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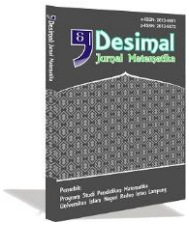

Level of critical thinking ability in solving numeration problems in the minimum competency assessment

Siti Masyitoh Azzahra Lubis*, Dian Permatasari

Universitas Islam Negeri Sunan Kalijaga Yogyakarta, Indonesia

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*Correspondence: E-mail:
zahraarhaz31@gmail.com

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ABSTRACT

Minimum Competency Assessment (MCA) is a form of evaluation of the education system launched by the government in order to measure the achievement of students' cognitive learning outcomes in literacy and numeracy abilities. MCA numeration is related to critical thinking skills. This study aims to describe the level of students' critical thinking skills in solving the MCA numeration questions. This type of research is descriptive-qualitative research. Data collection techniques in the form of written tests and interviews with test instruments are MCA numeration questions with four questions. The data analysis technique was carried out by giving tests, then interviewing the selected subjects to find out more about critical thinking skills, and then describing the results. The results showed that the level of critical thinking ability of class VIII students in solving MCA numeration questions in the number domain met the same criteria, namely the criteria of focus, reason, and situation. Domain algebra found that students have various levels of critical thinking skills with criteria that meet the criteria of focus and reason. In the geometry domain, it was found that students had a low ability to solve geometric problems, and in the uncertainty data domain, students only reached conclusions without giving reasons.

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INTRODUCTION

One aspect that is one of the goals and is very important to be developed in everyday life is in the aspect of critical thinking skills (Maharani, Rasiman, & Rahmawati, 2019; Rizza, 2020). Critical thinking ability is an ability that allows a person to solve a problem logically and reflectively which aims to draw conclusions and decisions on things to be believed (Riskiyah, Jannah, & Aini, 2018). The ability to think critically is one of the most important abilities to have because this ability is a problem-solving ability and is a consideration in making the right decisions (Dores, Wibowo, & Susanti, 2020). Critical thinking ability needs to be trained in order to fulfill the vision of education in mathematics, which has two directions of development, namely the

needs of the present and the future. In today's needs, the learning that is taught leads to concepts used to solve math problems or other fields, while future needs lead to logical, systematic, critical, careful reasoning abilities, and objective and open thinking, which are needed. In everyday life, we face the future (Istianah, 2013). When a child is cultivated in critical thinking, the child will be accustomed to studying, assessing, and researching things that need to be studied and resolved. However, the fact that currently occurs is that the level of students' critical thinking skills is currently relatively low. This can be seen from the quality of the questions given and the answers given by students during the learning process (Nugroho, 2017).

The Minister of Education and Culture gave a new idea called #MerdekaBelajar that consists of four main policy topics, one of which students currently face directly is the National Standardized School Examination (USBN) and the National Examination (UN), which in 2020 was changed to the National Assessment (AN). The National Assessment (AN) itself is an assessment program for the quality of each school, madrasah, and equality program at the primary and secondary levels (Asrijanty, 2020). The National Assessment does not necessarily replace the role of the National Examination (UN) in evaluating individual student achievement or learning outcomes, but the role of the National Assessment (AN) here is as a source of information to map and evaluate the quality of the education system. In the National Assessment (AN) itself, there are three instruments, namely 1. Minimum Competency Assessment (MCA); 2. Character Survey; and 3. Learning Environment Survey.

Minimum Competency Assessment (MCA) is a form of evaluation of the education system by the Ministry at the primary and secondary education levels. MCA is an assessment of the basic competencies of all students in developing self-capacity and participating positively in society and government in the development of this new idea, in order to familiarize students with critical thinking related to everyday problems and to avoid students' feelings of tension every time. work on exam questions that only dwell on learning materials (Ayuningtyas & Sukriyah, 2020). The MCA is designed to obtain information that can trigger improvements in the quality of teaching and learning (between teachers and students), which can further improve the quality of student learning outcomes for the implementation of the MCA (Anas, Muchson, Sugiono, & Rr. Forijati, 2021).

The MCA provides a presentation of problems related to the context of literacy and numeracy. In line with this research, which will focus on numeracy, MCA is the ability to think conceptually, procedures based on facts, and the use of mathematical tools as problem-solving related to the context of everyday life (Asrijanty, 2020). The MCA questions are made by referring to the content contained in each context presented. MCA presents three components of questions, namely content, cognitive processes, and context. MCA Numeration also contains content entitled mathematics and is divided into four groups, namely numbers, measurement and geometry, data and uncertainty, and algebra. In the stages of cognitive processes, numeracy explanation consists of understanding and reasoning. The last component has a context in the personal, socio-cultural, and scientific scope (Asrijanty, 2020).

