Inquiry Learning Model to Improve Student's Critical Thinking in the Themes Learning Technology Development in Class III SD IT Bina Insan Batang kuis

Dina Mawarni [1]*, Hidayat [2]

[1]*,[2] Al-Washliyah Nusantara Muslim University, Medan, North Sumatra, Indonesia

dinamawarni@umnaw.ac.id , hidayat@umnaw.ac.id

Abstract

This study aims to determine the success of the application of the inquiry learning learning model in increasing students' critical thinking in thematic learning of Theme 7 Technology Development in class III SD IT Bina Insan Batang Kuis. The design of this research is the Classroom Action Research (CAR) model of Kemmis and Mc. Taggart is a collaborative research conducted in 3 cycles. The data collection instruments were in the form of tests, observations, and interviews. Data analysis techniques in this study using qualitative and quantitative data. Based on the results of the study, it is known that before being given action in class, the percentage of critical thinking students is 35%, meaning that 9 out of 26 students who achieve a completeness score above the KKM 70. So the researchers took action by applying the inquiry learning model. The results of the application of the inquiry learning model run optimally as evidenced by the teacher's observations in the first cycle of 73.33 (enough), the second cycle increased by 83.33 (good) and experienced an increase in the third cycle of 93.33 (very good). The results of the first cycle of student observations from 66.66 (enough) to 87 (good) in the second cycle and obtained an increase of 90 (very good) in the third cycle. Students' critical thinking by applying the inquiry learning model to the first cycle, which obtained a completeness percentage of 53.84% (not critical), the second cycle increased to 84.61% (critical), and increased in the third cycle by 92.30% (very critical). The results of the research that researchers have done, can be seen in the acquisition of data from the cycle has increased. Thus it can be concluded that applying the inquiry learning model in thematic learning of Theme 7 Technology Development in class III SD IT Bina Insan Batang Kuis can improve students' critical thinking. Therefore, it is suggested that teachers can apply the inquiry learning model with the aim of improving students' critical thinking.

Keywords – Inquiry Learning Model; Critical Thinking; Thematic

1. Introduction

Learning is a process of acquiring knowledge, skills, on someone and then said to be successful after learning to experience changes in behavior. Learning and learning are two concepts that are interrelated with each other where student learning activities take place when learning occurs . On the other hand, the learning process can take place well when it gets a response from students. Thematic learning emphasizes the existence of an active learning process in the learning process, so that students can gain direct experience and are also trained to find their own various knowledge they learn.

The teacher's efforts in encouraging students to think critically are still relatively low and teachers tend to give questions that only ask for answers so that student learning activities look less active , but when repeated by experimenting with problems students are less able to answer them due to low student memory during the material. has been explained by the teacher. However, the obstacles faced by teachers are lack of understanding regarding the selection of learning models in improving students' critical thinking. This is because when teaching the teacher must adjust to the thematic learning being taught, as it is known that thematic learning consists of four or five lessons that are connected to each other.

In solving or solving any problems that exist during the learning process the teacher can ask students to analyze, draw conclusions, connect, and evaluate so that students can think critically in solving or solving problems. The development of critical skills can be through education, in this case the teacher plays an important role. The use of varied learning models will be more attractive to students, because

learning becomes more interesting and can make students better understand the learning material presented.

This opinion is supported by the research of Khayroiyah & Hidayat (2018) which states that the mathematics learning model currently applied by most

teachers uses the ordinary learning model, which is more focused on the teacher.

Various limitations of teachers' understanding and perception of learning processes and activities are one of the causes of teachers carrying out monotonous learning (Sukmawari, Hidayat: 2020).

To present information with a specific purpose, expertise in making presentations related to ability technical, and ability art as well as collaboration second ability this could produce percentage which interesting. By cognitive student burdened with lots of information which will they meet (Hidayat et al, 2021).

Learning required in skeleton prepare student face era resolution industry 4.0 which requires 21st century skills, namely creative thinking, critical thinking, communication, and collaborate (Sukmawari et al, 2022) .

