Enhancing Students' Critical Thinking Skills through Problem-Based Learning and Diorama Media: A Study at SD 3 Jurang

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ARTICLE INFO	ABSTRACT
	This research is motivated by monotonous learning using conventional models such as lectures and limited media usage, which can result in a lack of students' critical thinking skills. The objective of this research is to enhance students' critical thinking skills in IPAS material by using the Problem Based Learning model and diorama media. The Classroom Action Research method consists of 2 cycles with 2 meetings. The research subjects in the fifth grade of SDN 3 Jurang for the 2023/2024 academic year consist of 17 students, with 8 male students and 9 female students. The data analysis techniques used are quantitative and qualitative. Qualitative data were obtained through performance observation sheets, while quantitative data were obtained through evaluation tests. The results of the study showed significant achievements, with the assessment of students' critical thinking skills using the Problem Based Learning model and diorama media obtaining a score of 61.6 with a completion percentage of 35.3% in Cycle I, increasing to 80.9 with a completion percentage of 82.4% in Cycle II which means it is included in the Very Critical category. This study should allow teachers to apply the Problem Based Learning model and diorama media more interestingly through practice and group discussions, through this model students can improve critical thinking patterns in science learning.

Introduction

In the era of globalization, the advancement of knowledge and technology from science is increasingly rapid and students need to form the ability of thinking patterns. Lestari et al. (2023) explained that critical thinking skills in the learning process produce good retention, where students become active, broader knowledge insights, and students are able to choose the right information and learning resources. Therefore, teachers should choose learning strategies that can improve students' thinking skills. In line with the opinion of Nuraeni et al. (2023) which explains that critical reasoning is very important to be applied to students at this time, by having critical thinking skills, students can study the problems faced systematically, be able to formulate questions to design original solutions. According to Ariani Ariani (2020), it is very important to improve students' critical thinking skills in the application of natural science in everyday life. Saputri (2020) explains that critical

thinking is a systematic process in problem solving activities, decision making, and conducting scientific research.

Rahayu et al. (2023) said that the low critical thinking skills of students affect learning outcomes, which is a problem that is often encountered in learning. Students' critical thinking skills play an important role in the learning process, which does not mean that students who memorize material understand the material they understand. Critical thinking is a process that can be taught to students, provided that the teacher must be able to choose and apply the right learning model for the development of the students themselves Febiana et al. (2024). So it can be concluded that critical thinking is the ability of students to criticize various problems and be assessed from various points of view. Students' critical thinking skills play an important role in the learning process, which does not mean students who memorize material but about students understanding the material.

Critical thinking skills are important in learning, because they are one of the scientific attitudes that students must have when studying science. Students with low critical thinking skills tend to be less active in learning activities in class. Students only accept and listen to the material presented by the teacher without filtering information and expressing opinions in their minds. This makes students less able to understand the material taught in class. Therefore, students' critical thinking skills are very important to be improved in the learning process so that in the end they will have an impact on improving student learning outcomes, in line with the opinion of Najikhah et al. (2024) who said that if students' critical thinking skills are poor, then student learning outcomes will also decline.

The results of research at SDN 3 Jurang show that there are still many shortcomings, especially in the use of learning models and media so that it is efficient and effective during the learning process, due to the lack of teacher skills in delivering material with a lecture model and only relying on textbooks and LKS, so that students do not understand more clearly and the weak thinking skills of students, especially in IPAS learning, only listen to the material without understanding further how to solve problems, find solutions to problems, ask questions, discuss between groups, and conclude. The field conditions above are different from the ideal IPAS learning conditions, according to (Lestari et al., 2023) where IPAS learning helps students to think critically scientifically, and involves students inviting students to play an active role in solving problems to achieve good learning goals. Based on this statement, it is inversely proportional to the situation in class V SDN 3 Jurang which is addressed by the low ability to think seen from the indicators of achievement criteria for learning objectives (KKTP) of 17 students in the pre-cycle value of critical thinking skills, meaning that 4 students are able to get a complete score and half of the students get a minimum score of KKTP. The criteria for achieving learning objectives is determined from the school 75.

