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Static Fluid Matter Physics Experiment in High School-Based Scientific Inquiry

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Abstract. The purpose of this study was to design experimental models *scientific inquiry* the static fluid material which consists of four phases, [1] presenting the problem to the students, [2] the students to formulate the problem, [3] students identify problems in the investigation, [4] students find ways to overcome the difficulties. Experiments conducted by students aiming to improve student inquiry. Where the assessment results student experiment on the experiment I according to the phase [1] presenting the problem to students 71.87% [2] students to formulate the problem 79.10 [3] students identify problems in the investigation 81.23% [4] students find ways to overcome adversity 84.33%. That aspect of the investigation abilities of student based on the average value in each experiment increased.

1. Introduction

The purpose of education is to improve human living standards become more qualified and able to compete with others. The Government has given guidance by issuing Permendikbud No. 20. 2016 on Competency Standards for high school students. This explains the standards of competence domain knowledge, attitudes and skills acquired in different ways. That attitude is obtained through receiving, running, appreciate life and practice. The knowledge obtained through remembering, understanding, applying, analyzing, evaluating and creating. Skills gained through observing, asking questions, trying, reasoning, tasting and creating [1]

Physics is the basic science of the development of other sciences. Almost all natural phenomena that occur around the part of the concept of physics [2]. Physics aims to educate students to think logically, rationally, critically, has the objective characteristics and good discipline in solving problems in physics, or in everyday life [3]. The process of building physics in the student can begin to do some activities such as observing, questioning, predicting, communicating, planning and investigations as well as measuring and counting.

Some of the conditions that support the assumption that the difficult physics, including physics of materials have a lot of formulas and abstract concepts, in every teaching most teachers still less attention to the involvement of students, where the process of learning physics lasted only limited on providing the knowledge he has. The teacher's role is still dominating the atmosphere of learning



(teacher-centered), indications are more teachers provide instruction that is the instruction (command), while students only serves as a learning object passive, where students merely informed about the theories of science alone, as well as in the learning process the teacher presents the material then explained to the students.

Observed at SMA Negeri 1 Angkola Timur, Tapanuli Selatan, Sumatera Utara. Based on the results of a survey given to students that learning physics in SMA Negeri 1 Angkola Timur known they seldom conduct investigation activities such as lab work, whereas in a school laboratory. This has an impact on the ability of students who do not thrive investigation because rarely do the investigation and the lack of trained investigation. Finally, resulted in students experiencing difficulties in resolving issues related to physics.

This can be seen when students undertake practical activities, the students looked confused in following steps - steps in students' worksheets provided by the teacher and students are less able to observe the phenomenon in which the practicum. This situation is based on a survey given to 30 students, 78% strongly agree physics unattractive because teachers rarely do lab work, and only 22% in favor of students who think physics interesting and fun. Research by Pangestika, (2015: 4) through scientific inquiry more students actively seek and collect and process the data to find answers to these questions.

Responding to concerns over the need for activities that involve active learning to improve teaching and student inquiry with melaukan "static fluid material physics experiments at the SMA-based *Scientific Inquiry*".

2. Method

This research is an experimental research using a model of *scientific inquiry*. The first step [1] presenting the problem to the students, [2] the students to formulate the problem, where students can identify difficulties in the investigation. [3] students to identify problems in the investigation, so that they can identify the difficulties in the investigation. [4] students find ways to overcome the difficulties with designing experiments, process the data in different ways, develop ideas and so on. Scientific inquiry model is designed to bring students directly into the investigation process. Through scientific inquiry model of students are expected to actively ask the question why something happened and then look for and collect and process the data to find answers to the statement.

3. Results and Discussion

The result of this research is experimental study using a model *scientific inquiry*, there are four (4) phases, [1] the presentation of the problem to the students, [2] the students to formulate the problem, [3] the students to identify problems in the investigation, [4] students find ways to overcome the difficulties. Implementation of the research takes place each three meetings. The implementation class model of *scientific inquiry* experiment began by forming students into five groups with each group consisting of 6 students. The teacher presents the problem of topics to be studied. Students then formulate problems, in the implementation phase, students identify problems while teachers monitor and offer help when needed. At this stage of analysis and synthesis, students analyze and evaluate information obtained during the experiments. At the stage of final product presentation, the teacher pointed to several groups to present the results of experiments in front of the class. In the evaluation phase, teachers and students evaluate the contribution made by each group, some groups give their opinions and suggestions regarding the topics presented, what things are contrasts of each of these groups. Experiments carried out by the students aims to improve students' ability investigation. Students perform experiments in groups, each group makes its own working procedures by consensus group. As long as the students do the experiment, the teacher is assisted by peer observation inquiry problem solving ability of students.

Researchers analyzed the results of experiments workmanship that has been done by the students during the experiment at each meeting. Experiments were done by students are assessed with reference to the results of trials LKS has been conducted by the researchers. The results of the first experiment ratings can be seen in Figure 1.

