Implementation of the project based learning model to improve creativity and science learning outcomes for class VI students of SD Negeri Bangomolunow, Bolaang district, Bolaang Mongondow Regency

by Jeane Mangangantung

Implementation of the project based learning model to improve creativity and science learning outcomes for class VI students of SD Negeri Bangomolunow, Bolaang district, Bolaang Mongondow Regency

Fahmi Alhasni[1], Norma Monigir[2], Jeanne M Mangangantung[2]
[1] Students of the Master of Elementary School Teacher Education Study Program, Postgraduate Program, Universitas Negeri Manado, Indonesia
[2] Master of Elementary School Teacher Education Study Program, Postgraduate Program, Universitas Negeri Manado, Indonesia

Abstract
Based on the results of observations in class VI of SD Negeri Bangomolunow, Bolaang sub-district, Bolaang Mongondow district, creativity and student learning outcomes in science learning are still relatively low. This is caused by several factors, one of which is the lack of use of models in learning. One alternative to solve this problem is to use a model that is in accordance with the subject matter, namely by applying the Pjbl model. The purpose of this study (1) is to determine the activities of teachers and students on the material of various energy sources through the Pjbl model in class VI students. (2) To determine creativity and student learning outcomes by applying the Pjbl model in class VI. This research uses Classroom Action Research (CAR). The subjects of this study were the sixth grade students of Bangomolunow State Elementary School, Bolaang District, Bolaang Mongondow Regency, totaling 21 students. This research instrument uses teacher activity sheets, student activity sheets and student creativity observation sheets. The results of observations for creativity in the first cycle were 63.38. in cycle II 73.23 and cycle III 78.05. As for student learning outcomes, in cycle 1 62.00, cycle II is 71.42 and cycle III is 90.47. Thus the Pjbl model can increase creativity and student learning outcomes in the material of various energy sources in class VI SD Negeri Bangomolunow, Bolaang District, Bolaang Mongondow Regency.

Keywords: project based learning model and creativity, student learning outcomes

Introduction
The implementation of the 2013 curriculum is one of the efforts to improve the quality of formal education in Indonesia, in its implementation the 2013 curriculum is a learning development process and one of them is a pattern of passive learning into active learning. The active learning of students seeking is further strengthened by the scientific approach learning model as well as individual learning patterns into group learning (team-based). In choosing a learning method, teachers should always pay attention to the factors of students who are the subject of learning, because each student basically has different abilities and ways of learning from other students. These differences can lead to the different needs of each individual student. However, this does not mean that learning must be turned into individual learning, but an alternative learning is needed that allows the fulfillment of the needs of all individual students.

Good and correct teaching ability is one of the demands as an educator, so a teacher must be able to choose and use the right learning approach and in accordance with the material to be delivered, and must consider the level of student development. The approach applied to the 2013 curriculum is the scientific approach, which is an approach that emphasizes learning that activates students and one of the models in the scientific approach is the project-based learning model.

SD Negeri Bangomolunow, Bolaang District, Bolaang Mongondow Regency is a school that has adequate facilities and input of students who enter with different abilities and skills, ranging from students who have low learning abilities, moderate to students who have high learning abilities. SD Negeri Bangomolunow, Bolaang District, Bolaang Mongondow Regency. Based on the results of observations in class VI, which amounted to 21 students and interviews with students in that class on December 20, 2021, it is known that the learning method often used by teachers in learning activities is the lecture model. The use of the lecture method in the 2013 curriculum learning process is calculated to be less involved in students so that the creativity and learning outcomes of students in the class are low. Teachers must use learning models that further develop creativity in order to further activate students so that students do not get bored during teaching and learning activities in the classroom so that learning outcomes are better.

In the learning process, actually there is active student activity in the classroom, it's just that the activities carried out by most students are activities that should not be carried out in learning such as actively talking to themselves when the teacher is explaining the material.

Based on a study of the results of observations, it was found that the problems that caused the low creativity and learning outcomes of grade VI students of SD Negeri Bangomolunow, Bolaang District, Bolaang Mongondow Regency were teachers using methods that were less varied and students were less actively involved in learning activities. The learning process causes a lack of creativity so that the learning outcomes obtained by students are low in science subjects with various types of energy sources.