The above problems require learning models and media that are in accordance with the appropriate and effective teaching and learning process so that the learning objectives that have been implemented can be achieved. As the opinion of Khurriyati et al. (2022) the use of learning models so that students easily understand learning materials, and allow

students to work alone and work together and can improve students' critical thinking skills. Kurnia et al. (2024) the problem-based learning (PBL) model is one of the models that is suitable for IPAS learning, because it helps students think critically, increase social sensitivity, understand concepts and train students to actively participate in the learning process. The opinion of Indiyanti et al. (2023) say that the advantages of the PBL model are that students will get used to finding answers to the questions posed, understanding concepts and training students to actively participate in the learning process. One of the suitable media used is diorama media. Ermawati & Riswari (2023) said that learning media is a means to provide stimulation to students so that it is easier to convey learning material, in line with Raziman (2024) discussing the use of diorama media that can create a pleasant learning atmosphere, motivate students to be more active in the learning process and can improve learning outcomes in the development of critical thinking skills. Nisa et al. (2023) argue that students have more opportunities to think critically and respond to a question with the problem-based learning (PBL) model and diorama media. With this, students are expected to gain knowledge through their direct experience that is useful for their next life. This is what encourages making one of the objectives for researchers to raise the title in this study "Improving Critical Thinking Skills in IPAS Material Using the PBL Model and Diorama Media for Class V SDN 3 Jurang". The purpose of this study was to improve critical thinking skills with the application of the Problem Based Learning (PBL) model and the use of diorama media in the IPAS material of grade V SD 3 Jurang.

Research Methodes

The research used a combination of qualitative and quantitative approaches. Classroom Action Research. According to Evandel et al. (2024) is an action on learning activities in the classroom, actions that are deliberately proposed and occur together in the classroom. Riswari et al. (2023) explains that this research is carried out systematically using methods starting from collecting data, processing, and drawing conclusions to achieve the goal of finding answers to problems. This research was conducted systematically using methods starting from collecting data, processing, and drawing conclusions to achieve the goal of finding answers to existing problems. This research uses a design developed by Suhirman (2021), namely planning, acting, observing, reflecting. For more details, it can be seen in the Figure1.
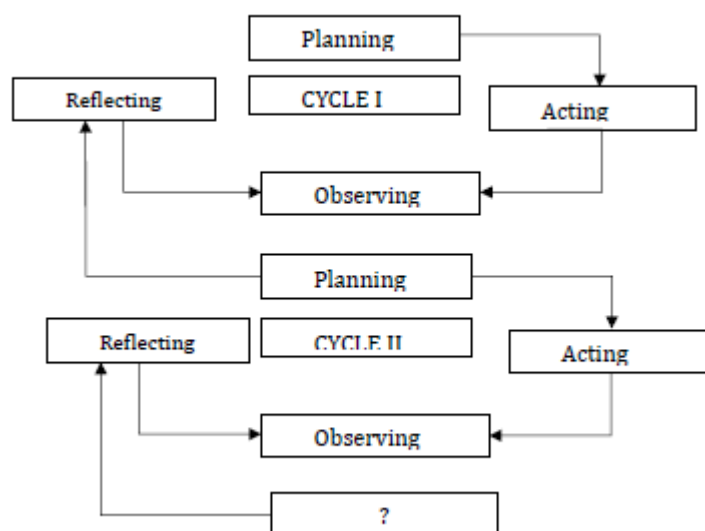
Figure 1. Research Flow (Suhirman, 2021)

This class action research was conducted at SD Negeri 3 Jurang which is located in Jurang Village, Gebog District, Kudus Regency. The research was conducted on September 30, 2024 and October 2 to 9, 2024. The subjects of the class action research were 17 students, consisting of 8 boys and 9 girls, while the object of this research was the improvement of students' critical thinking skills on the material of food chains and food webs in class V IPAS subjects by using problem-based learning models and diorama media.

