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Implementation of Problem-Based Models to Improve Critical Thinking Skills in Solving HOTS Questions in Civics Education Subjects for Grade 3

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1. Abstract

This research is motivated by the low critical thinking skills of students in grade III. One solution to overcome this problem is to use a *Problem Based Learning* (PBL) model. The purpose of this study was to improve students' critical thinking skills by using the *Problem Based Learning* model for students in grade III. This research method is Classroom Action Research (CAR) which is carried out in two cycles. Each cycle has two meetings and four stages, namely planning, implementation, observation, and reflection. The time of the research was carried out in April to June 2023. The subjects of this research were students in grade III who were visited by 12 students. With 8 male students and 4 female students. Data collection techniques in the form of observations, interview, tests, and documentation. The results of this study can be said to be the key to students' critical thinking which has increased in each cycle, where the percentage results in the first cycle of my meeting (25%), the second meeting increased to (41,67%) while in the second cycle of the first meeting (64,75%), and the second meeting increased to (83,33%). Thus, it can be said that by applying the *Problem-Based Learning* model, it can improve students' critical thinking skills in solving HOTS questions.

***Keywords**: Critical Thinking Skills, HOTS, Problem Based Learning Model*

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2. Introduction

UNESCO defines competencies for living in the 21st century as creativity and innovation, critical thinking skills and problem-solving, communication and collaboration, social and cross-cultural skills, and mastery of information (Sani, 2019). Critical thinking models for skills that need to be possessed in the 21st century are expected to help students develop their thinking skills and prepare themselves to compete in a complex global society (Zivkovil, 2016). Guided by this opinion, the ability to think critically is very important for students in this century, one of which is in learning, especially in Civic Education subjects. Critical thinking skills will help provide the right direction in thinking and working and help in determining the relationship of something to another more accurately.

Teachers should focus on active students in each lesson in order to improve students' critical thinking skills. Teachers do not only deliver material; they can also accustom students to being able to think critically. The ability to think critically is very important for students in the 21st century. This ability allows students to develop and find the root of the problems they face in life independently and innovatively. Class III SD students need to be equipped with critical thinking skills, especially in Civic Education subjects, as a provision of knowledge that can be applied in real-life everyday life.

Critical thinking is one of the characteristics of student activities in HOTS learning (Sani, 2019). Based on this statement, the teacher can make it a habit of using HOTS to improve students' critical thinking skills. The use of HOTS problem models based on Bloom's taxonomy levels greatly supports teachers in developing students' critical thinking skills by habituating them to solving C4 to C6 question types.

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The results of research conducted by Wibawa, etc (2015) regarding "Application of The NHT Learning Model to Improve Critical Thinking Ability in Class VIII B8 Civic Education Students" concluded that the importance of critical thinking in learning Civics subjects, one of which is that students are trained to actively search for material and solve problems, is to train critical thinking skills when implementing Civics learning. Critical thinking is needed by everyone to understand and solve problems. Critical thinking is one of the higher-order thinking skills that must be possessed by students to improve their cognitive abilities in solving problems.

Based on the results of interviews conducted by researchers on May 10, 2023, at 09.30 WIB with the homeroom teacher and students, a small proportion of students in class III have been able to learn critical thinking. Students only receive learning from the teacher directly in the field of knowledge, but their critical thinking skills are still experiencing problems, as evidenced by several examples of questions related to the material meaning of Pancasila symbols that they have not been able to understand and answer correctly. Almost all students do not understand how to critically develop their abilities, so when faced with problems that require critical thinking, they still experience difficulties. Students only memorize material from the teacher, what is in the book, and the results of their notes. Critical thinking skills are not well trained. Students who are lacking in critical thinking skills will experience difficulties in various areas, and their mindset is too narrow. What's more, student evaluation activities have not used HOTS question development, so students' critical thinking skills are not honed. This was reinforced by the results of the pre-cycle test, which was held on Friday, May 12, 2023. Students who scored ≥ 70 or above the Minimum Completeness Criteria (KKM) were only

ISSN: 3025-020X

16.67%, or equal to 2 people out of a total of 12 participants. educate. The remaining 83.33% of students are still under the KKM, which is around 10 people. Based on this explanation, it can be concluded that students' critical thinking skills in solving HOTS questions in Civics subjects are still very low.

