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Application of Scientific Approaches to Improve Mastery of Concepts and Learning Motivation Students at Sdn Pegirian II/495 Surabaya

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Abstract:- Application of scientific approaches to improve the mastery of the concept and motivation of learning students at SDN Pegirian II/495 Surabaya. Research respondent is grade IV student at SDN Pegirian II/495 Surabaya. This research is an experimental quasi research with the design of research used is a Nonequivalent control group design. Data collection is conducted with pretests and posttest for motivation and mastery of concept and student response questionnaire to scientific approaches. The results showed that the average execution of the average score in the control class was 3.5 with a percentage of 87.5% and in experimental classes obtained 3.63 with a percentage of 90.8%. The average value of an experimental group posttest was 83.3, while the average value of the Posttest control group was 74.6. The average outcome of motivational learning data in the experimental group showed an increase in student learning motivation of 16.1. Whereas the average student motivation data study in the control group showed an increase in student learning motivation of 9.2. Research results were analyzed using SPSS progam Test assisted Independent test, Demonstrate that there is an influence that the mastery and motivation of learning students in the experimental class of the control class. From the student response poll gives positive response to the implementation of the scientific-short learning model. It is concluded that learning with a scientific approach can improve the motivation and mastery of students ' concepts.

Keywords:- *Methods of the Scientific Pendexthane, Mastery of Concepts, Motivation to Learn Students.*

I. INTRODUCTION

Study of Natural Sciences (IPA) expects students to understand and master the concepts of SCIENCE and the related to real life. Students are also able to use scientific methods to solve the problems they face, sehingga lebih recognizing and loving the greatness and power of its creator (Sumaji, 1998:35). Based on the objectives and results of TIMMS, PISA that the SCIENCE learning objectives listed in the KTSP have not been shown with the results in TIMMS and PISA data.

One of the causes of this is the development of learning models in the IPA itself. The development phenomenon of the IPA learning model that is being popularized today is still in theoretical circles. This is also the case in SCIENCE learning activities at SDN PEGIRIAN II/495. Through interviews with several teachers in the school, it was revealed that SCIENCE learning is still conventional. Interviews with class IV teachers at the school were revealed that some learning materials were taught using only lecture methods.

In fact, students ' concept of mastery still does not have a separate container in classroom learning. It is also seen at SDN PEGIRIAN II/495. Educators further emphasize students for high scores in national exams. But in the questions of the national exam not only check the ability of understanding and application of students. National exams that contain objective questions are more stressed on data, information or other factual knowledge. This condition affects the thinking skills that students use are low level essential thinking skills. This situation resulted from the wrong focus of education which is getting high score in national exam.

This is in contrast to the demands of the 2013 curriculum that emphasizes learning through the process of observing, examining, menalar, and trying. 2013 curriculum directive, actually, is the use of scientific learning approaches. Scientific approaches are learning designed so that learners can actively construct concepts, laws through observing stages (To identify and find problems), formulate problems, propose or formulate hypotheses, collect data with various techniques, analyzing data, drawing conclusions and communicating concepts, laws or principles that are "found" (Daryanto, 2014:51).

Scientific approaches have also been a material for previous research. The results of a scientific learning approach conducted earlier can improve concept mastery skills and critical in class V SDN Kebonsari I Tuban (Wardani, 2016:122). This encourages authors to try to research scientific approaches to the ability to draft mastery and motivate students in learning. In addition, research has also been conducted in elementary school SE group VI Kecamatan Abang, The coral Asem concluded that the scientific approach positively affects the motivation of student learning (Sumayasa,dkk, 2015).

Based on the results of previous studies to improve the motivation and mastery of the concept of students increased by using the learning model including: Sidharta (2005), Scientific approaches can improve student motivation for learning. Moreover, the mastery of the student concept increases so that the learning outcomes also increase with

scientific approaches including: Saeed Khan dkk (2011), The implementation of a scientific approach learning model can improve student learning performance. The objectives of the research is to improve the mastery of concepts and motivation of students in scientific approaches with stylistic materials in students ' daily lives..

Based on the explanation above, scientific learning can be applied to elementary school students and allows to improve student concept and motivation. Therefore, the author tries to apply this scientific learning approach in elementary school students under the title "The implementation of scientific approaches to improve the concept of mastery and learning motivation for students at SDN Pegirian II/495 Surabaya".

