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## Application of the Team-Assisted Individualization Learning Model to Improve Students' Critical Thinking Skills in Mathematics in Fourth Grade Elementary Schools

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### ABSTRACT

This study describes the improvement of the Team Assisted Individualization learning model in the fourth grade of SD Negeri 028 Kubang Jaya in improving students' mathematical critical thinking skills. Data collection was carried out through observation, testing, and documentation, with qualitative data analysis using percentages. Based on the research results and data analysis, it was shown that before the action, 11 (73%) students were in the less critical category, and 3 (20%) students were in the critical category. 6.6% of students are in the quite critical category. Team-assisted, individualized learning applies remedial actions. After taking corrective action with the team-assisted individualization learning model. Then corrective action is taken with the team-assisted individualization learning model. In cycle I, students' critical thinking skills increased; 6 students, or 40%, were in the critical category, and 9 students, or 60%, were in the moderately critical category. Furthermore, in cycle II, the ability to think critically has increased: 8 students, or 53%, are in the very critical category, 4 students, or 26%, are in the moderately critical category, and 3 students, or 20%, are in the critical category. In cycle II, students' critical thinking skills have achieved the target success of the action set. Thus, it can be concluded that the application of the team-assisted individualization learning model can improve students' critical thinking skills in fourth-grade mathematics at Public Elementary School 028 Kubang Jaya.

### 1. Introduction

One of the subjects that students must follow starting from elementary school and continuing to tertiary institutions is mathematics (Kamarullah, 2017).

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Mathematics is the study of numbers and the logical and practical processes that can be applied to the solution of problems involving numbers (Melly Andriani, 2013). The teaching of mathematics in schools plays an important role in contributing to the realization of the nation's educational goals (Wendra et al., 2020).

According to the Ministry of Education and Culture's 2013 report from the Ministry of Education and Culture (Kemendikbud, 2013), the following are the objectives that must be achieved by learning mathematics:

- a. Improve students' intellectual talents, especially their higher-order thinking skills.
- b. Develop students' capacity to approach problem solving methodically.
- c. Reach a high level of learning.
- d. Teach students how to communicate their ideas effectively, especially through the production of scientific articles.
- e. Develop student character.

Recognizing numbers, operations, measurements, and fields is expected so that students excel in learning mathematics, students must be able to build and evaluate arguments when solving problems which is the goal of learning mathematics at the elementary school level. This goal requires the development of critical thinking skills (Sulistiani, 2015). The NEA (National Education Association) calls 21st century skills "The 4Cs." consisting of critical thinking skills, creativity, good communication, and collaboration are required. Critical thinking is the ability to analyze, evaluate, reconstruct, and make rational decisions (Redhana, 2019).

Mathematics is a subject that can help students develop logical thinking because it provides a strong and clear framework and connections between concepts (Depdiknas, 2003). But the reality on the ground proves that it is difficult for math teachers to improve their students' critical thinking skills in learning mathematics. A student is said to have the ability to think critically if he has a systematic thinking strategy, awareness in thinking, and has the ability to distinguish truth from error (Karim, 2015). Based on interviews conducted by researchers at Public Elementary School 028 Kubang Jaya, it was found that the ability to think critically in learning mathematics was still low. This can be seen from the symptoms which include:

- a) Of the fifteen students, there were seven (47%) who could understand the problem by writing down questions that were identified and asked accurately.
  - b) Of the fifteen students, there were four (27%) able to determine the relationship between statements, questions, and concepts by building accurate mathematical models and explaining them.
  - c) There are three students out of a total of fifteen, which is 20% of the total population, who are able to apply mathematical models to solve
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- problems and carry out calculations in a comprehensive and accurate manner.
- d) Of all 15 students, only two, or 13%, have the ability to draw conclusions correctly.

Based on these symptoms, the ability of students to apply critical thinking skills is still very minimal. Despite the fact that teachers have implemented various strategies, such as the following, to cultivate analytical thinking in students in relation to mathematical topics:

- a) The teacher distributes practice questions to students.
- b) The teacher discusses lessons with students repeatedly.
- c) In accordance with the content of the lesson, the teacher presents various forms of media.
- d) The teacher arranges the content material and writes it on the blackboard.

