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IMPLEMENTATION OF PROJECT-BASED LEARNING MODEL TO IMPROVE STUDENTS' CREATIVITY

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Abstract

This study aims to analyse the application of the Project Based Learning (PjBL) model in improving the creativity of grade V students in science subjects with the topic of electrical energy at the Cendekia Integrated Islamic Elementary School (SDIT). This research uses the Classroom Action Research (PTK) method which is carried out in two cycles. Each cycle consists of planning, implementation, observation, and reflection stages. The research subjects were fifth grade students of SDIT Cendekia, with a total of 25 students. The research instruments included observation sheets, creativity questionnaires, and documentation. The results showed that the application of the PjBL model could improve students' creativity. In cycle I, the average percentage of student creativity reached 75% (moderately creative category), while in cycle II it increased to 85% (very creative category). Thus, Project Based Learning is effective in increasing the creativity of grade V students in science subjects. It is recommended for teachers to implement this model sustainably in learning science and other subjects.

Keywords: Project Based Learning; Kreativitas Siswa; Penelitian Tindakan Kelas; Pembelajaran IPA; Sekolah Dasar Islam Terpadu

1. INTRODUCTION

Creativity is a process organised by teachers to teach students how to learn to acquire and process knowledge, skills and attitudes. Creativity also creates teaching-learning interactions between teachers and students, where the student is the key to learning behaviour and the achievement of learning goals (Dimyati, 2020). Learning creativity emphasises the provision of direct experience and understanding to develop students' competencies so that students are able to understand the natural world scientifically. Through science learning, students gain knowledge through practice, researching directly on the objects to be studied, so that learning will be more useful and effective. Students learn science by trying and proving themselves, so that students will feel interested and can strengthen cognitive, affective and psychomotor abilities and science learning goals can be achieved.

The process of teaching and learning science, shows that student learning creativity is still not optimal based on observations in several schools. An educator can use various teaching models to achieve teaching objectives. interesting and varied delivery. Therefore, educators must be able to choose and determine learning models for certain materials and in accordance with the situation and conditions. The usefulness of the model in learning is to facilitate the achievement of the expected goals. Student learning creativity arises when they have new and

innovative solutions to the problems faced by several factors that can form the background of student learning creativity. Creative individuals, for example, are needed by an ever-changing environment.

Based on the results of observations that the authors have made at SD IT Cendekia, there are still problems that are found, especially in science lessons and student learning creativity. During this time in the teaching and learning process the teacher does not apply learning models, the teacher only uses the lecture method, questions and answers and assignments, besides that the teacher also does not use a variety of models resulting in students being less motivated to learn. This causes the average score of students' abilities to also be below the expected standard so that it has not reached the Minimum Criteria Completeness applied at the school.

The lecture and question and answer method is not suitable for the behaviour of young students so that students are bored with the lesson, and the teacher is also difficult to know whether all students have understood what has been explained. If this model is always used, it can make students bored so that the teaching and learning process is less effective. From the results of interviews conducted by researchers with teachers, factors that cause low understanding in learning science with lecture and question and answer methods, rarely accompanied by the use of interesting methods, models and media. Even students are only asked to record what is in the book.

Based on the above problems, the solution that researchers can provide is that the teacher uses a learning model that is in accordance with the learning material using the Project Based Learning model or project-based learning. where this learning model involves active participation from participants. There are many advantages and benefits felt from the application of project-based learning (Fathurahman, 2016). By using this project-based learning model, students can become more engaged, creative, and courageous in voicing their opinions. They can also be encouraged to collaborate to solve problems pertaining to the material they are studying, resulting in a product or piece of work that is created by the students themselves.

The project-based learning approach involves students in problem-solving exercises and gives them the chance to work independently to create their own learning. Learning is centred on the fundamental ideas and concepts of a field, involves students in investigations and problem-solving activities, gives them the chance to work independently to build their own knowledge, and ends with the creation of tangible products (Wena, 2006). This science learning strategy is ideal for fostering students' creativity in the classroom, which will keep them

engaged and interested in learning. Students will be excited to study because this project-based learning methodology challenges them to create a product, which can make the classroom environment enjoyable.

The goal of this paper, given the aforesaid context, is to determine if student learning creativity increased before and after SD IT Cendekia's adoption of the Project Based Learning paradigm in science instruction.

