

Efforts to Improve Higher Level Thinking Skills in Thematic Learning through Problem Based Learning Model for Class III SDN Rejowinangun 1

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1. Abstract

The 21st century is an era of globalization where changes occur very quickly. This era requires humans to survive and adapt to these changes. The ability to survive and adapt to humans is strongly influenced by the ability to think highly to find problem-solving solutions. Changes in the era that has entered the industrial revolution 4.0 have an impact on the learning process which requires changes in learning objectives. One of the thinking skills that need to be developed is the ability to think at a high level or in English called high order thinking skills (HOTS). The study aims to determine the improvement of students' higher order thinking skills in thematic learning through the application of problem-based learning model. This research is a collaborative classroom action research conducted in class III SDN Rejowinangun 1 as many as 28 students. The results showed that the average score of pre-action was 50.0 with a percentage of completeness of 43% which was in the low category, then in cycle 1 showed an increase to 60.3 with a percentage of completeness of 57.14% which was in the moderate category. In cycle 2, the average score of higher order thinking skills was 75.0 with a percentage of completeness of 78.57% which was in the high category. The results showed an increase in the higher order thinking skills of elementary school students using problem-based learning. The implication of this research can be used as a reference in improving the higher order thinking skills of elementary school students.

Keywords: Problem Based Learning, Higher Level Thinking

2. Introduction

The 21st century is an era of globalization where changes occur very quickly. This era requires humans to survive and adapt to these changes. The ability to survive and adapt to humans is strongly influenced by the ability to think highly to find problem-solving solutions. Education as a means of producing human resources must facilitate this need by providing learning that stimulates students to think highly (Khotimah, 2018). In addition to facing the 21st century, the world is also facing the industrial revolution 4.0 which also has an impact on education.

Changes in the era that has entered the industrial revolution 4.0 have an impact on the learning process which requires changes in learning objectives. This is in line with the challenges that must be faced by educational institutions in this era. Educational institutions are challenged to be able to produce graduates who can compete globally by developing thinking skills and skills in solving problems (Ghufron, 2018). The ability to think that is required is not just the ability to think in solving ordinary problems. Because in this era and the era to come the problems that will be faced by each individual will be more complex. This is what educational institutions must develop in the learning process at school (Fauziyah, 2020).

Formal learning in Indonesia is elementary school (Kenedi et al, 2019). Primary schools have the responsibility to equip students' thinking abilities and skills so that they can follow education to a higher level. Elementary schools have a tough task to create learning that can answer the challenges of the industrial revolution 4.0 era. Teachers as organizers of learning in the classroom must develop lessons that are able to train students' thinking abilities and skills so that students today and in the future are able to solve the problems they face (Rizal, 2017). One of the thinking skills that need to be developed is high-level thinking skills or in English called high order thinking skills (HOTS). HOTS is part of the ability to think (Kenedi, 2018).

HOTS can also be said to be a thinking process that links old information with newly acquired information to develop information to a more complex stage aimed at solving problems (Hanifah, 2019). HOTS is also said to be a thinking process that involves individuals in the process of analyzing, evaluating and creating something as a step in solving problems (Krathwohl & Anderson, 2009). Therefore, it can be interpreted that HOTS is an ability that involves the thinking process through the process of analyzing, evaluating and creating as an effort to solve everyday problems.

High-level thinking skills or HOTS need to be trained from an early age because they are needed in the era of the industrial revolution 4.0. Therefore, HOTS must be developed since elementary school age. Facts from previous research state that the HOTS of elementary school students are still low (Ichsan, Iriani & Hermawati, 2018). This is because teachers do not create learning that can improve the HOTS skills of elementary school students.

Based on the researcher's observation of the learning process in class III, it was found that the teacher taught the lesson only with the teacher's book which was read and explained, while the students only observed the teacher, while occasionally looking at the student book. In the learning process the teacher does not provide feedback to students, as a result students feel bored and have no motivation in the learning process. In this process, the teacher rarely asks students to solve problems related to the material being taught. The learning process carried out by the teacher also has an impact on student learning outcomes. The learning process carried out by the teacher has an impact on the process of students' thinking skills which can be seen from the low student learning outcomes. Based on the observations made by the researchers, the main cause of the low HOTS is that the learning process carried out by the teacher does not support the process of developing students' HOTS.

The selection of the right learning model is essentially an effort to optimize thinking skills, especially higher order thinking. Various kinds of learning models have been developed to maximize the learning process of students in learning and developing their thinking skills, one of the models contained in the 2013 curriculum is the Problem Based Learning (PBL) learning model. Students' higher order thinking skills can be developed through problem based learning (PBL) model (Syaodih & Handayani, 2014). PBL is a learning model that makes problems the foundation of learning (Kenedi, 2017). PBL can stimulate students to actively find solutions to problems by developing creative thinking skills and critical thinking skills.

