CLAIMANT'S MATHEMATICAL READING AND COMPREHENSION: A MINIMUM QUESTION

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Abstract : According to PISA, TIMSS, and the Indonesian Student Competency Assessment, Indonesian education standards are poor. The Indonesian government has a new education quality plan. National Assessments replaced the National Examination as a way to evaluate educational accomplishments at the end of each school stage using standardized national criteria. The Character Survey and Minimum Competency Assessment comprise the National Assessment. These elements will become the national education standard. The Minimum Competency Assessment evaluates students' numeracy literacy and critical thinking skills when reading. A solid numeracy foundation is needed to pass the Minimum Competency Assessment and build 21st-century skills. Additionally, numerical literacy is essential to daily life. This study examines what affects students' numeracy literacy skills when they take Minimum Competency Assessment arithmetic tests. This study focuses on students' numeracy literacy skills in solving these issues. Data was collected via questionnaire, and students took a Minimum Competency Assessment-based mathematics test. The current study examined students' numeracy literacy. The inquiry produced Minimum Competency Assessment-compliant mathematical results. The study also examined the many factors that affect pupils' numeracy literacy.

1.   INTRODUCTION

Education's quality is defined by a set of standards. Quality education is needed to transform national and global educational standards. The Indonesian government must create guidelines for evaluating students' learning to improve education nationwide.

Policy gains and costs for society and politics are well established. The proposed changes include revising the National Standard School Examination system, eliminating the National Examination, successfully developing and implementing the Learning Implementation Plan, and implementing new Student Admissions Regulations with zoning. Nadiem Makarim, Indonesia's Minister of Education and Culture, announced major educational reforms in 2019. These policies address four main topics. Four main policies comprise the Free Learning Policy.

One of the Free Learning Policies eliminates the National Examination, which measures educational achievement based on national objectives at each stage. The National Assessment replaced the National Examination, which was discontinued. The National Assessment includes the Minimum Competency Assessment and Character Survey. These components are becoming national educational standards. This strategy will start in 2021.

The MCA maps schools and regions by minimum competencies. Students' critical thinking and logical reasoning skills in reading and numerical literacy are assessed by the Minimum Competency Assessment. Math skills are vital for handling daily challenges. Students learn computations, measurements, spatial thinking, and mathematical concepts through mathematics. People can understand and engage with daily concepts with these skills.

To solve real-world and mathematical problems, you must understand and employ a mathematical notion. Most students lack numeracy and reading skills, making math a difficult subject. The 2016 TIMSS research, which showed Indonesia scored 395 out of 500 in mathematics, and the AKSI results on the National

Assessment and Learning Center page support this claim. Indonesia placed 72 out of 78 countries in the 2018 PISA mathematics research, according to the OECD.

PISA, TIMSS, and AKSI data show that Indonesian education is inadequate domestically and internationally. Indonesia's low education levels reflect numeracy literacy deficiencies. Students need numeracy literacy skills to solve mathematical problems from inquiries and use them in daily life.

The minimum level of competency or ability is required for students. This case covers reading and math literacy. This competence matches 21st-century skills, which need students to adapt to fast-changing and demanding settings. With 21st-century abilities, students can master technology and information media for learning, innovation, and daily living.

Mathematical riddles and numerical literacy are linked. Math knowledge has limited usefulness without problem-solving. The assumption is accurate since arithmetic is learned by solving problems (NCTM, 2000). These problem-solving methods go beyond math. Instead, it means overcoming everyday challenges with critical thinking. Mathematical problems and strong mathematical principles can inspire people to explore mathematical concepts, strengthen their interrelationships through logical thinking, and develop perseverance and ingenuity in solving them.

Indonesia must organize a Minimum Competency exam in 2021 for 21st-century education. This test measures reading and math literacy. We want to help Indonesian kids with weaker numeracy literacy than their peers and teach them 21st-century skills. The Minimum Competency Assessment teaches students basic reading and numeracy abilities, including numbers and writing.

To take the Minimum Competency Assessment, students need not be subject experts. However, it promotes higher-order thinking, critical analysis, and creative ideation. Students learn convergent thinking to find the right answer on the Minimum Competency Assessment. The MCA

may develop numeracy literacy skill maps for pupils in years 5–11 in senior high school, grade 8 junior high, and grade 11 senior high. These skill maps promote classroom learning. Thus, the Minimum Competency Assessment's contextual questions measure students' problem-solving and critical thinking capabilities.