II. METHOD

This research was conducted at SDN Pegirian II/495 Surabaya Semester 1 of the school year 2019-2020. The design of research used for motivation and mastery of the concept is a Nonequivalent control group design (sugiono, 2002). Pretest and posttest the number of 17 items of multiple choice and description. Data collection through poll there are three poll motivation, Student response and teacher response. A poll of the motivation used in this study referring to Oktaviani (2012), Then modified by using a Likert scale, with four categories of responses that are strongly agreed (SS), agree (S), disagrees (TS), and strongly Disagree (STS). Statements are made with the following provisions: statement of positive criteria : STS= 1, TS=2, S=3, SS=4, negative Criteria Statement : STS= 4, TS=3, S=2, SS=1, Perhitungan skor gabungan dari kriteria positif dan negatif tiap kondisi merujuk langkah-langkah Suherman (1990).

Development of research instruments related to the preparation of instruments based on good test features and analysis of grain problem: 1) Point of difficulty analysis of grain problem. According Arikunto, (2012) The difficulty level is the number that indicates difficult or easy question. 2) Question of differentiation power item. The distinguishing power of the problem is the ability to distinguish between low-capacity students and highly capable students. The number indicating the magnitude of the differentiator is called the discrimination Index (D). (Arikunto, 2012). 3) Validity test of grain problem. According Arikunto (2011), Validity is a valid evaluation tool if the tool is able to evaluate what should be evaluated. Therefore, its legitimacy depends on the extent of the accuracy of the evaluation tool in carrying out its functions. 4) Reliability Analysis. According Suherman (2003), Reliability is an evaluation tool called reliability if the evaluation results are relatively equal (consistent or ajeg) if used for the same subject. Calculating the reliability of the concept mastery test and the motivation of students using Re-Test. 5) Test result instruments. Results of the analysis of the test instruments of the concept mastery test carried out with a total of 17 items With the test of difficulty level, different power, validity and realibility, there are 17 items of a valid draft mastery with 5 items of high category 3.33%, 9 items for a category of 70% enough, 2 items a low matter 13.3%. And 1 item is very low about 13.3%.

III. RESULTS AND DISCUSSION

All the steps in each meeting are carried out well. This indicates that the activity aspect is appropriate, systematic and precise with the learning syntax planned. This implementation describes the success of teachers in implementing scientific approach learning stages.

The initial stage of activity on the scientific approach of class IV elementary school generally entered in the category very well got with an average score of 3.75. This shows that teachers have carried out the initial learning activities, which include motivating activities, Convey the learning objectives, and do well enough to have an impact on students ' readiness to learn, early knowledge, and enthusiastic students in following learning.

The core activity stage in the scientific approach of class IV elementary school is generally entered in a very good category with an average score of 3.7. Teachers have performed very good core activities according to the syntax of scientific approaches which include observing, attempting , evangelize and communicating on learning activities. Teachers are also able to respond to questions asked. Teachers are also able to respond to questions asked by students and assist students in making conclusions based on experimental data students have done.

Stage of final activity on the scientific approach of class IV elementary school generally entered in excellent category with an average score of 3.7. This indicates that the teacher has carried out the final activities of learning well that includes doing reflection by making conclusions with students and providing a follow-up activity plan. The average or mean value of a concept-mastery posttest on experimental group students using a higher scientific approach than control group students who use conventional learning approaches. The average value of an experimental group posttest was 83.3, while the average value of the Posttest control group was 74.6.

The normality test can be noted that both groups of data tested are experimental groups that apply scientific approaches and control groups implementing conventional learning approaches show significance value of significance > 0.05. For this reason, both the control class and the experimental classes are either normal distributions. While the results of hmogeneity test obtained overall significant value data > 0.05 or > 5% and sample variances are said to be homogeneous. The results of the Independent Sample T-Test (posttest) on the influence of scientific learning model on the mastery of the concept obtained a value T count is 8,259 (8,259>2,002) And the results of SIG. 2 tailed 0,000 < 0.05, meaning H1 is accepted because Thitung value is greater than this and the value of sig. 2 tailed is smaller than 0.05. So it can be concluded that the mastery of concepts in students using a higher scientific

approach significantly compared to the mastery of concepts in students using conventional approaches.

Learning using scientific approaches in terms of developing a concept mastery makes students think more critically and creative issues related to their surrounding environment. Researchers develop problems directly related to the environment of students. The problem as a unity and learning evaluation tools as expressed by Siregar and Nara (2010:120) stating that the problem is presented after tasks and explanations are given, in order to provide kescempatan for students to apply their knowledge to master the concept.