The relationship between critical thinking and problem-solving is critical thinking is one of the skills needed by students to solve problems such as numeracy (Hidayat & Ismail, 2022). Critical thinking skills play a role in solving real-life problems, especially problems related to numeracy (Diana & Saputri,

2021; Lestari & Siswono, 2022). This explanation explains that there is a relationship between critical thinking skills and problem-solving activities carried out by students in solving numeracy MCA questions. There are four levels of critical thinking skills. The levels according to Ennis (2011) with the following criteria for the level of critical thinking ability (LCT) are: LCT 0, that is, there is no answer that matches the critical thinking indicator according to Ennis; LCT 1, namely students' answers according to one to three critical thinking indicators according to Ennis; LCT 2, namely students' answers according to four or five critical thinking indicators according to Ennis (2011); and LCT 3, students' answers according to six indicators according to critical thinking according to Ennis (2011).

Several studies such as Cahyanovianty & Wahidin (2021); Nufus & Kusaeri (2020); Purwanto (2021); and Rizza (2020) have conducted research on MCA and critical thinking. Nufus & Kusaeri (2020) and Rizza (2020) discusses critical thinking skills with geometry material. On the other hand, (Cahyanovianty & Wahidin, 2021; Purwanto, 2021) discuss MCA, but they don't connect it with critical thinking skills. However, there are few researches that discuss the level of students' critical thinking skills in solving numeracy MCA. Thus, this research aims to determine the level of critical thinking skills in solving the numeracy MCA questions in students.

METHOD

This research was conducted on April 11-25, 2021, with a total of 20 students. This research is to determine the level and study of students' critical thinking skills in solving MCA numerical questions. The data collection technique was carried out using the MCA numeration test instrument and interview guidelines that had been validated beforehand by the validator. The research data analysis procedures are listed in Figure 1.

The data analysis technique was carried out based on the Miles and Huberman model data analysis techniques, with the steps taken being data condensation, data presentation, and drawing conclusions. The test results data obtained were then determined by the level of critical thinking ability, and then semi-structured interviews were conducted on selected subjects until source triangulation was carried out to obtain the final results.