This design was effective, although the improvement was less than planned. After reflecting and discussing with the homeroom teacher, the researcher concluded that the teacher's learning model was not quite right. Students' ability to absorb and understand information is affected, but the teacher's efforts have not improved students' critical thinking skills in mathematics. The symptoms presented help determine the best way out. To help students develop their critical thinking skills, teachers must be good at designing interesting and understandable teaching methods (Wijayanti et al., 2018). After reviewing the literature and research results mentioned above, the researcher is interested in implementing Team Assisted Individualization as a means of coaching in improving critical thinking skills among students.

Shoimin said the Team Assisted Individualization model aims to adapt group learning to differences in student achievement (Yundiana et al., 2020). Team-assisted individualization in group learning helps students develop critical thinking, creativity, and curiosity. Motivating students and teaching them how to collaborate effectively are two of the many benefits of the team-assisted individualization learning model (Mustofa & Istiqomah, 2018).

## **2. Methodology**

This research is a classroom action research with two cycles. This research was conducted by a teacher and fifteen fourth grade students at SD Negeri 028 Kubang Jaya. Students' mathematical critical thinking skills are the focus of research conducted at the 028 Kubang Jaya Public Elementary School through the application of the Team Assisted Individualization learning model. Observations, interviews and documentation were carried out to obtain data through qualitative descriptive analysis techniques using percentages.

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### 3. Results and Discussion

#### a) Students' critical thinking ability before action

Students' critical thinking skills before action are classified as "very low." This can be seen from the percentage of students' critical thinking skills, which only reach 20%. For more details, see Table 1.

Table 1. Results of Students' Critical Thinking Ability Before Action

Student Code	Test Score	Category
1	68,8	K
2	50	KK
3	68,8	K
4	37,6	KK
5	25	KK
6	50	KK
7	37,6	KK
8	25	KK
9	31,3	KK
10	68,8	K
11	37,6	KK
12	25	KK
13	62,6	CK
14	37,6	KK
15	25	KK
Number of Students Meets Target		3
Percentage		20%

Source: 2021 Observation Processed Data

Note:

SK = Very Critical

K = Critical

C = Fairly Critical

KK = Less Critical

Based on Table 1, it can be concluded that students' critical thinking in mathematics before action is at a percentage of 20%; alternatively, out of a total of 15 students, only three students achieve critical thinking skills in the critical category with a percentage of 50%. However, there were twelve people who had an eighty percent percentage but did not meet the critical thinking ability score criteria.

According to this explanation, the level of student reflection and analysis before the action is still considered "very low." This shows that the indicator of critical thinking success is below 50%. Therefore, the researchers tried to apply the Team Assisted Individualization Learning Model to improve students' critical thinking skills in fourth grade mathematics at Public Elementary School 028 Kubang Jaya.

***b) Students' critical thinking ability in Cycle I***

To find out the results of evaluating students' critical thinking skills in learning mathematics, a written test was carried out that consisted of 1 question. After finishing presenting the results of the group's work, the teacher gives a written test. This can be seen in Figure 1.



Figure 1. The Teacher Gives a Written Test

As shown in Figure 1, the teacher writes test questions on the blackboard. The test questions are answered by students to measure their critical thinking skills after cycle 1. And regarding students' critical thinking skills cycle, it can be seen in table 2.

Table 2. Results of the Cycle I Students' Critical Thinking Ability Test

Student Code	Test Score	Category
1	68,8	K
2	68,8	K
3	75	K
4	62,6	C
5	62,6	C
6	68,8	K
7	56,3	C
8	56,3	C
9	62,6	C
10	75	K
11	62,6	C
12	56,3	C
13	75	K
14	62,6	C
15	56,3	C
Number of Students Meets Target		6
Percentage		40%

Source: 2021 Observation Processed Data

Based on Table 2, this was due to the fact that students did not read the questions carefully, which led them to the wrong conclusion. From the results of Table 2,

we can see that only 6 out of 15 students achieved an ability score on the test with a percentage of 40%, while those who did not reach the value of critical thinking skills were as many as 9 people with a percentage of 60%.

