

**INDEPENDENT CURRICULUM ANALYSIS OF IMPROVING THE
MATHEMATICS CRITICAL THINKING ABILITY AT
SMPN 01 PANINGGARAN**

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ABSTRAK

Penelitian ini bertujuan untuk mengeksplorasi pengaruh implementasi Kurikulum Merdeka terhadap peningkatan kemampuan berfikir matematis siswa. Metode kualitatif deskriptif digunakan untuk mendapatkan pemahaman mendalam tentang pengalaman siswa dengan tes dan dampak Kurikulum Merdeka dalam konteks pembelajaran matematika. Teknik analisis data yang digunakan dalam penelitian ini, yaitu reduksi data, penyajian data, dan penarikan kesimpulan dengan subjek penelitian kelas VIII SMPN 1 Paninggaran sejumlah 6 siswa. Hasil penelitian didasarkan pada analisis hasil perolehan kemampuan berpikir kritis siswa, siswa pada kategori atas dinilai jika memenuhi seluruh indikator kemampuan berpikir kritis matematis, dan siswa pada kategori sedang dinilai dalam matematika. menjawab dua indikator berpikir kritis. Siswa pada kategori kemampuan berpikir kritis rendah memenuhi salah satu indikator kemampuan berpikir kritis matematis.

Kata kunci: Kurikulum Merdeka, kemampuan berfikir matematis.

ABSTRACT

This research aims to explore the effect of implementing the Merdeka Curriculum on improving students' mathematical thinking abilities. Descriptive qualitative methods were used to gain an in-depth understanding of students' experiences with tests and the impact of the Merdeka Curriculum in the context of mathematics learning. The data analysis techniques used in this research were data reduction, data presentation, and drawing conclusions with research subjects in class VIII of SMPN 1 Paninggaran, a total of 6 students. The research results are based on an analysis of the results of students' acquisition of critical thinking skills, students in the upper category are assessed if they fulfill all indicators of mathematical critical thinking abilities, and students in the medium category are assessed in mathematics. answer two indicators of critical thinking. Students in the low critical

thinking ability category fulfill one of the indicators of mathematical critical thinking ability.

Keywords: *Merdeka Curriculum, mathematical thinking abilities.*

INTRODUCTION

One of the efforts to improve the quality of life of the community is the educational process. Education is a very important thing for humans. In this regard, it means that everyone has the right to access educational services. Education plays an important role in improving human resources. The first education of a child is obtained in the family. Just as children learn to walk, talk, and others. Education in schools and education in the community followed. School education prepares for a good life later in the community.

Education in essence cannot be separated from the curriculum. Because basically the curriculum is a set of plans, objectives and learning materials. Including teaching methods to guide each teacher to achieve learning goals and objectives. The curriculum is an integral part of the learning process. A curriculum is a set of plans that facilitate teaching and learning.

Educational institutions and educators are responsible for the plans made. Meanwhile, Article 19 of the Education System Law No. 20 of 2003 states that the curriculum is a set of arrangements and plans that concern objectives, content and learning materials, as well as how to direct learning activities. To achieve educational goals, curriculum is very important for every school as a guideline for teachers. Especially for formal schools, where the curriculum acts as a teaching guide. According to the understanding of the curriculum, which is something planned, all student activities in the world of education can be arranged in such a way that educational goals can be achieved.

The Indonesian curriculum has changed many times. Often changes or changes in the curriculum have a negative impact on students so that many students experience a decrease in enthusiasm for learning, even this condition has a direct impact on the school, namely in relation to the vision, mission and goals of the

school. Currently, education in Indonesia uses the independent curriculum which is used starting in 2021, it is hoped that the curriculum can restore learning after the Covid-

19 pandemic. The two-year pandemic has led to a sharp decline in education in Indonesia, leaving children displaced and lacking opportunities to support distance learning. Approximately two years of online learning has a significant impact on the character of students who experience changes and setbacks, student independence, respect and ability to socialize with friends decreases due to lack of communication between students and teachers, and the school environment. Based on the above background, this study was conducted with the aim of obtaining a true picture of the impact of the independent curriculum on the development of students' mathematical critical thinking at the Junior High School level.