The Minimum Competency Assessment uses TIMSS and PISA criteria. The MCAS questions are designed to improve students' analytical skills by using information. They don't want kids to have to memorize or recall material. The Minimum Competency Assessment questions were developed in five steps: question bank creation, framework analysis, stimulus preparation, assignment writing questions, and thorough evaluation and revision.

Based on the above setting, numeracy literacy is crucial to improving Indonesia's educational standards. This scenario requires numeracy literacy to satisfy 21st-century competences. The Indonesian government aims to introduce the Minimum Competency Assessment in 2021, requiring students to develop certain skills. Indonesian numeracy literacy will be assessed using the Minimum Competency Assessment. Numeracy skills are needed to pass the Minimum Competency Assessment and national and international standardized tests. These skills are needed to answer PISA, TIMSS, and AKSI questions.

This study assessed students' numeracy literacy. This study may also reveal factors affecting students' numerical literacy. To help students improve their reading and math skills through educational testing.

2. METHODS

A research technique is a scientific method for data collection that addresses specific applications or research challenges. The scientific method uses reasoning, empirical, and methodical qualities to perform research in this case. Rigorous research is coherent enough to employ human thinking to interpret the results. Empirical research approaches allow people to visually inspect and interpret study operations. A systematic research

methodology uses logical methods.

Empirical data comes from research studies. Direct observation, distinctive features, or widespread accuracy characterize this information. Validation is the methodical process of verifying research data. Because data is hard to get, thorough testing is used to verify it. Validity of a dataset depends on objectivity and reliability. When data is trustworthy and impartial, it is considered genuine. Truthful and objective facts have limitations. However, trustworthy and impartial data is unquestionably valid.

The current study used qualitative and descriptive research methods. Qualitative research deepens and broadens understanding. Combining many data collection methods is called triangulation in qualitative research. Qualitative research uses observational language and verbal descriptions to understand study participants' experiences.

Object of Research

The challenges or impediments studied are research subjects. SMA Negeri 16 Semarang class XI students' numeracy literacy is examined in this study. The trial ran from June 2–July 2, 2021. Student data from SMA Negeri 16 Semarang classes XI MIPA 2 and 3 was used for this study.

Population and Sample

Researchers select a community of individuals or items with specified traits for study and conclusion. The population is diverse and standardized. Population encompasses humans and other related beings and items. The population encompasses all of a person's or object's features and numbers. The study sampled SMA Negeri 16 Semarang class XI MIPA mathematics teachers and students.

The population includes the sample. Thus, the sample represents the population's size and composition. The researcher picked a sample over the full population due to time and energy restrictions. However, the sample's findings can represent the population. To be representative, a sample must closely resemble the population under study. The study involved SMA Negeri 16 Semarang XI MIPA students and their math professors.

Data Source

Interviews were the main data source. SMA Negeri 16 Semarang coordinators or curriculum members, math teachers from class XI MIPA 3, and many students were interviewed. AKM standard arithmetic problems given to pupils were the second data source. The observation will be done by 36 SMA Negeri 16 Semarang class XI MIPA 3 students.

3. RESEARCH INSTRUMENTS

Interview Guidelines

For this study, the interview guide questions were informally altered to match the problem. Basic interview questions for resource personnel. The interview conditions may change the questions. A grid like the one displayed will be utilized to interview eligible sources.

Table 1. Outline of interview guidelines

No.	Problem Formulation
1	How is the numeracy literacy ability of the students so far?
2	Is there a special movement to stabilize or improve students' numeracy literacy skills?
3	How are teachers and participants prepared to face the Minimum Competency Assessment?

Instrument Test

A Minimum Competency Assessment-based written test was the study's main assessment tool. The written test had 30 questions. Study questionnaire level requirements are based on PISA and TIMSS. Because MCA questions are standardized with PISA and TIMSS, this is true. Examine the evaluation tool questions first, then ask math professors and class XI MIPA 3 supervising lecturers for guidance. The percentage of Minimum Competency Assessment-level queries in this inquiry is displayed.

