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The Effect of the Inside Outside Circle (IOC) Type Cooperative Learning Model on the Learning Achievement of Students of Animal Life Cycle Material Class IV SDN 2 Sukasenang

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ABSTRACT

This study aims to determine the effect of the IOC type of cooperative learning model on student achievement in science subjects in the life cycle of grade IV animals in elementary schools. This is so that the delivery of learning material can be carried out well, because some teachers still use conventional methods and rarely use models and learning media so that learning is still teacher centered on theacers. The research method used is the experimental method type Quasi Experimental Design with the design used is Nonequivalent Group Pretest-Posttest Design. The data collection technique used is a test technique that is a multiple-choice question. Analysis of the data used is quantitative data analysis in the form of normality test, homogeneity test, and hypothesis testing using the help of SPSS 23 and Microsoft Exel 2007 programs. The results showed a significant influence. It was obtained from the learning achievements of the experimental class students who used the cooperative learning type IOC to obtain an average pretest of 42.03, the posttest average value of 87.03 and the normal average gain of 0.78 which was in the high category. While the learning achievement of the control class student who did not use the cooperative learning type IOC model obtained an average pretest of 41.85, the average posttest value was 68.51 and the normal average gain was 0.46 with the moderate category. Based on the t test between the control and experimental groups, the result obtained with the value of t count > t table is 6,584 > 2,000, the Ho is rejected and Ha is accepted, meaning there is a difference between the control class and the experimental class.

Keyword: Cooperative Learning Model Type IOC, Science Learning Achievement, Animal Life Cycle

INTRODUCTION

Education can encourage the improvement of human quality in the form of cognitive, affective and psychomotor competencies. This quality improvement is inseparable from the role of a teacher. Teachers must be able to plan an interesting learning process and have the ability to deliver learning in the classroom so as to create a fun, effective and efficient learning atmosphere. However, in reality, at every level of education, especially in elementary school, there are problems in delivering teaching materials, namely teachers still rely on lecture methods.

The problem also occurred at SDN 2 Sukasenang, based on the results of an interview with Mr. Toto Suheryanto, a grade IV teacher on Saturday, October 24, 2018, information was obtained that in learning still using the lecture method and giving questions so that learning centered on teachers and students was more silent, and rarely asked. Then the teacher does not use the learning model while learning takes place so that students become passive and less active. Teachers also rarely use learning media, so that learning delivery is not optimal. Judging from the test score data obtained in the animal life cycle science subject, only some students get scores less than the KKM (Minimum Completeness Criteria). Therefore, there are some students who still cannot remember and understand the science material, such as some students have difficulty in understanding the difference between perfect and imperfect metamorphosis, the sequence of animal life cycles and animal examples in each metamorphosis so that this affects the success of student learning achievement, which is still partly low.

In this case, teachers must be able to choose appropriate learning methods, models, and media. Especially in the selection of learning models to achieve maximum learning goals. According to Soekamto in Trianto (2014: 23) "a learning model is a conceptual framework that describes a systematic procedure in organizing learning experiences to achieve specific learning objectives, and serves as a guideline for learning designers and teachers in planning teaching and learning activities".1 So, the learning model is a framework that has been planned and used as a guideline as a guide for teachers in the implementation of learning in the classroom. So, the learning model is a framework that has been planned and used as a guideline as a guide for teachers in the implementation of learning in the classroom. The learning model that can be used is a cooperative learning model with one of the types being the Inside Outside Circle (IOC) type cooperative learning model.

For this reason, because the learning achievement of grade IV students at SDN 2 Sukasenang is still low, an experimental research was carried out, namely the influence of the Inside Outside Circle (IOC) cooperative learning model on student learning achievement of the material on the life cycle of animals in grade IV SDN 2 Sukasenang.

a. Cooperative Learning Model

The cooperative learning model is more about group learning. Here, the role of the teacher only acts as a facilitator who provides direction and support to students. Meanwhile, students carry out the tasks given by the teacher in cooperation and have the opportunity to communicate and interact with their friends to achieve learning goals.