Figure 2. media diorama (Source: Researcher, 2024)

Data collection techniques taken in the form of assessment of students' critical thinking skills by using problem-based learning models and diorama media. The instruments used in this study were performance sheets, essay tests, and documentation. Data analysis techniques in research with quantitative and qualitative methods. Quantitative data was taken from the essay test sheet, while qualitative data was taken from the performance sheet.

Table 1. Categories of students' critical thinking skills in terms of knowledge aspects

Interval Value	Categories
$80,5 < X \leq 100$	Veri Critical

60,5 < X ≤ 79,5	Critical
40,5 < X ≤ 59,5	Moderately Critical
20,5 < X ≤ 39,5	Less Critical
0 < X ≤ 19,5	Not Critical

Source: (Rahmawati et al., 2023)

Table 2. Categories of students' critical thinking skills in terms of skill aspects

Interval Nilai	Categories
80,5 < X ≤ 100	very good
60,5 < X ≤ 79,5	Good
40,5 < X ≤ 59,5	Fair
20,5 < X ≤ 39,5	Poor
0 < X ≤ 19,5	Failed

Source: (Malinda, 2020)

Findings
CYCLE I

In this study, researchers used learning with the application of the Problem Based Learning model and food chain diorama media to improve students' critical thinking skills, previously the teacher prepared learning materials, materials and media for the food chain. First the researcher said greetings followed by prayer, reading the learning objectives. Then the researcher explained about the food chain, continued In the implementation of learning with the Problem Based Learning model and diorama media, this includes (orientation stage to the problem) giving questions to students and students responding to questions, (stage organizing students to learn) students are divided into 4 groups of 4-5 students after observing the food chain diorama media, (individual or group investigation stage) working on LKPD sheets in groups and working on evaluation questions in critical thinking skills individually, (stage of developing and presenting work) students present the results of group discussions in front of the class, (stage of analyzing and evaluating the problem-solving process) students respond to or refute opinions conveyed by groups that are presenting.

The results of evaluating critical thinking using the knowledge aspect esay test, students work on questions individually to find out how critical each student is, with a total of 12 evaluation questions covering indicators of student critical thinking which include 1) Focus, 2) Reason, 3) Inference, 4) Situation, 5) Clarity, 6) Overiew.

Table 3. Recapitulation of Data on Critical Thinking Skills Knowledge Aspects Cycle I

No	Value Range	Frequency	Presentation	Categories
1	80,5 < X ≤ 100	1	5,8%	Veri Critical
2	60,5 < X ≤ 79,5	6	35,2%	Critical
3	40,5 < X ≤ 59,5	10	58,8%	Moderately Critical

4	20,5 < X ≤ 39,5	0	-	Less Critical
5	0 < X ≤ 19,5	0	-	Not Critical
Total		17	100%	
Classical Average		61,1		
Number of Students Completed		6		
Percentage Completed		35,3%		
Number of Incomplete Students		11		
Percentage Not Completed		64,7%		
Criteria for Completion		Less Good		

(Source: Researcher, 2024)

In the data on the results of the assessment of students' critical thinking skills in the knowledge aspect of cycle I in table 1, it can be seen that with a KKTP value of 75 there are 6 students who have a score ≥ 75 and 11 students have a score < 70. The number of students who are complete is less than the students who are not complete. The percentage of students who were complete was 35.2% and the percentage of students who were not complete was 64.7%. The class average value obtained from the results of the final evaluation of cycle I is 59.2. From the average value of cycle I 61.1 with the Good category, but still not reaching the completeness of the students' critical thinking skills limit of 75. The results of critical thinking skills in the skills aspect are described in the table as follows.