Table 2. Minimum Competency Assessment Numerical Question Proportion

Content

No.	Content/Domain	Percentage
1.	Number	0
2.	Measurement and Geometry	35 %
3.	Data and Uncertainty	25 %
4.	Algebra	40 %

Context

No.Context	Percentage
1.Personal	44%
2.Socio-Cultural	36 %
3.Scientific	20 %

Question Form

No.Question Form	Percentage
1.Multiple Choice	8 %
2.Complex Multiple Choice	33 %
3.Short Fill	20 %
4.Description	39 %

Questionnaire

Investigations employed two questionnaires. The introductory questionnaire assesses students' numeracy literacy. However, the secondary questionnaire tries to discover variables that affect students' AKM standardized arithmetic performance. The questionnaire will assess the following variables to gather data:

Questionnaire data collection Dear Colleague, Thanks for participating in this survey. Your feedback helps us improve. Student Numerical Literacy Assessment

➢ Numeracy literacy comprehension.
➢ Students' reading and math skills.
➢ Students' evaluation and application of basic math concepts
➢ Analyzing Factors Affecting Numerical Literacy in AKM Response Queries
➢ Many human bodily traits related to happiness.
➢ This study examines student cognitive processes and their ability to evaluate and apply key mathematical concepts psychologically.
➢ Environmental factors affect student learning.

Data Collection Techniques

Interviews, mathematics testing with AKM-related problems, and questionnaires were used to collect data for this study. This initiative will collect data through interviews. Qualitative data is often collected through interviews. Interviews provide more specific information from multiple sources. The informants' expertise or personal beliefs guide data collection. The Class XI MIPA 3 math teacher was interviewed. The interview was performed in the lobby of SMA Negeri 16 Semarang to comply with health requirements.

Qualitative research was done via an unstructured interview. Unstructured interviews follow a logical pattern without preset guidelines. Interview criteria were utilized in unstructured interviews to provide a brief overview of problem conceptualization. Qualitative data is collected through interviews and questionnaires. Data is collected via Google Form questionnaires. XI MIPA 2 and 3 students fill out the Google Form via the Whatsapp class group.

Next is assessment administration data collection. Test technique is the systematic collecting of student data via tests or exam questions. Data from this method can be used to test reading and math skills. First, the group will take a non-study exam. The supervisor and class XI MIPA mathematics instructor will review the test questions. AKM testing and Class XI MIPA 1's math instructor's validation were done.

Validity Test Analysis

The surveys were validated by SMA Negeri 16 Semarang mathematics instructor Dra. AM. Sri Endang Martuti and State University of Semarang mathematics lecturer Mr. Adi Satrio Ardiansyah, S.Pd., M.Pd. The questionnaire's validation showed that 75% of items measuring students' numeracy literacy may be used with minor alterations. Factor questionnaire items improved students' numeracy literacy skills by 77% while solving AKM standardized arithmetic problems. However, the second questionnaire validation suggests that modest tweaks can make the questionnaire effective.

This study evaluated the AKM standardized mathematics problem's validity, reliability, difficulty, and discriminating power. The examination involved 33 students from class XI MIPA 1. Participants must complete a Google Form with the AKM-standard maths question to take the assessment online. Form access is handled using the class WhatsApp group. After data processing, these results are obtained:

SPSS validity test findings showed 5 of 35 exam questions were invalid. Element 2, 4, 9, 15, and 30 are invalid. This study used thirty AKM-standard mathematics items, and the item validity test found five invalid.

The SPSS reliability test's Cronbach's Alpha coefficients are 0.705 for multiple choice, 0.751

for short answer, 0.696 for complicated multiple choice, and 0.725 for essay questions. A question's Cronbach's Alpha score above 0.60 implies excellent reliability or consistency.

Excel is used to assess AKM standard arithmetic question complexity. Twenty-three objects were moderately challenging, whereas ten were easy. Due to data processing, two tasks were deemed tough.

This study examined the discriminative power of AKM-standard maths problems using SPSS. The investigation found 30 excellent questions. One item was approved and corrected, while two were corrected but rejected. Two goods were also rejected.

4. RESULTS & DISCUSSIONS

The study was done in Semarang's SMA Negeri 16. The school is in Semarang's Mijen District, Central Java. The study took place June 2–July 2, 2021. Interviews with SMA Negeri 16 Semarang mathematics instructors were the main data collection method. The interview describes students' reading and math skills. Interviews took place in SMA Negeri 16 Semarang's lobby. The 25-minute, 35-second interview took place on Thursday, June 3, 2021.

On Tuesday, June 15, 2021, eleventh-grade Science and Mathematics Program (XI MIPA 1) students at SMA Negeri 16 Semarang took an exam after the interview. The instructor offers several numeracy test group recommendations for class XI MIPA 1 based on the Minimum Competency Assessment standard. Of the 36 Class XI MIPA 1 students, 33 (91.7%) attended the exam. The data was handled before validity and reliability testing. The investigation was conducted from Monday to Wednesday, June 21 to June 25, 2021, to ensure data accuracy and dependability.

