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CHILDREN LEARNING IN SCIENCE ON IMPROVEMENT OF LEARNING RESULTS IN SDN 1 SUDIMAMPIR

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ABSTRACT

The purpose of this research is to improve the learning outcomes of Elementary School (ES) students through the implementation of Children Learning in Science (CLIS) in grade V SDN 1 Sudimampir Regency West Bandung (KBB). The research design was conducted using experimental research design. The study population is 60 students divided into two classes. Data collection techniques used include: tests, observations, questionnaires, and documentation. Data analysis techniques used were prerequisite analysis test consisting of: normality test, homogeneity, and final analysis using t-test. Based on the results of hypothesis test data learners learn that the value of t count of 2.941 and t table of 1.677 (t count > t table), so Ho rejected. Thus, it can be concluded that the application of CLIS proved effective against the learners' learning outcomes in science learning material changes in the properties of objects.

Keywords: Learning outcomes, CLIS, Change in the nature of things.

INTRODUCTION

One of the subjects in elementary school curriculum (ES) is science. According to Aly and Rahma, 2011, "Science is a systematic and formulated science, which deals with material phenomena and is based primarily on observation and induction." Science is a theoretical science, but it is based on observations and experiments on natural phenomena. Facts about the phenomenon of nature are investigated and tested repeatedly through experiments, then based on the experimental results that formulated his scientific statement (his theory).

One of the science subjects that appeared in semester 1 in class V (Five) ES is the material change of the nature of the object. Based on the observation of the researcher, in the learning of matter of change of the nature of the object, the teacher only uses conventional model that is in the form of lecture and discussion only, while the material of change of the nature of the object should be learned by the use of experimental step and observation so that the learning of change of the nature of the object can be meaningful and the learners can build the knowledge themselves based on their own experiments or observations.

This kind of learning will certainly lead to less meaningful learning. Less meaningful learning is more prioritizing rote than on understanding and deeds so that learning outcomes become less embedded in the mindset and patterns of learners' actions. Less significant learning affects the low motivation of learners. The low motivation to learn these learners can affect the learning process of learners, so that learners learn to be not optimal. This requires

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serious attention from teachers in order to implement more meaningful learning, so that science can be well educated to learners.

The model of learning done in science should be fun, because the subjects of science discuss the universe. There are many learning models that are very interesting to apply and fun. Learning that can activate learners but still effective in the learning process. It would be nice if the element is active, creative, effective, and also fun can be done in a learning process. Learners will be interested in learning by teachers. In learning there will be an interaction between teachers and learners because learners are brave to ask questions and answer questions.

National Education System (Sisdiknas) no. 20 year 2003 article 4 which reads "Education is organized by giving exemplary, build willingness, and develop the creativity of peseta learners in learning process". Article 40 which reads "Creating a meaningful, fun, creative, dynamic, and dialogical education environment". And in PP no. 19 of 2009 article 19 which reads "The process of learning in educational units is held interatively, inspiration, fun, challenging, motivate learners to participate actively, and provide sufficient space for initiative, creativity, and independence in accordance with the talents, interests and development physical and psychological learners ". All articles issued by MoNE require teachers to create meaningful lessons so that participants' knowledge can be fully developed.

In relation to this, one of the few science-learning strategies deemed appropriate for the present and one of the lessons offered to improve the quality of ES science learning is a learning model based on a constructivist view because it is considered to be most appropriate to the characteristics of science learning. This is apparent with the number of writings on constructivist views in the form of research journal or mastery of ideas in an effort to develop a model of science learning (Samatowa, 2011).

Constructivist learning gives learners the opportunity to think about their experiences so that learners think creatively, imaginatively, encourage reflection on theories and models, introduce the idea of science at the right time. In addition, constructivist learning provides an opportunity for learners to try new ideas so that learners are encouraged to gain confidence using various contexts both known and new and ultimately motivates learners to use different learning strategies. One of the learning models that depart from the constructivist view is the learning model of Children Learning in Science (CLIS).

CLIS learning method is a learning model developed by Driver (Widiarti, Widayanti, and Winarti, 2012). Drivers state that the language factor in the thinking process is included

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in the conceptual changes as listed in the disclosure stage of the idea exchange. This model of learning is based on the view of constructivism from Piaget, where in the process the child builds his own knowledge and knows his knowledge outside the school. Therefore, learning activities of learners are not only given emphasis on mastery of concepts but also creative exercises by making observations and experiments.

