



Application of Project-Based Learning to Improve Critical Thinking Skills and Student Learning Outcomes in Materials on Relationship Between Economic Activities and Utilization of Natural Resources

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Abstract. This study aims to develop critical thinking skills and student learning outcomes on the subject of Natural Resources Utilization through Project-Based Learning. The research method used in this research is Classroom Action Research. The subjects of this study were the fourth grade students of SD IT Insan Rabbani for the 2018/2019 academic year, totaling 29 students. Students consist of 15 male students and 14 female students. The instruments used in this study were learning outcomes tests, critical thinking skills tests, and observation sheets. The results showed that the critical thinking skills and learning outcomes of elementary school students for grade IV on the material of the relationship between economic activities and the use of natural resources through project-based learning increased in each cycle. The results of student learning completeness in the pre-cycle are 41.38%. Through the application of project-based learning, student learning outcomes have increased in each cycle, namely 48.28% in the first cycle, the second cycle, which is 72.41% and 86.21% in the third cycle. Based on the results of these studies, it can be concluded that critical thinking skills and learning outcomes of SD IT Insan Rabbani Class IV students on the subject of Relationships between Economic Activities and Utilization of Natural Resources have increased through Project-Based Learning. Thus, the researcher recommends Project-Based Learning as an alternative in improving critical thinking skills in social studies learning material on the relationship between economic activities and the use of natural resources.

Kata kunci : Project-Based Learning, Critical Thinking Skills, Economic Activities, Natural Resources

Introduction ~ Law no. 20 of 2013 explains that social studies is a study material that must be included in the primary and secondary education curriculum which includes geography, history, economics, and sociology which is intended to develop students' knowledge, understanding, and analytical skills on the social conditions of society. Based on the law, social studies learning is an important lesson to improve students' thinking skills in studying and solving social problems they face. One of the important social studies material studied by students is the relationship between economic activities and natural resources.

The material on the relationship between economic activities and natural resources can equip students with awareness, positive mental attitudes, and skills towards the use of the environment that is part of that life (Susanto, 2016). Therefore, students are required to be able to develop critical thinking skills in analyzing the relationship between economic activities and the use of natural resources. According to (Facione, 2011) states that critical thinking is self-regulation in deciding something that results in interpretation, analysis, evaluation, and inference as well as exposure using evidence, concepts, methodologies, criteria, or contextual



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considerations, which are the basis for making decisions.

However, the results of studying the relationship between economic activities and the use of natural resources in Class IV SDIT Insan Rabbani Majalengka show that there are still many who have not met the KKM. The KKM value for the material on the relationship between economic activities and the use of natural resources at SDIT Insan Rabbani Class IV is 75. The results obtained by students are 17 out of 29 students or 58.62% have not met the KKM. This shows that learning on the relationship between economic activities and the use of natural resources in Class IV SDIT Insan Rabbani Majalengka still needs improvement.

Based on the results of observations made by researchers in the fourth grade of SD Islam Terpadu Insan Rabbani, it shows that social studies learning material on the relationship between economic activities and natural resources does not take advantage of the environment that provides natural resources so that it does not show an increase in critical thinking skills because it focuses on textbooks and discussions, not alive. This can be seen from the indicators of student activity in asking only a few students, the questions asked by students are limited to the level of memory contained in textbooks, students have not been able to explain in their own sentences, students have not

been able to make conclusions about the material that has been taught by the teacher, and the discussions that follow. done in class has not been going well because only some students responded, refuted or asked questions to the answers given by their friends. Therefore, it is necessary to implement learning that can improve the implementation of learning so that students can be more active and critical.

The project-based learning model is a learning model that is expected to improve students' critical thinking skills so that they can improve the learning outcomes of Class IV SDIT Insan Rabbani students on the relationship between economic activities and natural resources. The project-based learning model according to (Sujana and Sopandi, 2018) is a form of learning based on constructivist findings that students gain a deeper understanding of the material when they actively build their understanding by working and using ideas. Through project-based learning students will be more active in learning and hone critical thinking skills and student learning outcomes. Previous studies support this statement.

Research conducted by Anazifa and Djikri (2017) the results of the study show that (1) project-based learning and problem-based learning affect students' creative and critical learning abilities (2) there are differences in the effects of project-based

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learning and problem-based learning on students' creativity (3) there is no difference in the effect of project-based learning and problem-based learning on critical thinking. Holmes and Hwang (2016) research explains that students who learn to use project-based learning are more intrinsically motivated, show much higher critical thinking skills and value peer learning. Dimmit (2017) explains that project-based learning methods can provide students with effective techniques to increase independence, critical thinking skills. Based on these studies, it shows that project-based learning can solve various problems faced in class IV SDIT Insan Rabbani Majalengka on the material relationship between economic activities and the use of natural resources.