In learning with the scientific model students are trained to cooperate in a discussion group. Group discussions can give students a spin to practice thinking, social interaction, being positive, communicating and enhancing children's creativity (Bektiarso, 2015:123). The results of the students ' discussions also influence the mastery of the concepts of each individual, so that good cooperation in the group is necessary. Group Discussion Objectives according Bektiarso (2015:124) Include sharing information, sharing experiences, making decisions or solving problems by mastering concepts.

Concept Mastery is one of the learning outcomes that students must achieve and possess, although in elementary school students only On creative thinking and critical thinking with their creativity in a simple level. The use of scientific approaches in the learning that has been carried out shows that scientific approaches affect the mastery of concepts SCIENCE Studies in elementary School. It is in accordance with Rahman (2014: 184) Stating that scientific approaches have a positive influence on achievement motivation and student learning outcomes.

Student motivation is assessed by observation. Observations performed on students based on the implementation of motivational indicators that have been determined by researchers. Motivational indicators compiled by researchers based on the concept of learning motivation and associated with activities in the mastery of the concept of SCIENCE Elementary School.

It can be noted that both data groups are experimental groups that apply a scientific approach with the control group implementing a conventional approach demonstrates the differences in the motivation of learning students. The average outcome of motivational learning data in the experimental group showed an increase in student learning motivation of 16.1. Whereas the average student motivation data study in the control group showed an increase in student learning motivation of 9.2.

While based on test results normality can be known that both data groups are groups of experiments that apply scientific approaches and control groups implementing conventional approaches indicate overall significance value > 0.05, Hence, it was concluded that the students ' motivation data on each group's normal distribution. From the test results homogenity gained overall significant value > 0.05 means the sample is said to be homogeneous.

The results of the Independent Sample T-Test (posttest) on the influence of scientific approaches to the motivation to learn students obtained T count ie 4,647 (4,647>2,002) and the results of SIG. 2 tailed 0,000 < 0.05, meaning H2 is accepted because the value of Thitung is greater than the this and the sig. 2 tailed value is smaller than 0.05. Based on the results of the data can be concluded that the motivation to study students using a higher scientific approach than with the motivation to learn students who use conventional approaches.

Students are actively involved in learning using scientific approaches, so they feel a more meaningful learning process. It is in accordance with Siregar dan Nara (2010:107) That meaningful learning happens when students participate actively in the learning process and finally able to decide what to learn and how to learn it.

In learning using a scientific approach students perform observations directly based on material taught by the teacher, in addition, interwoven cooperation in discussion groups that make students can share their ideas or opinions. The activity of exploring information also helps to make motivation to learn the students, because students feel the activity is interesting to implement and provide a new experience for them. Bektiarso (2015:70) said that cooperation provides motivation for ongoing involvement in complex tasks and increase opportunities for discovering and dialogue together, and for the development of social skills.

Providing reward or appreciation for the activity of students as a form of strengthening in learning also makes students feel happy and motivated, because they feel valued for their learning outcomes during the learning process. It is in accordance with the opinion that the granting of reinforcement or response in the form of appreciation can positively affect one's life, encouraging a person to improve behavior and improve their business (Bektiarso, 2015: 118). Based on these findings, it can be concluded that the use of scientific approaches affects the motivation of student learning.

IV. CONCLUSION

Based on the research on the increase of natural science learning outcomes of grade IV students at SDN Pegirian II/495 Surabaya Through the implementation of a scientific approach, it can be concluded that:(1) the implementation of scientific approaches succeeded in enhancing the mastery of the concept of class IV students at SDN Pegirian II/495 Surabaya. This is evidenced by the outcome of post-test students after the scientific approach there is a significant difference in results (2) The application of scientific approaches is able to foster the learning interest of students in SCIENCE learning in particular style material. This can be proved by the results of the motivation that has been obtained at the end of

learning. The learning process with a scientific approach to the style material gets positive response from both students and teachers.

V. SUGGESTION

Based on the results of the research, recommended researchers are advised to improve the quality of education in elementary schools, especially on the subject of natural sciences is expected teachers to improve student motivation and concept mastery skills in SCIENCE learning in elementary School. In this scientific approach students will engage in active, mastery of concepts and make learning more enjoyable and meaningful. But in applying this learning approach, the teacher must adapt the characteristics of the teaching material by reviewing the content standards.

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