To improve students' critical thinking skills in classroom learning, it is better for teachers to use the inquiry learning model . According to (Suhada , 2017) inquiry learning is a learning model that emphasizes the activeness of students to have learning experiences in finding material concepts based on the problems posed and encouraging students to make their own conclusions based on learning experiences and find concepts from learning with the guidance of a teacher.

This culture-based worksheet links cultural outcomes with mathematical concepts, and pays attention to 21st century skills (Sukmawarti et al, 202 2) .

Formulation of the problem

Based on the background of the problem described above, the formulation of the problem in this study is what is the inquiry learning model .

Research purposes

Based on the formulation of the problem above, the purpose of this study is to determine the success of the inquiry learning model in increasing students' critical thinking in thematic learning theme 7 Technology Development .

2. Method
Research design

Classroom Action Research (CAR) is collaborative research by taking certain actions to improve or improve learning problems in a more professional manner. Classroom Action Research aims to improve the quality of the learning process, find innovative learning models to solve problems experienced by teachers and students.

Research Time and Place

The time of the research was carried out in March-June 2022. The place of research was carried out at SD IT Bina Insan Batang Kuis in class III through thematic learning with the theme of Sub-theme 4 Technology Development.

Research subject

The subjects of this study were teachers and third grade students with a total of 26 students. While the object of this research is students' critical thinking skills in thematic learning with the theme of Technology Development Sub-theme 4 .

Data Collection Instruments and Techniques

In this study the instruments used were in the form of written test questions , observation sheets and interview sheets .

Data collection technique

To obtain data, this study uses several techniques in its collection. With the hope that the data obtained is more valid, and in order to obtain valid data, the data collection techniques used in this study include:

a. Observation

Observation is a method of collecting data by observing every ongoing event and recording it with an observation tool regarding the things being studied or observed. The observations made are aimed at

collect data related to the activities of teachers and students during the learning process in order to find out how the attitudes and behavior of both teachers and students are .

b. Interview

According to Sugiyono (2018) Interviews are used as a data collection technique if you want to conduct a preliminary study to find problems that must be investigated, and if the author wants to know things from respondents who are more in-depth and the number of respondents is small.

c. Test

The test in this study was to measure student achievement in critical thinking in thematic learning by giving a written test that was formed in the questions referring to critical thinking indicators.

Data analysis technique

The data analysis used is qualitative and quantitative data. In qualitative data in the form of information on teacher and student activities carried out in each activity cycle. While quantitative data is the average value of students in critical thinking.

The data used in this study is the technique of qualitative descriptive analysis in the form of a questionnaire assessment sheet obtained from comments or suggestions which is the result of Validation by material expert lecturers and media experts. (Sukmawati et al, 202 1) .

Action Success Criteria

The success criteria used in this research is to determine the level of performance indicators of classroom action research. The required indicator, namely the inquiry learning model, is said to be able to improve the quality of the classroom learning process for third grade students at SD IT Bina Insan Batang Kuis.

3. Result and Discussion

This research was conducted with an inquiry learning model in thematic learning with the theme of Technology Development Sub-theme 4 in class III to improve students' critical thinking. The acquisition of students' critical thinking data is produced through a written test that has been made in two cycles , namely:

Cycle I

a. Planning in class planning Researchers and class teachers determine the time for the implementation for two meetings, namely 17 and 25 May 2022.

b. Action Execution. At the implementation stage, the researcher acts as a teacher who applies the inquiry learning model to improve students ' critical thinking, while the classroom teacher acts as an observer during the learning process.

c. Reflection. From research results classroom teachers and research colleagues make improvements because there are some students who have met the criteria of success, but some students also have not been able to meet the criteria of success specified .

Cycle II

a. The implementation , researchers and classroom teachers determined the time for the implementation for two meetings, namely May 31, 2022 and June 04, 2022.

b. Action Execution The teacher carries out learning in accordance with the lesson plans that have been prepared previously by using the steps of the inquiry learning model . 1) preliminary activities, 2) core activities, 3) closing activities.