The use of learning methods that do not vary can cause students to feel bored and bored, so that the learning process is less effective and learning objectives are not achieved as expected. Based on the responses of some students about the lecture method used by the teacher in teaching, they tend to feel bored and bored during learning because the teacher only lectures in delivering the material. Therefore, to create a more effective learning process, increase interactions that occur in students and can increase creativity and learning outcomes, it is necessary to use a project-based learning model or project-based learning by applying this project-based learning model to make students more active. creative and can encourage students to increase their courage and ability to work together in solving problems related to the material being studied so as to produce a product or work made by the students themselves so that their learning outcomes are getting better.

Based on the above background, the authors are interested in conducting research with the title "Implementation of Project Based Learning Models to increase Creativity and Science learning outcomes for grade VI students of SD Negeri Bangomolunow, Bolaang District, Bolaang Mongondow Regency"

Research Methods

Research Design

The research method used in this research is the Classroom Action Research Method (CAR) from Mohamad Asori 2017: 103 by using a research flow consisting of 4 components, namely:

a. Planning
b. Action Execution
c. Observation or Observation
d. Reflection

Stage 1. Action planning In this stage the researcher prepares a learning plan that will be implemented. The plan can be used as a reference in carrying out each of his actions in order to achieve maximum results.

Stage 2. implementation of action This stage of action research is the implementation of class action based on a plan that has been made previously

Stage 3. Observation of the actions of observation activities carried out simultaneously with the ongoing implementation of the activities carried out by the server who will observe the ongoing learning process.

Stage 4 of action reflection on the final action of a series of CAR activities is the reflection stage. Reflection is carried out to restate what has been done knowing the shortcomings and advantages of the actions that have been carried out. This reflection activity point makes it easy to make changes to the next action.

Based on the characteristics of the problems studied and the chosen research location, this implementation will take place from January 2022 to March 2022

Research Subject

The research subjects were all sixth graders at Bangomolunow State Elementary School, Bolaang District, Bolaang Mongondow Regency.

The sample in this study was class VI SD Negeri Bangomolunow, Bolaang District, Bolaang Mongondow Regency, totaling 21 people, 9 male students and 12 female students in the 2021/2022 academic year in Semester 2.

Research Instruments

1. Teacher Activity Observation Sheet
2. Student Activity Observation Sheet
3. Student Creativity Observation Sheet

Data collection Technique

1. Data collection techniques are a strategic step in research, because the main purpose of this research is to obtain data. Without knowing the data collection techniques, the researchers did not get data that met the data standards set
2. To obtain data in this study, the authors used data collection techniques in the form of:

1. Observation (Observation)

The purpose of this observation is to determine the suitability between planning and implementing actions as well as the level of creativity in student learning with the application of the Project Based Learning learning model in science learning with various types of energy sources.

Data analysis Technique

Data analysis technique according to Trianto (2011: 63) [1] uses the formula:

$$KB = N/Y \times 100$$

Note:
KB = Complete Learning
T = Total Score obtained by students
Tt = Total Score

Research Results and Discussion
1. Cycle I
a. Planning Stage
At this stage the researcher prepares several things, namely a plan implementation of learning (RPP I) on the material of various energy sources. In addition, the researchers also prepared learning tools and materials needed in learning both lesson plans, student worksheets (LKS), test instruments (test cycle I, cycle II, and cycle III), teacher ability observation sheets and student activity observation sheets, all of which can be seen in the attachment.

b. Implementation Phase (Action)
The implementation (action) phase of RPP I was carried out on January 17, 2022. In this study, the researcher acted as a teacher in learning by using the Project Based Learning model on various energy sources. Learning activities are divided into three stages, namely initial activities (introduction), core activities and final activities (closing). These stages are in accordance with RPP I.

c. Observation Phase (Observation)
The results of observations of teacher and student activities in cycle I can be seen based on the observations of the observer, there are also results of complete learning after that.