This shows that the fourth grade students of Public Elementary School 028 Kubang Jaya have not yet achieved the success indicators of critical thinking skills in the sub-aspects, namely the analysis, evaluation, and inference indicators, which are at 40% and, traditionally, 50% of the number of students, while the interpretation indicator has exceeded the percentage of 50% of the number of students. For this reason, researchers will correct the failures experienced by students through classroom action research by carrying out cycle II actions to further improve students' critical thinking skills through the team-assisted individualization learning model.

***c) Students' critical thinking ability in Cycle II***

In cycle II, the teacher monitors student work more, as shown in Figure 2.



Figure 2. The Teacher Monitors Student Work.

In Figure 1, it can be seen that the teacher monitors student work more; this aims for the teacher to control the class and monitor so that students are orderly when participating in the learning process, as shown in Figure 3.



Figure 3. Students Working on the LKPD

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From the learning process that has been implemented, as shown in Figures 2 and 3, the teacher gives a written test to measure critical thinking skills. The results of students' critical thinking skills tests using the Team Assisted Individualization learning model can be seen in Table 3.

Table 3. Results of the Cycle II Students' Critical Thinking Ability Test

Student Code	Test Score	Category
1	93,8	SK
2	68,8	K
3	81,3	SK
4	68,8	K
5	62,6	C
6	81,3	SK
7	62,6	C
8	68,8	K
9	87,6	SK
10	62,6	C
11	87,6	SK
12	62,6	C
13	81,3	SK
14	81,3	SK
15	75	SK
Number of Students Meets Target		11
Percentage		73%

Source: 2021 observation data

The average percentage of classical completeness obtained from students' critical thinking skills in cycle II with the Team Assisted Individualization learning model was 11 out of 15 students who achieved good critical thinking skills with a percentage of 73%. This shows that fourth grade students at Public Elementary School 028 Kubang Jaya have met the indicators of success in the sub-aspect of critical thinking. More specifically, students have achieved a score of 50% for the interpretation indicator, a score of 40% for the evaluation and inference analysis indicator, and a score of 50% classically. So that research conducted by researchers through classroom action research by carrying out cycle II actions to further improve students' critical thinking skills through the team-assisted individualization learning model can be said to be successful.

Recapitulation of students' critical thinking abilities in mathematics with the application of the Team Assisted Individualization learning model in Cycle I and Cycle II can be seen in Table 4. Based on Table 4., it can be seen that students' critical thinking skills in mathematics with the application of the Team Assisted Individualization learning model in cycle I, namely the classical percentage reached 40% in the "Low" category. Whereas in Cycle II the classical percentage obtained was 73% in the "High" category.

Table 4. Calculation Results of Students' Critical Thinking Ability

Aspects of Students' Critical Thinking Ability	Percentage of Students' Critical Thinking Ability					
	Test Before Action	Category	Cycle I test	Category	Cycle II test	Category
Interpretation	47%	High	100%	Very High	100%	Very High
Analysis	27%	Low	33%	Low	67 %	High
Evaluation	20%	Very Low	27 %	Low	67 %	High
Inference	13%	Very Low	20 %	Very Low	67 %	High
Classical Percentage	20%	Very Low	40%	Low	73%	High

Source: Observation Processed Data, 2021

#### 4. Conclusion

Based on the results of research and data analysis, it can be concluded that the team-assisted individualization learning model is able to improve students' critical thinking skills in Mathematics in fourth grade D Elementary School 028 Kubang Jaya. From the findings above, a conclusion can be drawn that increasing students' critical thinking skills using the steps of the Team Assisted Individualization learning model has been successful because  $\geq 50\%$  of students' critical thinking skills are in the critical category.

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