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IMPROVING CRITICAL THINKING SKILLS AND LEARNING OUTCOMES OF 4TH GRADE STUDENTS THROUGH DISCOVERY LEARNING MODEL

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Abstract. Lack of critical thinking skills in students is a problem faced in thematic learning at *SD Negeri 2 Kedungrejo*. Therefore, it had an impact on low learning outcomes. From this problem, this study aims to improve critical thinking skills and learning outcomes through discovery learning model. Classroom Action Research (PTK) was used in this study. While the data collection instruments included observation sheets, test questions, and questionnaires. The data analysis technique used a comparative descriptive technique. The subjects of this study were 22 4th grade students of *SD Negeri 2 Kedungrejo*. The results of this study indicated an improvement of critical thinking skills and students' learning outcomes. This can be proven by the average value of students' critical thinking skills in cycle I of 54.67% and increased again in cycle II by 69.84%. Whereas for students' learning outcomes, in cycle I showed students' average score of 70. Moreover, it increased by an average value of 80 in cycle II. To sum up, these results showed that applying discovery learning model in the online learning process were able to improve students' critical thinking skills and learning outcomes.

Keywords**:** Critical Thinking Skills; Learning Outcomes; Discovery Learning.

I. INTRODUCTION

Integrated thematic learning is basically integrated learning that uses themes to combine several subjects so that they can provide meaningful experiences for students. According to Majid (2014) integrated thematic learning is a learning model that combines a concept in several different fields of study in order to students learn better and meaningful. In this pandemic situation, it has a challenge for teachers to design and implement an online meaningful learning.

In this online learning activities, teachers are required to be creative and innovative. They also collaborate with parents to create an effective teaching and learning process. It can be face-to-face meetings using internet applications or giving structured assignments and project. The implementation of online learning becomes a technique for teachers to develop 21st century learning skills. Critical thinking is one of 21st century skills. It encourages students to think critically about events and facts that occur in the environment and use internet-based applications to deliver learning material.

Learning model in curriculum 2013 must provide a learning process that allows students to get used to develop critical thinking abilities and skills. It can be shown, when students have good critical thinking skills, their learning outcomes will be increased.

Based on the results of 4th grade observations and interviews with the homeroom teacher, it was found that 4th grade students had low critical thinking skills on social studies subject. It can be seen from their lack of opinion and express what they thought, and criticize what they saw, this was due to the lack of challenges in learning. The homeroom teacher employed teaching methods and models that were less to stimulate students' critical thinking skills. It was less challenging and made the students feel bored in the classroom. This had an impact on students' social studies subject learning outcomes because of low critical thinking skills.

This can be seen from the data provided by the homeroom teacher, there were 16 out of 22 students who did not master the competence of social studies subject. This can be proven by the Social studies subject test score ≤ 67, the score of 67 was the minimum threshold or *KKM*. From the 22 students, only 6 students were already above the *KKM* and got ≥ 67. However, 16 students had not yet completed their studies,

namely obtaining a score of ≤ 67. Based on the data, it shown that those who reach the *KKM* were 27% while those who had not been able to meet the *KKM* were 73%.

Based on the problems above, it needs a variative learning methods or models that can refresh the atmosphere of learning activities and provide opportunities for students to play a more active role in the learning process and be able to develop students' skills. One of the alternatives for this problem is implementing discovery learning model in the classroom.

The purpose of this study was to improve students' critical thinking skills and learning outcomes using discovery learning model. The theoretical benefit of this research was to consider to develop discovery learning model to improve students' critical thinking skills and learning outcomes.

According to Yaumi (2012: 67) "Critical thinking is a cognitive ability in making conclusions based on logical reasons and empirical evidence".

Santrock (2014) argues that thinking is manipulating and changing information in memory such as the form of concepts, reasons, critical thinking, making decisions, thinking creatively and solving problems. He also defines critical thinking is thinking reflective, productive and evaluating evidence.

From some experts' opinions above, it can be concluded that critical thinking skills are the ability of students to solve problems and draw conclusions from various aspects and perspectives they face.

