concepts used to answer each question at TPM-3 are the reading of known data on the graph, linking concepts, frequency related to the graph presented.

At the presenting the result of statistical data processing stage, high mathematics ability students on AKM questions on data content and uncertainty, can determine answers and can provide arguments from each statement and question on each TPM. As in TPM-1, high ability students are able to determine answers and provide arguments in accordance with statistical concepts in each statement on the question items. High ability students were able to relate the statistical concept of data centering measure material to the statements on each item. In TPM-2, high ability students can determine answers and provide arguments related to the statistical concepts of data concentration measures and data distribution measures in each item statement. In TPM-3, high ability students can determine the answer and provide arguments related to the known graph with the material of the size of the data concentration and the size of the data distribution in each item statement.

At the looking back stage, high mathematics ability students can connect the statistical concepts presented, asked in each TPM and evaluate the truth of a statement and questions related to the data presented, the data asked and the data that students have done. It can be seen that in TPM-1, TPM-2, and TPM-3, high ability students always answer each statement and question correctly and correct each answer that has been done.

2. Statistical Literacy of Medium Mathematics Ability High School Students in Solving AKM Model Problems on Data Content and Uncertainty

Based on the results of the study, it shows that the statistical literacy of students with moderate mathematics ability in solving AKM model problems on data content and uncertainty is quite good. The following is a discussion of the statistical literacy of students with moderate mathematics ability.

At the stage of understanding the statistical data, students with moderate mathematics ability on AKM questions on data content and

uncertainty mention some characteristics of each data presented, the data asked. As in TPM-1, moderate ability students understand the data presented and the data asked, but moderate ability students cannot explain the characteristics of the data presented are data on the grades of Indonesian, Mathematics and English subjects from 15 students. At TPM-2, moderate ability students were unable to explain in detail the characteristics of the data which included data on the ages of star players in the Barcelona, Real Madrid and Atletico Madrid clubs, each club presented the ages of 6 players. In TPM-3, medium ability students can explain what is known, but medium ability students cannot explain in detail the characteristics of the data presented which includes a graph of ANTAM gold price in May 2019, a graph of the comparison of JCI, Gold, and Inflation performance in 1985-2010.

At the presenting statistical data stage, moderate mathematics ability students on AKM questions on data content and uncertainty, are less able to communicate related to statistical concepts that are suitable for solving the data asked and the data presented. As in TPM-1, moderate ability students were less able to explain the statistical concepts used to answer each question in TPM-1, in the form of data covering the average value, the most frequently occurring frequency and the diagram suitable for the table presented. At TPM-2, moderate ability students were less able to explain the statistical concepts used to answer each question at TPM-2, in the form of data covering the average age of players per club, average deviation, range, and comparison between one data and another data. At TPM-3, moderate ability students are less able to explain the statistical concepts used to answer each question at TPM-3, in the form of data covering the reading of known data on the graph, linking concepts, frequency related to the graph presented.

At the presenting the result of statistical data processing stage, students with moderate mathematics ability on AKM questions on data content and uncertainty, could not determine the answers and could provide arguments from several statements and several questions on each TPM. As in TPM-1, moderate ability students were able to determine the answers to several statements of each item. Moderate ability students were able to answer the questions but could not provide arguments on what statistical concepts were suitable for some of the statements. Moderate ability students also feel confused in the words listed, will use what statistical concepts are suitable in determining the truth of each statement. In TPM-2, medium ability students were able to determine the answers to several statements of each item. Moderate ability students were able to answer the questions but could not provide arguments on what statistical concepts were suitable for some statements. Moderate ability students also feel confused in the words listed, will use what statistical concepts are suitable in determining the truth of each statement. In TPM-3, moderate

ability students were able to determine the answers to several statements of each item. Moderate ability students were able to answer the questions but could not provide arguments on what statistical concepts were suitable for some statements. Moderate ability students also feel confused about the words listed, will use what statistical concepts are suitable in determining the truth of each statement.

At the looking back stage, moderate math ability students can connect the statistical concepts presented, asked only in some TPM statements and cannot evaluate the truth of a statement and questions related to the data presented, the data asked and the data that students have done. It can be seen that in TPM-1, TPM-2, and TPM-3, moderate ability students answered several statements and questions correctly and corrected each answer that had been done, some statements were not answered correctly due to ignorance related to each item concerning statistical material.

3. Statistical Literacy of Low Mathematics Ability High School Students in Solving AKM Model Problems on Data Content and Uncertainty

Based on the results of the study, it shows that the statistical literacy of low mathematics ability students in solving AKM model problems on data content and uncertainty is not good. The following is a discussion of the statistical literacy of low mathematics ability students.

At the stage of understanding the statistical data, low mathematics ability students on AKM questions on data content and uncertainty do not understand the purpose of each Problem Solving Test, so low mathematics ability students do not mention some characteristics of each data presented, the data asked. As in TPM-1, low ability students did not understand the data presented or the data asked and medium ability students could not explain the characteristics of the data presented were data on the scores of Indonesian, Mathematics and English subjects from 15 students. At TPM-2, low ability students could not explain in detail the characteristics of the data which included data on the ages of star players in the Barcelona, Real Madrid and Atletico Madrid clubs, each club presented the ages of 6 players. In TPM-3, low ability students could not explain what was known, and medium ability students could not explain in detail the characteristics of the data presented which included a graph of ANTAM gold price in May 2019, a graph of the comparison of JCI, Gold, and Inflation performance in 1985-2010.