Research Results Cycle I, Cycle II and Cycle III

The data obtained from the observations of cycle I and cycle II are as follows:

In the first cycle it has not been achieved because of the 26 students who do not all meet the success criteria, namely 75%. The average value of the students' critical thinking test results is 61.23, the percentage of students' completeness is 53.84% while the percentage of students' incompleteness is 46.15%.

In the first cycle it has not been fulfilled, only the indicator denies an irrelevant argument and conveys a relevant argument, while there are still some indicator results that are not achieved from the percentage criteria that have been

set, namely 75%. In the second cycle, the criteria for success have been met, namely 75. The average value of the students' critical thinking test results is 86.35, the percentage of students' completeness is 84.61% qualified , while the percentage of students' incompleteness is 15.38% or 4 students.

In cycle II it has been fulfilled, each indicator increased such as, using facts accurately and honestly from 51.54% to 96.92%, organizing thoughts and expressing them clearly, logically, or logically from 49.23% to 77.69%, distinguishing between conclusions that based on valid logic with invalid logic getting a percentage of 47.69% increased to 78.46%, then on the indicator of denying an irrelevant argument and conveying relevant arguments obtained 78.64% increased to 89.23%, as well as indicators questioning a view and questioning implications from a view that gained 46.92% increased to 86.15%. So that the percentage criteria that have been set, namely 75% have been achieved.

In the third cycle, the criteria for success have been met, namely 75. The average value of the students' critical thinking test results is 88.77, the percentage of students' completeness is 92.30% with critical qualifications, while the percentage of students' incompleteness is 7.69% or 2 students. In cycle III has been fulfilled, the indicator has increased. The application of the inquiry learning model that is used to improve students' critical thinking is going well. Students become more confident in giving their opinions and when learning takes place students become more active. Therefore, the results obtained in the third cycle were satisfactory, with an average value of 88.31%. So that the percentage criteria that have been set, namely 75% have been achieved.

Discussion

Based on the results of the research that has been done, it shows that by applying the inquiry learning model , it can increase teacher activity, student activity and students' critical thinking. In this case, it is a discussion related to learning that has been implemented through the application of the inquiry learning model to improve students' critical thinking. The discussions are:

From the results of observations of teacher activities that have been carried out in cycle I, it shows that learning by applying the inquiry learning model has not carried out optimally, it resulted in not achieving the criteria for the success of teacher activities that had been previously determined.

In cycle II, improvements were made in accordance with the reflection that had been made, namely conditioning each activity such as guiding students by providing real examples in solving a problem, making students dare to ask questions, giving opinions, directing students to discuss, motivating students, and straightening answers or students conclude by giving examples so that the final score of teacher observation is 93.33 and has very good qualifications and reaches the specified success criteria, which is 80.

Table 1. Improving Student Observation Results

No	Name	Cycle I	Cycle II	Cycle II
1	Student Activity Observation	66.66	87	90

Table 2. Improving Teacher Observation Results

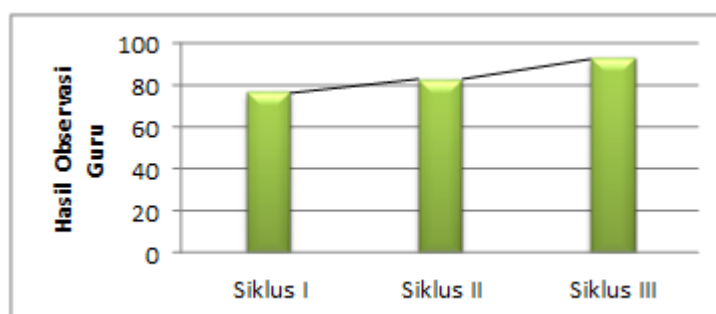| No	Name	Cycle I	Cycle II	Cycle III
1	Teacher Activity Observation	77.33	83.33	93.33

Figure 1. Teacher Activity Observation

In the picture above, it is explained that there was an increase in the results of observing teacher activities from cycle I to cycle II and cycle III. This is increasing because the teacher has provided a real picture or example so that students can better understand the explanation from the teacher. (Wulan Dari , et al., 2019)

states that teachers need to get used to guiding students with concrete examples, this is done so that students better understand directly to determine hypotheses, dare to express their opinions and are trained to solve problems that have been obtained.