To solve the problem, researchers collected data during the investigation. Students were given two validated questionnaires to collect data. The first questionnaire assessed students' numeracy literacy skills, while the second identified variables that affect students' responses to Competency Assessment standardized questions. At least.

In addition to surveys, Minimum Competency Assessment-compliant mathematical questions are administered. A State University of Semarang lecturer and public servant teacher meticulously analyzed these questions. Class XI MIPA 1 gave the AKM-standard arithmetic test, while classes 2 and 3 collected study data.Analysis of Survey Data An investigation on students' numerical literacy.

In the study, 54 students from XI MIPA 2 and 3 completed the questionnaire. When grading students' numeracy literacy skills, student awareness and low and high literacy proficiency are considered. Critical analysis and application of key mathematical concepts determine students' academic performance.

A study of 54 XI MIPA 2 and 3 students assessed their numeracy literacy skills. The statistics showed that 72% of students had prior reading knowledge. Furthermore, 74% of participants believed that strengthening students' numeracy literacy skills was crucial. Most respondents (77%), agreed that students should comprehend and apply basic mathematical principles.

Mathematical analysis of minimum competency assessment challenges. Minimum Competency Assessment in Math This study asks reading and math questions. Han et al. (2017:6) list fractions, decimals, percents, and comparisons as the four components of numeracy literacy. These skills also include relational pattern detection, spatial reasoning, and measurement and statistical data interpretation. The four components include numbers, algebra, geometry, measurement, and data and uncertainty if they relate to Minimum Competency Assessment numeracy problems.

The researchers created a Standardized Mathematics Question Minimum Competency Assessment by adapting the definition to the four numeracy literacy competencies. The study included thirty questions, and the following analysis explains the outcomes for each item, concentrating on the components used to assess students' numeracy literacy skills. To evaluate numeracy literacy, the sample question below has been formatted like the Minimum Competency Assessment.

The following question tests students' numerical and arithmetic skills.

Yusi wants to buy apples just at the grocery store. Yusi had to choose between two options. Yusi originally considered buying apples by kilogram or basket. The basket and apple cost the same per kg.

1 kilogram = 4 pieces = IDR 30,000   1 basket = 10 seeds = IDR 72,000

Yusi says buying a basket of apples instead of a kilogram is cheaper. Is Yusi honest? Please clarify.

Question 27 is a descriptive question with an eight-point maximum. The 54 participants scored 384 points. Eight items multiplied by 54 maximum scores yields the maximum score for all items. Thus, all objects score 432. This yields the following calculation:

Multiplying 89% by 100% yields 384 and 432.

Continuum represents collected data.

A sample of 54 pupils showed proficient literacy skills when answering item 27. A red data point indicates a concentration in the upper section of the scale, with 89% of students answering correctly.

Researchers assessed students' relational pattern recognition and use with the following question.

This is the 19th item.

Boyolali people make cheese from cow's milk. In cheese-making, bacteria are crucial. Lactobacillus bulgaricus is needed to make cheese. Microorganisms convert lactose to lactic acid, causing milk aggregation. Assuming one bacterial division per 2.5 units of time.

Each division produces two new germs, etc. We can measure the bacteria after 10 minutes if there were 5.

For a right answer to item 19, a brief question, you can receive two points. 54 students finished the assignment and received 58 points. For each question answered correctly, the cumulative score is 2 multiplied by 54, up to 108. This yields the following calculation:

The sentence 54% of (58 108) 100% can be rewritten academically as: First, calculate 54% of the difference between 58 and 108, then multiply by 100%.

Continuum represents collected data.

According to data from 54 participants, pupils' literacy competency is inadequate in proportion to item 19 performance. Red data points show that 54% of students answered correctly, which is below proficiency.

A study effort on student measurement and spatial cognition yielded the following query.

Definition of the first item:

Owners of the water ride include Mr. Dimas. He wanted to make a floating spherical copy. Materials needed to make a four-meter buoyant sphere are...

A. $2\pi \, m^2$
B. $4\pi \, m^2$
C. $8\pi \, m^2$
D. $16\pi \, m^2$
E. $24\pi \, m^2$

Question one in the multiple-choice style has a maximum score of 1, indicating that the correct response is 1 and the erroneous response is 0. Out of 54 pupils, 31 gave accurate answers and 23 gave erroneous responses. If all answers are correct, the highest score for each question is 54,

calculated by multiplying 54 by 1. Based on the previous computation, (31 - 54) multiplied by 100% equals 57%.