According to Suprijono (2012: 54) "in general, cooperative learning is considered more teacher-directed because teachers assign tasks and questions and provide materials and information designed to help students solve the problem in question".[2] Thus, cooperative learning is a series of activities carried out by students in the form of groups, where students are directed by the teacher to learn in groups and do the tasks given by working together.

b. Inside Outside Circle (IOC) Type Cooperative Learning Model

This IOC-type cooperative learning model was developed by Spencer Kagan, this model allows students to share information with each other simultaneously. Shoimin (2017: 87) stated that the Inside Outside Circle is a learning model with a system of small circles and large circles that begins with the formation of large groups in the classroom consisting of inner circle groups and outer circle groups. Members of the outer circle group stood facing inwards. Between the members of the inner and outer circles are paired and face to face, where students share information with each other at the same time with different pairs in a short and regular manner. Then, the students in the small circle are stationary in place, while the students in the large circle shift one or two steps clockwise so that each student gets a new pair. The information that is shared with each other is the content of the material that leads to the learning objectives. When sharing information, all students will give and receive each other's learning information[3].

There are several steps of the IOC type cooperative learning model according to Taniredja (2012: 78), which are as follows[4]:

1) Half of the standing class forms a small circle and faces out.
2) The other half of the class forms a large circle that faces inward.
3) Two students in pairs from small and large circles share information. This information exchange can be done by all couples at the same time.
4) Then the student in the small circle is stationary in place, while the student in the large circle shifts one or two steps clockwise.
5) Now it's the students' turn to be in a large circle that divides information. And so on.

The advantages and disadvantages stated by Shoimin (2017: 90) are as follows[5]:

1) The advantage is that there is no specification materials needed for the strategy so it can be easily incorporated into the lesson, this activity can build the nature of cooperation between students and get different information at the same time.
2) The disadvantage is that it requires a large classroom, is too long so that it is not concentrated and is abused to joke and is complicated to do.

c. Learning Achievement

Learning achievement is a sentence consisting of two words, namely "achievement" and "learning". The two words have different meanings, namely: according to Djamarah (2017: 21) "achievement is the result of an activity that has been done, created, which pleases the heart obtained by working tenaciously both individually and in groups[6]. While the meaning of learning is essentially about changing student behavior. As stated by Hamalik in Maolani (2017: 10) "learning is a process of changing individual behavior through interaction with his environment".[7]

Thus, it can be understood that achievement is basically a result obtained through an activity. While learning is basically a change in

behavior from a process in the form of experiences in the environment. So it can be understood about learning achievement that learning achievement is a result obtained in the form of impressions that result in individuals with the results of learning activities.

d. Science Learning in Elementary Schools

Science learning in elementary school is related to environmental knowledge. This knowledge is obtained from facts, concepts and inventions. According to Agustiana and Tika (2013: 257) "Science is related to the way of finding out about nature systematically so that it is not only the mastery of a collection in the form of facts, concepts or principles but also a process of discovery".[8]

Thus, students' activities to find out about science through the discovery process can be beneficial for human life.

METHOD

The research method used is the Quasi Experimental Design research method with a Nonequivalent Group Pretest-Posttest Design.

$NR_1\ O_1\ X\ O_2$

$NR_2\ O_3\ O_4$

Figure 1. *Nonequivalent Group Pretest Posttest Design*
(source: Jakni, 2016: 74)[9]

This research was carried out at SDN 2 Sukasenang. The population in this study is all grade IV students of SDN 2 Sukasenang which totals 54 students. The sample determination technique uses saturated sampling techniques. The sample in this study was 27 students in class IV A who were used as experimental classes and class IV B with 27 people who were used as control classes. The data collection techniques and instruments used are multiple-choice question tests, interviews, and documentation. Data analysis techniques are in the form of normality test, homogeneity test, hypothesis test and gain test.

RESULT

a. Research Results

1) Student Learning Achievement in the Control Classroom

In the control class there were 27 students and tests were carried out in the form of pretest and posttest in science subjects on animal life cycle material, but they were not given treatment but only used the lecture method.