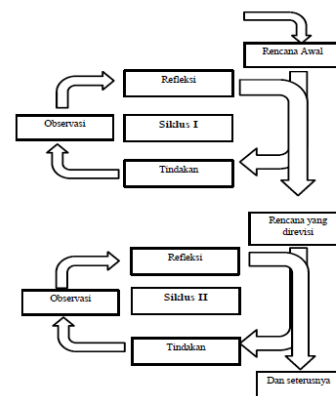
Based on the problems that have been described previously, the purpose of this study is to describe project-based learning to improve critical thinking skills and student learning outcomes on the relationship between economic activities and the use of natural resources.

Research Methods

This research was conducted in the fourth grade of the Insan Rabbani Integrated Islamic Elementary School in the 2018/2019 academic year with a total of 29 students consisting of 15 male students and 14 female students. The type of research used in this research is Classroom Action Research. Classroom Action

Research or CAR has a very important role to improve the quality of learning if implemented properly. (Mulyasa, 2011: 34) classroom action research can be interpreted as "an effort to improve the learning process or solve problems encountered in learning".

The research design refers to the Kemmis and Mc Taggart model (Wiriadmadja, 2012: 12) which consists of four stages, namely planning, action, observation and reflection. The steps for implementing the action can be seen in the image visualization below:



Adopted from the Spiral model of Kemmis and Mc Taggart (in wiriadmadja, 2012: 66)

Based on the research procedure above, the researcher developed it as follows:

1. Conducting pre-research observations to find out what problems occur in the classroom as a reference for implementing plans.
2. The researcher prepares a plan based on the results that have been obtained from the pre-research. Plan (plan) activities to develop an action plan that will be carried out in class IV SD Islam Terpadu Insani Majalengka.



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Researchers compiled syllabus and lesson plans, determined learning steps using project-based learning in accordance with the material to be delivered and compiled data collection tools to make it easier for researchers to see the results of the actions that have been taken and process data.

3. Next, the stage is carried out, namely the application of project-based learning in the fourth grade of the Integrated Islamic Elementary School Insan Rabbani based on a plan that has been made previously. Actions will take place until critical thinking skills in learning the relationship between economic activities and the use of natural resources using project-based learning reach a saturation point (stable)
4. At this stage observe, observing, viewing and documenting (recording and recording) the processes, results, effects and problems that arise during the implementation of project-based learning in grade IV SD Islam Terpadu Insan Rabbani. The results that have been recorded and documented will be processed and become the basis for reflection for the success of the actions that have been taken and become improvements in developing further action plans.

5. The last stage is *reflect* (reflection) where at this stage the researcher evaluates the actions that have been taken. Aims to see the results of the implementation of the action and find out the shortcomings and advantages of the learning process to be further improved in the lesson plan at the next stage.

The technique of collecting data on the independent variable (X) is collecting data on a project-based learning model using a non-test technique, namely observation. Observations will be made on the activities of teachers and students in implementing the project-based learning model. The technique of collecting data on related variables (Y1), namely critical thinking, is carried out using an assessment rubric. The scoring rubric is based on critical thinking indicators from Ennis. The technique of collecting data on related variables (Y2), namely learning outcomes is carried out using test techniques. The test was conducted to measure students' mastery of the material on the relationship between economic activities and natural resources after the project-based learning process was carried out.

The data analysis technique used is descriptive qualitative and comparative descriptive analysis techniques. Comparative descriptive is to compare the initial conditions, cycle I, cycle II, and cycle III to determine the improvement of



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critical thinking skills and learning outcomes. Data from the test results of critical thinking skills will be analyzed by calculating the percentage of critical thinking skills and percentages classically.

Results and Discussion

The results showed that through the application of project-based learning models critical thinking skills and student learning outcomes on the material of the relationship between economic activities and natural resources have increased. This is indicated by changes in both critical thinking skills and student learning outcomes that occur in cycle I, cycle II, and cycle III when compared to the pre-cycle. In order to find out the success rate of implementing project-based learning models on the relationship between economic activities and natural resources in increasing critical thinking skills of fourth grade students of SDIT Insan Rabbani, it is presented in the following table:

Table 1

Comparison of Critical Thinking Ability

Category	Kondisi Awal		Siklus I		Siklus II		Siklus III	
	f	%	f	%	f	%	f	%
Very Critical	-	-	3	10,34	5	17,24	5	17,24
Critical	-	-	8	27,58	9	31,03	10	34,48
Fairly Critical	4	13,79	12	41,37	14	48,27	14	48,27
Not Critical	16	55,17	5	17,24	1	0,34	-	-
Very Uncritical	9	31,03	1	0,34	-	-	-	-