The method used in this study is descriptive of qualitative quality. Descriptive qualitative research seeks to describe the problem under study in detail by describing the situation under study based on data collected during the research conducted so that the research results are in accordance with real conditions (Pramawanda et al. , 2023). Qualitative research is research conducted in natural circumstances, where researchers do not carry out any treatment that can affect the subject under study. In this type of research, the data obtained are words or images, which are then analyzed and described. The process of data collection and analysis in qualitative research is divided into three stages: description, classification, and processing. Qualitative research data includes detailed descriptions of situations and events, evidence provided by experienced researchers in the region, and documentation provided for observation (Septiani et al., 2022).

This research was conducted at SMPN 1 Paninggaran. The subjects of this study were students of kelas VII I SMPN 1 Paninggaran with a total of 6 people. Data collection techniques using test instruments in the form of one HOTS (*High Order Thinking Skills*) question of straight- line equation material. The data analysis techniques used in this study are data reduction, data presentation, and conclusions. The answers of the 6 students were analyzed based on indicators of

mathematical critical thinking skills. The results of the data obtained are calculated so as to get a final score and are further classified into 3 categories of mathematical critical thinking skills according to student scores.

The categories of students' critical thinking ability according to Arikunto (2013) are in the following table:

Table 1. Categories Mathematical Critical Thinking Ability

Category	Range of Values
Tall	$X > (x + s)$
Keep	$(x - s) \leq X \leq (x + s)$
Low	$X < (x - s)$

Information:

X = student score

x= average student score

S = standard deviation of studentquestionnaire scores

From the results of the classification,

3 research subjects were thenselected representing the level of ability Mathematical critical thinkingof students, namely 1 student whohas the ability to think critically mathematically

high category, 1 student who has the ability to think criticallymathematically in the medium category, and 1 Students who have low mathematical critical thinking skills. Subject determination The study used purposive sampling based on the results of critical thinking skills tests Mathematics in the form of HOTS problems.

DISCUSSION

Researchers measured the mathematical critical thinking skills of students at SMPN 1 Paninggaran as an impact of the implementation of the independent curriculum using test instruments in the form of HOTS (*High Order Thinking Skills*) questions on straight-line equation materialwhich was done by 6 grade

VIII students of SMPN 1 Paninggaran.

Garis lurus l_1 melalui titik $(-1, 3)$ dan $(11, 12)$. Persamaan Garis l_2 adalah $3y + 4x - 30 = 0$.

a. Tentukan persamaan untuk l_1 dalam bentuk $ax + by + c = 0$, di mana a , b , dan c adalah bilangan bulat.

b. Tentukan koordinat titik potong l_1 dan l_2 .

Figure 1. HOTS Problem

$P(-4, 3)$, $Q(a, 1)$, $R(1, -2)$, $S(b, 2)$, dan $T(4, c)$ merupakan lima titik koordinat yang membentuk garis lurus, tentukan nilai a , b , dan c

Figure 2. HOTS Problem

Table 2. Classification of Mathematical Critical Thinking Ability of Class VIII Students SMPN1 Paninggaran

Category	Number of students	Percentage
Tall	3	50%
Keep	3	50%
Low	0	0%
Sum	32	100%

The results of Table 2 show that the results of mathematical critical thinking skills are mostly students in the high category with a percentage of 50% of students, then 50% of students with mathematical critical thinking skills in the medium category and 0% of students with thinking skills low category mathematical critical. From the classification of critical thinking skills of grade VIII students in Table 2, researchers took 3 students from each category to analyze and describe the results of the answers.

1. Subjects with High Category Mathematical Critical Thinking Skills

1 data was taken from 3 data with the highest score obtained from students' answers in solving HOTS questions.

