JoSLEPI 2 (2) (2024)
Journal of Science Learning Process and Instructional Research
https://journal.riau-edutech.com/index.php/joslepi
ISSN 3031-3252
Publisher :
Andester Riau Edutech
Pusat Inovasi Pendidikan dan Teknologi

Implementation of Creative Problem Solving Model With a Contextual Approach To Improve Students' Cognitive Learning Outcomes on Static Electricity Material In Grade IX Of SMPN 3 Kandis

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Submiited: 20/06/2024
Revised: 06/08/2024
Accepted: 06/08/2024
Published: 09/08/2024
Vol. 2
No. 2

ABSTRACT

Education is something that is really needed in this world, through education a person can have a good personality and can be useful for many people. The aim of Indonesian national education is to produce a generation of people who are faithful, devout, virtuous, intelligent and creative. This research aims to describe the cognitive learning outcomes of students who apply the creative problem solving model with a contextual approach to static electricity material and improve students' cognitive learning outcomes by applying the creative problem solving model. The type of research used is Quasi Experiment (Post-test only control design). This research will be carried out at SMPN 3 Kandis using tests on students' cognitive learning outcomes on static electricity material. This research used two classes, namely the experimental class by applying a creative problem solving model with a contextual approach, while the second class was a control class using conventional methods. Based on the results of the final tests that have been carried out in both classes, it can be seen that there has been an increase in learning outcomes that have been experienced by students on static electricity material. The average score for the experimental class was 83.79 and the control class 72.58. Through research conducted at SMPN 3 Kandis, it is known that the creative problem solving (CPS) model with a contextual approach can improve students' cognitive learning outcomes in static electricity material in class IX SMPN 3 Kandis.

Keywords: *Pengembangan, Perangkat Pembelajaran, Contextual Teaching and Learning*

1 Introduction

Education is an effort to improve the quality of human resources, both individually and as a group (Sugianto and Purba Andy Wijaya, 2018: 72). One type of learning that can develop students' potential is science learning. Science learning is learning that allows students to gain direct experience, thereby increasing their ability to receive, store and apply the concepts they have learned (Khatimah et al, 2015:1)

Natural Science has the dimensions of scientific attitude, scientific process and scientific product, in the form of knowledge. Therefore, science learning is not just about gathering knowledge, but must train various process skills, think creatively and foster a scientific attitude. According to Azhar (2008) and Danis et al (2015), Physics states that Physics is a science that studies physical events that require the power to think, reason, analyze and be scientific in order to understand concepts to solve problems in everyday life. Physics is a branch of science which basically aims to study and analyze natural phenomena or processes and the properties of substances and their applications (Rahayu, 2015).

According to Kurniadi Cendra and Aslimeri (2020: 152), learning tools are all the tools and materials used by teachers to carry out the learning process. One appropriate learning model to improve students' cognitive outcomes is using the creative problem solving (CPS) model.

How to Cite :
Suryani, J. *et al*. (2024).Implementation of Creative Problem Solving Model With a Contextual Approach to Improve Students Cognitive Learning Outcomes on Static Electricity Material in Grade IX of SMPN 3 Kandis. *Journal of Science : Learning Process and Instructional Research* (JoSLEPI), 2(2), 23-27

The CPS model is designed to improve students' abilities in problem solving skills. So that students are more active during the learning process and more motivated to participate in class learning and are able to express creative ideas or opinions.

2 Research Methodology

In this research, the nature of the research design used is quasi-experimental (quasi-experimental) using a posttest only control design research design with two groups, namely the experimental class and the control class. The experimental class is the class that is given treatment and the control class is the class that is not given treatment. This quasi-experimental design pattern has the following research pattern.

Class	Treatment	*Posttest*
Eksperimen class	X	O1
Control class		O2

The data analysis techniques used in this research are Descriptive Analysis and Inferential Analysis. In this research, the data must be normal and also homogeneous. The data collection method in this research is a test technique, data is collected by giving a post-test (learning outcomes test) in the experimental class and control class. The research instrument in this study was a test of student cognitive learning outcomes. The student cognitive learning outcomes test is in the form of a multiple choice test created based on indicators of achievement of learning outcomes in Static Electricity.

3 Results and Discussion

Learning outcomes were obtained after both classes had finished studying Static Electricity material and student learning outcome data was obtained through a test containing 20 test questions. The following is the data obtained

Table 1. Table of student learning outcomes

Class	N	Minimun	Maximum	Avarage	Standard Deviation
Ekperiment	33	65	95	83,79	8,633
control	33	55	90	72,58	10,317

Based on Table 1, it can be seen that the experimental class consisting of 33 students has an average score of 83.79, a standard deviation of 8.633, with a minimum score of 65 and a maximum score of 95. The control class consisting of 33 students has an average of 72.58. standard deviation 10.317, with a minimum value of 55 and a maximum value of 90. The experimental class and the control class have different average cognitive learning outcomes. This shows that the average cognitive learning outcomes of the experimental class are higher than the average cognitive learning outcomes of the control class.

Student cognitive learning outcomes can be categorized as very high, high, medium, low and very low. Categories of students' cognitive learning outcomes in the experimental class and control class are presented in Table 2.