Based on the table above, it shows that at the time of the pre-cycle critical thinking ability of the 29 students there were 4 students or 13.79% who were in the moderately critical category, 16 students or 55.17% were in the uncritical category, and 9 students. or 31.03 is in the very uncritical category. Then after taking action in the first cycle, students' critical thinking skills increased by 3 people or 10.34% of students were in the very critical category, 8 people or 27.58% of students were in the critical category, 12 people or 41.37% were in the moderate category. critical, 5 people or 17.24% are in the uncritical category, and 1 person or 0.34% are in the very uncritical category. Then in the second cycle of action, students' critical thinking skills increased. The number of students in the very critical category is 5 people or about 17.24%, the critical category is 9 people or 31.03%, the moderately critical category is 14 people or 48.27%, the uncritical category is 1 person or 0.34%, the category is not critical. very uncritical as many as 0



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people or 0%. In cycle III the improvement of students' critical thinking skills meets the expected criteria. The very critical category is 5 people or 17.24%, the critical category is 10 people or 34.48%, the moderately critical category is 14 people or 48.27%, and the uncritical and very uncritical category is 0 people or 0%.

The students' critical thinking ability in the initial conditions, based on the results of the assessment rubric showed that the critical thinking skills of fourth grade students of SDIT Insan Rabbani on the material of the relationship between economic activities and natural resources were still in three categories, namely quite critical, not critical and very uncritical. The three categories of critical thinking have not met expectations in students' critical thinking skills. The majority of students' critical thinking levels in the initial conditions are in the uncritical category as many as 16 people or 55.17%. Constraints experienced by students in critical thinking are indicators of analyzing arguments, asking and answering clarifying questions, giving reasons for a decision, and the ability to conclude. Meanwhile, in identifying or formulating student questions, it is quite good.

Lack of critical thinking skills that are reflected in the initial conditions, then action is taken through the application of project-based learning. The

implementation of the learning process through project-based learning has six stages according to the Ministry of Education and Culture (2013):

1. Phase 1: Observing Phenomenon
2. Phase 2: Define Fundamental Questions
3. Phase 3: Designing the Project Plan
4. Phase 4: Develop Project Schedule
5. Phase 5: Monitoring Students and Project Progress
6. Phase 6: Testing Results and Evaluating Experience

Project-based learning phases accommodate critical thinking skills in the learning implementation process. Through the learning phases, students can actively argue based on their respective opinions. So that learning is not only a transfer of knowledge but also a place to develop thinking skills. Critical thinking is the main thing taught in schools, it can include teaching students to: respect reason and truth; open minded; respect others during discussions; Willing to see thoughts from other people's point of view (Bailin et.al., 1999)

Through the implementation of project-based learning in the first cycle, the critical thinking ability of fourth grade students of SDIT Insan Rabbani Majalengka has increased. The process of implementing project-based learning on the relationship between economic activities and natural resources presents new experiences that can increase



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student activity in learning. Students observe contextual phenomena regarding various natural resources in the surrounding environment and follow the question guides that have been provided by the teacher. In phase 2, students formulate problems in the form of questions about economic activities and natural resources in the surrounding environment. In Phase 3, students work in groups to develop appropriate steps for projects to use natural resources for economic activities. Students carry out each stage in a monitored manner until they present the development of teaching materials (Suryandari, Sajidan, Rahardjo, Prasetyo, and Fatimah (2018). This stage can help train students to analyze, evaluate, interpret, and communicate. Phase 4, each group prepares a project schedule Phase 5, carried out at the 2nd meeting. In this phase the teacher monitors the project results of each group. Phase 6, carries out presentations and discussions about the results of the projects carried out. At this stage the implementation of learning facilitates students to express opinions and provide arguments based on the results of the observations they did and carried out were sufficient to increase students' critical thinking levels. The categories of students' critical thinking abilities in the first cycle of action were quite diverse from very critical to very uncritical. The majority of students were at the level of very critical, critical and

moderately critical categories. which points there is an increase in critical thinking skills.

The category of student ability in the first cycle was mostly in the critical enough category as many as 12 people or 41.37%. This figure shows that the critical thinking skills of students at stage I have increased from the uncritical category to be quite critical. In this fairly critical category, students in addition to making questions are also able to make simple arguments. In the critical category there are 8 people or 27.58%. In this category, students are very good at formulating questions, analyzing arguments or making arguments, and answering more in-depth questions. In the very critical category there are 3 people or 10.34%. In this category students are very good at making questions, analyzing arguments or making arguments, answering more in-depth questions, making decisions and conclusions. In the non-critical category, there are 5 people or 17.24% who have not been able to make questions according to the expected context and have not been able to make an argument. In the very uncritical category there is 1 student or 0.34% of students who have not been able to show all the expected indicators. Questions, arguments or conclusions do not match the questions ordered.

