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THE INFLUENCE OF CHILDREN LEARNING IN SCIENCE MODELS ON STUDENTS' SCIENCE PROCESS SKILLS

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Abstract

Learning that is passive and does not provide direct experience to students is the cause of low students' science process skills. This study aims to determine the effect of the Children Learning In Science learning model on science process skills. This study uses a quantitative approach. The method used in this research is to use a Quasi Experimental Design with the type of pretest-posttest control group design research. The subjects in this study were 33 students in class VA as the experimental class and 29 students in class V B as the control class. The results showed that there were differences in science process skills and differences in improving science process skills between the experimental class. This shows that the Children Learning In Science learning model can have an impact on the science process skills of students who use the Children Learning In Science learning model. Thus, fathers/mothers of teachers who are going to ban science, especially those who want to improve their science process skills, would be a good step, to try to apply the Children Learning In Science learning model.

Keywords: Science Process Skills, Children Learning In Science, Science

Abstrak

Pembelajaran yang bersifat pasif dan tidak memberikan pengalaman langsung kepada siswa menjadi penyebab rendahnya keterampilan proses sains siswa. Penelitian ini bertujuan untuk mengetahui pengaruh model pembelajaran *Children Learning In Science* terhadap keterampilan proses sains. Penelitian ini menggunakan pendekatan kuantitatif. Metode yang digunakan dalam penelitian ini adalah dengan menggunakan *Quasi Experimental Design* dengan jenis penelitian *pretest-posttest control group design.* Subjek dalam penelitian ini adalah kelas V A sebanyak 33 siswa sebagai kelas eksperimen dan kelas V B sebanyak 29 siswa sebagai kelas kontrol. Hasil penelitian menunjukkan bahwa terdapat perbedaan keterampilan proses sains dan perbedaan peningkatan keterampilan proses sains antara kelas eksperimen dan kelas kontral. Hal ini menunjukkan bahwa model pembelajaran *Children Learning In Science* dapat memberikan pengaruh terhadap keterampilan proses sains siswa yang menggunakan model pembelajaran *Children Learning In Science.* Dengan demikian, Bapa/Ibu guru yang akan mengajarkan IPA, khususnya yang ingin meningkatkan keterampilan proses sains alangkah baiknya, untuk mencoba menerapkan model pembelajaran *Children Learning In Science*.

Kata Kunci: Keterampilan Proses Sains, Children Learning In Science, IPA

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INTRODUCTION

Education plays an important role in ensuring survival and improving the quality of human resources. Through education, a person will gain knowledge and be able to achieve success. Education in elementary schools is the most basic level of education and functions as the first step in developing the cognitive aspects of a student in order to gain knowledge of the learning process. A lot of knowledge will be obtained in elementary school education, one of which is Natural Sciences (IPA).

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IPA is the science of natural phenomena which are systematically arranged based on the results of experiments and observations made by humans (Samatowa: 2011). Through science students not only understand concepts, but also have to practice during learning in order to avoid social inequalities in everyday life and in the future. In order for students to be skilled, it is necessary that science process skills are applied in conducting learning to train students' skills.

Science process skills are a human ability to understand a phenomenon and carry out scientific investigations where this ability is important for the development and application of scientific theoretical concepts (Alpusari, 2016). Science process skills are a scientific method in which students practice steps Learning science is not just memorizing scientific concepts and principles, but by learning science it is hoped that students can have attitudes and abilities that are useful for themselves in understanding the changes that occur in their environment.

Several facts show that there are still many problems with the implementation of science learning, including teachers still using conventional and non-innovative learning models resulting in students being less enthusiastic about learning. Conventional learning is less able to cultivate students' science process skills, because learning is focused on cognitive aspects, while psychomotor aspects and affective aspects are given less attention (Ismail, 2018). This causes the opportunity for students to be involved in the learning process and opportunities for self-development are reduced. The learning process in the classroom should lead to the active role of students (student centered).

The results of the initial interviews conducted by the researcher on the homeroom teacher of class V MI PUI Cipari obtained data that the students' science process skills were classified as low. Information obtained through interviews regarding science process skills indicates that teachers in teaching are still dominated by the lecture method or are still teacher centered. In one semester the teacher invites students to carry out practical activities only a few times in one semester. This can cause science process skills to not develop. Whereas in science learning if the learning process is only through the delivery of material orally from book sources to students, then students cannot develop a skill that must exist in science learning, namely science process skills. Therefore we need a learning model that is student centered so that students learn more actively in participating in learningo find something through experimentation and experimentation. Basic science process skills are needed to be known and possessed by elementary school students (Eliyana, 2020).

From the problems that have been described, the solution that can be given is through the application of a learning model that is able to improve science process skills, namely the Children Learning In Science (CLIS) learning model. The Children Learning in Science (CLIS) learning model is a learning model that has stages to generate students' concepts through experiments or experiments. According to Samatowa (2011) the Children Learning in Science (CLIS) learning model has characteristics that underlie the constructivism view by paying attention to students' initial experiences and concepts, student learning and the environment as learning resources.