1. Observation of Teacher Activity Cycle I
At this stage, observing the teacher's ability to use an instrument in the form of a teacher activity observation sheet. Learning activities through the Project Based Learning model get an average score of 64.44 which is in the sufficient category.

2. Observation of Student Activity Cycle I
At this stage is the activity of observing student activities when learning takes place, from beginning to end for each meeting. The results of observing student activities in the first cycle showed an average of 60 in the Enough category

3. Student Creativity in Completing Projects
Student creativity is seen from the results of student work (LKS) given to students and done in groups but individual scores. Creativity is assessed based on the values and criteria that have been set in the creativity assessment rubric. At this stage is the activity of observing the creativity of students in working on worksheets when learning takes place for each meeting. The results of observing student creativity in the first cycle are 1331 with an average value of 63.38, with the category of Medium Creativity (KS). Based on the results of the observation sheet on student creativity in the implementation of learning activities, it can be seen that the average value of the percentage of creativity is 63.38 with students who score 60 and above there are 14 out of 21 students, this value is included in the Medium category = 50 - 74. This shows that the category of students' creativity in learning is about learning by using the Project Based Learning model. This data can be concluded that by applying the Project Based Learning model, the researcher hopes that students can increase creativity and student learning outcomes in cycle II.

Student Test Results Cycle I
At the end of the first cycle of the learning process, the researcher gave a test in the form of multiple choice in the amount of 10 questions. The results of student answers in the form of test scores with a total of 1,246 with an average of 59.33.

Table 1: Completeness and Unfinished Value

No	Completeness	Total	value
		Cycle 1	Cycle 1
1.	Finished	13	62.00
2.	Not finished	8	38.09

Based on the test results in the first cycle in table 1 above, it is known that as many as 13 students completed learning with a score of 62.00. while those who did not complete were 8 students with a score of 38.09. This measure of completeness is based on the results of the KKM that have been set at the school. If a student is said to be successful in learning individually if he has an absorption capacity of 60 (individual completeness), while

one class is said to be successful in learning if 70 (Classical completeness). So it can be concluded that classical student learning completeness for the first cycle has not been achieved.

d.   Reflection Cycle I
Reflection is an activity to remember and look back at all the activities in the learning cycle activities that have been carried out, to complete the next cycle.
1.   Teacher Activities
2.   Student Activities
3.   Student Creativity

Based on the results of observations of student creativity in the first cycle, the average result was 63.38 that there were still students who had not achieved the KKM score. With students who got a score of 60 and above there were 14 students from 21 students while those who did not complete were 7 people. Therefore, researchers must continue the learning process in cycle II to correct deficiencies in cycle I.

4.   Student Learning Outcomes
Based on the test results in the first cycle with an average value of 62.00 students who completed there were 13 people and 8 people did not complete. it can be seen that there are still 8 students who have not reached the KKM and have not achieved classical completeness scores.

2.   Cycle II
a.   Planning Stage
b.   Implementation Phase (Action)
c.   Observation Phase (Observation)

1.   Observation of Teacher Ability Cycle II
At this stage, the observation of the teacher's ability uses an instrument in the form of a teacher's ability observation sheet. The data from the observation of the teacher's ability shows that learning activities through the use of the Project Based Learning model get an average score of 77.77 which is included in the good category. This proves that the results obtained in the second cycle are more improved than the first cycle.

2.   Observation of Cycle II Student Activities
At this stage is the activity of observing student activities when learning takes place, from beginning to end for each meeting. The results of observing student activities in RPP II can be that student activities in science learning through the use of the Project Based Learning model in cycle II have increased with an average value of 73.33 which is included in the good category. Because there are several aspects that must be improved, namely: first, students must be able to draw conclusions, second, students must be able to present the work they have made, and third, students must be able to condition the time that has been set.

3.   Student creativity in completing projects.
At this stage is the activity of observing the creativity of students in working on worksheets when learning takes place for each meeting. The results of observations of student creativity in the implementation of learning activities in cycle II show that the average value of the percentage of creativity has increased from cycle I, namely 73.23 with students who scored 65 and above there were 15 of 21 students, this value was included in the category P = 50 - 74 This shows that the category of student learning creativity is moderate towards science learning using the Project Based Learning model. This data can be concluded that the application of the Project Based Learning model can increase student learning creativity.