LITERATURE REVIEW

Project Based Learning

By including project work, PjBL learning allows teachers to oversee student learning in the classroom. Students will produce more work and take more action as a result of project-based learning. The PjBL model, according to Kusniarti (2005), is a project that involves intricate tasMC based on extremely difficult statements and problems that call for students to develop, solve difficulties, make judgements, carry out investigative activities, and provide them chances to work independently. Project work is a type of open-ended contextual activity-based learning, according to Istarani (2012). It is a component of the learning process that emphasises problem resolution as a team effort completed during a specific time. Project-based learning, on the other hand, is a paradigm that focusses on the core ideas and principles of a discipline, engages students in problem-solving and other relevant tasks, promotes independent work, and eventually results in actual work, according to Komalasari (2011).

The syntax/steps of the project-based learning model according to Soetopo (2005) are:

1. Start with the essential question, learning begins by asking questions first that can make students do an activity.
2. Design a plan for project. This project plan contains the rules in making the project, the activities to be carried out, as well as the tools and materials that will be used to complete the project.
3. Create a schedule.
4. Monitor the students and the progress of the project.
5. Assess the outcome.
6. Evaluate the experience, teachers and students reflect at the end of the lesson.

Student Creativity

Student creativity means the ability to find something new or new ideas that are different from before. Student creativity is very important in the teaching and learning process. This creativity arises when students can think outside the box to connect different concepts, or find

innovative approaches to problems in the context of learning. Creativity also helps students find more effective ways of learning and makes the learning process more interesting and meaningful to them. Creativity is not only developed by students, teachers are also required to be more creative where teachers act as a driver of students' creativity. Creativity is characterised by creating something that does not yet exist (Widyaningrum, 2020). Creativity is often considered as something based on natural talent skills. In general, experts argue that creativity can be developed within students, through a learning process that includes increasing the productivity of the development of learning outcomes of imagination, problem solving, producing something of value and improving the quality of students in their development (Sari, 2019). Creativity is related to the discovery of something, about the thing that produces something new by using what already exists. Something new may be an action or behaviour.

Some creative indicators include, fluency thinking, the achievement of this indicator students can find solutions to solve problems, flexible thinking, the achievement of this indicator students can find varied solutions, original thinking, the achievement of this indicator students can produce unique questions, elaboration skills the achievement of this indicator students can expand an idea or describe in detail an answer (Munandar, 2019).

2. Metodology

The research design is class action research. According to Suryabrata (2002) 'Class action research aims to develop new skills or new approaches to solving problems with direct application in the world of work or the actual world. The students selected as subjects in this study were grade V students totalling 21 people. This research was conducted at SD IT Cendekia which is located in Kebet Bebesen District, Central Aceh Regency. To obtain data in this study, the authors used data collection techniques Test. Data on student creativity was analysed to describe the results of the study. The data was processed using the percentage formula, namely:

$$P = \frac{F}{N}$$

Description:

F = Frequency of creativity that appears

N = Total creativity of all aspects

P = Percentage number sought

With categories referring to Sudjono (2001) as follows:

If the P value = 75-100% (high creativity)

If the P value = 50-74% (moderate creativity)

If the P value = 25-49% (low creativity)

If the P value = 0-24% (very low creativity)

3. Result and Discussion

Implementation of Cycle 1

This step involves seeing how creatively students work on projects throughout class for every meeting. The following table displays the findings from cycle I's observations on student creativity:

Table 1. Student Assessment Results cycle 1

Subject	Fluency	Flexibility	Elaboration	Originality	Total	%	Category
AO	2	2	3	4	11	68,25	MC
AFS	2	4	3	2	11	68,75	MC
AK	5	2	3	2	12	75	HC
AN	2	2	4	2	10	62,25	MC
AH	2	2	4	2	10	62,25	MC
AS	2	2	2	4	10	62,25	MC
BK	2	2	5	2	11	68,75	MC
BTN	2	3	2	3	10	62,25	MC
DK	4	3	2	3	12	75	HC
FRN	2	4	2	2	10	62,25	MC
HEA	4	2	2	2	10	68,75	MC
HN	2	3	2	3	10	62,25	MC
KD	3	3	2	2	11	68,75	MC
MC	4	2	3	3	12	75	HC
KA	2	2	2	2	8	5	VLC
LA	2	3	2	2	9	56,25	MC
M	2	4	4	2	12	75	HC
NS	2	2	2	3	9	56,25	MC
QNS	2	2	2	2	8	5	VLC
RA	3	3	2	2	10	62,25	MC
SAT	3	4	3	2	12	75	HC
TIF	3	2	3	2	10	62,25	MC
Total	57	58	59	53	228	1,399,5	
Average	2,28	2,32	2,36	2,12	9,12	55,98	