The learning process has something that has been achieved. The results of the learning process that have been achieved are called learning outcomes.

Purwanto (2013) argues that learning outcomes can be explained by understanding the two words that make it up, namely "results" and "learning". The definition of a result (product) indicates an acquisition as a result of carrying out an activity or process that results in changes in functional input. In teaching activities, after experiencing learning, students change their behaviour compared to before.

Emphasized by Susanto (2013) student learning outcomes are abilities that children acquire after going through learning activities. Because the learning activity itself is a process of someone trying to obtain a relatively permanent form of behaviour change.

Based on the explanations of the experts above, it can be concluded that the learning outcomes are a sign of the learning process carried out which has an impact on behaviour in the short and long term. As well as in education, learning outcomes are interpreted in the form of test results for a number of subjects that have been delivered.

In connection with the explanation above, the researcher was interested in conducting classroom action research with discovery learning model to improve critical thinking skills and student learning outcomes in social studies subject in the 4th grade of *SD Negeri 2 Kedungrejo.*

There were previous studies that have used discovery learning model for critical thinking skills and student learning outcomes. These are some researches that have been conducted by Toni Hidayat, Mawardi, Suhandi Astuti (2019), Oktaviani (2018), Fadilah Wulan Dari, Syafri Ahmad (2020), Ratih. Dwi Yulianti Rahayu, Mawardi, Suhandi Astuti (2019), Yulita Windarti, Slameto, Eunice Widyanti S (2018), Gitta Merdiani Afandi (2019), Awalus Sa'diyah, Yari Dwikurnaningsih (2019), Emi Nur Faizah, Ganes Gunansyah (2014)), Sri Hartati, Irwan Koto, Daimun Hambali (2020), Dianita Eka Prasasti, Henny Dewi Koeswanti, Sri Giarti (2019).

Toni Hidayat, Mawardi, Suhandi Astuti (2019: 3) state that the discovery learning model is a teaching method that guides children acquire knowledge that they previously knew not through notification, or are entirely discovered from the results of their own experiences.

According to Ratih Dwi Yulianti Rahayu, Mawardi, Suhandi Astuti (2019: 9) discovery learning model is learning designed in order to students can find knowledge without being previously known and educators are only facilitators so that they can make students active in learning activities.

Based on the explanation of the discovery learning model, it can be concluded that the discovery learning model is a learning concept in which the learning content is not conveyed directly in the form of text and focuses on learning activities, students are encouraged to find what they want to know, look for their own information, and form what they know then drawn to conclusions.

According to Hosnan (in Fadilah Wulan Dari, Syafri Ahmad, 2020: 1471) the advantages of discovery learning model are: 1) Increasing students' critical thinking skills, 2) Helping students strengthen their self-concept, because they gain the confidence to cooperate with other students, 3) Encouraging students involvement in learning, 4) Learning situations become more stimulated, 5) Training students to learn independently, 6) Improving students' activeness in learning because they think and use the ability to find the final result.

II. METHODOLOGY

Based on the type of data used, this research was classified as qualitative research. Meanwhile, based on the method used, this research was classified as Classroom Action Research (*PTK*). This research was conducted at *SD Negeri 2 Kedungrejo* on 17-20 February 2021. The subjects in this study were all 4th grade students of *SD Negeri 2 Kedungrejo* which consisted of 22 students, namely 6 male students and 16 female students.

Data collection instruments used in this study were observation sheets, test questions, and questionnaires. The observation sheet was used to find out information about the number of students, lesson schedules, syllabus, and teacher and students. activities in learning. Test questions were used to measure student learning outcomes. Questionnaires were used to measure students' critical thinking skills. The data analysis technique employed a comparative descriptive technique.

According to Herry Sanoto (2013: 41) Classroom Action Research *(PTK)* is research that aims to take corrective

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action, increase and also take action in a change in a better direction than before as an effort to solve problems faced, especially aimed at learning activities or the teaching and learning process in the classroom.