Based on this description, the researcher conducted a collaborative classroom action research (PTKK) with the title "Efforts to Improve Higher Level Thinking Skills in Thematic Learning Through Problem Based Learning Model for Class III SDN Rejowinangun 1".

3. Methods

3.1. Participants and context

The research conducted was a type of Collaborative Classroom Action Research (CCA) carried out in two cycles. The design (design) of Collaborative Classroom Action Research (CCA) used in this research is the Kemmis and McTaggart model which includes four flows (steps): (1) action planning; (2) action implementation; (3) observation; and (4) reflection (Suharsimi Arikunto, 2009: 21).

The research subjects were students of class III B SDN Rejowinangun 1 with a total of 28 students. In accordance with the research model conducted by researchers, namely the Kemmis and Mc Taggart model, the stages of classroom action research in this study consist of four components, namely planning, implementing actions, observing, and reflecting which are organized into one cycle.

3.2. Materials

Assessment instruments are used to collect data to make it easier. The instrument used is an observation sheet for the implementation of the Problem Based Learning model to determine the implementation of each step of the Problem Based Learning model to improve students' higher order thinking skills and a written test assessment instrument in the form of a description to determine the improvement of skills to answer higher order thinking skills questions.

3.3. Data Collection and analysis

In Classroom Action Research (CAR) generally does not use population, samples, and sampling techniques as in quantitative research, but uses research subjects. In PTKK, the population is the same as the sample, which is the research subject. The selection of research subjects is carried out based on the background of learning problems in the classroom. The data collection techniques used were observation, documentation and tests. The observation technique was used to observe the implementation of the Problem Based Learning model including the introduction, core, closing activities and student activities in learning. Documentation was used to obtain secondary data through documents during the implementation of learning. The essay or description test technique is used to determine the improvement of students' higher order thinking skills in thematic learning. Data analysis techniques are carried out by descriptive statistical analysis using the formula:

Calculating the percentage of learning completeness

$$p = \frac{\sum \text{students who completed learning}}{\sum \text{students}} \times 100\%$$

The indicator of success is seen from the increase in the HOTS ability of elementary school students who are in the high category, namely between 61 and 76 and the

percentage of completeness of 75%. The HOTS criteria can be seen in the table below:

Table 1. HOTS criteria

No.	HOTS	Criteria
1	≥ 76	Very High
2	$61 \leq \text{HOTS} < 76$	High
3	$46 \leq \text{HOTS} < 61$	Simply
4	$31 \leq \text{HOTS} < 46$	Low
5	< 31	Very Low

(Syafri et al, 2018)

3.4. Ethical Considerations

All research or research involves humans as research subjects. Based on this, in this study there are basic principles of research ethics, including: the first is respecting people, in this case we must respect and appreciate students, where students are the subject of research, then the second is the benefit, in this study there are benefits for which provide benefits to learning in schools, especially in thematic learning, higher order thinking skills and do not harm research subjects, in this study, do not harm research subjects because during teaching and learning activities carried out in the classroom.

3.5. Limitations to the Study

Due to the limitations of the researchers in terms of time, energy, and cost, this research is limited to efforts to improve Higher Level Thinking Skills in Thematic Learning through the Problem Based Learning Model for Class III SDN Rejowinangun 1.

4. Results and Discussion

This research was only conducted in two cycles with four meetings. The steps of the Problem Based Learning (PBL) learning model that have been implemented in each cycle are: 1) problem orientation; 2) organizing learning; 3) guiding students; 4) presentation of work or discussion; 5) analysis and evaluation of the problem solving

process. The steps used by researchers refer to the steps of the PBL approach quoted from the opinion of Hotimah (2020) which essentially argues that the Problem Based Learning (PBL) learning model has five stages, namely: 1) orienting students to the problem; 2) organizing students to learn; 3) guiding individual and group investigations; 4) developing and presenting work; 5) analyzing and evaluating the results of problem solving.

Collaborative Classroom Action Research (CCA) carried out consists of pre-action, cycle I and cycle II. The results of the research on improving Higher Level Thinking Skills in Thematic Learning through the Problem Based Learning Model for Class III, can be described as follows:

Pre-action

Before carrying out the research, the researcher first conducted classroom observations on thematic learning. Based on the observation, it can be seen that learning is still teacher-centered and has not used an innovative model. The results of the documentation of the initial ability of students' higher order thinking skills, only 11 students scored above the KKM determined by the school which is 75. While 17 students scored below 75.

Table 2. HOTS Results based on Pre-action Indicators

Indicator	Score
Analyzing	60.0
Evaluate	57.0
Create	60.0
Average	59.0

From the pre-action results, it can be seen that the average student HOTS test score is 50 with a percentage of 43% completeness. This result states that students' HOTS is still in the low category. So the researchers analyzed the implementation of learning that had not guided students optimally so that students could not convey their thoughts.

