Jurnal Inovasi Pembelajaran Fisika
(INPAFI)
*Available online http://jurnal.unimed.ac.id/2012/index.php/inpafi*
*e-issn 2549-8258, p-issn 2337-4624*

# THE EFFECT OF GUIDED INQUIRY LEARNING MODEL TOWARDS STUDENTS SCINCE PROCESS SKILLS ABOUT ELASTICITY TOPIC IN CLASS XI MAWARIDUSSALAM A.Y 2019/2020

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Diterima: Juni 2020. Disetujui: Juli 2020. Dipublikasikan: Agustus 2020

## ABSTRACT

The objective to be achieved through this research ate to find out the significant effect of guided inquiry learning model on science process skills students in the Elasticity Topic in Class XI Islamic Boarding School MAWARIDUSSALAM A.Y 2019/2020. This type of research is a class experiment with the design of two groups prestest-postest. The population in this study were all students of class XI IPA semester I at Islamic Boarding School MAWARIDUSSLAM. Sampling was done by cluster random sampling. Class XI IPA 1 as an experimental class aplied by KPS and class XI IPA 2 as a control class applied to conventional learning, amounting to 24 and 18 respectively. The Science Process Skill Instrument consist of 8 essays. Before learning a pretest is conducted to see the students' initial abilities in both classes. The average value of the Science Process Skill pretest in the experimental class was 13.54 and the control class was 14.12. Based on the t-test the initial ability of students in both classess is the same Science Process Skills. The average posttest score for Science Process Skills in the experimental class was 36.63 and the control class was 19.44. Based on the monova test there are significantdifferences, which means there is an influence of the guided inquiry learning model on Science Process Skills in students.

**Keywords**: Science Process Skilss And Guided Inquiry

## INTRODUCTION

Education is learnign the knowledge, skills, and habits of a group of poeple that are passed down from one generation to the next through teaching, training, or research. Understanding education in General is a planned attempt to bring about an atmosphere of learnig and the learning process for students in order to develop the potential of him that had power of religius, spiritual self-control, personality, intelligence, morals, as well the necessary skills themselves and society.

According to law No.20,2003 "Education is a planned and consious effort to bring about an atmosphere of learning and the learning processso that learners are actively developing potential for her to have the spiritual power of the religius, self-control, personality, inteligence, noble character, as well as the necessary skills themselves, society, antion, and state".

According to Soedijarto (991:56), that low quality or the quality of education the side caused by granting of a role taht is less proportional to the school, the less match the planning, educaton and management system of the curriculum, and the use of leraning outcomes in the cognitive achievement as the only indicator of success education, also caused due to not planning evaluation system is mounted as an educational tool and integarl part of the curriculum system.

Physics learning objective namelyto equip learners to gain knowledge and abilities in order to develop science and technology. Sapriati (in Nana,2018:36) proclaimed that

learning does not only conver information (facts) and understanding the material, but also pay attention to the development of other capabilities such as the ability to use tools and solve the problem, even on the development of attitudes, appreciations, and interest of students.

According to Barba (Rina.2012:53), Process Skills Science (PSS) in not being a basic process skills and skills for integrated process. The basicprocess skills and skills for integrated process. The basic process skills include: obeservation, classification, measurement, communication, concludes, prediction, relationship or time of use, the use of identication numbers and variables. While the integrated process skills include: preparation of hyptheses, controlling variables, oprational definiton, investigation and esperimentation.

Model laerning inquiry social interactions is a learning centered on students. Piaget (in Wulanningsinh 2012:34) suggest that the model is model of social interactions inquiry prepares learners to experiment on the situation itself extensively in order to see what happens. Model Learning Inquiry social interactions is very appropriate for the developing process of scince skills, because the syntax or stage of learning inquiry social interactions that are developed with the scientific method science process skill can train on the students.

In general the process of inquiry according to Sanjaya (Grady 2013:83) can be done via several steps, which are: 1. To formulate problems; 2. Propose a hyphothesis; 3. Collect data; 4. Test the data based on the data is found; and 5. Make a conclusion.