Table 4. Recap of Student Critical Thinking Skills Data Cycle I

No	Indikator	Prasiklus	Siklus I
1	*Focus*	27,9	44,1
2	*Reason*	26,5	33,1
3	*Inference*	31,6	41,9
4	*Situation*	27,2	38,2
5	*Clarity*	25,9	41,9
6	*Overiew*	26,5	39,0
	Total Skor	165,6	238,2
	Nilai Rata-rata (%)	27,6%	39,7%
	Kategori	Kurang Kritis	Cukup Kritis

(Source: Researcher, 2024)

In table 4, it can be concluded that the results of the observation of students' critical thinking sheets in the pre-cycle received a total score of 165.5 with an average percentage of 27.6% and then increased in cycle I by obtaining a total score of 238.2 with an average percentage of 39.7%. This shows that students' critical thinking skills have increased by using the Problem Based Learning learning model and diorama media by 12.1%. From the total average percentage of the 39.7% cycle with the Critical Enough category, which means that it still has not reached the completeness of the students' critical thinking skills limit of 75.

CYCLE II

In cycle II learning with the application of the Problem Based Learning model and dioarama media. By going through the stage of orienting students to the problem, the stage

of organizing students to learn, the stage of guiding individual or group experience, the stage of developing and presenting results, and the stage of analyzing and evaluating the problem solving process. The results of critical thinking evaluation using esay tests, students work on questions individually to find out how critical each student is, with a total of 12 evaluation questions covering indicators of students' critical thinking which include 1) Focus, 2) Reason, 3) Inference, 4) Situation, 5) Clarity, 6) Overiew can be seen from the table below.

Table 5. Recapitulation of Data on Critical Thinking Skills in the Knowledge Aspect of Cycle II

No	Value Range	Frequency	Presentation	Categories
1	$80{,}5 < X \leq 100$	11	64,7%	Veri Critical
2	$60{,}5 < X \leq 79{,}5$	6	35,3%	Critical
3	$40{,}5 < X \leq 59{,}5$	0	-	Moderately Critical
4	$20{,}5 < X \leq 39{,}5$	0	-	Less Critical
5	$0 < X \leq 19{,}5$	0	-	Not Critical
Total		17	100%	
Classical Average		80,9		
Number of Students Completed		14		
Percentage Completed		82,4%		
Number of Incomplete Students		3		
Percentage Not Completed		17,6%		
Criteria for Completion		Sangat Baik		

(Source: Researcher, 2024)

In the data on the results of the assessment of students' critical thinking skills in the knowledge aspect of cycle II in table 5, it can be seen that with a KKTP value of 75 there are 14 students who have a score ≥ 75 and 3 students have a score <70. The percentage of students who completed was 82.4% and the percentage of students who did not complete was 17.6%. The average class score obtained from the results of the final evaluation of cycle II is 80.9.

Table 6. Recapitulation of Data on Students' Critical Thinking Skills Cycle II.

No	Indikator	Siklus I	Siklus II
1	*Focus*	44,1	91,2
2	*Reason*	33,1	75,0
3	*Inference*	41,9	80,9
4	*Situation*	38,2	76,5
5	*Clarity*	41,9	86,0
6	*Overiew*	39,0	77,9
	Total Skor	238,2	487,5
	Nilai Rata-rata (%)	39,7%	81,3%
	Kategori	Cukup Kritis	Cukup Kritis

(Source: Researcher, 2024)

