

# The Effect of Models Problem Based Learning and Cooperation Skill on the Critical Thinking Ability in Grade IV Elementary School Student of MI AL-AZHAR Menganti Kab.Gresik.

Ria Resti Fauziah, Prof Mustaji, M.Pd, Dr. Nanik Setyowati, M.Si

Departement of Basic Education, Post Graduate Program, State University of Surabaya

Corresponding Author: Ria Resti Fauziah

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**Abstract:** Researches are interested in developing if it is associated with how to solve problems in the learning process, thinking is a cognitive process in the process involving some knowledge manipulation such as connecting the understanding with one another in the cognitive system directed is to find or produce solutions in solving a problem in the learning process. But the facts in the field of students tend to be interested in interacting digitally rather than interacting directly with their surroundings. This study aims to determine the effect of Problem based learning and cooperative skills on the critical thinking skills of fourth grade students at MI AL-AZHAR Menganti Gresik

This research was conducted at MI AL-AZHAR, Kec. Menganti Gresik, class IV, school year 2018-2019. The research sample was class IV with a total of 22 students. In this study using instruments in the form of validation sheets, questionnaires, critical thinking test questions, student observation sheets during lessons and teacher response questionnaires.

The results showed: (1) Based on the analysis with the Pearson bivariate correlation test from the pretest and posttest values using the SPSS 20.00 test it can be concluded that the pretest and posttest values are interrelated because  $r_{count} > r_{table}$ . Where  $r_{table}$   $n = 22$  is 0.359 can be concluded  $r_{count} > r_{table}$  in the table above shows  $0.836 > 0.359$ . (2) Based on the analysis table test Sperman Rank Correlation with a significant level of  $0.359 > 0.05$  or  $> 5\%$ , while in the test table 4.15 it is known that  $t_{table}$  data is 0.514, which means the correlation test is above 0.359 so it can be concluded that there is the effect of cooperative skills on students' critical thinking abilities (3) there is an interaction between problem based learning learning models and cooperative skills towards critical thinking skills in the class IV MI Al-Azhar Menganti is proven by the value of the pretest and the increasing posttest.

**Key words:** *Problem based learning, cooperation skill, critical thinking.*

## 1. PRELIMIARY

Based on Republic of Indonesia Law Number 14 of 2005 concerning Teachers and Lecturers Chapter 1 article 1 point (a) Teachers are one part of professional educators whose job is to educate, teach, demonstrate, direct, train, process, and evaluate students in the world of education includes early childhood education from both formal education, basic education, and secondary education.

That is, the education process ends in the formation of attitudes, behaviors, utilization of intelligence or intellectuals, and the utilization of children's skills that should be in accordance with the required competencies. The teacher is a learning driver for students who have a big role in fostering enthusiasm and giving motivation to students to be actively involved in the learning process. In the process of learning activities the teacher must also be able to choose a learning model that will be used as one of the determinants in the success of learning of students. A good learning model will provide satisfactory learning outcomes, because students will be interested in the delivery model used by the teacher.

The process of learning in the world of education can be seen from the formation of attitudes, behaviors, utilization of intelligence or intellectuals, and the utilization of children's skills which should be in line with their competencies. Educators are facilitators of student learning that have a large role in fostering enthusiasm and giving motivation to students to be actively involved when in class while doing teaching and learning activities. When learning activities educators must also be able to determine the appropriate learning model and be applied in the learning process as one of the factors increasing the achievement of teaching and learning goals for the success of learning of students. The learning model is said to be appropriate and successful if during teaching and learning activities students are actively involved, can express ideas that are owned and create an atmosphere of teaching and learning that runs both ways.

One way done by educators to improve critical thinking is to use the appropriate learning model accompanied by good cooperation. students only listen to the material explained by the teacher, students are less active in terms of asking questions and if they answer questions from the average teacher they cannot answer, some of them can answer the answers according to the contents of the book and are memorized while the other students the answer follows another friend. At the time of learning students are less actively involved in the thought process to achieve material completeness, so that this causes learning activities to be less meaningful because they are more motivated to results than processes. Aziz (2012: 39) if it is associated with how to solve problems in the learning process, thinking is a cognitive process in the process involving some knowledge manipulation such as connecting the understanding with one another in the cognitive system directed is to find or produce solutions in solving a problem in the learning process

The learning model is a conceptualized chart that describes the procedure systematically in organizing the learning experiences of students in achieving their learning goals, and its function is to be used as a guide for learning designers and educators. in planning and carrying out the process of teaching and learning activities. (Toeti Soekamto and Udin Saripudin W). The task of the teacher in addition to delivering the material also creates a conducive atmosphere and learning environment and attracts students to be more active in learning and can motivate students to be actively involved in the learning process. So that it is expected that with the right learning design made by the teacher, students will have maximum learning achievement. For this reason educators should have knowledge and be able to apply various learning models so that learning objectives are very diverse and complex. It is not enough for teachers to rely only on one approach or learning model. Capitalizing on the ability to carry out various learning models, educators should have knowledge of good and appropriate learning models to achieve specific learning goals that are tailored to a particular learning environment or group of students and can be actively involved in the teaching and learning process. Because as it should be the learning process is an effort carried out by students, not something that is done to students ..

