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USING KIT FOR KIDS AT DISCOVERY LEARNING MODEL TO INCREASE INTEREST TOWARD SCIENCE ELEMENTARY SCHOOL STUDENTS

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Abstract

This research was conducted to determine the increase of interest toward science at elementary school students through the use of kits for kids in the discovery learning model. The research method used is a quasi-experimental research design with the matching only pretest and posttest control group design. The learning process in the experimental class applies a kit for kids-assisted discovery learning model, while the control class applies traditional learning. The research subjects were 23 students in the experimental class and 22 students in the control class. The research instrument uses an attitude scale for interest in science. The attitude scale of interest in science was modified from the Attitude Toward Science in School Assessment (ATSSA) which measured aspects of interest in science. The data analysis technique of each student's interest attitude scale towards Science was answered to get a score of 1 and those who were not answered a score of 0 for each statement. The results showed that of the student's interest in science attitude scale in the experimental class showed a better improvement after receiving discovery learning treatment using kit for kids compared to students in the control class who received traditional learning treatment.
Keywords: discovery learning, kit for kids, interest in science

Abstrak

Penelitian ini dilakukan untuk mengetahui peningkatan minat terhadap Sains siswa SD melalui penggunaan kit for kids pada model discovery learning. Metode penelitian yang digunakan adalah eksperimen semu dengan desain penelitian the matching only pretest and posttest control group design. Proses pembelajaran pada kelas eksperimen menerapkan model discovery learning berbantuan kit for kids sedangkan pada kelas kontrol menerapkan pembelajaran tradisional. Subjek penelitian pada kelas eksperimen 23 siswa dan pada kelas kontrol 22 siswa. Instrumen penelitian menggunakan skala sikap untuk minat terhadap Sains. Skala sikap minat terhadap Sains dimodifikasi dari Attitude Toward Science in School Assessment (ATSSA) yang mengukur aspek minat terhadap Pembelajaran Sains. Teknik analisis data setiap skala sikap minat terhadap Sains siswa yang dijawab memperoleh skor 1 dan yang tidak dijawab diberikan skor 0 untuk setiap pernyataannya. Hasil penelitian menunjukkan bahwa sikap minat terhadap sains siswa di kelas eksperimen menunjukkan peningkatan yang lebih baik setelah mendapatkan perlakuan pembelajaran discovery menggunakan kit for kids dibandingkan dengan siswa di kelas kontrol yang mendapatkan perlakuan pembelajaran tradisional.
Kata Kunci: discovery learning, kit for kids, minat terhadap sains

INTRODUCTION

Natural Sciences, hereinafter referred to as IPA or Science, is a human effort in understanding the universe through precise observations on the target, using procedures, and explained by reasoning so as to get a conclusion. In this case, teachers, especially those who teach science in elementary schools, are expected to know and understand the nature of science learning, so that in science learning teachers have no difficulty in designing and implementing learning. Students who do learning also have no difficulty in understanding science concepts.

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The nature of science is seen as a process, product, attitude, and application. As a process, science is defined as a scientific activity to improve knowledge about nature and to discover new knowledge. As a product, science is defined as the result of a process, in the form of knowledge taught either inside or outside school or as reading material to spread knowledge. As an attitude, in addition to scientific activities, science also has a scientific nature (scientific attitudes) so that the results achieved in scientific activities are in line with expectations. As an application, science is seen as a science whose application is in accordance with life (Mariana and Praginda: 2009).

The discovery learning model is based on constructivist theory which emphasizes the need for students to investigate their environment and construct knowledge. This gives students the opportunity to explore the environment around them. So it is hoped that the knowledge gained by students can be constructed by themselves based on the discovery activities carried out in learning activities. In the learning process, Bruner emphasizes the active participation of each student, and is well acquainted with the differences in abilities. To support the learning process, the environment needs to facilitate students' curiosity at the exploration stage. This environment is called discovery learning environment. Discovery learning environment is an environment where students can explore, new discoveries that are not yet known or understanding similar to those already known. Agree with Njoo, 1994; De Jong & Van Joolingen, 1998 in Balim (2009) which explains that in discovery learning, students construct knowledge based on new information and data collected by them in an explorative learning environment. This kind of environment aims to make students in the learning process run well and be more creative. So, to facilitate a good and creative learning process, it must be based on the manipulation of learning materials according to the level of students' cognitive development. This indicates that in learning, especially science learning, a teaching aid or experimental tool is needed which in this study is called a KIT for kids.