Continuum represents collected data.

The data from 54 respondents shows that pupils' reading proficiency in answering question one is low. Only 57% of students answered the question correctly, as seen by the red data point, which suggests poorer proficiency, according to the research.

The following study question tests students' data analysis and statistical interpretation skills.

This is item twenty-first.

The night market entertains Juwana locals. Unfortunately, the night market is only open one month a year. The night market opens in June, the year's halfway. The night market draws up to 150,000 people. The night market draws how many people on average?

Short-form question 21 carries a two-point maximum score for the correct answer. A 72 score was achieved by 54 students. For each question answered correctly, the cumulative score is 2 multiplied by 54, up to 108. This yields the following calculation:

The equation 68 100% is 72 108.

Continuum represents collected data.

According to data from 54 participants, kids have proficient literacy in problem-solving, particularly issue 21. A red data point, which indicates a concentration of responses on the higher scale, supports this interpretation. Close to 67% of

students solved this challenge.

Research shows that pupils have good numeracy literacy skills, as seen by their 78% Minimum Competency Assessment performance in applying numerical ideas and arithmetic operations. Both students scored 61% for recognizing and applying relationship patterns, suggesting low skill. They struggle with numeracy literacy, especially identifying and using related patterns. Comparing the case to students' measures and partial reasoning yields a 55% score. This shows that pupils' numeracy literacy is inadequate for measurements and partial reasoning. Students demonstrate numeracy literacy by collecting 68% of the components needed to evaluate and analyze statistical data. Thus, 63% of 54 students in XI MIPA 2 and 3 are proficient in numeracy literacy.

Assessing Questionnaire Results: Mathematics Problem Solving Minimum Competency Assessment Standards (AKM) Numerical Literacy Factors.

In class XI MIPA 2 and 3, 54 students completed the survey. Mathematics Problems with Minimum Competency Assessment Standards (AKM) measure students' numeracy literacy in six ways, including the physical dimension. The research examines kids' health, psychology, cognitive processes, mathematical reasoning, environmental factors, and learning.

A questionnaire poll on students' numeracy literacy skills found that 82% of participants felt that healthy kids can answer AKM standard questions. The information was regarding students' physical health. The psychological dimension is the second, and 73% of respondents believe psychology influences AKM standard questions. Cognitive processes can affect numeracy literacy when solving AKM (Arithmetic, Algebra, and Geometry) issues, according to 71% of pupils. This suggests students understand it. A score of 77% suggests that students comprehend and apply basic math concepts.

This suggests students are aware of how these skills may affect their numeracy literacy, especially when answering AKM standard questions. Unlike the health-focused physical side.

Environmental factors can affect students' numeracy literacy analytical ability. This idea is supported by 77% of students. Data shows pupils' learning component performance is 66%. This suggests that students may be confused how much their learning experiences would improve their AKM standard question answers and numeracy and literacy skills. Physical health, psychological well-being, cognitive capacities, students' capacity to analyze and apply key mathematical ideas, and contextual circumstances may affect students' numeracy literacy skills when answering AKM standard questions.

5. CONCLUSION

The teacher interviews and numeracy literacy abilities questionnaire data processing show that children understand these subjects.

According to an examination of student math problems, 63% of 54 students in classes XI MIPA 2 and 3 demonstrated AKM-standard numeracy literacy. The questionnaire can identify elements that may affect students' numeracy literacy when answering AKM standard questions. Health, psychological, cognitive, students' capacity to evaluate and apply basic mathematical concepts, and environmental aspects are analyzed.

Based on the study findings, discussion, and conclusions, the authors suggest the following to improve the Minimum Competency Assessment (AKM)'s efficacy and usability in measuring students' numeracy literacy skills and researching numeracy difficulties. These suggestions expand the assessment's reach and maximize its benefits. Scholars suggest numerous research directions:

This study will examine whether numeracy literacy improves Indonesian schooling.

This research will inform mathematics lesson plans to improve students' numeracy abilities and ability to solve mathematical problems according to the Minimum Competency Assessment (AKM) requirements.

When assessing numeracy literacy, it is best to review scholarly papers and existing research to get comprehensive information and improve analytical results.

AKM numeration questions provide current facts and context to help students apply math in real-life situations. To effectively assess reading and math skills, find multiple HOTS, PISA, and TIMSS sources. More research is needed to identify what influences kids' numeracy literacy skills.

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