In cycle II, student activities through project-based learning are more focused.



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Students follow the instructions according to the activity that must be done. Based on the results of observations, students are more skilled in identifying phenomena and are accustomed to discussions to determine projects under teacher guidance. In cycle II, the majority of students in the category of critical enough experienced an increase, namely 14 people or 48.27%. Students who are not critical are 1 person or 0.34% and there are no more students in the very uncritical category. In the critical category has increased to 9 people or 31.03% of students. The increase was also found in the very critical category to 5 people or 17.24%. The main obstacle for students who are in the non-critical category is the ability to identify problems so that they have difficulty in other indicators. Constraints in the critical enough category, namely in answering questions in depth so that they also affect indicators, provide reasons for a decision and conclude that it is still not appropriate. In the critical category, students are good enough in showing the expected indicators. In the very critical category, students are already very good in various expected indicators, especially in providing in-depth arguments so that they are able to explain decisions and conclusions very well. critical thinking consists of processes such as displaying intelligence about a problem, deciding and assessing accurately (Reza, et al. 2018)

In the third cycle, the learning stages were carried out according to project-based learning that had been previously planned without experiencing much change. Changes that occur in natural resources that are used as study material and projects are made. In this cycle, students are more skilled and focused in carrying out the phases of project-based learning. At this stage all students are in the very critical, critical, and moderately critical categories. Shows that students' critical thinking skills increase through project-based learning. The very critical category is 5 people or 17.24%. Critical 10 people or 34.48%. Critical enough 14 people or 48.27%.

Increasing students' critical thinking skills affect the learning outcomes of fourth grade students of SDIT Insan Rabbani on the material relationship of economic activities and natural resources. This is known from the learning outcomes of fourth grade students of SDIT Insan Rabbani on the material of the relationship between economic activities and natural resources in pre-cycle activities, cycle I, cycle II, cycle III. Based on learning outcomes through the application of project-based learning, student learning outcomes in each cycle have increased. The learning outcomes of fourth graders at SDIT Insan Rabbani on the relationship between economic activities and natural resources are presented in the following table:

Table 2



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Comparison of Student Learning Outcomes

No	Ketuntasan Belajar	Nilai	Pra-siklus		Siklus I		Siklus II		Siklus III	
			f	%	f	%	f	%	f	%
1	Tuntas	≥75	12	41,38	14	48,28	21	72,41	25	86,21
2	Belum Tuntas	< 75	17	58,62	15	51,72	8	27,59	4	13,79
Jumlah			29	100	29	100	29	100	29	100
Nilai Tertinggi			83		85		91		94	
Nilai Terendah			20		27		45		61	

Based on the comparison table of learning outcomes, it can be seen that learning outcomes continue to increase after the action of implementing learning through project-based learning models is carried out. Before the action was taken, the number of students who completed was 12 of 29 students or 41.38% with the highest score of 83 and the lowest score of 20. After the action in the first cycle the number of students who completed 14 or 48.28% and the number of students who have not completed or 15 students who have not completed or 51.72% with the highest score of 85 and the lowest score of 27. In the second cycle the number of students who completed 21 people or 72.41% and the number of students who had not completed was 8 people or 27.59% with the highest score of 91 and the lowest score was 45. In the third cycle the number of students who completed 25 or 86.21% and the number of students who had not completed was 4 or 13.79% with the highest score of 94 and the lowest score of 61.

CONCLUSION

Based on the exposure of the data above , it can be concluded that project-based learning can answer learning problems that occur in the material of the relationship

between economic activities and the use of natural resources.

1. Learning is centered on students, the teacher does not dominate in learning activities. Students are more active in the learning process, both in discussions on designing projects and presentations in front of the class, so as to foster teamwork among students. Problems and challenges in making solutions in the form of projects given in the learning process make students enthusiastic to formulate questions, issue ideas/ideas, work together and be trained to think critically together with a group of friends.
2. Project-based learning can improve critical thinking skills. The critical thinking ability of students has increased in each cycle.
3. Project-based learning can improve student learning outcomes on the relationship between economic activities and the use of natural resources. The acquisition of complete learning outcomes in the pre-cycle is 41.38%, the first cycle is 48.28%, the second cycle is 72.41%, the third cycle is 86.21%.

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