According to Jufri (in Yasmin,2015:70) there are five phases/steps in the method of inquiry in General, namely: a) formulate questions; b) formulate hyphothesis; c) collecting data; d) test the hyphothesis; and e) draw conclusion.

Joyce and Weil (Dedi,2015:303) suggest that inquiry-based learning model is a processtrain students to investigate and explain an unusal phenomenon. Inquiry learning is designed to let students directly that does scientific process through practice in a short time.

Based on the results of observation that has author done at boarding schools MAWARIDUSSALAM, States that the factors that cause the learners didi not reach the appropiate value KKM on subject Physisc (especially in Elasticity Topic) is caused by the lack of interst in learning the learners to learn the material due to teaching and learning of Physics through mathematical analysis. Students trying to memorize the formula but less interpret what and how the formula was used. So did the problems given by the teacher emphasixes mathematically so that underprivileged students in mathematics will find ithard to learn physics so that the learning physics become less meaningful and interesting for the students themselves.

This is in accordance with the research conducted by Sri Wuryastuti (in Destya,2014) suggest that some of the problem of learning Physics that occur i field nowadays, that is located on the process of teaching and learning that still focuses on teachers, learning materials are in a dequate, not applying the scienceprocess skills while learning activities of students, and only prepares students to continue their higher studies, not the setting up HUMAN RESOURCES are critical, sensitive to the environmen, creative, and understand the simple technology is present amongst the poeple.

Based on the circumstances of learners which I observe in boarding schools MAWARIDUSSLAM, it takes an innovation in the form of learning models that can help students in the train and develop the skills of students with the process of science using a model of learning inquiry social interactions.

## RESEARCH METHODOLOGY

This research was conductes at the Islamic Borading School of MAWARIDUSSALAM, this research was

conducted in class XI of the first semester A.Y 2019/2020. The population of this study was all student of class XI Islamic Boarding School MAWARIDUSSLAM. Sample of this study consisted of two class, namely the experimental class and control class randomly selected. Using a cluter random sampling technique.

This reseacrh involved two classes namely the experimental class and the control class, where the two classes were given differents treatment. The experimental class is given a guided inquiry model while the control class is given a conventional learning model.

To find out science process skills of students obtained by these two treatments. Students must be given a test twicw, namely before treatment and after treatment. The research design used is two Group Pretes-Posttest Design which is shown in Table 1.

**Table 1.** Two Group Pretes – Posttes Design

| class | Pretes | Treatment | Postes |
|---|---|---|---|
| Experimen | $T_1$ | X | $T_2$ |
| control | $T_1$ | Y | $T_2$ |

Information:

$T_1$ = Pretest given to the experimental class and control class before being given treatment

$T_2$ = Pretest given to the experimental class and control class before being given treatment

X = Teaching by applying *Guided Inquiry Learning Model*

Y = Teaching by Physics teachers by applying Convebtional Learning Model

The researcher gives priority to the experiment class and control class. The instrument used in the study was a critical thinking ability test consisting of 8 essay questions. The critical thinking ability test is first standardzied using a content validity test by two lectrurers and one teacher according to to the experts. After the pretest data is obtained, data analysis is done with the normality test, namely the liliefors test, the homogeneity test and the similarity variance test. After that, testing the hyphothesis of the two-party t-test to determine the initial ability of students in both groups f samples in this case the inital ability of the two samples must be same. Nest the researcher teaches the lesson using the conventional learning inquiry training model in the control class. The difference in the final results can be known by doing a post-test using an anova test 1 path to determine the effect of the guided inquiry learning model treatment on students' critical thinking skills.