One effort to improve the ability of students is the ability of teachers to determine the learning model used. The role of educators in active learning is essentially as a facilitator. Facilitators are individuals who play an active role in helping side by side with students to learn and acquire new skills needed to achieve learning goals (Warsono and Harianto, 2014: 20). The success of the learning process is inseparable from the ability of educators to implement various types of learning models that are oriented to improvement involvement of students in achieving learning goals. The application of the learning model basically aims to create active and enjoyable learning conditions. In this regard the selection of learning models is needed because the learning model is a method or technique used by educators in implementing learning processes.

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Based on observations made by researchers during the learning process at MI Tarbiyatul Ulum Menganti on November 16, 2018, students only listened to the material explained by the teacher, students were less active in asking questions and if they answered questions from the average teacher they could not answer, some of them can answer the answer in accordance with the contents of the book and are memorized while the other students answer the answers to other friends. At the time of learning students are less actively involved in the thought process to achieve material completeness, so that this causes learning activities to be less meaningful because they are more motivated to results than processes. Aziz (2012: 39) if it is associated with how to solve problems in the learning process, thinking is a cognitive process in the process involving some knowledge manipulation such as connecting the understanding with one another in the cognitive system directed is to find or produce solutions in solving a problem in the learning process. But the facts in the field of students tend to be interested in interacting digitally rather than interacting directly with their surroundings. This causes students to lack good cooperation skills, this is

evidenced by the lack of indifference to other fellow students, cheating or dishonesty during the exam, lying to cover up their mistakes and violating school rules. These problems can be an example of the low skills of cooperative students. Thus improving the skills of this cooperation can be done through education. Because a teacher is not only required to be able to instill aspects of knowledge only in the learning process but instill good behavior and character by instilling a habit of positive cooperation skills for students. Based on the above problems, to find out the description of the effect of problem-based learning and Cooperation Skills on critical thinking skills in class IV, the researcher conducted a study entitled "The Effect of Problem Based Learning and Collaborative Skills on Class IV Critical Thinking Ability at MI AL-AZHAR Kab. Gresik".

## 2. Research Methods

This type of research is development, because The research conducted in this study uses experimental research because experimental research is based on the philosophy of logical positivists which means operating with strict rules regarding logic, truth, laws and predictions (Danum, 2002). This experimental research was identified as a work process that took place in a concise, limited and sorting out problem that would be a benchmark and could be expressed in nominal form. This research was conducted to explain, examine the relationship between variables, determine the causality of variables, and examine theory.

In this study using a quantitative approach, where the work process that takes place in a concise, limited and determine the problem is a part that can be measured and expressed in nominal or numerical form. To provide an explanation of the relationship between the variables studied.

In this study using a Pre-Experimental design with a one-group Pretest-Posttest Design design model, meaning that in this study there was only one class group that had been determined. Data retrieval is done by giving a pretest to a particular group done at the beginning before giving treatment to know the ability of the initial group, then given treatment and posttest to determine the effect after being given treatment to know the students' critical thinking skills. Thus the results obtained by treatment can be known to be more accurate because it can compare with previous conditions before being treated. The design is described as follows

This research belongs to experimental research. Experimental research was conducted to examine whether there is a causal relationship between variables. This study uses a nonequivalent control group design. Sugiyono (2008) suggested that this design was not different from the pretest-posttest group design, only in this design the experimental group and the control group were not chosen randomly. This research was conducted in three stages, namely the preparation, implementation, and completion stages.

**Table 2.1 the reseach design**

|                |   |                |
|----------------|---|----------------|
| O <sub>1</sub> | X | O <sub>2</sub> |
|----------------|---|----------------|

The location taken in this study was AL-AZHAR MI. The research population was fourth grade students of MI AL-AZHAR with a total number of students of 26 students.