The learning achievement of students in the control class in the pretest obtained an average score of 41.85, and in the posttest the average score was 68.51. Thus, judging from the average pretest and posttest scores of the control class, there was no significant increase in the average.

Table 1. Average Learning Achievement of Control Class Students

Class	N	Average Student Learning Achievement	
		Pretest	*Posttest*
Control	27	41,85	68,51

2) Student Learning Achievement in the Experimental Classroom

In the experimental class, there were 27 students and tested in the form of pretest and posttest in the science subject of animal life cycle material. In the experimental class, treatment was given using the Inside Outside Circle (IOC) type cooperative learning model.

The learning achievement of students in the experimental class in the pretest obtained an average score of 42.03, and in the posttest the average score of 87.03. Thus, judging from the average of the pretest and posttest of the

experimental class, there is a difference, namely a significant increase in the average.

Table 2. Average Learning Achievement of Experimental Class Students

Class	N	Average Student Learning Achievement	
		Pretest	*Posttest*
Experiment	27	42,03	87,03

3) Gain Score Index

Student learning achievement in the science subject of animal life cycle material between the control class and the experimental class was different on average. It can be seen from the average result of the control class gain score of 0.46, while the average result of the experimental class gain score is 0.78. This shows that the average gain score of the experimental class is greater than that of the control class, so it can be concluded that student learning achievement using the Inside Ouside Circle (IOC) type cooperative learning model is better than the learning achievement of students who do not use the Inside Ouside Circle (IOC) type cooperative learning model.

Table 3. Average Score Gain

Class	N	Average Student Learning Achievement	
		Control	Experiment
Gain Score	14	0,28	0,67

b. Hypothesis Test Results/ Research Question Answers

1) Control Class and Experimental Class Pretest Pretest Prerequisites

This test was carried out to determine the difference in students' initial learning achievement between the control class and the experimental class With calculations using the Shapiro-Wilk normality test, the following results were obtained:

Table 4. Normality Test Results of Control Class Pretest and Experimental Class

Tests of Normality			
	Shapiro-Wilk		
	Statistics	*Df*	*Sig.*
Control Class	,968	27	,549
Experimental Classes	,974	27	,715

Based on the table above, it can be seen that in the Shapiro-Wilk column, the control class pretest data is sig 0.549, this shows more than a significance ≥ 0.05, so it can be concluded that the control class pretest data is normally distributed. While in the experimental class pretest data is sig 0.715, this shows more than a significance of ≥ 0.05, so it can be concluded that the experimental class pretest data is normally distributed. Since the control class pretest and the experimental class are normally distributed, the prerequisite test is followed by the variance homogeneity test.

The results of the homogeneity test of the pretest data for the control class and the experimental class were obtained Fcal 1,042. With the level of significance (α) = 0.05 and the degree of freedom (dk1) = 26 and (dk2) = 26 obtained Ftable 1.90. So Ho was accepted and Ha was rejected. It can be concluded that the control class and the experimental class vary homogeneously because they meet the criteria of Fcal ≤ Ftable = 1.042 ≤ 1.90.

After it is known that the data results are distributed normally and homogeneously, then the calculation is carried out using the Independent Sample t Test, a tcount of 0.055 is obtained, while at the significance level α= 0.05 with (dk=52) a ttable of 2.000 is obtained. With this, it can be concluded that the tcount < ttable is 0.055 < 2,000. This means that Ho was accepted and Ha was rejected, which means that there was no difference in students' initial learning achievement between the control class and the experimental class. This means that the students' initial abilities in both classes are the same.