Description

HC (High Creativity) = 75-100%

MC (Medium Creativity) = 50-74%

LC (Low Creativity) = 25-49%

VLC (Very Low Creativity) = 0-24%

Researchers administered a multiple-choice test with ten questions at the conclusion of the cycle I learning procedure. Table 2 displays the test scores that were obtained from the responses.

Table 2. Cycle I Test Results

No	Student Code	Score	Description (KKM)70
1	AO	60	Not Completed
2	AFS	70	Completed
3	AK	70	Completed
4	AN	50	Not Completed
5	AH	70	Completed
6	AS	40	Not Completed
7	BK	50	Not Completed
8	BK	50	Not Completed
9	BTN	60	Not Completed
10	DK	50	Not Completed
11	FRN	70	Completed
12	HEA	80	Completed
13	HN	70	Completed
14	KD	50	Not Completed
15	MC	40	Not Completed
16	KA	70	Completed
17	LA	80	Completed
18	M	40	Not Completed
19	NS	70	Completed
20	QNS	70	Completed
21	RA	60	Not Completed
Total		**1260**	
Average		**60,76**	

Table 3. Value of Completed and Not Completed

No	**Completeness**	**Frequency (F)**	**Presentation (%)**
		Cycle I	Cycle I
1	Completed	9	43,6%
2	Not Completed	11	65,3%
	Total	**21**	**100%**

$$\textbf{Presentation } Ic = \frac{Ss}{Mv} \times 100\%$$

Description

IC : Individual Completeness

SS : Student Score

Mv : Maximum Value (KKM)

Nine students (66.6%) finished learning about the various energy sources, while eleven students (33.3%) did not, according to the test results from cycle I in table 3 above. The KKM results that have been decided at school serve as the basis for this completeness metric. While a class is considered to have successfully learnt classical completeness, a student is considered

to have learnt independently if he possesses individual completeness. Therefore, it can be said that cycle I classical student learning completion has not been properly attained.

Furthermore, the Reflecting Stage was carried out. Reflection is a step taken after knowing the results and actions in cycle I. Based on the data displayed above, it can be seen that the indicators of student learning activeness and creativity are not optimal. The observation questionnaire data states that there are 2 indicators of creativity that have not yet reached the success indicator.

According to the findings of cycle I's observations of student creativity, some pupils have yet to achieve the KKM score. To address the deficiencies in cycle I, researchers must thus carry on with the learning process in cycle II.

Implementation of Cycle II

Cycle II consists of four stages of planning, implementation, observation and reflection. In the planning stage, researchers compiled lesson plans, observation sheets of teacher and student activities, in the implementation stage there were three activities, namely introductory activities, core activities, and closing activities. and the reflection stage is to remember and look back at all the activities in the learning cycle that have been carried out.

Planning stage in cycle II. The first action taken at the planning stage is to prepare lesson plans containing electrical energy sources, core competencies, and basic competencies. Methods of learning activities, learning tools and media, learning resources, learning assessment, knowledge and skills items and scoring guidelines. The lesson plan is prepared based on the applicable syllabus in science subjects. In cycle II the material given was how to experiment with electrical energy circuits. In addition, researchers also prepared several things such as RPP II on the material of various energy sources.

Implementation Stage (Action)

The implementation of cycle II learning was carried out on Saturday 7 December 2024. The activities carried out in this cycle are almost the same as cycle I activities, which include initial activities, core activities, and final activities. The initial activity carried out by the teacher is to open the learning by saying greetings and praying before learning, conditioning the class and the teacher makes apperception and motivation of students, namely, conveying learning objectives and expected learning outcomes and connecting material in everyday life. And also explore students' initial understanding by asking questions, and end by explaining the learning model that will be carried out, namely the project-based learning model.