The techniques used to collect data in this study are: (1) Tests. The test includes giving written questions in the form of descriptions to students according to the test indicators consisting of 15 subjective questions. The test was conducted twice, namely at the pretest and posttest stages for the two research classes. This test is used to determine the contribution of the problem based learning model to students' critical thinking skills. (2) Observation. Observations were made to collect data on the achievement of indicators of student cooperation determined by the researcher.

in formal education the role of educators is very important for achieving learning goals. Educators are facilitators to complete the learning process to shape students in a better direction. The main task of an educator is to teach students to be able to learn. Besides the quality of learning, innovative learning models are also needed as a means of supporting the teaching and learning process. Through an innovative learning model it is expected that it will facilitate the learning process that is in accordance with the character and needs of students.

The instrument developed in this study is the Evaluation Sheet (problem solving ability test). Evaluation sheet is given twice namely before being given treatment (pretest) and after being given treatment (posttest). Evaluation sheet is given to students to find out the contribution model of problem based learning in improving problem solving skills in class IV. The evaluation sheet developed is a written test of natural appearance material and artificial appearance. The test is in the form of 15 open questions in the form of a description, so students can explore their ability to solve problems and obtain information from various other references around students. For questions successfully answered by students, scores are given according to the weight of the predetermined questions.

Observation sheet. Observations carried out by observers are used to determine the level of student cooperation through observing student activities in learning in the classroom. The observation sheet that will be developed is a checklist with "yes" or "no" answers according to indicators of student learning motivation including

attention levels, asking questions or responding, persistence, digging information from various sources, and excitement in learning. Assessment consists of 2 criteria, namely score 1 for the answer "no" and score 2 for the answer "yes".

Before analyzing the data relating to the results of the study, it must first be conducted a feasibility trial of the research instrument consisting of validity and reliability testing.

The data analysis technique used in this study is descriptive and inferential analysis techniques. Descriptive data analysis aims to assess the extent to which the variables studied are in accordance with predetermined benchmarks. While inferential data analysis is used to test the hypotheses that have been proposed (Arikunto, 2010, p. 282)

Inferential data analysis begins with a normality test and homogeneity test as a prerequisite for the t test to test the hypothesis proposed by the researcher. The hypothesis proposed in this study are: 1) There is the influence of using problem based learning models and cooperative skills on students' critical thinking skills. 2) there is no effect on the use of problem based learning models and cooperative skills on students' critical thinking abilities

### 3. Result

Problem based learning is one of the learning models used to stimulate high-level thinking of students in situations that are oriented to real-world problems, including in the teaching and learning process. Rusman (2012: 243) suggests that the steps of problem-based learning are as follows:

#### Phase Indicator of Teacher Roles

1. Student orientation to the problem Explain the purpose of learning, explain the logistics needed, and motivate students to be actively involved in problem solving activities
2. Organizing students to learn Helps students define and organize learning tasks that are related to the problem
3. Guiding experience Encouraging students to gather appropriate information, carrying out experiments to get explanations and problem solving
4. Develop and present the work of helping students in planning and preparing suitable works such as reports.
5. Analyzing and evaluating the problem solving process Helping students to reflect or evaluate their investigations and the processes that have been passed in solving problems.

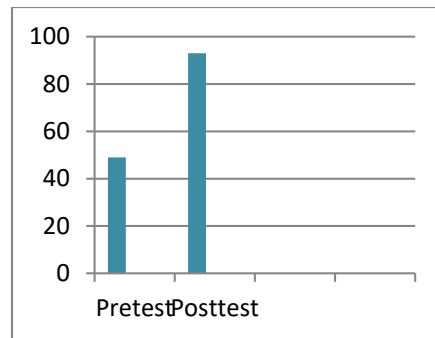
The results of the study consisted of the results of expert validation, the results of research in the field, and the results of inferential analysis. The following are the results of the validation of learning tools and research instruments used in this study, which have been validated by two experts who are competent in the field of education and learning.

**Table 3.1. Results of Validation of Learning Devices and Research Instruments**

| Results                  | Mean's of results | Grade     | Ket                                |
|--------------------------|-------------------|-----------|------------------------------------|
| Silabus                  | 3,28              | B / Valid | Can be used with a little revision |
| RPP                      | 3,38              | B / Valid | Can be used with a little revision |
| Observation Sheet        | 3,21              | B / Valid | Can be used with a little revision |
| Test of cricial Thinking | 3,61              | B / Valid | Can be used with a little revision |

The results of the validation of the syllabus, RPP, observation sheet and problem-solving ability test in the table show the average feasibility validation of the four learning instruments and research instruments from the validator to get a good category, so it can be concluded that learning devices and research instruments are feasible with a slight revision.