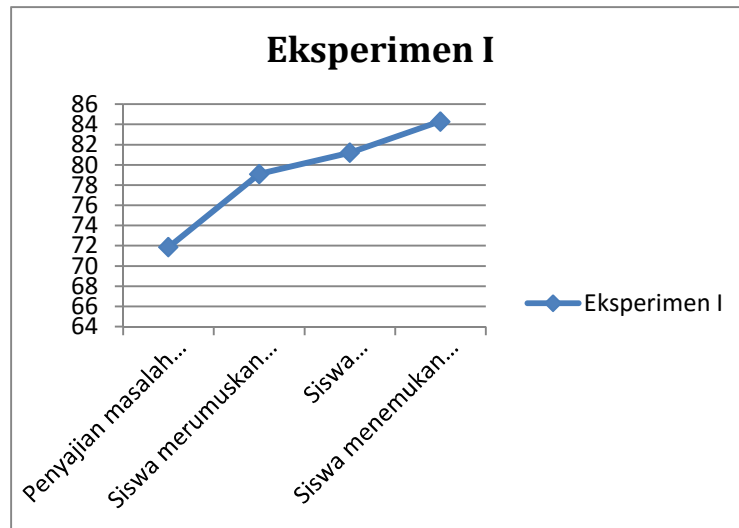


Figure 1. Results of Experiment I

Experiments were done by students are assessed with reference to the results of trials LKS has been conducted by the researchers. II experimental assessment results can be seen in Figure 2

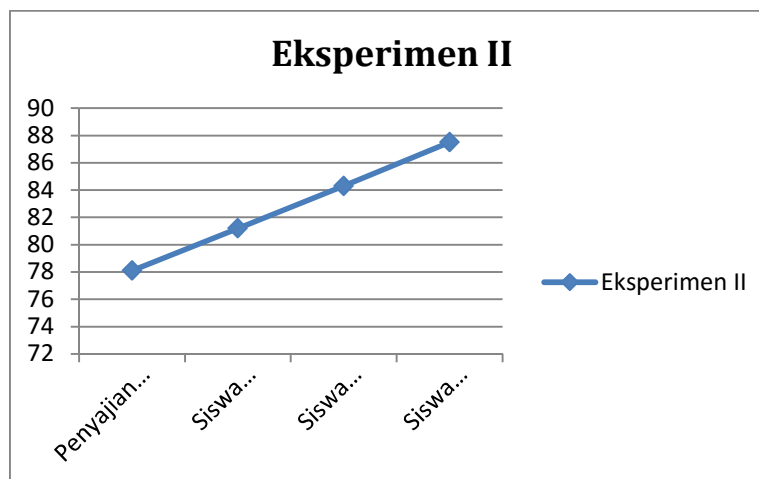


Figure 2. The results of Experiment II

Experiments were done by students are assessed with reference to the results of trials LKS has been conducted by the researchers. The assessment results of experiments III can be seen in Figure 3

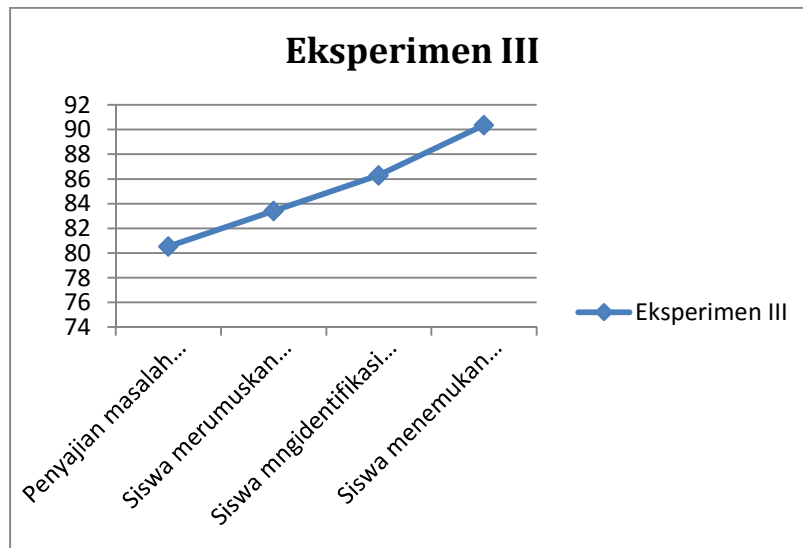


Figure 3. The results of Experiment III

Researchers also analyzed the results of the experiment workmanship that has been done by the students during the experiment at the meeting I, II and III. Experiments were done by students are assessed with reference to the results of trials LKS has been conducted by the researchers. The results of experimental assessment of the three meetings can be seen in Figure 4

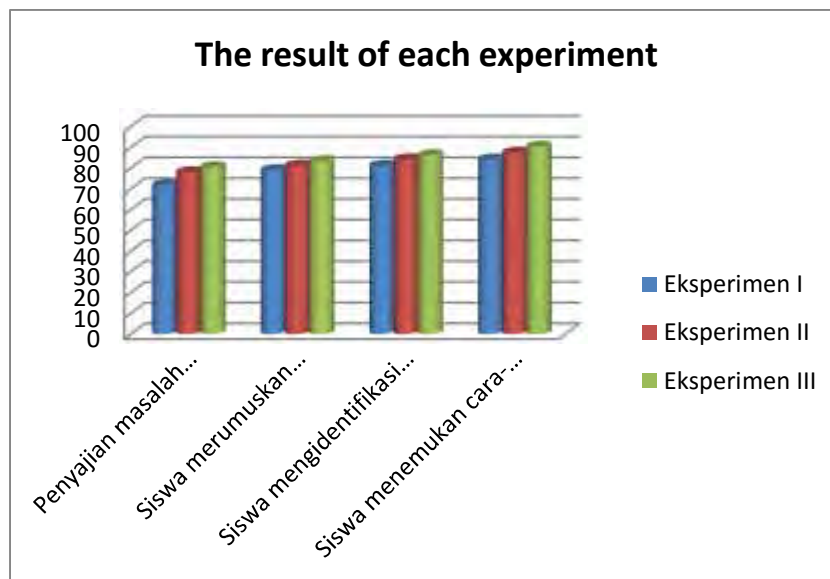


Figure 4. The results of each experiment

Based on the above data it can be concluded that this aspect of the investigation problem solving ability of students based on the average value in each experiment increased.

4. Conclusion

It can be concluded the results of this study indicate that the influence of the model of scientific inquiry to probe the ability of students. Where aspects of the investigation abilities of students based on the average value in each experiment increased.

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