This research was conducted in 2 cycles and each cycle consisted of one meeting. Each cycle consists of: seeing (look), thinking (think), doing (act). To measure the level of success in the study, the teacher in each cycle conducted an evaluation and distributed a questionnaire. The successful research is if it has achieved 2 indicators, namely: (1) Learning using discovery learning model is successful if after being given action, there is an increase in students' critical thinking skills ≥ 60 or students get a score of 60 above. (2) Learning by applying discovery learning model is successful if the student's score is ≥ 70 or the student gets a score of 70 and above.

III. RESULTS AND DISCUSSION

A. Results

Based on the data obtained, it can be seen an increase in the mean value of critical thinking skills and student learning outcomes obtained by students starting from cycle I to cycle II.

The results of the inventory of students' critical thinking skills in cycle I can be seen in table 1.1 below:

Table 1.1
Inventory Results of Critical Thinking Skills Cycle I

Category	Value Range	Frequency	Percentage
Very high	60 - 80	9	41 %
High	40 – 59	13	59 %
Moderate	20 – 39	0	0
Low	0 - 19	0	0
Total		**22**	**100 %**
Description		**has not succeeded**	

From table 1.1 it can be seen that the results of the inventory of students' critical thinking skills as cycle I data. The data showed that 41% of students were at very high criteria, 59% of students were on high criteria, 0% was on medium criteria, and 0% was on low criteria.

The students' learning outcomes of *SD Negeri 2 Kedungrejo* after learning using discovery learning model in the first cycle mentioned as follows:

Table 1.2
Frequency Distribution of Learning Outcomes Cycle I Social Studies Subject Theme 7 Sub-Themes 3 Theme 3 Learning 3 *SD Negeri 2 Kedungrejo* Semester II of the 2020/2021 School Year

Category	Score	Frequency	Percentage
Completed	≥ 70	10	45 %
Not complete	≤ 69	12	55 %
Total		22	100 %
KKM		70	
Minimum Value		40	
Maximum Value		90	
Average value		70	

From table 1.2 it can be seen that the completeness of the learning outcomes of students of *SD Negeri 2 Kedungrejo* in the first cycle were students who achieve scores above *KKM* were 10 students with a percentage of 45%. There were 12 students who had not reached *KKM* with a percentage of 55% with the lowest score of 40 and the highest score of 90.

The results of the inventory data analysis for the critical thinking skills of 4th grade students in cycle II:

Table 1.3
Inventory Results of Critical Thinking Skills Cycle II

Category	Value Range	Frequency	Percentage
Very high	60 - 80	19	86 %
High	40 – 59	3	14 %
Moderate	20 – 39	0	0
Low	0 - 19	0	0
Total		**22**	**100 %**
Description		**Succeeded**	

From table 1.3 it can be seen that the results of the inventory of students' critical thinking skills as cycle II data. The data shows that 86% of students were at very high criteria, 14% of students were on high criteria, 0% was on medium criteria, 0% was on low criteria.

The learning outcomes of *SD Negeri 2 Kedungrejo* students after learning using the discovery learning model in cycle II mentioned as follow:

Table 1.4
Frequency Distribution of Learning Outcomes Cycle II Social Studies Subject Theme 7 Sub-Themes 3 Theme 3 Learning 3 *SD Negeri 2 Kedungrejo* Semester II of the 2020/2021 School Year

Category	Score	Frequency	Percentage
Completed	≥ 70	18	82 %
Not complete	≤ 69	4	18 %
Total		22	100 %
KKM		70	
Minimum Value		50	
Maximum Value		100	
Average value		80	

From table 1.4, it can be seen that the completeness of the learning outcomes of students of *SD Negeri 2 Kedungrejo* in cycle II were 18 students who achieve scores above *KKM* with a percentage of 82%. There were 4 students who had not reached *KKM* with a percentage of 18% with the lowest score of 50 and the highest score of 100.