4.   Student Test Results in Cycle II
After learning activities in RPP II, the teacher gives a Cycle II test to determine the success of student learning after learning is implemented through the use of the Project Based Learning model. The score of students' reading skills in RPP II is 1,465 with an average of 70.0.

Table 2: Completeness and Unfinished Value

No	Completeness	Total	Value
		Cycle II	Cycle II
1.	Finished	15	71.42
2.	Not finished	6	28.57

Based on the test results in cycle II in table 2 above, it is known that as many as 15 students (71.42) have completed studying the material on various energy sources, while as many as 6 students (28.57) have not. This measure of completeness is based on the results of the KKM that have been set at the school. If a student is said to be successful in learning individually if he has an absorption capacity of 60 (individual completeness), while

one class is said to be successful in learning if 70 (classical completeness). It was concluded that classical student learning completeness for cycle II was not maximal and needed to be continued to cycle III.

d.   Cycle II Reflection
Reflection is an activity to remember and look back on all the learning activities that have been carried out, to complete the next cycle.
1.   Teacher activities
2.   Student activities
3.   Student Creativity
Based on the results of observations of student creativity in cycle II, it can be seen that the average percentage of creativity is 73.23 which has increased from cycle I. There are 21 students who scored 60 and above out of 21 students. Students have been able to make projects assigned by the teacher. students already have good curiosity in project completion and have shown a sense of challenge in project completion and have begun to show courage in terms of working on a project together with group members so that the time given has been used well in working on projects in groups.

3.   Cycle III
a.   Planning Stage
In planning cycle III, the researcher prepares a learning implementation plan (RPP) cycle III based on the results of reflection and revision of the activities of cycle I, and cycle II in the early stages of planning in cycle III, namely by preparing all the needs and steps in conducting research the same as carried out in cycles I and II.

b.   Implementation Phase (Action)
The implementation (action) stage of RPP III was carried out on March 24, 2022. In this study, the researcher acted as a teacher in learning by using the Project Based Learning model on various energy sources. Learning activities are divided into three stages, namely initial activities (introduction), core activities and final activities (closing). These stages are in accordance with RPP III.

c.   Observation Phase (Observation)
Observations were made during the third cycle of the learning process. Observations were made on the teacher's ability, student activities and students' reading skills and recorded things that happened during the learning process.

1.   Observation of Teacher Ability Activities in Cycle III
At this stage, the observation of the teacher's ability uses an instrument in the form of a teacher's ability observation sheet. The data from the observation of the teacher's ability is 87, the average is 96.66, with a very good category. Based on the data above, the teacher's ability to manage the learning of various energy sources through the Project Based Learning model obtained a score of 96.66 which was included in the very good category.

2.   Observation of Student Activities in Cycle III
At this stage is the activity of observing student activities when learning takes place from beginning to end for each meeting, observing student activities in cycle III, namely the number of 81, the average is 90.00, and the category is very good. Student activities in learning through the Project Based Learning model in cycle III get a percentage score of 90.00. Based on the research category, the percentage of 90.00 is in the very good category

3.   Student Creativity in Completing Cycle III Projects.
At this stage is the activity of observing the creativity of students in working on worksheets when learning takes place for each meeting. The results of observations of student creativity in cycle III are 1648 and an average of 78.05.
Based on the results of the student's creativity observation sheet in the implementation of the third cycle of learning activities, it can be seen that the average value of the percentage of creativity is 78.05, all students get a score of 60 and above. This value is included in the 75-100 category. This shows that the category of students' creativity in learning is high in science learning by using the Project Based Learning model. This data can be concluded that the application of the Project Based Learning model can increase student learning creativity.

4.   Student Test Results in Cycle III
After the learning activities were carried out in cycle III, the teacher gave test questions to determine the success of student learning. The test scores for learning outcomes in the third cycle are 1.7135 and an average of 83.00.