KITs are science teaching aids that are intentionally designed, made, compiled, or compiled by the teacher with items related to the unit of study used to help students understand science material from various objects found in the environment and students' daily lives (Iswadji, 2003). KIT is an educational teaching aid packaging system where all components or instruments are arranged in an integrated manner so that it can be used for various experiments by practical (Gumala et.al, 2020). While the kit for kids is a translation of the kit for children. The children here are shown in elementary school children. In this study, the primary school children were the students in the fifth grade of elementary school.

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Starting from a positive outlook, something can be learned more easily. Likewise studying science or science, interest in science is expected to be positive so that students can easily learn and appreciate science. Students who have an interest in certain subjects will tend to be more diligent in learning so as to achieve satisfactory achievements (Sonia, 2013). Students who have positive thoughts about Science usually say that, "I like Science or Science subjects". This is what is needed in studying Science or Science. This positive view can impress students when science learning designed by the teacher involves students actively in discovering science material based on experiments by utilizing objects in their environment.

The results of previous studies have shown that it is related to the application of discovery learning models and kits. The results of research by Kadri and Rahmawati (2015) entitled the effect of discovery learning models on student learning outcomes on the subject matter of temperature and heat. The results showed that the posttest average value of the experimental class was 72.50 and the control class was 64.00. These results indicate that there are differences in the effect of the discovery learning model on student learning outcomes. Furthermore, research by Arnyana et al. (2013) entitled the effect of the numbered head together (NHT) type cooperative learning model with the aid of a science kit on creativity and student learning outcomes in science subjects for fourth grade elementary school shows the results; first, there are differences in the creativity of students in science learning between students who take numbered head together (NHT) learning assisted by science kits and students who take conventional learning. Second, there are differences in science learning outcomes between students who take numbered head together (NHT) learning assisted by science kits and students who take conventional learning. Based on this description, it can be said that research related to the use of discovery learning models and science kits has been done a lot. However, these studies were carried out partially. This means that the research is only focused on discovery learning models or science kits. Therefore, researchers are encouraged to use discovery learning models and science kits in research.

Based on this description, the formulation of the research problem is "How is the increase in interest in science for elementary school students who get a discovery learning model using kits for kids compared to elementary school students who get traditional learning?" While the purpose of this study is "To get an overview of the increased interest in science for elementary school students who get a discovery learning model using kits for kids compared to elementary students who get traditional learning".

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METHOD

The method used in this research is a quasi-experimental method. Quasi-experimental research is a research in which research subjects are not grouped randomly, but accept the state of the subject as it is (Ruseffendi, 2006). This study uses two classes, namely the experimental class where students learn using kit for kids on the discovery learning model and the control class where students learn using traditional learning or learning as usual. This is based on the opinion of Fraenkel et al., (2012) which says that research that tests the effectiveness of a new method in teaching at least one group is given the treatment of the new method compared to a comparison who learns as usual by the teacher. The two classes were given different treatment, but were given the same pretest and posttest, so the research design used was the matching-only pretest-posttest control group design (Fraenkel, et al., 2012).

The population determined in this study was the number of fifth graders who were members of cluster I in the schools studied in Cinangka District, Serang Regency, namely 9 classes (study groups) from 7 elementary schools in the school cluster. This is because the characteristics of the schools in cluster I are relatively similar in applying science learning. The samples that were set were only 2 classes, namely class V A with a total of 23 students and class V B with a total of 22 students in a cluster I school in Cinangka District, Serang Regency. Determination of sampling is determined by purposive sampling technique. Purposive sampling is taking the object of research based on the purpose or adapted to the purpose of the study (Sukmadinata, 2011, p. 254). Furthermore, Arikunto (2006, p. 135) explains that the purposive sampling technique is a technique of taking samples not based on random, regional or strata, but based on considerations that focus on certain goals.