In table 6, it can be concluded that the results of the observation of students' critical thinking worksheets in cycle I received a total score of 238.2 with an average percentage of 39.7% and then increased in cycle II by obtaining a total score of 487.5 with an average

percentage of 81.3%. This shows that students' critical thinking skills have increased by using the Problem Based Learning learning model and dioarama media by 41.6%. From the total average percentage of cycle II 81.3% with a very critical category, which means that it has reached the limit of students' critical thinking completeness, which is ≥ 75. The following to explain the comparison of the results of students' critical thinking skills on each indicator is presented in a bar chart in Figure 2.
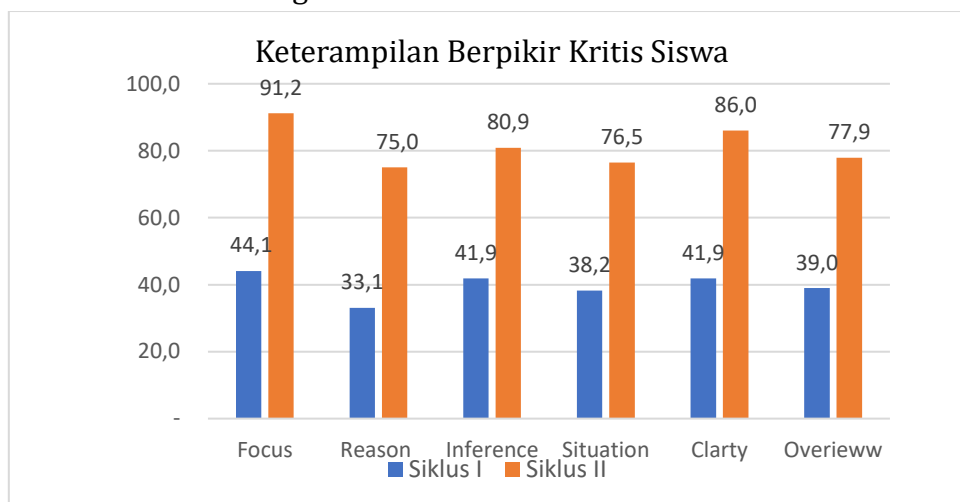
Figure 3. Comparison of Students' Critical Thinking Skill Aspects
(Source: Researcher, 2024)

In on the bar chart in Figure 3, it can be stated that there was an increase in students' critical thinking skills in cycle I and cycle II. In cycle I, it obtained an average percentage of 39.70% with a fairly critical category, increasing in cycle II with an average percentage of 81.30% with a very critical category. The increase in students' critical thinking skills in cycle I and cycle II was 41.6%.

Discussion

From the results of students' critical thinking skills in the knowledge aspect, it shows that there is an increase in students' critical thinking skills with the Problem Based Learning model and diorama media, in the pre-cycle getting an average score of 56.3 in the category of Not Good with a percentage of completeness of 11.8% which states that there has not been completeness in learning. After that, the first cycle was carried out, obtaining an average value of 61.6 in the Critical category, which meant that it increased, with student completeness obtaining 35.3%, but still not achieving the results of the completeness of students' critical thinking skills with this research in cycle II obtained a rapid increase, namely with an average value of 80.9 in the Very Good category and a percentage of completeness of 82.4%. This shows that the percentage results of students' critical thinking skills completion in the knowledge aspect have reached completion. This research was stopped in cycle 2 because it had met the criteria achieved, namely ≥75.

The results of classroom action research show an increase in critical thinking skills with the Problem Based Learning model and diorama media. The increase in critical thinking skills in the skill aspect measured by the performance sheet, the increase is proven by research data. Assessment of students' critical thinking skills in this study consists of several indicators, namely FRISCO The following is an understanding of each assessment indicator.

1. Focus

Focus according to Sima et al. (2022) is that focus means identifying problems well. This ability is shown by writing down the information known from the problem and what is asked precisely, completely, effectively, and efficiently. Aspects observed in the study students pay attention to teachers / students who are presenting arguments and students are enthusiastic about discussing and actively asking questions about the problems being discussed. In cycle I obtained an average result of 44.1 in the Less Critical category, and after the action in cycle II experienced an increase by obtaining an average result of 91.2 which included the Very Critical category. In cycle I there were still many students who were less focused on saving material delivered by the teacher, listening to presentations in front of the class and less active students asking questions in classroom learning. Furthermore, in cycle II students can focus on listening to the material and listening to group presentations and students are also actively involved in learning.