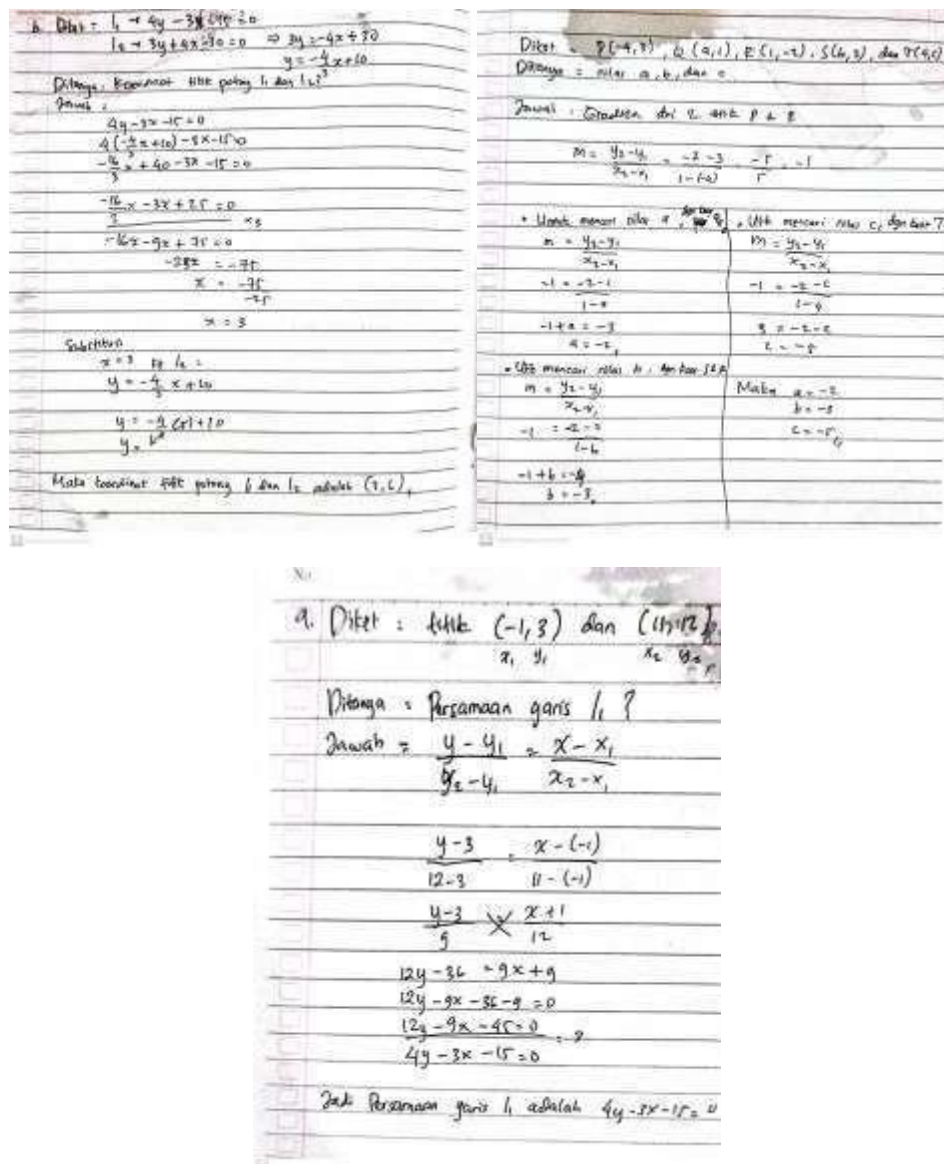


Figure 3. Results of answers of subjects with high mathematical critical thinking skills

Based on the data processing in figure 2, it can be known that subjects with high mathematical critical thinking skills can be through four indicators, namely generalizing, identifying, formulating problems into mathematical models, and deducing. At the stage of generalizing the subject Able to write the main thoughts on the problem with his own understanding, then the subject is able to write down what is known in the question and what the problem is asked in the problem. At the stage of identifying the subject is able to determine the concept

and the way that will be used to solve the problem correctly. At the stage of formulating the problem into a mathematical model, the subject is able to apply the value written in the known statement into the way that will be used to solve the problem. At the stage of deducing the subject is able to solve the problem in order and detail according to the concept correctly, the subject is able to identify the concept used to solve the problem correctly and is able to provide conclusions from the problem that has been solved.

2. Subjects with Mathematical Critical Thinking Skills in the Medium Category

1 data was taken from 3 data with moderate scores obtained from students' answers in solving HOTS questions.