Table 3: Completeness and Unfinished Value

No	Completenes	Total	Value
		Cycle III	Cycle III

1.	Finished	19	90.47
2.	Not finished	2	09.52

Based on the test results in the third cycle in table 4.18 above, it is known that as many as 19 students (90.47) have completed learning on the material of various energy sources, while as many as 2 students (09.52). This measure of completeness is based on the results of the KKM that have been determined in schools, namely if students are said to be successful in learning individually if they have an absorption capacity of 60 (Individual completeness), while one class is said to be successful in learning if 70 (classical completeness). This shows that students have been able to solve the questions that have been given by the teacher on various energy sources and show improvement during learning by using the Project Based Learning model, especially science learning.

d. Cycle Reflection Stage III

Based on the results of observations in cycle III on teacher and student activities, it can be seen that learning already reflects the Project Based Learning (PjBL) learning model. Where this learning is more student-centered students are required to be able to produce a project. This means that it is in accordance with the principles in the Project Based Learning model.

1. Teacher activities
2. Student activities
3. Student Creativity

Student learning outcomes

Based on the results of the tests carried out in the third cycle, the average score was 90.47. It can be seen that the number of students who achieved learning completeness was 19 students while 2 students had not yet achieved complete learning. This is a factor that the two students are children with special needs so that the school or teacher in the classroom cannot force the child due to physical and mental limitations. of the two children.

Based on the results obtained from the third cycle, students were able to do well on the LKPD (student worksheet) and were able to explain what projects were carried out in groups in presenting in front of the class in front of the teacher and their peers. Thus, it can be concluded that student learning outcomes through the application of the Project Based Learning model on the material of various energy sources in class VI SD Negeri Bangomolunow have been successfully carried out so that the learning outcomes are already very good.

C. Discussion of Research Results

In carrying out research using the Project Based Learning model on student learning creativity in the material of various energy sources, from the first cycle to the next cycle there is a change in the learning process towards a better one. The results of observations on teacher activities, students in managing the learning process that has been carried out from cycle I are still very lacking, while in cycle II to cycle III it has increased. This increase is measured based on the value of the data obtained from each cycle.

Based on the explanation above, the application of the Project Based Learning model is able to increase students' creativity for learning success, because student creativity is an important basic element to achieve success. In this study using the Project Based Learning model, the researcher found students who were active in learning activities as seen from the busyness of the students and the interaction between fellow students in participating in the ongoing learning.

To achieve the creativity of students towards the success of student learning that is expected above, of course, the ability of teachers to manage learning is needed. Therefore, in this study the teacher's ability was also measured and able to manage learning activities well. The discussion of all the results of the research analysis is as follows:

1. Teacher Activities in Managing Learning

Research on teacher activities in teaching using the Project Based Learning model to increase student creativity in science learning for class VI SD Negeri Bangomolunow was carried out in three cycles. The first cycle is on January 17, 2022, the second cycle is on February 21, 2022 and the third cycle is on March 24, 2022. In this study, the observer on teacher activities was Mendi A.P Machmud, S.Pd as a Class VI teacher.

Based on the data concluded, it shows that teacher activity has increased. In accordance with teacher activity data obtained from observers, the average value of the first cycle was 64.44 (enough), the second cycle was 77.77 (good), and the third cycle was 96.66 (very good). The results of the analysis show that there is an increase in teacher activity in learning by using the Project Based Learning model, this shows that teachers can overcome the problems faced by using the Project Based Learning model.

2. Student Creativity

Based on the results of observations of student creativity in the implementation of learning activities for each cycle, it has increased between cycle I, cycle II and cycle III. In the first cycle the average percentage of creativity is 63.38 (medium), in the second cycle the average value of the creativity percentage is 73.23 (medium), and the third cycle shows the average percentage of creativity is 78.05 (very good) all students score 60 and above. This value is included in the BS = 75 - 100% category. This shows that the category of student learning creativity (high) towards science learning using the Project Based Learning model. This data can be concluded that the application of the Project Based Learning model can increase student learning creativity.