CLIS model is a model of learning that seeks to develop the ideas or ideas of learners about a particular problem in learning and reconstruct ideas or ideas based on observations or experiments. Learners are trained to argue after making observations or experiments. In addition CLIS model is a learning model that is in accordance with the nature of science. According to Subianto (2008), in science learning must practice three things, namely (1) to observe and select the facts, (2) to construct a hypothesis containing the conclusions of linking the facts and giving explanations, and (3)) should experiment to prove the truth. Of the three things, all the elements in science are included in the CLIS model, therefore the CLIS model is a model appropriate for science learning.

According Handayani, et al. (2002), there are some characteristics of ES students proposed by some experts who need to pay attention to teachers with respect to their implications in learning. Holt stated that the characteristics of ES students are to have more curiosity, investigators, inventors, learners, and creators. Blosser and Hogelsoon stated that ES students more easily understand the science when doing their own experiments. Bingham emphasizes the importance of experiments, because experiments can help to find the reason why something is happening. Based on some of the above opinions, then the activities through experimental observation in accordance with the characteristics of ES and in accordance with the views contructivisme embodied in a learning model that is CLIS learning model. CLIS model is a learning model that seeks to develop ideas or ideas of learners about a particular problem in learning and reconstruct ideas or ideas based on observations or experiments.

CLIS model is one of the innovative learning model that can be used as an alternative variation of science learning model. From the description, the researchers conducted a study to determine the effectiveness of the CLIS model implementation of motivation and learning outcomes of science material changes in the nature of objects in class V students SDN 1 Sudimampir KBB.

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RESEARCH METHODS

The research used is experimental research with quasi experimental design as the research design. Quasi experimental design is an experiment that has a control group, but can not fully function to control the external variables that affect the implementation of the experiment (Sugiyono, 2011). The Quasi experimental design design used by researchers is Nonequivalent Control Group Design. In the first stage experimental class and control class get the same treatment that is the implementation of the initial test. Initial tests were used to find out and calculate the similarity of initial ability between the two classes. After that, carry out the learning in both classes. The first group (experimental class) was treated using a CLIS learning model, while the second group (control class) was not treated (not using the CLIS learning model, but using the inquiry model). The final test is carried out at the end of the learning to see if there are significant differences in learning outcomes between treated and non-treated classes.

Population is a generalization region consisting of objects/subjects that have certain qualities and characteristics set by researchers to be studied and then drawn conclusions (Sugiyono, 2011). The population in this study were all students of class V SDN 1 Sudimampir which amounted to 60 students, consisting of 34 female students and 26 male students.

The sample, according to Sugiyono (2011) is part of the number and characteristics possessed by the population. Sampling in this study using probability sampling technique, by sampling using Simple Random Sampling technique. Researchers use this method because given that class V SDN 1 Sudimampir has academic ability of the class is considered the same (homogeneous). After randomly selected, the VA SDN 1 Sudimampir class was obtained as the experimental class, the VB class as the control class, and the VC class as the research instrument research class.

The variables in this study consist of dependent variable and independent variable. The dependent variable in this research is learning motivation and learning result of science. The independent variable in this study is the science learning of material changes in the properties of objects by using CLIS learning model.

Data collection techniques used documentation, observation, test, and questionnaire techniques. This research instrument is used for data collection. Data collection in this study is a test instrument in the form of questions and non-test in the form of a questionnaire with the amount of 44 and 40 items respectively. Other supporting instruments are class V

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syllabus, V grade science promo, Learning Implementation Plan / RPP, grid questions, answer keys, answer sheets, and assessment guidelines. Prior to being used as a research instrument, both test and non-test instruments need to be passed through test steps called instrument prerequisite tests. For the test instrument, the instrument prerequisite test is performed in order to determine the validity, reliability, difficulty level, and differentiating power of the problem. Meanwhile, for instrument nontes, instrument prerequisites are tested to determine the validity and reliability.

Before testing the hypothesis, then first test prerequisite analysis. The prerequisite test used in this study include normality test, homogeneity test, and equality test of the initial data. In this study, the normality test was performed on the learning result score (pretest) achieved by all sample members by using Lilliefors test of SPSS version 20 program by looking at the value of kolmogoro-vsmirnov. The menu used to know the data normality is Analyze-Descriptive-Explore. To find out whether or not the data is normal, we can see the significance value in column kolmogoro-vsmirnov. If the significant value is ≥ 0.05, then it can be said that the data is normally distributed or if significant <0.05 then the data is not normally distributed (Priyatno 2010).