In addition to the results of the validation of learning devices and research instruments from experts, the results of research in the field will also be presented relating to the influence of the ARIAS learning model on learning motivation and problem solving skills. The following is a graph that illustrates the comparison of the results of data analysis of learning motivation and problem solving skills in the experimental group and the control group.



**Figure 3.2 Diagram of pretest and posttest critical thinking**

Based on the graph shows that the results of the students' critical thinking ability tests that have been carried out by observers in the experimental class have increased, at the pretest the learning motivation was low (21.43%), while at the posttest the students' learning motivation became high (65.52%). While the results of observation of student learning motivation that has been done by observers in the control class did not experience much improvement, at the pretest the learning motivation was low (22.84%), while at the posttest the students' learning motivation became moderate (46.76%).

The results of the problem solving ability test in the experimental class that were treated using the ARIAS learning model showed an increase in the class average. At the pretest the class average was only 56.24, while in the posttest the average class increased to 77.83. While the results of the problem solving test in the control class that did not get treatment or use conventional learning models showed that there was no significant increase in the class average. At the pretest the class average was only 54.43, while the posttest class average was 63.46. Furthermore, the results of inferential data analysis will be presented relating to the testing of hypotheses from the researcher. The following is the result of inferential data analysis to test the hypothesis proposed by the researcher. Before the t test is carried out, it must first perform a normality test and homogeneity test. The following are the results of calculations in this study.

**Table 3.3 normality test**

| Variabel          | Kelas      | Df | Sig.  | Deskripsi |
|-------------------|------------|----|-------|-----------|
| Cooperation       | Kontrol    | 28 | 0,113 | Normal    |
|                   | Eksperimen | 28 | 0,121 | Normal    |
| Critical thinking | Kontrol    | 28 | 0,200 | Normal    |
|                   | Eksperimen | 28 | 0,155 | Normal    |

Based on the table above shows that the assumption of normality has been fulfilled, it can be seen from the significant level on all variables (learning motivation and problem solving ability) posttest in the control class and experimental class more than 0.05.

**Table 3.4 Homenitas Test**

| Variabel          | df 1 | df 2 | Sig.  | Deskripsi |
|-------------------|------|------|-------|-----------|
| Cooperation       | 1    | 55   | 0,832 | Homogen   |
| Critical Thinking | 1    | 55   | 0,699 | Homogen   |

Based on the table the results of the homogeneity test at the posttest of student learning motivation showed a significance value of 0.832 and the posttest problem solving ability was a significance value of 0.699. Data

requirements are said to be homogeneous, ie if the sig value is more than 0.05, so that the processed data can be stated that the assumption of homogeneity is fulfilled for both the control class and the experimental class.

**Tabel 3.5. Uji T - Independent Sample T-Test**

| Variabel          | T     | Df | Sig. (2-tailed) | Deskripsi   |
|-------------------|-------|----|-----------------|-------------|
| Cooperation       | 4,513 | 55 | 0,000           | Ho rejected |
| Critical Thinking | 5,037 | 55 | 0,000           | Ho rejected |

The results of the analysis in the table show the results of the analysis with the Independent Sample t-test obtained sig 2 tailed for  $0,000 < \alpha (0.05)$  with t count of 4,513 for learning motivation and 5,037 for problem solving skills then t count consulted with t table for one-party test where t table 2.004 (df = 55) because t count > t table, means that the results of the two samples differ significantly. This means that there are significant differences in learning motivation and problem-solving abilities of students in the control class and experimental class at the posttest. Students in the experimental class who use the ARIAS learning model are more motivated in learning and better ability to solve problems than students in the control class who use conventional learning.

Whereas for problem solving ability test data, it can be concluded that the problem solving ability in students who use the ARIAS learning model is significantly higher than the problem solving ability in students who use conventional learning models.

Questionnaire for student responses was given to 20 respondents in the experimental class. This response questionnaire contains 7 statements that must be filled out by the respondent, in which there are four answer choices including SS (Strongly Agree) having a score of 4, S (Agree) having a score of 3, TS (Disagree) having a score of 2, and STS (Strongly Disagree) has a score of 1. Respondents must choose one of the answers provided by cheating. This questionnaire is related to the learning method used. The learning method used is discovery learning method, the learning method is very suitable to be applied to the material properties of light because in this material students prove themselves or make observations directly about the properties of light through practicum that is done so that learning is more memorable and the material will last longer.