3. Completeness of Student Learning Outcomes

To see student learning outcomes as a whole on the material of various energy sources. researchers conducted a learning evaluation. Based on the test results for each cycle there was an increase between cycle I, cycle II and cycle III. In the first cycle there is a percentage value of 62.00 (enough), in the second cycle there is a percentage of 7.42 (good), while in the third cycle there is a percentage of 90.47 (very good). Thus can be concluded. that the use of the Project Based Learning model on the material of various energy sources can improve student learning outcomes.

Conclusion

Based on the research that the author has carried out on the implementation of the Project Based Learning model on the material of various energy sources at SD Negeri Bangomolunow, it can be concluded as follows:

1. Teacher activities in managing learning by applying the Project Basad Learning model in cycle I, cycle II, cycle III got a total percentage of 96.66 with a very good category.
2. Student activities in managing learning by applying the Project Basad Learning model, students work on projects on time, so that they get a percent of 90.00 with a very good category.
3. Student creativity using the Project Based Learning model shows that students' creativity in learning science using the Project Based Learning model is satisfactory.
4. Student learning outcomes using the Project Based Learning model show that learning science using the Project Based Learning Model has been stated to be very good.
5. The application of the Project Based Learning model can increase creativity and student learning outcomes in Theme 2 Sub-theme 1 with the material Types of energy sources in class VI SD Negeri Bangomolunow, Bolaang District, Bolaang Mongondow Regency, this can be seen from the results of the discussion from Cycle 1 to d Cycle III.

References

1. Trianto. Panduan Lengkap Penelitian Tindakan Kelas (Clasroom Action Research). Jakarta: Prestasi Pustaka, 2011.
2. Bloom. Belajar dan Pembelajaran Bandung: Rineka Cipta, 2013.
3. Bell S. Project Based Learning for the 21 Century: Skills for the Future, The Clearing House, 2010.
4. Daffily. Discourse Analysis. New York: Cambridgee University press, 2006.
5. Davis. Learning System Design: An Approach to The Improvement of Instruction, Michigan STATE University: McGraw-Hill Book Company, 1974.
6. Daryanto. Pendekatan Pembelajaran Saintifif. Erlangga. Jakarta, 2014.
7. Gregory. Project Based Learning, Soills and Foundations, 2007.
8. Iskandar Agung. Meningkatkan Kreativitas Pembelajaran Bagi Guru, Jakarta: Bestari Buana Murni, 2010.
9. Kementrian Pendidikan dan Kebudayaan Republik Indonesia, selalu Berhehat Energi Tematik Terpadu kurikulum 2013, Jakarta: Pusat Kurikulum dan Perbukuan, 2014.
10. Johann. Inclusion Strategies That Work!: Research-Based Methods for the Classroom, California: Corwin Press, 2006.
11. Made Wena. Strategi Pembelajaran Inovatif Kontemporer, Jakarta: Bumi Aksara, 2006.
12. Model Kurikulum dan Strategi Pembelajaran: Pendidikan Profesi Guru, 2019.
13. Permendigbud. Tentang implementasi kurikulum. Jakarta: Kementrian Riset, Teknologi, dan Pendidikan Tinggi, 2013.
14. Rusman. Model-model Pembelajaran Mengembangkan Profesionalisme Guru. Rajawali Pers. Jakarta, 2012.
15. Ravitz. Learning To Teach Belajar Untuk Mengajar. New York: McGraw Hill Companies, 2011.
16. Masykur R. Teori dan Telaah Pengembangan Kurikulum, Bandar Lampung: CV Anugrah Utama Raharja, 2018.
17. Sudjana. Dasar-Dasar Proses Belajar Mengajar. Jakarta: Rineka Cipta, 2008.
18. Siyoto. Dasar Metodologi Penelitian, Kediri: Literasi Media Publishing, 2015.
19. Suharsimi. Prosedur Penelitian. Jakarta: Rineka Cipta, 2016.
20. Sulistyorini. Implementasi Manajemen Peningkatan Mutu. Surabaya: CV Karya Utama, 2013.
21. Winarmo. Metodologi Penelitian, Malang: UM Press, 2013.
22. Wurdinger. Students' Perceptions of life Skill Development in Project Based Learning Schools. Departement of Educational Leadorsship: Minnesota State University, 2015.