The results of the inventory data analysis of critical thinking skills of 4th grade students in cycle I and cycle II can be seen in table 1.5:

Table 1.5
Comparative Descriptive Analysis of Critical Thinking Skills Cycle I and Cycle II

No	Category	Cycle I		Cycle II	
		Total	%	Total	%
1	Very high	9	41	19	86
2	High	13	59	3	14
3	Moderate	0	0	0	0
4	Low	0	0	0	0
Total		**100**		**22**	**100**
Description				**Succeed**	

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Based on table 1.5, it can be seen that the increase in students' critical thinking skills was in a better direction. It can be seen that in the first cycle there were 9 students or 41% of the students who reached the very high criteria, 13 students or 59% of the students who reached the high criteria, and no students who were in the medium and low criteria. For the results of cycle II, there were 19 students who were at very high criteria with a percentage of 86% and 3 students were at high criteria with a percentage of 14%. Based on the results of the comparative descriptive analysis of critical thinking skills starting from cycle I and cycle II, it shows that there is an increase in critical thinking skills in 4th grade students of *SD Negeri 2 Kedungrejo*.

Table 1.6
Comparative Descriptive Analysis of Learning Outcomes Cycle I and Cycle II

No	Category	Cycle I		Cycle II	
		Total	%	Total	%
1	Completed	10	45	18	82
2	Not complete	12	55	4	18
KKM		**70**		**70**	
Minimum Value		**40**		**50**	
Maximum Value		**90**		**100**	
Average value		**70**		**80**	

From the table above, the comparison of the completeness of student learning outcomes from cycle I and cycle II shows the learning outcomes in cycle I the average value was 70 even though there were still 12 students who had not reached *KKM* (70), while 10 students who had ≥ *KKM* (70) were complete. To strengthen the result, the researcher decided to proceed cycle II. In cycle II there were 4 students who did not complete or ≤ *KKM* with a percentage of 18% of students who had completed or ≥ *KKM* as many as 18 students with a percentage of 82%.

These are the results of this study conducted at *SD Negeri 2 Kedungrejo* by applying the discovery learning model has been proven to improve the learning outcomes of 4th grade students with an increased comparison of learning outcomes.

B. Discussion

Based on the results, it showed that there were differences in students' critical thinking skills and learning outcomes before applying the discovery learning model where at the pre-cycle time there were no students who were able to achieve high criteria, even so the student learning outcomes showed that student learning outcomes were still very low. where of the 22 students only 6 completed students or 27%.

The results of the calculation of the inventory analysis of critical thinking skills showed that there were 9 students in cycle I or 41% who reached very high criteria, in cycle II it was seen that the increase in critical thinking skills was 19 students or 86%. As well as student learning outcomes seen in the first cycle the number of students who completed were 10 students or 45% and in the second cycle student learning outcomes increased to 18 students or 82% who completed. Based on the previous research, it is proven that the use of discovery learning model is effective in improving critical thinking skills and student learning outcomes.

These results reinforce the previous research carried out by Hidayat, Mawardi, Astuti (2019: 8). There were three conclusions namely: 1) Implementing discovery learning model to improve students' critical thinking skills was more effective than using conventional learning model; 2) Implementing discovery learning model to improve students' learning outcomes in learning was more effective than using conventional learning model; 3) There was a positive relationship between critical thinking skills and improvement of students' learning outcomes. In addition, the previous research support conducted by Yulita, Slameto, Eunice (2018: 154) that applying the discovery learning model had been shown to improve critical thinking skills and student learning outcomes, the results of this study are in the line with previous research.

IV. CONCLUSION AND SUGGESTION

A. Conclusion

Based on the results of data analysis during the study to improve students' critical thinking skills and learning outcomes applying discovery learning model in the 4th grade of *SD Negeri 2 Kedungrejo*, it was concluded that: 1) It was more effective to employ discovery learning model than lecture learning model to improve students' critical thinking skills in the classroom. 2) It was more effective to employ discovery learning model than lecture learning model to improve learning outcomes in the teaching and learning processes. 3) There was a good relationship between improving critical thinking skills and students' learning outcomes.

B. Suggestion

These are some suggestions to improve the teaching and learning quality namely: 1) Hopefully, teachers can implement discovery learning model to improve students' critical thinking skills in teaching and learning activities; 2) Students can sharpen and strengthen their critical thinking skills in order to more competent and responsive in the classroom; 3) The institution or school can provide moral and material assistance for teachers to improve the quality of learning.

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