Based on the results of the interviews and pre-cycle test results, a way is needed to improve critical thinking skills in solving HOTS questions in Civics subjects. A teacher must be innovative in carrying out learning for his students. Began to make changes from a teacher-centered system to a student-centered system that prioritizes process and ability development and exploration of student potential through learning. This is because the biggest challenge for higher education today is developing and implementing meaningful learning. Meaningful learning can be obtained from learning that involves the real environment because it is from the surrounding environment that problems arise. The problem-based learning model can be an alternative learning model in schools. The problem-based learning model makes students proactive, encouraging them to use and develop their critical thinking skills. Thus, it is hoped that through problem-based learning, students will have the opportunity to develop their critical thinking skills in solving problems.

The results of research by Fristadi and Bharata (2015) in their article on "Improving Students' Critical Thinking Ability with Problem-Based Learning" concluded that students' critical thinking skills can be improved by applying the problem-based learning model in the mathematics learning process. Problem-Based Learning, a model that brings problems from real life into mathematics, provides opportunities for students to make choices about what they will learn so that learning becomes more meaningful.

ISSN: 3025-020X

In line with the description of the problems above, the researcher is interested in conducting research that aims to improve students' critical thinking skills in learning Civics subjects with the title "Implementation of Problem-Based Models to Improve Critical Thinking Skills in Solving HOTS Questions in Civics Education Subjects for Grade 3".

3. Methods

3.1. Participants and context

This research is Classroom Action Research. Classroom action research is research conducted by designing, implementing, and reflecting on collaborative and participatory actions that aim to improve the learning process in the classroom through an action in a cycle. This research was conducted from April to June 2023. The subjects of this study were 12 class III students, consisting of 8 male students and 4 female students. This study has four stages, including planning, implementation of action, observation, and reflection. The class action research stage can be clearly seen in Figure 1 below:

ISSN: 3025-020X

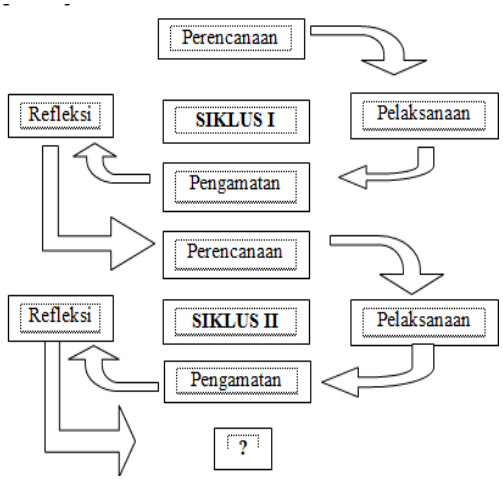

Figure 3.1.1 Classroom Action Research Cycle (Arikunto, 2017: 42)

This research was conducted in two cycles, with each cycle consisting of two meetings. In cycles 1 and 2, the researcher applies the problem-based learning model in cycles 1 and 2. The planning stage includes all preparations to support research activities, such as syllabus preparation, learning implementation plans (RPP), observation sheets of teacher and student activities, LKPD, and thinking ability observation sheets critical to solving HOTS questions. The implementation phase includes implementation at the planning stage. At this stage, the researcher implements learning activities using the problem-based learning model, starting with the implementation of the initial, core, and closing actions. The observation stage is used to observe the activities of teachers and students by adjusting the lesson plan that has been made and observing students' critical thinking skills in completing HOTS questions. The reflection stage aims to find problems, causes of problems, and solutions to problems from the results of actions, to be corrected at the next meeting.

ISSN: 3025-020X

The next stage is cycle two, and the stages are the same as those in cycle one.

3.2. Material

The research instruments were written tests, observation sheets for critical thinking skills to solve HOTS questions, interviews, and documentation. Written tests are used to determine the level of students' understanding of learning material and their abilities in solving given problems, so that it can be seen that there is an increase in critical thinking skills in solving HOTS questions. The test used in this study was a written test in the form of multiple-choice questions, short entries, and descriptions referring to the use of HOTS-type questions. The observation sheet used in this study is the observation sheet for the test results of critical thinking skills in solving HOTS questions. The observation sheet lattice of the results of the critical thinking ability test in solving HOTS questions is listed in the following table.