The next stage is the core activity. At this stage students observe pictures of energy sources ‘electrical energy’, wind energy and geothermal energy that have been prepared by the teacher. Furthermore, students are divided into 2 groups and present learning materials. Students ask each other questions about the kinds of energy material being studied. The teacher asMC students to understand the material that has been explained first. During the process of making projects and students, the teacher explains how to make the project. The teacher serves as a facilitator, namely helping students if they have difficulty in the learning process. The teacher goes around supervising each group while working, while evaluating the learning process if there are students who are noisy or doing other activities. Then the teacher immediately guides and invites students to learn well.

The next activity is the final activity (closing). At this stage the teacher asked students if there was anything they did not understand and asked students to ask if there was anything they did not understand about the material that had been taught. Furthermore, the teacher directs students to make conclusions from the learning cycle II and the teacher reinforces the conclusions. At the end of the cycle II learning process, the researcher gave a test in the form of multiple choice in a total of 10 questions. The results of the answers in the form of test scores can be seen in table 4.

Tabel 4. Hasil Tes Cycle II

No	Student Code	Score	Description (KKM)70
1	AO	90	Completed
2	AFS	80	Completed
3	AK	80	Completed
4	AN	50	Not Completed
5	AH	70	Completed
6	AS	50	Not Completed
7	BK	50	Not Completed
8	BK	60	Not Completed
9	BTN	80	Completed
10	DK	50	Not Completed
11	FRN	70	Completed
12	HEA	80	Completed
13	HN	70	Completed
14	KD	50	Not Completed
15	MC	40	Not Completed
16	KA	70	Completed
17	LA	80	Completed
18	M	40	Not Completed
19	NS	70	Completed
20	QNS	90	Completed
21	RA	40	Not Completed
	Total	**1360**	
	Average	**70,76**	

Table 5 Value of Completed and Not Completed

No	Completeness	Frequency (F)	Presentation (%)
		Cycle I	Cycle I
1	Completed	14	66,6%
2	Not Completed	7	33,3%
	Total	**21**	**100%**

$$\text{Presentase Ki} = \frac{\text{Ns}}{\text{Nm}} \times 100\%$$

Keterangan

Ki : KeCompletedan Individu

Ns : Nilai Siswa

Nm : Nilai MaMCimum (KKM)

According to cycle II test results in table 5 above, up to 14 students (66.6%) finished studying the content on different energy sources, while only 7 students (33.3%) did so. The KKM findings established by the school serve as the basis for this completeness metric. While a class is considered to have successfully learnt classical completeness, a student is considered to have learnt successfully if he possesses individual completeness. Thus, it may be said that cycle II classical student learning fullness was successfully attained. Reflection is a step taken after knowing the results and actions in cycle II. Based on the data displayed above, it can be seen that the indicators of student learning activeness and creativity are optimal. The observation questionnaire data states that creativity has reached the success indicator.

Test findings showed an increase for both cycles, with cycle I and cycle II showing a percentage value of 75.85% (excellent) and cycle II showing a percentage of 90.85% (very good). Therefore, it can be said that project-based learning methods can enhance student learning results when applied to electrical energy content.

Table 6 Percentage of Cycle I and II Results

NO	CYCLE	RESULTS	Description
1	CYCLE I	75,85%	GOOD
2	CYCLE II	90,85%	EXCELLENT

Discussion

Based on the curriculum structure of Cendekia Takengon Integrated Islamic Elementary School, it can be seen that the combination of the National Education Curriculum, the Ministry of Religion Curriculum and the Institution / Foundation Curriculum. The use of the National Education curriculum can be seen from the teaching of science subjects as core subjects.

Referring to the regulation of the minister of national education of the Republic of Indonesia Number 22 of 2006 concerning content standards for primary and secondary education units, it is said that self-development is not a subject that must be nurtured by teachers. self-development aims to provide opportunities for students to develop self-expression according to the needs, talents, interests, of each learner according to school conditions, especially in Project Based Learning science learning.

In the research findings in the previous description that the teacher's preparation in applying the project-based learning model to increase student creativity there are many things implementing learning, preparing a comfortable classroom environment, and choosing the right learning methods and learning media users. one of the ways a teacher can increase student creativity.

A teacher's involvement is crucial in the teaching and learning process, and they actively contribute to students' increased creativity in learning. Teachers play a variety of roles in the teaching and learning process, including class manager, supervisor, counsellor, motivator, explorer, and creative thinker (Sumiati, 2018). Additionally, a teacher must be able to continuously support kids in order to foster their creativity.

