

## **5E Learning Cycle Model To Improve Students' Scientific Attitude**

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**Abstract :** *This study aims to Determine the effectiveness of the 5E learning cycle models in improving students' scientific attitudes. This study included quasi experiments with a pretest-posttest non-equivalent control group design. Respondents were 56 students divided into two groups, the experimental group and the control group. Data were Analyzed by N-gain test. The results of this study indicate that the students' scientific attitude of the experimental group is much higher than the control group. This shows that the application of 5E learning cycle models is effective in improving students' scientific attitude.*

**Keywords:** *5E learning cycle, scientific attitudes*

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Date of Submission: 21-04-2017

Date of acceptance: 08-05-2018

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### **I. Introduction**

Natural Science is a set of knowledge about nature systematically arranged, so that the Natural Sciences not only the collection of knowledge in the form of facts, concepts, or principles, but also a process of discovery. [1] states that the Natural Sciences learning should be taken of scientific inquiry (scientific inquiry) and the provision of direct learning experiences for learners to foster critical thinking, working, and scientific attitude and communicating it as an important aspect of life skills. Natural Sciences learning objectives are that the students can learn the scientific knowledge and process skills that can be used in everyday life, forming a scientific attitude of students as curious, Learners are expected to have a scientific attitude in which there is an attitude of curiosity, diligent, open, honest and objective so on science education to be important in the development of the character of the nation [3], improving the academic quality of the students [4] and scientific attitude affects the outcome study Natural Sciences. Learners who have high scientific attitude will always encouraged to be actively involved in the learning process so that the learning outcomes Natural Sciences students will be better than the students who have low scientific attitude [5].

Reality on the ground has not fully consider the development of a scientific attitude as seen in the learning process in the classroom. Learning tends to be expository, teachers just give definitions, principles and concepts of learning [6]. Learners are not yet fully given to make observations, experiments and research simple. There is still a lack of interaction and cooperation among students in a group that tends to be individual learners, learners who are smart are rarely willing to share with friends who are less able and less able learners tend to not want to ask the reason for embarrassment. The emergence of social interaction through group work closely with the scientific attitude, learners who have an attitude of curiosity, open, diligent, The achievement of the ability of the scientific attitude can be realized when educators concerned with standards of educational processes. Standard Process involves planning the learning process, the implementation of the learning process, learning outcomes assessment, and supervision of the learning process [7]. In the planning process of learning of Natural Sciences, the government demanded Natural Sciences educator to be able to analyze, organize, develop and use learning device. Understanding the material Natural Science Learning Tool takes an integrated learning model appropriate teaching materials. Basically all it was a good learning model just that educators should be able to analyze and choose the learning model that corresponds to the material so that the learning can be run in accordance with expectations. One model of learning in the learning of Natural Sciences Learning Cycle is a model of learning (Learning Cycle) 5E. The model was developed by a team of Biological Science Curriculum Study (1980). This learning model consists of five phases: engage, explore, explain, elaborate, and Evaluate [8].

5E learning model is a model that would allow students to discover and acquire new knowledge. The model will encourage students to be competent in various aspects, cognitive, affective and psychomotor learning activities.

Learning science Device Usage 5E model, is expected to facilitate learners to understand the problems and phenomena of Nature, developing critical thinking skills and scientific attitude. Learning Model with 5E model is able to increase the success and learning is not boring learners [9] Research [10] states that the use of

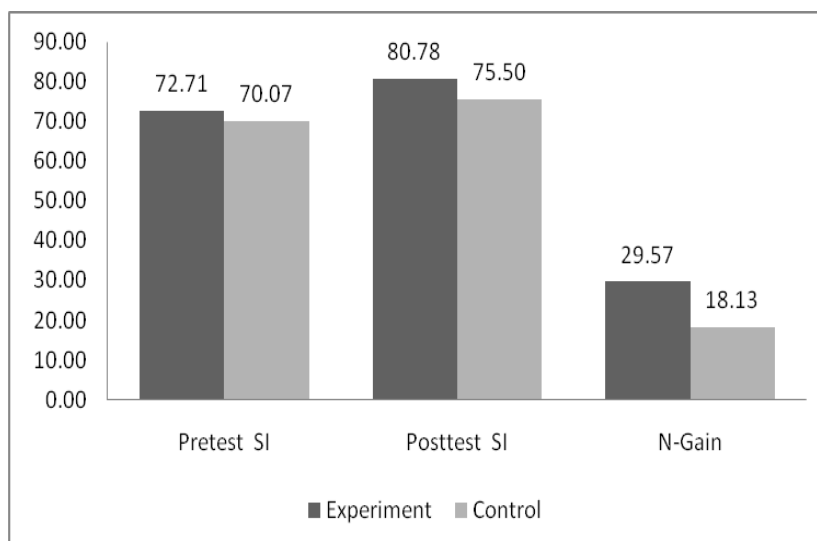
Natural Sciences learning tool that is integrated with Learning Cycle 5E models can improve the critical thinking skills of learners. This is in line also with the results of [11] states that the worksheet learners in the form of animation that composed the 5E model is effective in increasing the understanding of the concept of learners. 5E Instructional Model also has significance for the students, related to the study results. The results showed that the positive effect 5E model and effective in improving student learning outcomes [12].