Children Learning In Science (CLIS) is related to students' science process skills, because by using this model students can increase creativity, activeness and thinking skills so that students' science process skills can develop (Ajul et al., 2019). The advantage of the Children Learning In Science (CLIS) learning model is that it creates student creativity for learning so as to create a more comfortable and creative classroom atmosphere, collaboration occurs between students and students are directly involved in carrying out activities and learning becomes more meaningful, meaning that the class atmosphere becomes active and not boring (Ismail, 2018).

METHOD

The method used in this research is the experimental method. According to Arikunto (2013: 9) the experimental research method is a way to look for a causal relationship (causal relationship) between two factors that are deliberately caused by researchers by eliminating or setting aside other disturbing factors. The research form is a quasi-experimental design. The form of the quasi-experimental is the pretest-posttest control group design. The subjects of this study were the fifth grade students of MI PUI Cipari, who were taken from 2 classes, namely the VA class as the experimental class which consisted of 33 students and the VB class as the control class which consisted of 29 students.

The data collection technique used is a test. The research instrument used in this study was a test sheet to collect data regarding the science process skills to be measured. The test sheet used is in the form of multiple choice questions with a total of 20 questions (pretest and posttest). Furthermore, the data were analyzed using descriptive data analysis techniques and with several data analysis techniques in the form of normality tests and homogeneity tests, and hypothesis testing using the T test and N-Gain test.

The procedure in this study was carried out using 2 groups which were divided into two classes. The first group is the experimental group, where the experimental group is the group that gets the learning treatment using the Children Learning In Science (CLIS) learning model. While the second group is the control group, where the control group is a comparison group or as a group that is the result of not getting the learning treatment using the Children Learning In Science (CLIS) learning model and will get treated with the conventional learning model.

The test was carried out twice, namely pretest and posttest. The initial test (pretest) was carried out before the experimental group and the control group were given treatment with the aim of knowing the initial abilities possessed by students, while the final test (posttest) was carried out after the experimental group and control group were given different treatment, from the results of the post-test it will be known whether the Children Learning In Science (CLIS) learning model is better than the conventional model in improving students' science process skills

RESULTS AND DISCUSSION

Results

Data on the results of students' science process skills in this study were obtained from pretest and posttest scores, namely before being given treatment and after being given treatment in both classes. Pretest and posttest data of students' science process skills can be seen in the table below:

Table 1. Pretest and posttest data

Research Data	Pretest		Posttest	
	Experiment	Control	Experiment	Control
The number of students	33	29	33	29
Highest score	65	65	100	100
Lowest score	35	20	70	65
Average	46,09	41,60	82,75	75,56
Standard deviation	9,05	6,79	9,19	7,33

To find out the initial test of the experimental class and control class, a pretest was carried out in each class and the data obtained in the experimental group obtained the highest score of 65, the lowest score of 35, the average was 46.09 and the standard deviation was 9.05. As for the control group, the highest score was 65, the lowest score was 20, the average was 41.60 and the standard deviation was 6.79. After being given different treatment between the experimental group and the control group, different results were obtained, namely in the experimental group the highest score was 100, the lowest score was 70, the average was 82.75 and the standard deviation was 9.19. As for the control group, the highest score was 100, the lowest score was 65, the average was 75.56 and the standard deviation was 7.33.

The results of data acquisition from the research conducted were then analyzed using the normality test and homogeneity test, hypothesis testing using the T test and the N-Gain test. With the following data exposure:

Table 2. Pretest and Posttest Normality Test Table

Statistics	Experiment Class		Control Class	
	Pretest	Posttest	Pretest	Posttest
Average	46,09	41,60	82,75	75,56
SD	9,05	6,79	9,19	7,33
X^2count	6,89	6,02	5,88	3,65
X^2table	7,81	7,81	7,81	7,81
Information	Normal	Normal	Normal	Normal

Based on the results of the pretest and posttest calculations for the normality test in the experimental class, the pretest X^2count obtained a value of 6.89 and X2table of 7.81. So the data can be said to be normally distributed. And the posttest X^2count value obtained a value of 6.02 and X^2table of 7.81. So the data can be said to be normally distributed. Furthermore, the results of the pretest and posttest calculations for the normality test in the control class obtained the pretest X^2count value which obtained a value of 5.88 and X^2table of 7.81. So the data can

be said to be normally distributed. And the posttest X^2count value obtained a value of 3.65 and X^2table of 7.81.