2. Reason

Reason is to provide rational reasons for the decisions taken. According to Fitriana et al. (2024) said that the ability of the thinking process that stems from sensory observations that produce a number of concepts and understanding. In this study, the aspects observed were that students looked for ways to solve problems by providing relevant evidence of each step taken and students were able to provide rebuttals / opinions to friends who presented. In cycle I obtained an average result of 33.1 in the Non-Critical category, and after the action in cycle II experienced an increase by obtaining an average result of 75.0 which included the Critical category, this increase was due to the fact that in cycle II students were able to solve problems by looking for sources of bancaan and from textbooks, and students dared to give rebuttals or have opinions about presentations from other groups.

3. Inference

According to Pratiwi & Setyaningtyas (2020) is a conclusion, the ability to process in drawing conclusions or judgments based on existing evidence or information. In the inference indicator, there are several aspects that are observed, namely students can make the results of the discussion in the form of a report and students can make logical conclusions. In cycle I obtained an average result of 41.9 in the Less Critical category, and after the action in cycle II experienced an increase by obtaining an average result of 80.9 which included the Very Critical category. In cycle I, only a few students were able to make reports and the results of discussions in the form of reports, but in cycle II there was an increase, namely all students actively participated in solving problems by making report results and students were also able to make logical conclusions in solving problems or problems either during group discussions or individually.

4. Situation

Situation is the ability to understand the problem. Uliyanti et al. (2024) said that Situation is understanding the situation in thinking to clarify questions and know their meaning. In this study, the aspects observed are that students are able to use the information obtained to solve problems and students can explain back from a statement. In cycle I obtained an average result of 38.2 in the Non-Critical category, and after the action in cycle II experienced an increase by obtaining an average result of 76.5 which included the Critical

category. In cycle I only a few students were able to use information in solving problems, then in cycle II students experienced an increase because there were already several students who could use information in solving problems and students could explain back a statement. This increase occurred because students were able to solve problems independently and students were able to provide the right answers in solving problems.

5. Clarity

Clarity is giving an explanation to the argument. According to Ferazona (2020).Clarity is a person's ability to explain the term for something. The aspects observed in this study are that students are able to explain and give examples, and students are able to explain the results of diksui coherently and clearly in front of the class. In cycle I obtained an average result of 41.9 in the Less Critical category, and after the action in cycle II experienced an increase by obtaining an average result of 86.0 which included the Very Critical category. In cycle I students were still shy in expressing the results of the discussion with a quiet voice with jokes when reading, then this increase was because in cycle II students were more confident in presenting in front of the class with each student reading the results of the discussion coherently and explaining with a discussion that was easy to understand and effective.

6. Overiew

Sulaiman & Azizah (2020) state that overiew skills are the ability to review or examine in detail. In other words, overiew is the stage of checking the results of the discussion / report, with the aspects observed, namely students examining or rechecking the results of the solution and students being able to find other alternatives in solving problems. In cycle I obtained an average result of 39.0 in the Less Critical category, and after the action in cycle II experienced an increase by obtaining an average result of 77.9 which included the Critical category. The increase is because students have been able to solve the problem more thoroughly and check the answer to the question again.

Conclusion

Students' critical thinking skills in the knowledge aspect in cycle I reached an average score of 35.3 completeness with the category Less Good and increased in cycle II which got an average score of 82.4 completeness percentage with the category Very Good. The critical thinking skills aspect obtained in cycle I reached an average percentage score of 39.7 in the Fair category and increased in cycle II which got an average percentage of 81.3 in the Very Good category. Students' critical thinking skills have met the success indicator of ≥75%. With the learning treatment using the PBL model and diorama media, it can have an Influence on improving students' critical thinking skills and making students more active in the classroom. This research should enable teachers to apply the Problem Based Learning model and diorama media in a more interesting way through group exercises and discussions, through this model students can improve critical thinking patterns in science learning.

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