## REESULT AND DISCUSSION

### a. Result of Research

Data described in this study includes data on critical thinking skills of students studying physics on elasticity topic, which is given a treatment difference is 1) Guided Inquiry Learning model, 2) learning by using conventional learning. Pretest data results of the experimental class and control class students can be shown in figure below:

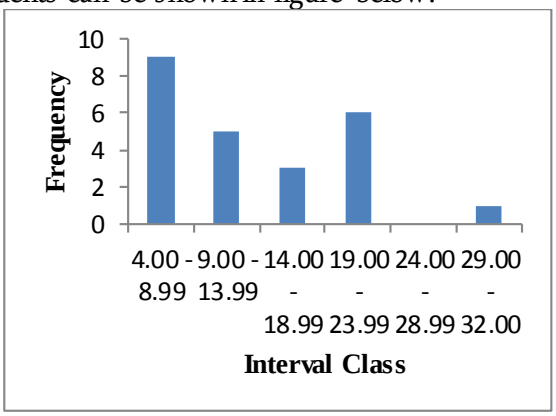


**Figure 1.** Data of pretest experiment class

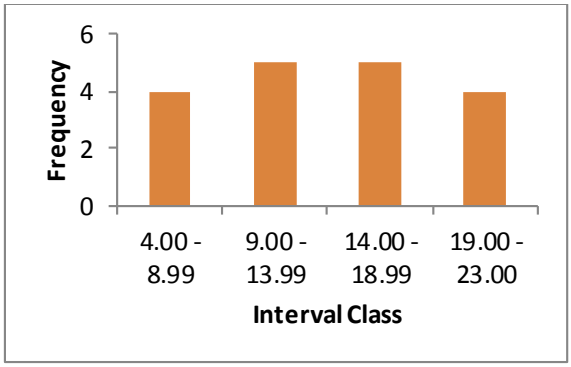


**Figure 2.** Data of pretest control class

The figure above shows that the prestest value in the experimental class and control class has a low value, but the value of the experimental class and the control class are not much different, comparison of average values is 13.54 with standard deviation 6.86 and 14.12 with standard deviation 5.37.

Frequency distribution of student achievement data in the experimental and

control classess can be visualized in the figure below:

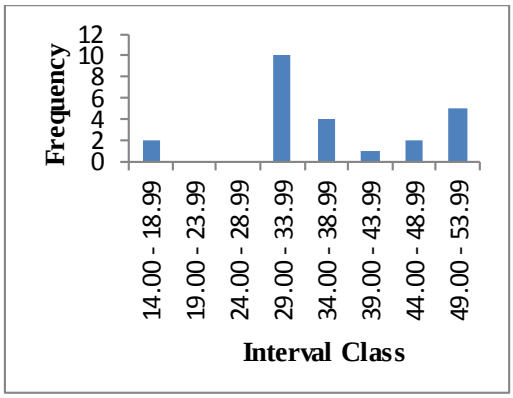


**Figure 3.** Data posttest experiment class

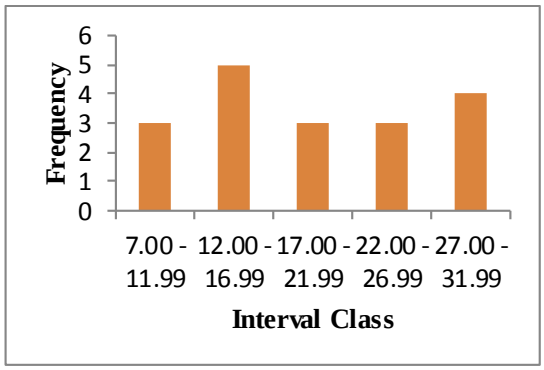


**Figure 4.** Data posttest control class

Figure 3 and 4 above show that the posttest value of the experimental class is higher than the postest value of the control class, comparisaon of average values is 36.63 with standard deviation 9.82 and 19.44 with standard deviation 7.69. There is an increase in students' critical thinking skills obtained in both classes but the experimental class better than the control class.

Based on these results the normality test using the liliefors test for both samples shows that the pretest and posttest values are normal distributes as shown in table2.