The instrument used in this study is an attitude scale for interest in science. The attitude scale of interest in science was modified from the Attitude Toward Science in School Assessment (ATSSA) which measured aspects of interest in science or science learning (interest in science). The students' interest in science attitude scale used in this study consisted of 14 statements, 10 positive statements and 4 negative statements.

Table 1. Science attitude scale

No	Statement	+/-	SA	A	DA	SDA
1	Science is fun	+				
2	I don't like Science and I find it very difficult to learn Science	-				
3	I am interested/enthusiastic about taking science lessons	+				
4	I want to study Science more deeply	+				
5	If I'm told that I won't be taking Science lessons anymore, I feel sad	+				
6	Science is interesting and I can enjoy this subject	+				
7	Science makes me uncomfortable, restless and uncomfortable	-				
8	Science is interesting and fun	+				
9	My feeling towards Science is a good feeling	+				
10	When I hear the word Science, I have a feeling of dislike	-				
11	Science is a subject that I enjoy studying	+				
12	I'm comfortable with Science and I really like it	+				
13	I have a very positive reaction to Science	+				
14	Science is boring	-				

The data on the attitude scale of interest in science only shows the dimensions of the direction and intensity of the attitude, namely; Strongly Agree (SA), Agree (A), Disagree (DA), and Strongly Disagree (SDA). However, in calculating respondents' responses, the four categories were simplified into two categories, namely first, the Agree category (A) which is a combination of the Strongly Agree (SA) category with the Agree (A) category and second, the Disagree (DA) category which is a merger from the Disagree (DA) category to the Strongly Disagree (SDA) category. Data analysis techniques for each student's attitude of interest in Science were answered with a score of 1 and those who were not answered were not given a score for each statement.

Furthermore, the percentage of respondents' responses is obtained by the following formula.

$$P = \frac{R}{TR} X100\%$$

Information:
P : Percentage of respondent responses
R : Number of respondents who answered (SA/A) or (DA/SDA)
TR : Total number of respondents

Furthermore, the results of the calculations in each statement are added up (adjusting negative statements) which are then averaged to determine the interpretation of responses from

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respondents. The interpretation of the results of the attitude scale analysis can be determined in Table 2.

Table 2. Interpretation Percentage of Respondents Response (RR)

RR (%)	Interpretation
RR=0	None of the respondents
0 < RR < 25	Few respondents
25 < RR < 50	Almost half of the respondents
RR = 50	Half respondents
50 < RR < 75	Most respondents
75 < RR < 100	Almost all respondents
RR = 100	All respondents

RESULTS AND DISCUSSION

Results

The data collection on the scale of interest in science/science learning for the experimental class and control class was carried out before and after being given treatment. The data in table 2 is a recapitulation of 14 statements of the attitude scale of interest in science from the two research classes. The recapitulation of the results of data analysis can be seen in table 2.

Table 3. Recapitulation of Interest Attitude Scale Results for Science in Control Class and Experiment Class

Statements	Control Class				Experiment Class			
	Pre-test %		Post-test %		Pre-test %		Post-test %	
	SA/A	DA/SDA	SA/A	DA/SDA	SA/A	DA/SDA	SA/A	DA/SDA
1	55	45	55	45	52	48	83	17
2	59	41	41	59	35	65	22	78
3	64	36	55	45	57	43	74	26
4	59	41	64	36	61	39	83	17
5	73	27	77	23	70	30	87	13
6	59	41	68	32	57	43	91	9
7	45	55	36	64	39	61	9	91
8	68	32	68	32	65	35	96	4
9	32	68	73	27	57	43	83	17
10	45	55	32	68	39	61	4	96
11	45	55	45	55	57	43	78	22
12	64	36	68	32	61	39	83	17
13	32	68	55	65	52	48	78	22
14	36	64	36	64	35	65	13	87
Total %	**55**	**45**	**63**	**37**	**60**	**40**	**85**	**15**

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Based on table 3 in the control class the results of the attitude scale of interest in science show the results of the pre-test categories agree 55% and disagree 45%. While the results of the post-test category agree 63% and disagree 37%. Furthermore, in the experimental class the results of the attitude scale of interest in science showed the results of the pre-test categories agreed 60% and disagreed 40%. While the results of the post-test category agree 85% and disagree 15%.