Cycle 1

a. Action Planning Stage

Planning is arranged in accordance with the problem to be solved, namely improving students' higher order thinking skills through the Problem Based Learning model. At this stage the actions taken during the research are: a) Developing lesson plans (RPP) Thematic with the Problem Based Learning model, b) preparing learning media, c) preparing student worksheets, d) making appropriate assessment rubrics.

b. Action Phase

In the action stage of cycle 1, the learning process was carried out in the classroom using the plan that had been prepared using the Problem Based Learning (PBL) learning model. There are five stages, namely: 1) orienting students to the problem; 2) organizing students to learn; 3) guiding individual and group investigations; 4) developing and presenting work; 5) analyzing and evaluating the results of problem solving. Learners are given essay questions to measure higher order thinking skills in thematic learning with the following data:

Table 3. HOTS Results based on Cycle 1 Indicators

Indicator	Score
Analyzing	62,0
Evaluate	60,8
Create	58,0
Average	60,3

From the results of cycle 1, it can be seen that the average student HOTS test score was 60.3 with a percentage of completeness of 57.14%. This result states that students' HOTS is still in the sufficient category.

Table 4. Results of Implementation of PBL model syntax Cycle 1

No.	PBL Syntax	Cycle I	
		G	S
		(%)	(%)

1	Problem orientation	87,5	75
2	Preparing students to learn	100	87,5
3	Individual and group inquiry	75	75
4	Presentation and exchange of discussion results	87,5	75
5	Analyze and evaluate the problem-solving process	93,8	93,8
Average		88,76	81,26

c. Observation Stage

Make direct observations on the activities carried out in cycle 1.

d. Reflection Stage

After the action in cycle 1, the reflection of the resulting activities are: a) students become more prepared in carrying out learning, b) through discussion activities, students exchange ideas with other students in solving problems in thematic learning c) higher order thinking skills in the learning process using the Problem Based Learning model have increased.

Cycle 2

a. Action Planning Stage

Planning is arranged in accordance with the problem to be solved, namely improving students' higher order thinking skills through the Problem Based Learning model. At this stage the actions taken during the research are: a) Developing lesson plans (RPP) Thematic with the Problem Based Learning model, b) preparing learning media, c) preparing student worksheets, d) making appropriate assessment rubrics.

b. Action Phase

In the action stage of cycle 2, the learning process was carried out in the classroom using the plan that had been prepared using the Problem Based Learning (PBL) learning model. There are five stages, namely: 1) orienting students to the problem; 2) organizing students to learn; 3) guiding individual and group investigations; 4) developing and presenting work; 5) analyzing and evaluating the results of problem solving. Learners are given essay questions to measure higher order thinking skills in thematic learning with the following data:

Table 5. HOTS Results based on Cycle 2 Indicators

Indicator	Score
Analyzing	81,5
Evaluate	70,7
Create	72,7
Average	75,0

From the results of cycle 2, it can be seen that the average student HOTS test has increased, namely getting a score of 75.0 with a percentage of completeness of 78.57%. This result states that students' HOTS is in the high category.

Table 6. Results of Implementation of PBL model syntax Cycle 2

No.	PBL Syntax	Cycle I	
		G (%)	S (%)
1	Problem orientation	100	87,5
2	Preparing students to learn	100	93,8
3	Individual and group inquiry	81,3	81.3

4	Presentation and exchange of discussion results	90,7	87,5
5	Analyze and evaluate the problem-solving process	90,7	93,8
Average		92,54	90,65

c. Observation Stage

Make direct observations on the activities carried out in cycle 2.

d. Reflection Stage

After the action in cycle 1, the reflection of the resulting activities are: a) students become more prepared in carrying out learning, b) through discussion activities, students exchange ideas with other students in solving problems in thematic learning c) higher order thinking skills in the learning process using the Problem Based Learning model have increased.

The results of the overall improvement of higher order thinking skills can be seen in the following table:

Table 7. HOTS Results

No.	Cycle	Average Score	Category
1	Pre-action	50,0	Low
2	Cycle 1	60,3	Simply
3	Cycle 2	75,0	High

Based on the results of the study, it was found that the results of observations from pre-action, cycle 1 and cycle 2 showed that students' higher order thinking skills increased. The average of high-level thinking skills in preaction scored 50 with a percentage of completeness of 43% which was in the low category, then in cycle 1 showed an increase to 60.3 with a percentage of completeness of 57.14% which was in the moderate category. In cycle 2, the average score of higher order thinking skills was

75.0 with a completion percentage of 78.57% which was in the high category.

5. Conclusion

Students' higher order thinking skills can be improved through the application of the Problem Based Learning (PBL) model in thematic learning. This is evidenced by the results of the study. The average of high-level thinking skills at pre-action got a score of 50 with a percentage of completeness of 43% which was in the low category, then in cycle 1 showed an increase to 60.3 with a percentage of completeness of 57.14% which was in the moderate category. In cycle 2, the average score of high-level thinking skills was 75.0 with a percentage of completeness of 78.57% which fell into the high category.

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