At the presenting statistical data stage, low mathematics ability students on AKM questions on data content and uncertainty, could not communicate related to statistical concepts that are suitable for solving the data asked and the data presented. As in TPM-1, low ability students were unable to explain the statistical concepts used to answer each question in TPM-1, in the form of data covering the average value, the most frequently occurring frequency and the diagram suitable for the table

presented. At TPM-2, low ability students were unable to explain the statistical concepts used to answer each question at TPM-2, in the form of data covering the average age of players per club, average deviation, range, and comparison between one data and another data. At TPM-3, low ability students were unable to explain the statistical concepts used to answer each question at TPM-3, in the form of data covering the reading of known data on the graph, linking concepts, frequency related to the graph presented. In each TPM, low math ability students answered by instinct as written on the worksheet.

At the presenting the result of statistical data processing stage, low math ability students on AKM questions on data content and uncertainty, can determine answers but do not provide arguments for each question on each TPM. As in TPM-1, low ability students checked several statements for each item. Low ability students were able to answer the questions but could not provide arguments on what statistical concepts were suitable for some of the statements. Low ability students were confused about the words listed, will use what statistical concepts are suitable in determining the truth of each statement. On TPM-2, low ability students checked several statements on each item. Low ability students were able to answer the questions but could not provide arguments on what statistical concepts were suitable for some statements. Low ability students are confused about the words listed, will use what statistical concepts are suitable in determining the truth of each statement. On TPM-3, low ability students checked several statements on each item. Low ability students were able to answer the questions but could not provide arguments on what statistical concepts were suitable for some statements. Low ability students were confused on the words listed, will use what statistical concepts are suitable in determining the truth of each statement. In each TPM, low math ability students answered instinctively as written on their worksheets.

At the looking back stage, low math ability students cannot connect the statistical concepts presented, asked in each TPM statement and cannot evaluate the truth of a statement and questions related to the data presented, the data asked and the data that students have done. It can be seen that in TPM-1, TPM-2, and TPM-3, low ability students answered each statement but did not answer correctly due to ignorance related to each item concerning statistical material and could not provide arguments related to statistical concepts in each statement. In each TPM, low math ability students answered instinctively as written on their worksheets.

CONCLUSION

Based on the results of the statistical literacy analysis of the research data described, the following are obtained.

1. Statistical Literacy of High Mathematics Ability High School Students in Solving AKM Model Problems on Data Content and Uncertainty

   Student with high mathematics ability on AKM questions on data content and uncertainty through understanding the statistical data by

mentioning the characteristics of each data presented, the data asked, presenting statistical data by communicating related statistical concepts that are suitable for solving the data asked and the data presented. presenting the result of statistical data processing, by determining the answer and being able to provide arguments from each statement and question on each TPM and at the end of the work, high mathematics ability students re-examine by connecting the statistical concepts presented, asked on each TPM and evaluating the truth of a statement and question related to the data presented, the data asked and the data that students have worked on.

2. Statistical Literacy of Moderate Mathematics Ability High School Students in Solving AKM Model Problems on Data Content and Uncertainty

   Students with moderate mathematics ability on AKM questions on data content and uncertainty through understanding the statistical data by mentioning some characteristics of each data presented, the data asked, not presenting statistical data because they are less able to communicate related to statistical concepts that are suitable for solving the data asked and the data presented. Students with moderate mathematics ability on AKM questions on data content and uncertainty, did not present the results of statistical data processing, because they could not determine the answers and could provide arguments only on some statements and some questions on each TPM. At the end of the work, students with moderate mathematics ability did not re-examine what had been done because students with moderate mathematics ability could connect the statistical concepts presented, asked only in several TPM statements and could not evaluate the truth of a statement and questions related to the data presented, the data asked and the data that students had worked on.

3. Statistical Literacy of Low Mathematics Ability High School Students in Solving AKM Model Problems on Data Content and Uncertainty

   Students with low mathematical ability on AKM questions on data content and uncertainty do not understand the purpose of each Problem Solving test, so low math ability students do not mention some characteristics of each data presented, the data asked. So it does not fulfill the indicator of understanding the statistical data.

   Students with low mathematical ability on AKM questions on data content and uncertainty, cannot present statistical data because they cannot communicate related to statistical concepts that are suitable for solving the data asked and the data presented.

   Students with low mathematical ability on AKM questions on data content and uncertainty, cannot present the results of statistical data processing, because students can determine answers but do not provide arguments for each question on each TPM. Low math ability students answered instinctively as written on their worksheets.

   At the end of the work, students with low mathematical ability did

not re-examine what they had done because they could not connect the statistical concepts presented, asked in each TPM statement and could not evaluate the truth of a statement and questions related to the data presented, the data asked and the data that students had done. In each TPM, low math ability students answered instinctively as written on their worksheets.

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