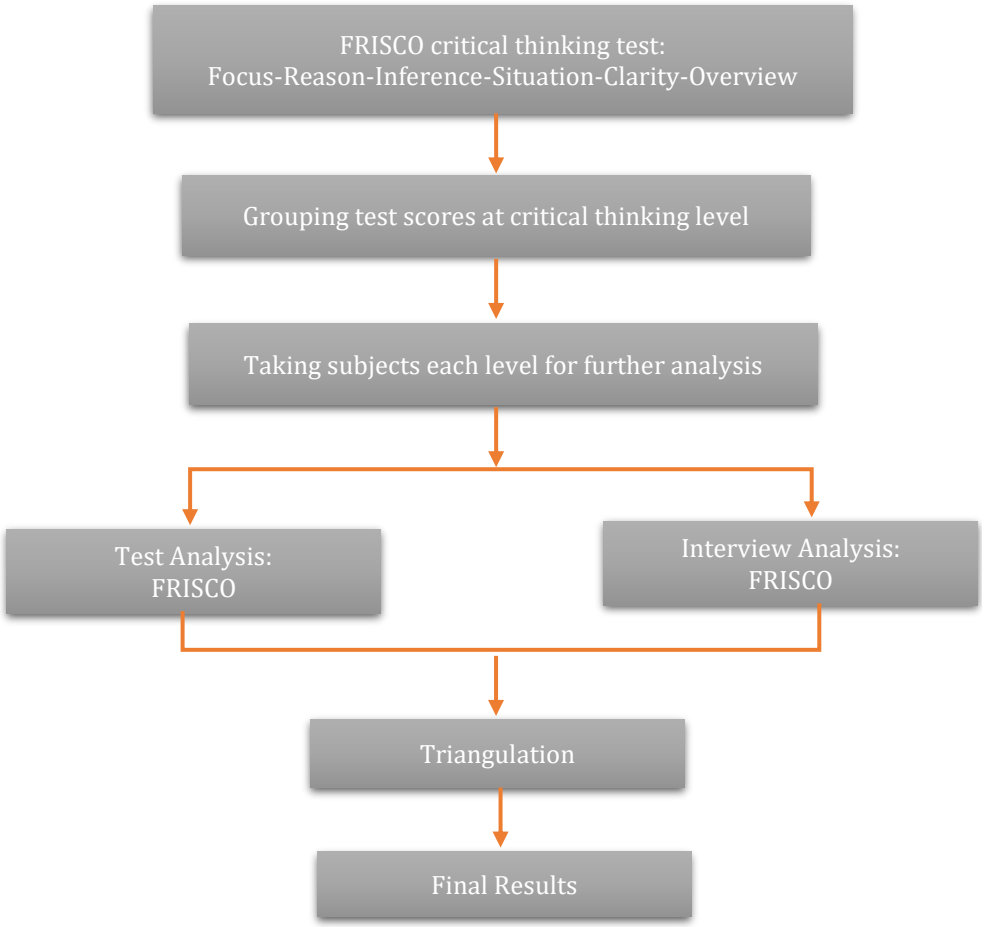

Figure 1. Research Procedure

RESULTS AND DISCUSSION

From the results of the analysis of students' critical thinking skills in solving the MCA numerical questions, the results of the LCT can provide a description regarding the level of students' critical thinking skills (LCT) in solving the MCA numerical questions. The results of student tests on solving the MCA numerical questions on critical thinking skills are presented in Table 1.

Table 1. Test Results on Students' Critical Thinking (LCT) Level

LCT / Domain	LCT 0	LCT 1	LCT 2	LCT 3
Number	4	7	8	1
Algebra	6	8	5	1
Geometry	0	15	5	0
Data and Uncertainty	15	0	5	0

Table 1 shows that in the algebraic domain, most students are in LCT 2, whereas in the algebra domain, most are in LCT 1, in the geometry domain, most are in LCT 1, and in the data and uncertainty domain, most are in LCT 0. Students have LCT 0 in the domain of data and uncertainty, namely as many as 15 students. While the majority of students had LCT 1 in the geometry domain, there are 15. On the other hand, the number of students who had LCT 2 in the domains of algebra and geometry and the same data and certainty was 5 students, and the most in the number domain were 8 students. Students who have LCT 3 have 1 student each in the domain of numbers and algebra.

MCA consists of four domains, namely: (1) numbers, (2) algebra, (3) geometry, and (4) data and uncertainty.

Table 2. Number Domain Test Results

Criteria / LCT	F	R	I	S	C	O	Total
LCT 0	-	-	-	-	-	-	4
LCT 1	7	7	4	3	-	-	7
LCT 2	8	8	7	8	7	-	8
LCT 3	1	1	1	1	1	1	1

In the test results above, it was found that the level of critical thinking ability in the number domain was mostly obtained by students with Critical Thinking Level (LCT) in LCT 1 and LCT 2. The ability with Critical Thinking Level (LCT) was at least obtained by students with LCT 3, while others had LCT 0. LCTs that meet the criteria according to Ennis (2011) are LCT 1, 2, and 3, with all three fulfilling factors of focus, reason, and situation. This shows that in solving the number domain MCA Numeration questions, there are still students who do not meet the inference, clarity, and overview criteria. The reason for this is, in accordance with the research of Ekawati, Nuriyatin, & Ayuningtyas (2021) that critical thinking is required to think in a way that does not lead directly to conclusions without really thinking about them. This shows that critical thinking requires criteria that meet the focus, reason, and situation stages (Nufus & Kusaeri, 2020). It was also stated by Ekawati et al. (2021) and Nuragni (2018) that there are still many students who have difficulty carrying out the evaluation stage (overview) and a more detailed explanation (clarity).

Students with an LCT of 0 were categorized at the non-critical level (Pramuditya, Supandi, & Nugroho, 2019). This is due to the difficulty of students in identifying the questions due to the large number of readings in the MCA Numeration questions, and students cannot determine the formula for solving the problems. Several studies such as Cahyanovianty & Wahidin (2021) and Pratiwi & Setyaningtyas (2020) stated that the mistakes made by students in working on a number of material problems were that students did not have the expertise and understanding to convert the information in the questions into mathematical sentences and did not know more about the number material, so they were unable to determine the problem-solving formula.

Table 3. Domain Algebra Test Results

Criteria / LCT	F	R	I	S	C	O	Total
LCT 0	-	-	-	-	-	-	6
LCT 1	8	8	4	4	-	-	8
LCT 2	5	5	5	5	5	-	5
LCT 3	1	1	1	1	1	1	1

The table of algebra domain test results above shows that most students meet the Critical Thinking Level (LCT) in LCT 1, as many as 8 students, and in LCT 3, as many as 1 student. Students with LCT 1, 2, and 3 have criteria that all three meet the criteria of focus and reason. This is because in certain LCTs there are students who meet various criteria, for example, in LCT 1, research subjects have different critical thinking criteria, namely inference and situation criteria. This is in line with the research of Purwati, Hobri, & Fatahillah (2016), who found that in the algebraic domain, the level of critical thinking ability of each subject has various achievements. This shows that most of the students meet the level of critical thinking skills in the medium-to-low category (LCT 2, LCT 1, and LCT 0), and only a small proportion is included in the high-level category (LCT 3) (Hasanah, 2017; Na'imah, 2018).