Table 3.2.1: Observation Sheet for Critical Thinking

No	Indicator	Descriptor	Score
1.	Identify problems	1. Can understand the problem	1
		2. Can analyze the relationship between problems with theory	1
		3. Can retell problems in their own language	1
2.	Provide arguments	1. The arguments made have a basis or source	1
		2. Can provide concrete evidence or examples correctly	1
		3. Can explain arguments correctly	1

ISSN: 3025-020X

3.	Draw a conclusion	1.	Can provide conclusions in accordance with the arguments presented	1
		2.	Draw conclusions based on the facts	1
		3.	Make and determine the results of considerations based on the consequences	1
4.	Evaluation	1.	Can answer questions according to the instructions in the question	1
		2.	Can answer HOTS questions correctly	1
		3.	Can provide answers with explanations	1
			Skor Maksimal	12

Source : Yulianti (2022)

Interviews in this study were given to the class teacher and several third-grade students at the end of each cycle. The teacher interview aims to find out the teacher's response regarding the implementation of the Problem-Based Learning model, while the student interview aims to find out the student's response to participating in learning.

The documentation used in this study was in the form of mid-semester test scores for the Civics Education subject for class III students for the 2022–2023 academic year, student presence in the implementation of each cycle, as well as photographs during learning activities.

3.3. Data Collection and analysis

The data analysis in this study is a combination of qualitative and quantitative

ISSN: 3025-020X

data. Qualitative data in the form of qualitative descriptions are obtained from observations of teacher and student activities carried out in each cycle, which refers to teaching and learning activities through the problem-based learning model. Quantitative data contains quantitative descriptions obtained from the results of tests of critical thinking skills completed by completing HOTS questions at the end of each lesson. Data collection techniques used in this classroom action research include the following:

1) Observation

Observations were made by directly observing Civics Education learning activities in class. Observations were made by researchers as they observed teacher activities and student activities during learning by filling out the observation sheets that had been prepared beforehand. The results of teacher and student observations in Civics Education learning activities using the Problem-Based Learning learning model can be calculated using the formula:

Percentage : $\frac{jumlah\ skor\ yang\ diperoleh}{skor\ maksimal}$ x 100

2) Interview

Interviews were conducted to obtain information from teachers and students regarding the implementation of the learning that had been carried out. The results of the interviews were analyzed descriptively and used to support other data.

3) Test

The test used in this study is used to measure critical thinking skills in

ISSN: 3025-020X

solving HOTS questions. There is an increase in critical thinking skills in solving HOTS questions, as seen from student learning completeness. This is because the evaluation questions already include HOTS aspects that require students' critical thinking skills, so student learning completeness can describe the increase in critical thinking skills in solving HOTS questions as a whole. The data analysis used in this classroom action research was done by calculating the mean (average) and the percentage of student learning completeness. According to Daryanto (2011: 191), the class average value can be calculated with the following formula:

$$\bar{X} = \frac{\sum X}{N}$$

Note:

$\bar{X}$ = Average value

X = the sum of all student scores

N = total number of students

Individual completeness is processed using the following formula:

$$\text{Mastery Level} = \frac{the\ total\ score\ obtained}{maximal\ score} \text{ x } 100$$

Ennis (in Fridanianti et al., 2018) Students are said to be complete if they have met the indicators of success, namely the level of mastery of critical thinking skills ranging from 80% to 89% or declared critical. To determine classical completeness, the formula used is

$$\text{Clasical mastery} = \frac{number\ of\ students\ who\ completed}{total\ number\ of\ students} \text{ x } 100\%$$

ISSN: 3025-020X

The criteria for the level of critical thinking ability can be seen in Table 3.3.1 below:

Table 3.3.1. Categories of Critical Thinking Ability to Solve HOTS Questions

No	Indicator Mastery Level (%)	Category
1.	90 – 100	Very critical
2.	80 – 89	Critical
3.	70 – 79	Quite critical
4.	< 69	Less critical

Source: Wowo (in Mulyani et al., 2019)

If students' classical mastery has reached 80% of all students, then the level of students' critical thinking skills in solving HOTS questions has increased.