After the data is declared normal distribution, then continued with homogeneity test. Homogeneity test which will be used by researcher in this research that is levene test with decision making and withdrawal conclusion taken at significant level 5% homogeneity test is done by using program of SPSS version 20. Decision making and conclusion to homogeneity test done at significant level 5% . If the value is significant ≥ 0.05, then it can be said that the variance is homogeneous. Conversely, if the significance value is <0.05, then the variance is not homogeneous. The second criterion is to compare the F arithmetic with F table. If F arithmetic> F table, then the data is not homogeneous and if F arithmetic $\leq$ F table, it can be declared homogeneous (Riduwan 2010).

The data analysis after the experiment was to test the learning result of the material science of changing the properties of the objects of both groups after each received treatment. In addition, the final analysis is also done for the hypothesis, make sure first that the data has normal distribution and also homogeneous. Hypothesis test in this research using independent sample t test technique, this technique is used to test the average difference of two groups of data/sample which are independent/ unrelated (Priyatno, 2010). Another requirement that must be met in analyzing hypothesis test result data (t-test) should indicate the difference of motivation and learning outcomes between the two groups to be compared.

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The hypothesis in this study is described below:

The Null Hypothesis (Ho1)

There is no difference in learning motivation of learners in science learning material change of object properties between learning using CLIS model with learning using conventional model.

Alternative Hypothesis (Ha1)

There are differences in learning motivation learners in science learning material changes in the nature of objects between learning using conventional models.

The Null Hypothesis (Ho2)

There is no difference in learning outcomes of learners in science learning material changes in the nature of objects between learning using CLIS model with learning using conventional model (inquiry).

Alternative Hypothesis (Ha2)

There are differences in learning outcomes of learners in science learning material changes in the nature of objects between learning models using CLIS with learning using conventional models.

The Null Hypothesis (Ho3)

The motivation to learn the science of learners with the application of CLIS model is not better than the motivation to learn the science of learners with the application of conventional learning model.

Alternative Hypothesis (Ha3)

The motivation to learn the science of learners with the application of CLIS model is better than the motivation to learn the science of learners with the application of conventional learning model.

The Null Hypothesis (Ho4)

Results learn science of learners with the application of CLIS model is not better than the results of learning science learners with the application of conventional learning model.

Alternative Hypothesis (Ha4)

Results learn science of learners with the application of CLIS model better than the learning outcomes of learners learners with the application of conventional learning model.

Hypothesis test used in this research is right side test. In the right-hand test of the applicable provisions, t price can fall in the acceptance area. Ho is greater than or equal to (≥) of t table, then Ho is greater than or equal to (≥) of t table, then Ho is accepted and H4 is

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rejected (Sugiyono, 2010). The final hypothesis test calculation is assisted by using SPSS program version 20.

RESULTS AND DISCUSSION

The initial stage of the research process, namely preparing the instrument. Before trial, the instrument of this research first tested its logical validity by expert appraiser. For the test instrument, the validity test is performed by two expert assessors namely Dr. Ramdhan Witarsa, M.Pd. (Supervisor) and Ruli Setiyadi, M.Pd. (Lecturer of PGSD STKIP Siliwangi) using the logical validity score sheet. The non-test instrument validity test is conducted by an expert appraiser namely Dr. Ramdhan Witarsa, M.Pd. as a supervisor. After the questions are assessed logical validity and declared eligible for trial, then tested the problem to students VB class SDN 1 Sudimampir KBB.

Based on the test results of the instrument in the test class, then tested the validity of the instrument using product moment. To facilitate the calculation of researchers using the help of SPSS version 20 program. Decision making on the test validity significant 0.05 and two-sided test. For the limit r table with the number n = 40 r table obtained at 0.308 in table r. If the correlation value of each question is more than the specified limit then the item is considered valid, whereas if the value of the correlation value is less than the specified limitation then the item is considered invalid. From the calculation, obtained 22 valid items and 22 invalid valid for the test instrument. Meanwhile, for non test instrument, 15 items are valid.

The second instrument testing step is reliability test. For instrument performed by using manual calculation with KR-21 formula, while for non test instrument its reliability test is done by using Cronbach's Alpha formula which is assisted through SPSS program version 20. The test instrument criteria test with KR-21 formula seen from comparison between rhitung with rtabel. If r hitung > r tabel, then the item is said to be reliable. Meanwhile, the reliability testing criterion for non test instrument with Cronbach's Alpha formula which is assisted through SPSS program version 20 is Cronbach's Alpha Value consulted with table value r with significant 5%. If the result r 11 > r tabel then the data is declared reliable, otherwise if the result r 11> r tabel then the data declared not reliable. From the calculation results, obtained data that all items on the test instrument or non test tested is reliable.