2) Control Class and Experiment Class Posttest Prerequisites

This test was conducted to determine the difference in students' final learning achievement between the control class that was not treated and the experimental class that was treated using the Inside Outside Circle (IOC) type cooperative learning model. With calculations using the Shapiro-Wilk normality test, the following results were obtained:

Table 5. Normality Test Results of the Control Class and Experimental Class Posttest

Tests of Normality			
	Shapiro-Wilk		
	Statistics	*Df*	*Sig.*
Control Class	,907	27	,019
Experimental Classes	,925	27	,052

Based on the table above, it can be seen in the Kolmogrov-Smirnov column, the control class posttest data is sig 0.019, this shows more than a significance of ≥ 0.05, so it can be concluded that the control class posttest data is normally distributed. While the experimental class posttest data is sig 0.052, this shows more than a significance of ≥ 0.05, so it can be concluded that the experimental class posttest data is normally distributed.

The results of the data homogeneity test for the control class and the experimental class were obtained Fcal 1.449. With the level of significance (α) = 0.05 and the degree of freedom (dk1) = 26 and (dk2) = 26 obtained Ftable 1.90. So Ho was accepted and Ha was rejected. It can be concluded that the control class and the experimental class vary homogeneously because they meet the criteria of Fcal ≤ Ftable = 1.449 ≤ 1.90.

After it is known that the data results are normally distributed and homogeneous, then the calculation is carried out using the Independent Sample t Test, a tcount of 6.584 is obtained, while at the significance level α= 0.05 with (dk=52) a ttable of 2,000 is obtained. With this, it can be concluded that the tcount ≥ ttable is 6,584 ≥ 2,000. This means that Ho is rejected and Ha is accepted, which means that there is a difference in students' final learning achievement between the control class and the experimental class where the experimental class uses the Inside Outside Circle type cooperative learning model while the control class does not use the Inside Outside Circle type cooperative learning model.

3) Control Class and Experiment Class Gain Score Prerequisites Test

The N-Gain test was conducted to determine the extent of the influence of the use of the learning model used on the improvement of student learning achievement by looking at the average gain score of the control class and the experimental class. To find out the N-Gain of the control class and the experimental class, it can be done using prerequisite tests, namely the normality test of the gain score and the homogeneity test of the gain score. If the distribution comes from a population that is normally distributed and homogeneous, then the next step is to use a parametic statistical test. The following are the results of the normality test on the gain scores of the control class and the experimental class:

Table 6. Control Class and Experimental Class N-Gain Normality Test

Tests of Normality				
		Shapiro-Wilk		
Class		Statistics	Df	Sig.
Ngain_score	Control Class	,903	27	,016
	Experimental Classes	,906	27	,018

Based on the table above, it can be seen in the Shapiro-Wilk column that the control class N-Gain normality test data is sig 0.016, this shows more than a significance of ≥ 0.05, so it

can be concluded that the normality test data of the control class N-Gain is normal. While in the experimental class it is sig 0.018, this shows more than a significance of ≥ 0.05, so it can be concluded that the posttest data of the experimental class is normally distributed.

The results of the homogeneity test of the gain score variance were obtained Fcal 1.474. With the level of significance (α) = 0.05 and the degree of freedom (dk1) = 26 and (dk2) = 26, Ftable 2.62 is obtained. So Ho was accepted and Ha was rejected. It can be concluded that the control class and the experimental class vary homogeneously because they meet the criteria of Fcal ≤ Ftable = 1.474 ≤ 2.62.

After it is known that the data results are normally distributed and homogeneous, then the calculation is carried out using the Independent Sample t Test, a tcount of 9.577 is obtained, while at the significance level α= 0.05 with (dk=52) a ttable of 2,000 is obtained. With this, it can be concluded that the tcount ≥ ttable is 6,584 ≥ 2,000. This means that Ho is rejected and Ha is accepted, which means that there is a difference in students' final learning achievement between the control class and the experimental class where the experimental class uses the Inside Outside Circle type cooperative learning model while the control class does not use the Inside Outside Circle type cooperative learning model.

Thus, it can be concluded that there is an influence on student learning achievement in the science subject of animal life cycle material by using the Inside Outside Circle type cooperative learning model.

DISCUSSION

a. Interpretation and Discussion of Results

This research was carried out in grade IV of SDN 2 Sukasenang with a total of 54 students, each class consisted of 27 students as a control class, and 27 students as an experimental class. In both classes, the same teaching materials are given. However, the only difference lies in the provision of treatment. The experimental class was given a treatment while the control class was not given a treatment. Learning was carried out in three meetings.