Implementation of the project based learning model to improve creativity and science learning outcomes for class VI students of SD Negeri Bangomolunow, Bolaang district, Bolaang Mongondow Regency

Publication

6   baixardoc.com
    Internet Source   1 %

7   Nunung Ariandani, Sandy Ermanda, Nurul
    Fajri. "The Effect Of Project-Based Learning
    Model Using Three Dimensional Media And
    Computation On Achievement Of Study
    Reviewed based of Student's Creativity",
    Journal of Physics: Conference Series, 2020
    Publication   1 %

8   M Susilawati, D P E Nilakusmawati.
    "Effectiveness of problem-based learning to
    optimize student learning outcomes in
    regression analysis course", Journal of
    Physics: Conference Series, 2018
    Publication   1 %

9   jurnal.peneliti.net
    Internet Source   1 %

10 eprints.ukmc.ac.id
    Internet Source   <1 %

11 www.grafiati.com
    Internet Source   <1 %

12 css.ethz.ch
    Internet Source   <1 %

13 Muhammad Munawar. "The application of
    STAD-Cooperative Learning Model: Efforts to
                                                             <1 %

increase motivation and Learning Outcomes of students in Class 5 SD N 07 Ledok Salatiga in Mathematics subjecth in Folding Symmetry and Rotating Symmetry topics", MUDARRISA: Jurnal Kajian Pendidikan Islam, 2019
Publication

14 A Agustoni, Suratno, Suparti. " Development of science learning devices contexstual problem based learning (CPBL) based in improving problem solving skills for 4 grade elementary school ", Journal of Physics: Conference Series, 2021
Publication
<1 %

15 D Dewantara, S Mahtari, M Misbah. "Create an interactive video about alternative energy sources from fruits to optimize student creativity", Journal of Physics: Conference Series, 2021
Publication
<1 %

16 Dina Mariani, Usmeldi. "Needs analysis in the development of natural science student books connected type integrated of local cultural wisdom", Journal of Physics: Conference Series, 2019
Publication
<1 %

17 journal.unj.ac.id
Internet Source
<1 %

journal.umpr.ac.id

18   Internet Source   <1%

19   Syahrul Ramadhan, Vivi Indriyani, Yasnur Asri,   <1%
      Elfia Sukma. "Design of Learning Modules
      Writing Narrative Text Based on Project Based
      Learning (PjBL) by Using Mobile Devices",
      Journal of Physics: Conference Series, 2020
      Publication

20   repository.uhn.ac.id   <1%
      Internet Source

21   Silfia Ilma, Mimien Henie Irawati Al Muhdhar,   <1%
      Fatchur Rohman, Murni Sapta Sari.
      "Promoting students' metacognitive
      awareness and cognitive learning outcomes in
      science education", International Journal of
      Evaluation and Research in Education (IJERE),
      2022
      Publication

22   jurnal.unissula.ac.id   <1%
      Internet Source

23   jurnal.unimed.ac.id   <1%
      Internet Source

24   media.neliti.com   <1%
      Internet Source

25   repository.uin-suska.ac.id   <1%
      Internet Source

26 repository.ung.ac.id
Internet Source
<1%

27 Ardhi Sanwidi, Galuh Tyasing Swastika. "Lectora Inspire in Learning Congruence Triangles in Higher Education", JIPM (Jurnal Ilmiah Pendidikan Matematika), 2018
Publication
<1%

28 Dehdashti, Alireza, Semira Mehralizadeh, and Masoud Motalebi Kashani. "Incorporation of Project-based Learning into an Occupational Health Course", Journal of Occupational Health, 2013.
Publication
<1%

29 academic-accelerator.com
Internet Source
<1%

30 works.bepress.com
Internet Source
<1%

31 www.michigan.gov
Internet Source
<1%

Exclude quotes	On	Exclude matches	< 5 words
Exclude bibliography	On		