For non test instruments, testing is only up to the reliability test. The non-test instrument that is ready to use is a number of 25 grains. Meanwhile, non-test instruments

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need to be continued testing, namely test the level of difficulty and different power questions. After going through the testing of the level of difficulty and differentiation of the problem, obtained a test item item that is ready to be used as a research instrument that is a number of 20 questions.

The next process of research activity is the learning process. The learning process in the control class uses the conventional model (inquiry model) and the experiment classroom learning using the CLIS model. In the learning process conducted in the experimental class, there are several stages of learning CLIS model that must be passed, among others answer LKPD prediction in each group, then proceed to find theories related to the material taught and in accordance with the problem LKPD has been done, followed by experiments and observations, answering LKPD results of experiments, presentation of experimental results and observations and frequently asked questions to match the results of experiments with predictive LKPD answers to determine the comparison of answers before experiments / observations with after experiments / observations . At the end of the learning, the researchers take the final data scores the value of learning science students.

The data obtained is then analyzed to obtain the results of testing the hypothesis that the comparison of learning motivation shown by the t count of 3.414 and the t tabel of 1.677. Referring to the decision rule of hypothesis test of one party, the result of comparison 3,414 > 1,677 (t count > t tabel), it can be concluded that Ho is rejected. In other words, the motivation to learn the science of learners with the application of the CLIS model is better than the motivation to learn the science of learners with the application of conventional learning model (model inquiry).

The result of hypothesis test of learning result data of learners with calculation using comparative hypothesis test formula two independent samples manually showed that t count of 2,941 and t tabel equal to 1,677. Referring to the provisions of decision making hypothesis test results comparison 2.91 > 1.677 (t count > t table), it can be concluded Ho rejected, or the result of learning science students with the application of CLIS model is better than the results of science learning learners with the application of conventional learning model (model inquiry). These results reinforce the results of previous studies that show that the application of CLIS models is effective against science subjects of material change.

Based on the research that has been done, it can be seen that science is a subject that must be taught by using constructivism approach, that learners must build their own knowledge through observation or experiment on natural phenomena and events studied in science. This

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is also in accordance with the opinions of some experts listed in Handayani's paper, et al. (2002). Blosser and Hogelsoon stated that ES students are more likely to understand science when doing the experiments themselves. Bingham emphasizes the importance of experiments, because experiments can help to find the reason why the process of something is happening. Based on some of the above opinions, the activities through observation and experiments are in accordance with the characteristics of the ES and in accordance with the constructivism view that is embodied in a CLIS. The CLIS model is a learning model that seeks to develop the ideas or ideas of learners about a particular problem in learning and reconstruct ideas or ideas based on observations or experiments.

Application of CLIS model is one of innovation in science learning. Application of CLIS model is proven to increase the motivation of learners in following science learning. This is evident from the emergence of learning motivation indicators of learners in the learning in the experimental class. Learners look more passionate, attentive, earnest in learning, enthusiastic, and challenged to compete with each other in learning.

This answer the theory of motivation in the forward by Hamalik (2012) that the act of learning occurs because of the motivation that encourages a person to do learning activities.
In addition to improving learners motivation, CLIS model also proven to improve learners' learning outcomes on material changes in the properties of objects. This is evidenced from the average value of pretest experimental grade of 58.62 increases in the postes value to be 85.17. This average is much higher than the value of control class postes that reached 78.18 from the pretest average value of 59.77. Learning outcomes obtained by learners in accordance with the opinion Hamalik (2008), that the learning outcome is if someone has learned will change the behavior of the person, for example from not knowing to know and from not understand to understand. Learning outcomes are characterized by pamahaman learners on material changes in the nature of objects that become better.

CONCLUSION

The result of experimental research that has been done in SDN 1 Sudimampir KBB shows the result of composite hypothesis test of two independent samples manually shows that t count of 3,414 and t table is 1.677 referring to decision decision test of one party hypothesis, result of comparison 3,414 > 1,677 (t count > t table) it can be concluded that Ho is rejected and Ha accepted. In other words, the motivation to learn the science of learners

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with the application of the CLIS model is better than the motivation of learning science students with the application of conventional models (model inquiry).

Meanwhile, the result of hypothesis test of learning result data of learner with calculation using comparative hypothesis test formula two independent samples manually showed that t count 2,941 and t tabel equal to 1,677 refer to decision decision test of hypothesis comparison 2,941 > 1,677 (t count > t table), can it was concluded that Ho was rejected. These results reinforce the results of previous studies that show that the application of CLIS model effective against certain materials on the eyes of science learning, one of which is the material changes the nature of the object.

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