In the control class, each meeting is allocated 2x35 minutes and is held at 07.30 every time until it is finished. The first meeting was held on April 9, 2019, the second meeting was held on April 10, 2019 and the third meeting was held on April 11, 2019. Meanwhile, in the experimental class, each meeting is allocated 2x35 minutes and is held at 10.00 a.m. until it is finished. The first meeting was held on April 10, 2019, the second meeting was held on April 11, 2019, and the third meeting was held on April 12, 2019.

This study has proven that the Inside Ouside Circle (IOC) type cooperative learning model is better than learning by using the lecture method on student learning achievement in the science subject of animal life cycle material. In this discussion, it will be explained based on the results of the research. From the results of the pretest or students' initial learning achievement in the science subject, animal life cycle material in the control and experimental classes obtained the same results with the average score of the control class of 41.8519 and the average of the experimental class of 42.0370 and the ttable < calculation value of 0.055 < 2,000, then Ho was accepted and Ha was rejected which means that there was no difference in the student's initial learning achievement (pretest) between the control class and the experiment class.

In the implementation of learning in the experimental classroom using the Inside Outside Circle cooperative learning model at the first meeting, there are still many students who do not understand the use of the model,

but with the passage of time students begin to understand and get used to the use of the learning model.

Then the results of the posttest or final achievement of students after learning in the experimental class using the Inside Outside Circle type cooperative learning model, and in the control class that did not use the Inside Outside Circle type cooperative learning model, obtained a significant difference in the learning achievement of students in the science subject of animal life cycle materials by obtaining an average score of the control class of 68.5185 and the average of the experimental class was 87.0370 and the tcal value of the ≥ ttable obtained a score of 6.584 ≥ 2,000 which means that Ho was rejected and Ha was accepted which means that there is a difference in student learning achievement between the control class and the experimental class.

Thus, it can be concluded that there is a significant influence on the use of the Inside Outside Circle type cooperative learning model on student learning achievement in the science subject of animal life cycle material.

b. Research Limitations

The limitations in this study include:

1) This study was only conducted on grade IV students of SDN 2 Sukasenang which amounted to 54 students so that the population in the study was limited.
2) Students are not used to the *Inside Outside Circle* type cooperative learning model so they must pay extra attention to condition the classroom to remain conducive and research runs smoothly.
3) The time was relatively short so that the results of this study were not optimal.
4) Limited facilities and infrastructure so that in the delivery of material it is not possible to use infokus.

c. Implications for Service, Education, and Research

1) Implications for Service

The implications for the service are that it can provide an overview of the use of learning models that can be used in the teaching and learning process.

2) Implications for Education

The implication for education is that it can add insight for educators as reference material in the learning process.

3) Implications for Research

The implications for the research are that it can increase knowledge about the learning model used and can be used as a reference for further research.

CONCLUSION

Based on the data that has been collected from the results of the research as described in the previous chapter, the following conclusions can be drawn:

1. In the pretest results or initial ability, students in the control class and the experimental class obtained the same average results, i.e. there was no significant difference. Looking at the average pretest score of the control class is 41.8519 while the average pretest score of the experimental class is 42.0307.
2. Treatment in the control class used conventional methods, while in the experimental class used an Inside Outside Circle type cooperative learning model. With the results of the posttest of the control class which obtained an average score of 68.5185, while the results of the posttest of the experimental class obtained an average score of 87.0370. Thus, the results of the posttest of the control and experimental classes were significantly different.
3. The difference in student learning achievement was seen from the average N-Gain of the control class obtained an average gain score of 0.46 which was in the medium category, while the experimental class obtained an average gain score of 0.78 which was in the high category. Thus, the use of the Inside Outside Circle type cooperative learning model in class IV animal life cycle materials is more effective to use than

not using the Inside Outside Circle cooperative learning model.This also proves that the Inside Outside Circle cooperative learning model has an effect on student learning achievement.

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