Table 4. Geometry Domain Test Results

Criteria / LCT	F	R	I	S	C	O	Total
LCT 0	-	-	-	-	-	-	0
LCT 1	15	1	-	-	-	-	15
LCT 2	5	5	5	4	4	-	5
LCT 3	-	-	-	-	-	-	0

The test results in the table above show that in the geometry domain, all students meet LCT 1, and other students meet LCT 2. Students who meet LCT 1 only meet the criteria at the focus stage. This is

because most students experience errors in understanding the solution to the problems given. This is in line with research conducted by D. R. Sari, Lukman, & Muharram, (2021) that shows students have difficulty solving MCA geometry questions because they do not understand the content and cannot answer questions optimally. This affects their ability to solve MCA questions. The geometry numeration is still low.

The low ability to solve geometric problems is influenced by the difficulty of students understanding problem-solving (Fauzi & Arisetyawan, 2020). This is in line with the MCA questions. Numerical domain geometry, which requires students to be proficient in mathematical literacy skills when solving problems, is in accordance with what was conveyed by Astuti (2018), that students really need mathematical literacy skills in solving mathematics. The process of solving mathematics involves not just representing mathematical models but also formulating, interpreting, and evaluating them in various contexts, and these contexts depend closely on students' problem-solving skills (R. H. N. Sari, 2015). Teachers need to make more efforts in providing practice questions so that students can master them and have varying levels of questions so that their critical thinking skills are more honed (Rahmatillah & Oktavianingtyas, 2017).

Table 5. Data Domain Test Results and Uncertainty

Criteria / LCT	F	R	I	S	C	O	Total
LCT 0	-	-	-	-	-	-	15
LCT 1	-	-	-	-	-	-	0
LCT 2	5	5	5	5	3	-	5
LCT 3	-	-	-	-	-	-	0

In the table of data and uncertainty domain test results above, it is found that most students fulfill LCT 0, which is caused because students do not understand the meaning of the questions given properly. Subjects cannot remember the concept of solving the problems given because students only fulfill the process of making conclusions without giving reasons and just guessing. This is because students experience errors caused by their weakness in their ability to identify, utilize, and convert concepts into the correct mathematical form Khairunnisa & Setyaningsih (2017). Students who have low reasoning abilities often make mistakes in understanding questions and choosing the right concepts to solve problems in data and uncertainty domain questions. From here, complex mathematical literacy skills are needed, not only in the understanding process but also in the reasoning process (Nurmaya, Muzdalipah, & Heryani, 2022).

CONCLUSIONS AND SUGGESTIONS

Based on the results of the data analysis and discussion that have been presented in this study, it can be concluded that the level of students' critical thinking skills, according to Ennis (2011), in solving MCA numeracy questions in each domain, which consists of the domains of numbers, algebra, geometry, as well as data and uncertainty. In the number domain, it was found that students with LCT 1, 2, and 3 met the same criteria, namely the focus, reason, and situation criteria. This shows that there are still students who have not fulfilled inference, clarity, and situation. In addition, at LCT 0, it was found that the subject had not been able to write down information and apply formulas to the questions given. This is because students have difficulty understanding the question text as a result of the long MCA numerical questions, and students are not used to working on MCA numerical questions. In the algebraic domain, it is found that students have various levels of critical thinking skills. The criteria that meet LCT 1, 2, and 3 are focus and reason. This shows that students' ability to solve

algebraic problems has a variety of solutions and an even distribution of critical thinking skills, although there are still students who still meet LCT 0. In the geometry domain, it was found that most students fulfilled LCT 1 and others fulfilled LCT 2. This was because most students experienced errors in understanding the solutions to the problems given. This low understanding is caused by the students' lack of skills in mathematical literacy. Continuous practice questions are needed so that students' understanding can be honed. In the data and uncertainty domain, most of the students met LCT 0, and the others met LCT 2. This made students weak in their ability to identify and reason about questions. More mathematical literacy skills and exercises are needed so that understanding of questions can be more honed and complete.

Based on the results of this study that have been described previously, the suggestions are that the researcher can develop research skills at the level of critical thinking skills in solving questions in one of the domains or MCA numeracy levels. Other researchers can use this research as a reference related to the same theme, namely solving the MCA numerical questions.

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