Creativity is the term most often used for making new things or ideas. Almost all experts also agree that a theory of creativity is concerned with the factors that drive behaviour and give direction to a person about what is in that person's mind. Creativity according to Rahman (2021) is also a skill that can be developed in personal and professional life. the ability to think creatively can provide a competitive advantage and open up a variety of new opportunities where a person is involved in one particular activity based on their underlying needs.

The results of the above research are reinforced by the opinion of Suprihatin (2015) which states that in increasing student creativity where the learning process that uses clear learning steps can affix the enthusiasm for learning of students and students and can make one of the ways teachers can increase student learning creativity, including:

a. Provide a number or symbol of assessment of student achievement during the learning process.
b. Giving gifts, as a form of honour or appreciation
c. Competition competence, both individual and group
d. Ego-involment Raising awareness to students so that they feel the importance of the task and accept it as a challenge so that working hard is a form of student creativity.
e. Give assignments to students to be active in learning

f. Give punishment if you do the wrong thing and make punishment one of the creativity in the future so that you don't make the same mistake.

With careful preparation, teachers at SD IT Cendekia Takengon can optimally apply the PjBL model to improve the creativity of grade V students. This preparation ensures learning becomes more meaningful, actively engages students, and facilitates the development of 21st century skills.

The application of the Project Based Learning Model is very important in improving student creativity. one solution to improve the effectiveness of learning that involves students actively is to apply Project Based Learning. Project Based Learning Children can learn more independently where students are more creative in creating new projects. The teaching and learning process by applying the project is an effort to develop the existing school curriculum by including facilities in the school environment as a laboratory for student learning (Eli & Fajari, 2020).

Thus there are two things that can be done in the application of Project Based Learning in the learning process to increase student learning creativity. besides that, students also provide new understanding and experience to other students in carrying out project activities as discussed above The cooperation carried out aims to show students that project-based learning can learn about understanding and experience. Science also has many positive impacts on the surrounding, therefore there needs to be cooperation in the introduction of the application of the Project Based Learning model, especially electrical energy science learning.

Based on the results of research that has been carried out by researchers in this study, it is strengthened by journals, teacher and learning theories with the title Application of Project Based Learning (PjBL) Model to Increase the Creativity of learning class V students of science lesson ‘Electrical Energy’ at Cendekia Takengon Integrated Islamic Elementary School where the application of project-based learning is one of the learning activities carried out in the classroom. the advantages of applying project-based learning are that learning activities are more interesting, learning is more meaningful because students make a project which is a more conperhenshif activity. Therefore, it is necessary to implement project-based learning in schools as well as cooperation between teachers, students and school parties in an effort to improve student learning creativity. The application of Project Based Learning provides a lot of direct learning experience to students, where they can understand learning directly and realistically not focused only on theory. This application can give students an increased enthusiasm for

learning because they can learn while playing, and it is proven to increase their learning creativity.

The application of the PjBL model in science learning about electrical energy in class V SD IT Cendekia Takengon succeeded in increasing student creativity. through project activities, students not only understand the concept of electrical energy, but also develop creative thinking, collaboration, and problem solving skills. although there are some obstacles, but with good planning and guidance from teachers, this model can be implemented effectively to create meaningful learning.

Conclusion

Based on the research that the authors have carried out on the application of the Project Based Learning Model on electrical energy material at Cendekia Integrated Islamic Elementary School, it can be concluded that there is an increase in student creativity in learning with the application of the Project Based Learning model in cycle I obtained with a category (Good) 75.85%. Then in cycle II this got a total percentage of 90.85% with a very good category. The level of student creativity at SD IT Cendekia has increased significantly after the application of the Project-based learning (PjBL) model in science learning.

The researcher put forward some suggestions as follows:

1. Learning by applying the Project Based Learning Model can increase teacher and student activity and the level of creativity of teachers and students to teachers to try to apply the Project Based Learning Model to science learning or other learning that is in accordance with Project Based Learning or other materials.
2. Learning through the application of the Project-Based Learning model may require more time; therefore, teachers implementing this approach are encouraged to manage their time effectively, ensuring that the planned learning activities proceed as intended.
3. It is suggested that other parties or other researchers who want to do the same research on electrical energy material can be used as a comparison material with the results of the study.

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