This study shows that the results of the questionnaire response analysis of students interested in the application of the discovery method included in the criterion of responding to learning are 26 out of 30 students with a percentage of 86.7%. While those included in the criteria for responding to learning are 4 out of 30 students with a percentage of 13.3%. this can be seen in figures 4.1 and 4.2 which have shown differences in the average learning outcomes and scientific attitudes of students in the experimental class and the control class. The average learning outcomes and scientific attitudes in the experimental class are better with the control class because the experimental class is gives.

#### 4. Discussion

Based on the discussion of the results of the research presented, it can be concluded that there is a positive and significant influence between mind mapping learning methods and literacy movements on students' reading activities in elementary schools. . The results showed that the group of students using the ARIAS learning model (experimental group) were more motivated than the group of students who used the conventional learning model (control group). And there is a positive and significant influence between the ARIAS learning model on students' ability to solve problems. The results showed that groups of students who used the ARIAS learning model (experimental group) had better ability to solve problems compared to groups of students who used conventional learning models (control groups).

Based on these conclusions, the researcher can provide the following suggestions. Based on the results of observations of student learning motivation and the results of problem solving abilities that have been achieved by students using the ARIAS learning model, the learning model can be an alternative learning model that can be applied by teachers to improve student learning motivation and problem solving skills in social studies in elementary school. In this ARIAS learning model students will be actively involved, think creatively and make learning more fun and meaningful. But in applying this learning model, the teacher must adjust the characteristics of the teaching material by reviewing content standards. As well as for other researchers, can conduct another review of the influence of the ARIAS learning model, for example student activities, interests, student creativity, and so forth. Because this study was only reviewed from students' learning motivation and problem-solving ability in social studies learning in fifth grade elementary school students.

In this study there were experimental classes and control classes studied. The experimental class is given treatment by using the discovery method while the control class is not given treatment by using the lecture method. The results of the study and testing of hypothesis testing statistics using SPSS 18 posttest values of learning outcomes obtained the value of Sig (2-tailed) = 0.000 which is smaller than the significant value that is 0.05 then it can be concluded that H<sub>0</sub> is rejected and H<sub>a</sub> is accepted. Likewise the hypothesis test using SPSS 18 posttest scientific attitudes is obtained by the value of Sig (2-tailed) = 0.000 which is smaller than the significant value that is 0.05 then it can be concluded that H<sub>0</sub> is rejected and H<sub>a</sub> is accepted. Thus the hypothesis in this study is "There is an influence of the discovery method on the scientific results and attitudes in the class V science class material of the properties of light". With the average value of the experimental class learning outcomes is 73.7 and in the control class is 60.3 while the average value of the scientific attitude of the experimental class is 75.2 and in the control class is 53.7.

This is in accordance with the opinion of Ausebel, that learning is said to be meaningful if the information to be learned by students is arranged in accordance with the cognitive structure of students, so that students can associate new information with the cognitive structure they have. This is also in line with the opinion of Jhon Dewey who said that teachers must encourage students to engage in learning processes or problem-based tasks and help them investigate problems both intellectually and socially.

The ability of cooperation is in this research to be group or social activities in which students must interact with other students. This is in accordance with the opinion of Vygotsky who argues that children's cognitive and language development does not develop in empty social situations. Indeed, humans can compile their knowledge, but mental functions have several social connections, which means that humans can develop or process well if they can develop the potential for social interaction well.

Using the problem based learning model during the teaching and learning process students will get used to facing problems and feel challenged to solve problems both problems in the material in learning and social problems while fostering a sense of cooperation with other students can foster good social solidarity. Children will be accustomed to expressing opinions, discussing and interacting with other students into tears.

The results of the study are in line with the scientific journal written by Anisa Bellah (2015) which included quantitative research on the type of experimental research using the Quasi Experimental Design. The research form Nonequivalent Control Group Design with Pretest-Posttest Control Group Design. In this study it can be concluded that the influence of PBL learning models and Cooperation Skills influence learning outcomes in teaching and learning activities. The results of the study prove that the social level of students is needed or increased by 69%, meaning that the social attitudes needed in the teaching and learning process include honest, disciplined, responsible, caring, polite and confident behavior.

## **5. Conclusion**

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Based on the results of the research obtained, the suggestions that can be given by the researcher are as follows: (1) Teachers should always pay attention to student characteristics and always involve students in the learning process that relates to the material to be delivered so that students can be more enthusiastic and improve the thinking skills they already have. (2) The teacher should use a learning model that is varied and in accordance with material needs in the learning process. Based on the results of the research that has been done, the problem based learning model needs to be implemented in the classroom so that students in the class can develop the ability to discuss and think critically. (3) The researcher only examines the effect of the problem based learning model and the effectiveness of cooperation on critical thinking skills, so that the next researcher is expected to be able to add or apply other variables with different material.

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