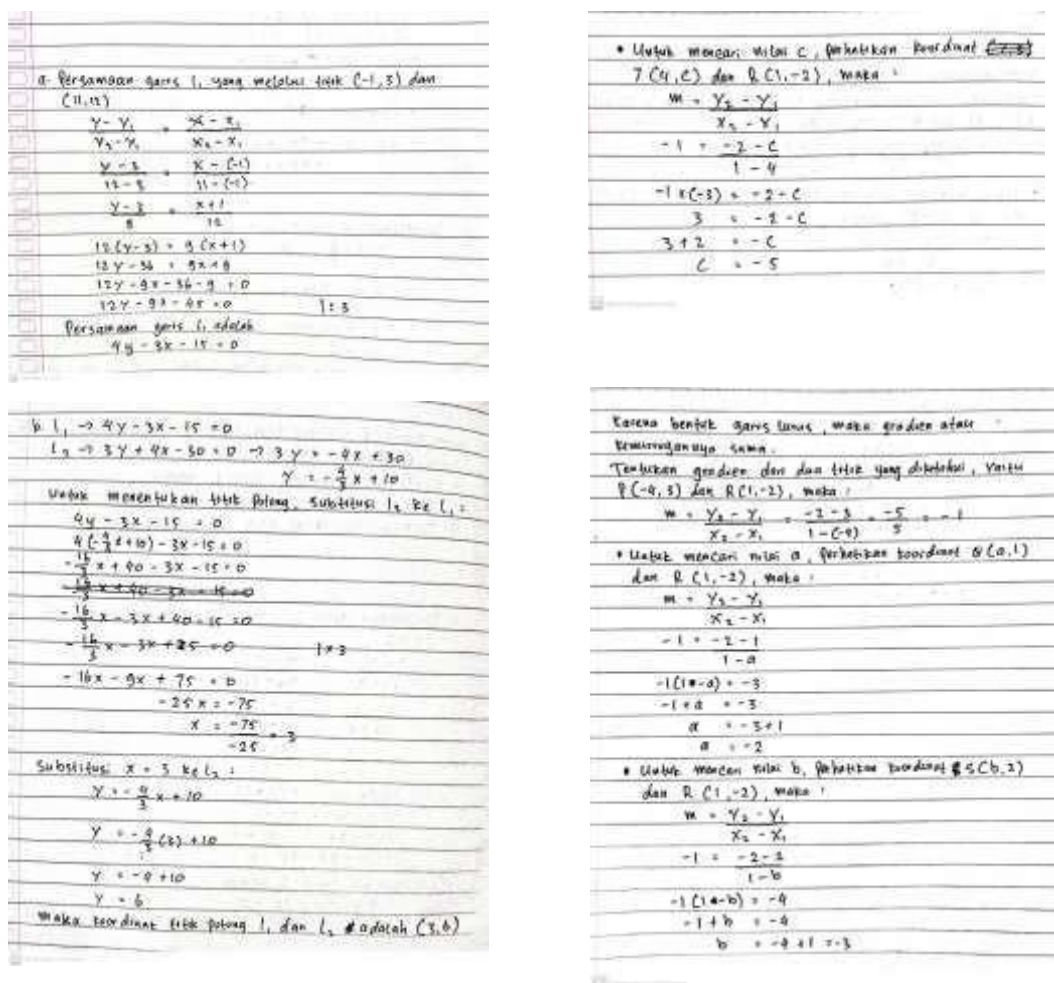


Figure 4. The results of the answers of subjects with mathematical critical thinking skills in the medium category

Based on the data processing in figure 3, it can be known that subjects with mathematical critical thinking skills in the medium category cannot go through four indicators, namely generalizing, identifying, formulating problems into mathematical models, and deduce. At the stage of generalizing the subject is able to write down things that known in the question. However, it is wrong to write down one of the things known in the problem. The subject is also unable to write down what problems are asked in the questions. At the stage of identifying the subject can determine the concept and the way to be used to solve the problem in question. At the stage of formulating the problem into the mathematical model the subject is able to apply the already known values in the problem into the concept and means to be used appropriately. However, the subject does not Write the ratio symbol on the calculation result of the ratio value. At the stage of deducing the subject Able to solve problems in order. However, the subject paid less attention to the problem So there is an error in writing the conclusion sentence from the results of solving the problem.