4. Results and Discussion

Before implementing the problem-based Learning Model in the class, the researchers accumulated the document analysis results of the previous critical thinking skills in solving HOTS questions and gave a pretest. Following the observations and the document analysis, the conversation text pre-test was given to 12 students.

Based on these observations, classroom learning was boring and not active. Classes become ineffective because students feel anxious or afraid when studying in class. The learning process was dominated by the teacher. This is in parallel with the document analysis conducted by the researchers.

ISSN: 3025-020X

In this pre-action, the researcher gave Higher Order Thinking Skills questions before the action was carried out. The questions given use cognitive indicators for aspects of analyzing (C4), evaluating (C5), and creating (C6) in the subject of Pancasila and Citizenship Education about the Meaning of Pancasila Symbols.

The pre-action in this study was intended to determine the extent to which students' ability to understand and solve the questions given to measure critical thinking skills in solving HOTS questions Based on the results of the pre-action tests carried out, the average score for class III students was 61, with the highest score being 80 and the lowest score being 47. The percentage of learning completeness was 16.67%, or there were 2 students who had achieved KKM out of 12 students. The pre-action value proves that students' critical thinking skills in solving HOTS questions are still low, as seen from student learning completeness. The results of the pre-action test for completing HOTS questions can be seen in Table 4.1 below.

Table 4.1 Observation Results of Critical Thinking Ability Tests in Solving Pre-Action HOTS Questions

No	Indicator Mastery Level (%)	Category	The Number of Students	Percentage (%)
1.	90 – 100	Very critical	0	0
2.	80 – 89	Critical	2	16,67
3.	70 – 79	Quite critical	0	0
4.	< 69	Less critical	10	83,33
Total			12	100
Lowest value			47	
Highest value			83	

ISSN: 3025-020X

Average Value	61	
Complete	2	16,67
Not Complete	10	83,33

After the action in cycle I using the problem-based-learning model, there was an increase in learning based on the results of observations of critical thinking ability tests solving HOTS questions for class III students. This is shown in Table 4.2 below:

ISSN: 3025-020X

Table 4.2 Recapitulation of the Results of Observations on Students' Critical Thinking Skills Tests in Cycle I

No	Indicator Mastery Level (%)	Category	Meeting 1		Meeting 2	
			The Number of Students	Percentage (%)	The Number of Students	Percentage (%)
1.	90 – 100	Very critical	1	8,3	2	16,7
2.	80 – 89	Critical	2	16,7	3	25
3.	70 – 79	Quite critical	6	50	6	50
4.	< 69	Less critical	3	25	1	8,3
	Total		12	100	12	100
	Lowest value		63		67	
	Highest value		90		90	
	Average Value		72		77	
	Complete		3	25	5	41,67
	Not Complete		9	75	7	58,33

Based on the Table 4.2, it can be seen that students' critical thinking skills were assessed in HOTS questions in cycle I meeting 1 of 12 students. As many as 25% (3 students) were in the very critical and critical categories with a minimum score of 80, while students who did not reach the predetermined category were 75% (9 students). In the cycle I meeting, 2 of the 12 students who reached the category determined by the researcher (5 students) were in the very critical and critical category with a

ISSN: 3025-020X

minimum score of 83, while students who did not reach the category determined by the researcher totaled 58.33% (7 students). By using the problem-based learning model, it can be seen that the grade III students' critical thinking skills in the first cycle of action have increased when compared to the pre-action scores. The increase in the value of critical thinking skills in solving HOTS questions in the first cycle of the first meeting was 25% classically, while the students' scores in the second meeting were 58.33% classically.

Performance indicators for critical thinking skills in solving HOTS questions in this study were the number of students whose scores were above the KKM (80), which reached 80% of the 12 students. Thus, it is necessary to reflect on the first cycle and take action on the second cycle. As for the recapitulation of the observation results of the critical thinking ability test in solving HOTS questions in cycle II meetings 1 and 2, they can be seen in Table 4.3 below.