Furthermore, the results of the scale of interest in science (strongly agree and agree) are interpreted into the interpretation of the percentage of respondents' responses which can be seen in table 4.

Table 4. Attitude Scale Recapitulation Interest in Science

Class	Total of Responses of Students who are Interested in Learning Science/Science (%)				Increasing (%)
	Pre-Score	Interpretation	Post-Score	Interpretation	
Experiment (Discovery learning using kit for kids)	60	Most respondents	85	Almost all respondents	25
Control (traditional learning)	55	Most respondents	63	Most respondents	8

Based on Table 4. shows that the state of interest in science/science learning before treatment, the percentage of the initial score of respondents' responses between the experimental class that applied discovery learning using kits for kids and the control class that applied traditional learning showed the same interpretation, namely that most of the respondents were interested in learning Science. Where the experimental class obtained an initial score percentage of 60%, while the control class obtained an initial score percentage of 55%. That means that before the treatment was given, the two classes were not much different in obtaining the percentage of respondents' responses in terms of interest in learning science.

The application of learning in the experimental class can increase interest in learning science/science more than the application of learning in the control class. This can be seen from the results of the percentage in the experimental class obtained by the final score percentage of 85% with the interpretation of almost all respondents after being given discovery learning treatment using kits for kids. This means that there is an increase in the percentage of 25% from before treatment. While in the control class after being given treatment, the final score

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percentage was 63%. That means there is a percentage increase of 8%. This increase is relatively low when compared to the increase that occurred in the experimental class, which is three times lower. Even though it has increased, the interpretation after being given treatment is still the same as the interpretation before being given treatment, that is, only most of the respondents agree in terms of interest in learning science/science. This indicates that students in the control class who applied traditional learning assessed the learning that had been done as well as the previous learning, the learning seemed ordinary, monotonous, and less meaningful.

The percentage increase in the experimental class which is higher than the control class proves that discovery learning using kits for kids has a positive impact on interest in science/science learning. This is because learning can increase motivation and make it easier for students to understand the concept of Electrical Energy Transfer and Change. In addition, the learning carried out is a new learning for students, which can provide opportunities for them to learn the material by finding their own through a series of experiments.

Discussion

Interest in science is something that science teachers really need to pay attention to. Students' interest in science can affect learning activities and the achievement of learning outcomes. Interest in Science is a person's interest in things related to Science which is based on a person's view of Science. Thus, if a student has an interest in science, of course, the student will say that learning science is fun learning. Research conducted by Cracker (2006) shows that attitudes toward science change according to exposure to that science, learning environment, and learning methods.

Based on the findings of the researchers in this study, almost all students actively participate in learning. They follow the lesson well even though there are some students who do not understand the syntax of the kit for kids-assisted discovery learning model, so that during the learning process, there is little noise. But this only happened at the first meeting. For the next meeting, students have begun to understand what must be done in the learning process. In principle, the discovery learning model using kits for kids provides advantages such as students can be motivated to understand that science is not an abstract and difficult subject to understand, but science can also provide direct learning experiences that will be useful for their lives in the future. This also proves that kits can help teachers improve conceptual understanding, science process skills, and students' interest in science (Jones 2014, p. 2376).

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CONCLUSION

Based on the results of research and discussions that have been carried out, it can be concluded that the application of the discovery learning model using kits for kids can further increase the interest in science for elementary school students compared to traditional learning. It is necessary to adjust the kit for kids with learning models related to the stages of learning activities carried out.

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