From the results of the analysis and description of the results of the answers of the 3 students, it was obtained that at the generalizing stage, students with high category mathematical critical thinking skills were able to go through the stage but students with medium and low category mathematical critical thinking skills were not fully able to go through that stage because there were still some errors in the generalizing stage. Furthermore, at the identification stage, students with high and moderate mathematical critical thinking skills are able to go through that stage but low category mathematical critical thinking skills students are not fully able to go through that stage because there are still errors in writing formulas at the identification stage which is the impact of errors at the generalizing stage.

Next, at the stage of formulating problems into mathematical models, students with high category mathematical critical thinking skills are able to go through that stage but students with medium and low category mathematical critical thinking skills are not fully able to go through that stage because students do not write ratio symbol on the calculation results of ratio values or students

are wrong in calculating answers. Then at the deducting stage, students with critical thinking skills High category mathematicians are able to go through that stage but students are able to think Mathematical criticalities of the medium and low categories have not been fully able to go through these stages. Because there are still errors when students write conclusions or students do not write conclusions from the problem. Students with high category mathematical critical thinking skills can go through all indicators i.e. generalize, identify, formulate problems into mathematical models and deduce. While students with mathematical critical thinking skills in the medium and low categories cannot go through all indicators, only through a few indicators. This is in line with research by (Pebrianti et al., 2021) which states that students with high mathematical ability have high critical thinking skills by meeting four indicators of critical thinking ability in solving problems, i.e. interpretation, analysis, evaluation, and inference. While students with abilities Medium and low math tend to meet only a portion of the four indicators of critical thinking ability. Furthermore, the results of research conducted by (Rohana et al., 2021) show that subjects with high critical thinking skills are able to understand problems, are able to analyze, are able to use appropriate and correct strategies, and are able to provide true and good conclusions. Subjects who are able to think critically are able to understand problems, able to analyze, less able to use appropriate and clear strategies, and able to make conclusions. Subjects with low critical thinking skills are able to understand problems by writing down known and asked, less able to analyze, less able to use good strategies and correct, and less able to give correct conclusions. Next, research conducted by (Prasetyo & Firmansyah, 2022) states that students with low category abilities have not met the four indicators of critical thinking ability at all. Students with moderate category ability can pass three indicators of critical thinking ability well, while students with high category ability can pass the overall indicator of critical thinking ability properly and correctly. In addition, there are also Research conducted by (Manurunget al., 2022) shows that thinking subjects High critical can meet all four indicators of critical thinking namely interpretation, analysis,

evaluation and inference. Subjects who think critically are meeting only 2 indicators of critical thinking interpret and analyze. While subjects who think critically low only meet 1 indicator of critical thinking, namely interpreting. Furthermore, from the results of research conducted by (Sihotang & Warmi, 2023), it can be concluded that students who fall into the high category are able to meet all indicators of mathematical critical thinking skills. Students who fall into the medium category, are only able to meet three indicators of mathematical critical thinking skills. Meanwhile, students who fall into the low category, do not meet all indicators of mathematical critical thinking ability.

CONCLUSION

Based on the results of the analysis of mathematical critical thinking skills of grade VIII students of SMPN 1 Paningalan in solving HOTS problems, 50% of students who have mathematical critical thinking skills are included in the high level i category. 33.33% are in the medium category and 0% are in the low category. Students who have advanced mathematical critical thinking skills can use four indicators: generalize, define, and formulate and derive problems in mathematical models. Conversely, students whose mathematical critical thinking skills are in the medium or weak category are unable to confirm four indicators namely generalization, identification, formulation and derivation of problems in mathematical models. Based on the results of mathematical critical thinking, most students are in the top category with 3 out of 6 students. This indicates the implementation of an independent program carried out in Class VIII of SMPN 1 Paninggaran from 2022 to 2023. This has a significant impact in shaping students' high-level mathematical critical thinking skills.

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