ISSN: 3025-020X

Table 4.3 Recapitulation of the Results of Observations on Students' Critical Thinking Skills Tests in Cycle II

No	Indicator Mastery Level (%)	Category	Meeting 1		Meeting 2	
			The Number of Students	Percentage (%)	The Number of Students	Percentage (%)
1.	90 – 100	Very critical	3	25	4	33,33
2.	80 – 89	Critical	6	50	6	50
3.	70 – 79	Quite critical	2	16,67	2	16,67
4.	< 69	Less critical	1	8,33	0	0
	Total		12	100	12	100
	Lowest value		67		73	
	Highest value		93		93	
	Average Value		82		84	
	Complete		9	75	10	83,33
	Not Complete		3	25	2	16,67

Based on Table 4.3, the average value of critical thinking skills in solving HOTS questions in Cycle II is 83. The results of classical completeness for the ability to think critically in solving HOTS questions in Cycle II are 83%, i.e., 11 out of 12 students have achieved the competency achievement indicators set by the researcher. The results of the ability to think critically in solving HOTS questions in Cycle II increased and reached a performance indicator of 80%, so this research could be said to have been successful.

ISSN: 3025-020X

Based on the results of the research above, there has been an increase in critical thinking skills in solving HOTS questions from the pre-action results to cycle II. The following Table 4.4 is presented to compare the results of tests of critical thinking skills in solving HOTS questions in pre-action, cycle I, and cycle II.

Table 4.4 Comparison of the results of critical thinking skills tests in Solving HOTS Questions in Pre-Action, Cycle I, and Cycle II

Indicator Mastery Level (%)	Category	Pre-Action		Cycle I				Cycle II			
				P1		P2		P1		P2	
		f	%	f	%	f	%	f	%	f	%
90 – 100	Very critical	0	0	1	8,3	2	16,7	3	25	4	50
80 – 89	Critical	2	16,67	2	16,7	3	25	6	75	6	50
70 – 79	Quite critical	0	0	6	50	6	50	2	0	2	0
< 69	Less critical	10	83,33	3	25	1	8,3	1	0	0	0
Total		12	100	12	100	12	100	12	100	12	100
Lowest value		47		63		67		67		73	
Highest value		83		90		90		93		93	
Average Value		61		72		77		82		84	
Complete		16,67		25		41,67		64,75		83,33	

Note :

f : frequency (the number of students)

P1 : meeting 1

ISSN: 3025-020X

P2 : meeting 2

% : percentage

Based on the results of the observations and analysis carried out, it can be seen that the problem-based learning model can improve critical thinking skills in solving HOTS questions in class III students. Learning using this model emphasizes problems in order to develop students' thinking skills in analyzing questions and finding appropriate answer solutions so that they are more systematic and make it easier for students to solve problems. In line with Anugraheni's opinion (2018: 11), the problem-based learning model is a model that involves students in learning activities and prioritizes real problems both in the school, home, or community environment as a basis for acquiring knowledge and concepts through the ability to think critically and solve problems. Asriningtyas et al. (2018), in their research, also show that the problem-based learning model can improve critical thinking skills in learning mathematics.

5. Conclusion

Based on the results of research that has been carried out for two cycles, it can be concluded that the application of the problem-based learning model can improve critical thinking skills in solving HOTS questions on Citizenship Education in class III students. The increase in critical thinking skills in solving HOTS questions can be seen from the improvement in each cycle. In the initial conditions, the average value of critical thinking skills in completing HOTS questions was 61 with critical criteria of 2 students (16.67%) and less critical of 10 students (83.33%), then increased in cycle

ISSN: 3025-020X

I meeting 1 of 72 with details of 1 student very critical (8.33%), 2 students critical (16.67%), 6 students moderately critical (50%) and 3 students less critical (25%). The average value of critical thinking skills in completing HOTS questions in cycle I meeting 2 was 77, with very critical criteria of 2 students, 3 students who were critical, 6 students who were quite critical, and 1 student who was less critical. In cycle II, the average value of critical thinking skills in solving HOTS questions increased, namely at meeting 1 of 82 with a classical completeness of 64.75% and at meeting 2 of 84 with a classical completeness of 83.33%.

ISSN: 3025-020X

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