In the learning process the teacher forms students to be able to play an active role by creating an interesting learning atmosphere, identifying learning well to increase curiosity, and being able to overcome problems both in the classroom and outside the classroom. (Widyastuti , 2018). This is in line with what has been said (Putra, et al., 2018) that teachers do not only prepare quasi-learning materials but also design good learning processes so that students better understand the material, dare to express opinions, formulate problems and make conclusions.

Based on the results of observing student activities in the first cycle, student activities obtained a final score of 66.66 because students were still in the adjustment phase with the learning process carried out using the inquiry learning model such as paying attention to explanations and conducting questions and answers given by the teacher. Furthermore, the teacher carried out improvements in cycle II and cycle III, students became more daring to ask questions related to the material, formulate problems, determine hypotheses, and carry out activities such as conditioning their group friends to discuss well, so that the final score obtained was 87 on cycle II, then get a value of 90 in cycle III.

The inquiry learning model is a model that emphasizes the activeness of students to have learning experiences and encourages students to make their own conclusions and find concepts from learning with the guidance of a teacher (Suhada: 2017). This is in line with (Zedadra, et al., 2019) which says that the inquiry learning learning model has an influence on student activity to obtain information, seek answers and solve problems by thinking critically and logically.

The increase in student activity can be seen from the score obtained and the learning steps that have been prepared, such as at the core stage or orientation designed to invite students to think.

After students already have an understanding of learning, the teacher guides students to carry out the stage of formulating problems by providing examples of direct problems so that students can understand, then determining hypotheses based on explanations and questions made by the teacher to encourage students to think. The next stage is collecting data by discussing, displaying the results of the discussion, providing feedback and uniting opinions. As mentioned

(Widyastuti: 2018) that during the learning process the teacher places students as learning subjects, where students not only receive the material presented by the teacher but also examine, sort, and provide responses regarding the material provided and learning becomes student-centered.

Table 3. Improving Teacher and Student Observation Research Results

No	Name	Cycle I	Cycle II	Cycle III	Enhancement
1	Teacher Activity Observation	77.33	83.33	93.33	20
2	Student Activity Observation	66.66	87	90	23.34

The summary of the increase that occurred in the results of teacher activity observations was an increase of 20 and students who obtained an increase of 23.34. From these results, each of them has reached a performance indicator of 80.

This can be proven through the results of individual tests in the form of 5 questions. The individual test results from the first cycle of 26 students there were 14 students who completed with a percentage gain of 53.84%. After that the teacher tried to make improvements according to the reflection in the first cycle, so that there was an increase in the individual test results of the second cycle students, namely from 26 students in total there were 22 students who completed with a percentage of 84.61% and to maintain the results, the teacher tried to do the third cycle which got the result that is 24 students experience completeness with a percentage of 92.30% . The following are the results of increasing the

158 Inquiry Learning Model to Improve Student's Critical Thinking in the Themes Learning Technology Development in Class III SD IT Bina Insan Batang kuis

Dina Mawarni , Hidayat

percentage of student success in thematic learning of theme 7 technology development sub-theme 4 transportation technology material.

Figure 2. Results of Increasing Students' Critical Thinking

The picture above explains that students' critical thinking has increased between the first cycle and the final result obtained is 53.84%, in the second cycle the result is 84.61% and in the third cycle the final result increases to 92.30% and achieves the action success criteria indicator, namely ≥75 %.

In students' critical thinking there are several indicators as stated by (Bashith & Amin: 2017) namely providing simple explanations that are easier to understand, building basic skills, making conclusions, providing further explanations and setting strategies and tactics.

From the discussion above, it can be concluded that the application of the inquiry learning model can improve students' critical thinking. Thus, the action hypothesis, namely an increase in students' critical thinking skills by applying the inquiry learning learning model to the thematic learning of the theme of Technology Development in class III SD IT Bina Insan Batang Kuis can be accepted as true.