Table 3. Pretest and Posttest Homogeneity Test Table

Statistics	Pretest		Posttest	
	Experiment Class	Control Class	Experiment Class	Control Class
F_{count}	1,08		1,68	
F_{table}	1,91		1,91	
n1	32		32	
n2	28		28	
Information	Homogeneous		Homogeneous	

From the table above it can be seen that the test for homogeneity of data in the experimental class and control class obtained results for the Pretest F_{count} = 1.08 and for the Posttest F_{count} = 1.68. This means that $F_{count} < F_{table}$, which means that both test score data are in homogeneous groups.

Table 4. Pretest t-test

Group	Average	Varians	The number of students	t_{count}	t_{table}
Experiment	46,09	101,46	33	0,10	2,00
Control	41,60	110,09	29		

Based on the table above, the results of the pretest t-test obtained a tcount of 0.10 and a t_{table} of 2.00. Thus t_{count} (0.10) < t_{table} (2.00) it means that the two groups before being given treatment had relatively the same abilities.

Table 5. Posttest t-test

Group	Average	Varians	The number of students	T_{count}	t_{table}
Experiment	82,75	83,09	33	4,18	2,00
Control	75,56	49,81	29		

Based on the table above the posttest t-test results obtained tcount of 4.18 and ttable of 2.00. Thus tcount (4.18) > ttable (2.00) it can be interpreted that there is a significant difference in science process skills after being given treatment of the two groups. So it can be said that there is an influence of the children learning in science learning model on students' science process skills.

Table 6. N-Gain Class Experiment and Control

Group	Pretest	Posttest	N-Gain	Criteria
Experiment	1.475	2.730	0,72	Tall
Control	1.195	2.215	0,59	Currently

Based on the table above, it shows that the experimental class using the Children Learning In Science (Pretest) learning model obtained a score of 1,475. While the test results after being given treatment (Posttest) was 2,730. Then obtain an N-Gain result of 0.72, then according to the N-Gain criteria these results can be expressed as high criteria. While the test results in the control class used before the use of the lecture method (Pretest) scored 1,195. After being given treatment in the control class, the result test (Posttest) was 2,215. Then obtain an N-Gain result of 0.59, according to the N-Gain criteria this result can be stated in the medium criteria. This means that there is a significant difference between improving students' science process skills between the experimental class and the control class.

Discussion

This research was conducted in the experimental class by giving treatment using a child learning model in science and in the control class using the lecture method. In the experimental and control classes, this study was divided into three meetings. For this reason, the method used to collect data is in the form of an initial test (pretest) given to class VA (Experimental) and class VB (Control) before being given treatment aims to determine the initial abilities possessed by students. Then, a final test (posttest) is given to find out the difference between the learning model of children in science and in the control class that uses the lecture method.

The results of the experimental pretest calculation data obtained the lowest score of 35, the highest pretest score of 65, the average value was 46.09, and the standard deviation was 9.05. While the results of the pretest in the control class obtained the lowest score of 20, the highest pretest score of 65, the average value of 41.60, and the standard deviation of 6.79. After looking at the values of each experimental class and control class, it can be concluded that the two classes have an average value that is not much different.

The results of the final test (posttest) for the experimental class and the control class were different and increased, but the visible increase was not as much as what happened in the experimental class and there were even some students whose grades dropped. This can be seen in the learning process in the experimental class using the children learning in science learning model, during the learning process students follow the learning process well, can work with their group mates, have the opportunity to be more active in giving opinions and understand the material easily . So that the results of the children learning in science learning model can influence and assist students in improving the results of their science process skills.
After knowing the results of the pretest and posttest values, then the research continues with the gain test. The existence of this gain test aims to see how big the increase is in this study. The results of the N-Gain test in the experimental class obtained a value of 0.72 which was a high criterion and for the results of the N-Gain test in the control class it obtained 0.59 with moderate criteria.

In the experimental class learning activities, all students were given responsibility for completing the assignments given. It's just that in the process of carrying out the discussion which consisted of 6 people, the students were not used to doing experiments. So that when carrying out the experiment not all students in the group followed it well, there were still some students who were still confused when conducting the experiment. This is because students have not been trained to conduct experiments on material that should be carried out experiments. Therefore, the teacher's role in providing direction to students has a major effect on improving students' science process skills.

CONCLUSION

Based on the results of research and data analysis, it can be concluded that:

1. There are differences in students' science process skills between the experimental class using the Children Learning In Science (CLIS) learning model and the control class using the lecture method in class V MI PUI Cipari. Posttest t-test results obtained tcount 4.18 > ttable 2.00. This shows that there is a significant difference in science process skills after being given treatment of the two groups.
2. There is a difference in improving students' science process skills between the experimental class using the Children Learning In Science (CLIS) learning model and the control class using the lecture method in class V MI PUI Cipari. The results of the N-Gain test showed that the experimental class was 0.72 with high criteria and the control class was 0.59 with moderate criteria.

Based on the two conclusions above, it can be stated that using the Children Learning In Science learning model can have an impact on the science process skills of students who use the Children Learning In Science learning model compared to those who do not use the Children Learning In Science learning model.

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