## II. Method

This study aimed to determine the effect of the use of the device 5E learning cycle at study Natural Sciences. This study is classified as quasi-experimental research design with nonequivalent pretest-posttest control group design. The population used in this study was the students of class VIII, amounting to 224 people. Samples of the study was taken four classes. Samples were taken by simple random sampling means that sample of members of the population using random without regard to strata or levels. This is done because all homogeneous population researchers. Scientific attitude of students as measured include the attitude of accuracy, fairness or objectivity, transparency, discipline and curiosity, willingness or strong spirit. Tests scientific attitude questionnaire form which is based on the Likert Scale learners a list of statements relating to the scientific attitude to the material Network Structure and Function of Plants and Utilization in Technology. Some statements contain indicators of scientific attitude and include positive and negative statements. Scoring a positive statement: SS = 4, C = 3, TS = 2 and STS = 1 whereas a negative statement is given a score on the contrary, namely: SS = 1, S = 2, TS = 3 and STS = 4. Data analysis Scientific Attitude (SI) using the Test of N-Gain.

## III. Result and Discussion

Based on data analysis, the value of the scientific attitude of learners has increased quite high, is visible from the difference value obtained pretest and posttest experimental class and control class. Comparison of the average pretest, posttest, and the percentage of N-gain scientific attitude experimental class and control class can be seen in Figure 1. The average value of pretest the experimental class and control class looks superior control class by a margin of 2.64.



**Figure 1.** Comparison of Learning Outcomes Scores scientific attitude both groups

Furthermore, based on the acquisition value posttest both classes, it appears that the experimental class scored 80.78 while the control class 75.50. Both look the same class - the same increase, but the experimental class has a relatively high increase compared to the control class. This is evidenced from the percentage of N-gain obtained by the experimental class at 29.57 with high criteria and control classes 18:13 with low criteria. Acquisition of the data showed that the physics scientific attitude in class doing the learning model 5E learning cycle better than the class who have not learned to use the model.

The results of this study showed that the scientific attitude of students learn by using the 5E differ significantly from the students who are learning tools Non-5E models. Students who study with scientific attitude 5E obtain higher scores than students who are given a lesson with the Non-5E. This fact proves that the effect of implementation of the scientific attitude of students 5E very significant and better compared with the non-5E. In the experiment group had an average value attitude ilmiah higher compared with the control group.

This is in line with the results of the study [13] which states that the learning model 5E learning cycle to improve learning outcomes and scientific attitude of learners.

One of the distinctive characteristics of 5E lies in the design that provides opportunities for students to practice digging through LPKS and practice information communicate the results of their learning activities in LHKS. The integration of device models with learning implementation strategy is a factor to be of more value than 5E and 5E Non membedakanya tools. What kind of research by [14] and [15] that there is an increase of confidence and scientific attitude by applying 5E learning model. The development of scientific attitudes students need more 'doing science' than 'listening to scientific knowledge'. In other words, an increase in saintific attitude can take place when teaching science are presented pendik by reducing the role of speaker and increase the role of facilitator through practical activities that encourage children 'doing science' such as observation, testing, and research and device 5E model can mempasilitasi students to explore their own information forming curiosity, cooperation, discipline in work and responsibility. LPKS separated by LHKS in this research aims to make the students work hard to gather information so that the scientific attitude of learners can be formed. After implementing the learning activities participants fill in LHKS learning outcomes. Fill LHKS learners include Enggange, eksplora, Eksplains, Elaborit And Evaluative that can form a scientific attitude of learners such as curiosity, diligence, honesty, openness, and discipline, thus the application of the device 5E can be used as a model to form the scientific attitude learners. [16] experimentation integrated with 5E syntax can be used to develop an attitude of self-reliance and scientific attitude didk participants.

#### **IV. Conclusion**

Based on the results of this study concluded that the scientific attitude of learners can be improved through learning 5e models.

#### **Acknowledgments**

This article paper can be accomplished with the help of lecturers, mentors and friends.

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Faizin "5E Learning Cycle Model To Improve Students' Scientific Attitude." IOSR Journal of Research & Method in Education (IOSR-JRME) , vol. 8, no. 3, 2018, pp. 01-03.