4. Conclusion

Application of the Inquiry Learning learning model in the Thematic Learning with the Theme of Technology Development in class III SD IT Bina Insan Batang Quiz can be carried out well during the learning process. In the first cycle, the

results of the teacher's activity observations obtained a final score of 73.33 qualified in the sufficient category, so that improvements were made to increase. Observation of teacher activity in cycle II increased to 83.33 and qualified in the good category, then to maintain the results, it was continued with cycle III and obtained a final score of 93.33% with good qualifications. Furthermore, in the first cycle, the results of the observation of student activities obtained a final score of 66.66 with a sufficient qualification category, in the second cycle it increased to 87, and the third cycle increased with a value of 90 so that the qualification was very good.

The application of the Inquiry Learning learning model to improve students' critical thinking in the Thematic Learning with the theme of Technology Development in class III with the sub theme 4 Development of Transportation Equipment has increased, supported by 5 essay questions and predetermined indicators. The result of the percentage of students' critical thinking in the first cycle was 53.81% with the qualifications of the less critical category so that improvements were made in the second cycle. Final result

percentage in the second cycle increased by 84.61.% and in the third cycle the gain obtained was 92.30%. Then the results of the average percentage per indicator of the first cycle obtained by students amounted to 54.41% (less critical criteria), while the second cycle was obtained at 83.38% and the third cycle experienced an increase in the achievement of students' critical thinking per indicator by achieving an average of 86.31% (critical criteria) and the criteria for the success of the action have been achieved, namely 75%.

References

Hidayat & Khayroiyah. S, (2018). " *Development of Didactic Design in Geometry Learning"* Journal of Math Education Nusantara Vol. 1(1), 2018, 15-19.

160 Inquiry Learning Model to Improve Student's Critical Thinking in the Themes Learning
Technology Development in Class III SD IT Bina Insan Batang kuis
Dina Mawarni , Hidayat

Hidayat, Sukmawati, & Suwanto, S. (2021). The application of augmented reality in elementary school education. research, Society and development, 10(3), e14910312823. Thing : 1-2

Nelpita , et.all. (2019). *The Effectiveness of Inquiry Learning Model on Students' Critical Thinking Ability in Pythagorean Theorem Maetri* . Scholar's Journal, 3(2), 227-237.

Putra, *et al.,* (2018). *Application of the Inquiry Method to Improve Critical Thinking Skills on the Materials of the Earth and the Universe for Grade V Elementary School Students* . Journal of Pendas Mahakam, 3(1), 37-45.

Sugiyono . (*2018)* . *Quantitative, Qualitative, and R&D Research Methods* . Bandung: Alphabeta.

Suhada, H. (2017). Inquiry Learning Model and Critical Thinking Ability Science Process Skills of Class V Students in Science Subjects . Journal of Basic Education, 8(2), 63–68. http://doi.org/10.21009/JPD

Sukmawati, E. (2021) . *"Development of Pop Up Book Media in PKN Learning in Elementary School."* Thesis for Elementary School Teacher Education at UMN AL-Washliyah Medan.

Sukmawati & Hidayat. (2020). " Implementation of culture-based worksheets in Mathematics SD". Paper presented at the 2020 Research Results Seminar. UMN Al Washliyah. April 28, 2021.

Sukmawarti, Hidayat, Putri, H. L. A.(2022). Culture-Based Worksheet Workshop for MI Jami'atul Qamar Tanjung Morawa Teachers. Pakmas: Journal of Community Service, 2(1), Pages: 202-207.

Sukmawati, Pulungan, Julia, A. (2020). Development of Elementary Mathematics Teaching Materials Nuance House custom Malay. *JournalMathematics and Natural Sciences Education Research* . 5(1), 31-36. DOI: https://doi.org/10.32696/jp2mipa.v5i1.534

Widyastuti, T. 2018. The Teacher's Learning Process Forms Students To Be Active Mine. Yogyakarta. 224 p.

Zedadra, *et al.,* (2019). *Critical Thinking in the Context of Learning.* Bogor: Erzatama Karya Abadi.