Table 2 Cognitive Learning Outcome Categories

Index	Research Range	Students in the experimental Class	Students in the control class
Very high	X≥90	12	3
High	75≤X<90	18	13
Currently	60≤X<75	3	15
Low	40≤X<60	0	2
Very Low	0≤X<40	0	0
Jumlah		33	33

In this research, it can be seen that students in the experimental class got the most marks in the high predicate and many also got the very high predicate, while in the control class the students got the most marks in the medium predicate and there were also students who got scores with the low predicate. By implementing the CPS learning model, it can improve students' creative thinking abilities and learning outcomes, because students can explore their abilities to think more deeply, so that the concepts they obtain are not only remembered but understood (Malisa, 2018:18).

In this study, the instrument took the form of multiple choice questions consisting of 20 cognitive ability test questions. Based on the level of cognitive ability, the test instrument consists of C1 (remembering) with 2 questions, C2 (understanding) with 3 questions, C3 (applying) with 6 questions, C4 (analyzing) with 4 questions, C5 (evaluating) with 4 questions. questions and C6 (creating) 1 question.
The cognitive abilities of students in the experimental class and control class at each cognitive level can be seen in Table 3

Level kognitif	Experimental Class		Control Class	
	Persentase(%)	Kategori	Persentase (%)	Kategori
C1	94,48	Sangat tinggi	87,87	Sangat Tinggi
C2	92,92	Sangat tinggi	81,81	Tinggi
C3	80,3	Tinggi	71,21	Sedang
C4	85,60	Tinggi	78,03	Tinggi
C5	78,03	Tinggi	58,33	Sedang
C6	69,69	Sedang	54,54	Rendah
Rata-rata(%)	83,5	Tinggi	71,96	Sedang

Students' cognitive abilities can be seen based on table 4.3. In domain C1 (remembering) the experimental class obtained a percentage of 94.48% and the control class obtained a percentage of 87.87%. At Level C2 (understanding) the experimental class obtained a percentage of 92.92% and the control class obtained 81.81%. Cognitive abilities at Level C3 (applying) the experimental class obtained a percentage of 80.3% and the control class obtained a percentage of 71.21%. The percentage obtained by the experimental class at Level C4 (analyzing) was 85.6% and the percentage in the control class was 78.03%. In the cognitive

domain C5 (evaluating) experimental class students obtained a percentage of 78.03% and the control class obtained a percentage of 58.33%. Meanwhile, in domain C6 (creating), the experimental class and control class obtained 69.69% and 54.54% respectively.

The comparison of learning outcomes in the experimental class and the control class can be seen more clearly through an analysis of students' cognitive abilities. Overall, the experimental class had a higher average percentage of cognitive abilities than the control class in each cognitive domain. In the experimental class those in the very high category were C1 (remembering) and C2 (understanding), while in the control class the percentage of students in the very high category was only C1 (remembering). The experimental class has an average score in the high category, namely C3 (applying), C4 (analyzing) and C5 (evaluating), while the control class has an average score in the high and medium categories, some even fall into the low category, namely C6 (create).

The results of the normality test in both classes obtained a significance value of 0.060 in the experimental class and 0.153 in the control class. The significance value in both classes is > 0.05, so the data is normally distributed in both classes. The results of the Homogeneity test show a significance value of 0.153 > 0.05 so it can be concluded that the variance of the experimental class posttest data and the control class posttest data is the same or homogeneous. The results of the independent sample t-test static test, obtained a 2-tailed significance value of 0.00. This value is smaller than 0.05. The t-test results show that Ho is rejected and Ha is accepted, which means that there is an increase in students' cognitive learning outcomes in classes that use the creative problem solving learning model with a contextual approach to Static Electricity material in class IX SMPN 3 Kandis. This can also be seen based on the hypothesis testing criteria, the mean score of the experimental class is higher than the control class, so it can be concluded that the Creative problem solving (CPS) model in physics learning on static electricity material can improve students' cognitive learning outcomes.

The creative problem solving (CPS) model with a contextual approach in physics learning can improve students' cognitive learning outcomes in class IX static electricity material at SMPN 3 KANDIS. This statement is in line with research conducted by Siti Nurlina Ripani (2020) which shows research results that the creative problem solving (CPS) learning model is able to improve learning outcomes as well as research by Handayani et al., (2022) which states that the contextual approach is able to improve results. students' cognitive learning. Students who have followed the learning process using the creative problem solving (CPS) model with a contextual approach will be able to improve students' cognitive learning outcomes.

4 Conclusion

Based on the results of descriptive and inferential analysis, through the implementation of a creative problem solving model with a contextual approach to improve students' cognitive learning outcomes on static electricity material in class IX SMPN 3 Kandis. It was found that the cognitive learning outcomes of class students who carried out creative problem solving (CPS) learning models with a contextual approach obtained a higher average than those of classes who carried out conventional learning. The average score for students in the class that uses the creative problem solving model is 83.79 and the class that uses conventional learning is 72.58. So it can be concluded that in science learning, the creative problem solving (CPS) model with a contextual approach is effective in improving students' cognitive learning outcomes in static electricity material in class IX SMPN 3 Kandis.

5 Acknowledgement

We would like to thank the Department of Physics Education, FKIP, Riau University.

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