**Table 2.** Pretest and Postest Data Normality Test

| Class | | Data | | Conclusion |
|---|---|---|---|---|
| | | $L_{count}$ | $L_{table}$ | |
| Pretest | Experiment | 0.0806 | 0.1476 | Normal |
| | Control | 0.1440 | 0.1476 | |
| Postest | Experiment | 0.1315 | 0.1476 | Normal |
| | Control | 0.1465 | 0.1476 | |

Based on the table above, in the experimental class the pretest value with price is obtainedLh= 0.0806 and the posttest value is obtained by the price Lh = 0.1315. at a significant level a = 0.05 and n = 24 obtainedLtable = 0.1476 then Lcount<Ltable. While in the control class the pretest value is obtained by the price Lh= 0.1440 and the posttest value is obtained by the priceLh = 0.1465 at a significant levela = 0.05 and n = 18 obtainedLtable = 0.1476 thenLcount<Ltable. Thus, it can be concluded that data from the two samples come from normally distributed populations.

Homogeinity testing for pretest and postets data using the variance test. For homogeinity test results is shown in table 3.

**Table 3.** Homogeinity Test of Data Pretest and Postest

| Data | $F_{count}$ | $F_{table}$ | Conclusion |
|---|---|---|---|
| Pretest | 1.65 | 1.76 | Homogen |
| Postest | 1.63 | 1.76 | Homogen |

Based on the table above, for the pretest value obtained with the price of Fh = 1.65 and the posttest value obtained by the price of Fh = 1.63. at a significant level a = 0.05 and n1 = 24, n2 = 18 obtained Ftable = 1.76 then Fcount < Ftable. Thus, it can be concluded that the data obtained is homogeneous or can represent the entire population.

Based on the normality test and the homogeinity test obtained, can be conculed that the sample used is normally distributed and homogeneous, so to find out the student's initial ability used the t-test. t test are shown in table 4.

**Table 4.** T-test Student Pretest Data

| Data | Average | $t_{count}$ | $t_{table}$ | Conclusion |
|---|---|---|---|---|
| Class Experiment | 13.54 | 0,3083 | 1,99 | Initial ability of students in both groups the same sample |
| Class Control | 14.12 | | | |

Based on Table 4. summary calculation of the average similarity test pretest of Science Process Skills in the experimental and control classes with gradest_count=0.3083which has a lower value thant_table=1.9966it can be concluded that the initial ability in both classes is the same for Science Process Skills.

**Table 5.** T-test Students Posttest Data

| Data | Average | $t_{count}$ | $t_{table}$ | Conclusion |
|---|---|---|---|---|
| Class Experiment | 36.63 | 6,43 | 1,99 | Initial ability of students in both groups the same sample |
| Class Control | 19.44 | | | |

Based on table 5, it was found that thitungof 6.43. Whereas based on the Distribution List t with ttable of 1.99. by comparing between tcountandttable, thenthitung>ttable or 6.43 > 1.99. Based on the hypothesis testing criteria, Ha is accepted and Ho is rejected, the results of the hypothesis test indicate that the posttest mean score in the experimental class is higher than the posttest control class average value. From the above data, it can be concluded that there are differences in the average value of student learning outcomes using the guided Inquiry learning model on the material elasticity and hooke law.

### b. Discussion

The average value of the experimental class pretest was 13.54 and the average value of the control class 14.22 while the average value of the experimental class posttese was 36.63 and the average value of the control class was 19.44. It can be concluded that student learning outcomes in the expermental class are greater than the control class, means there is an influence of guided inquiry learning model on outcomes on the elasticity topic in class XI MAWARDUSSALAM.

The difference in cognitive learning outcomes is due to the guided inquiry model improving student learning outcomes in the aspect of knowledge because it has seven stages of learning that make student knowledge better and increase. This is supported by Kulthau, et al (2007) Guided inquiry learning models allows students to develop a series of thinking in the learning process through guidance. It can be seen that students' knowledge in the initial stages is not clear, until the stage of experinting students have begun to focus on the material being studied. In the next stage there is an increase in interest that makes students look for information relatede to the material being studied, until the final stage students experince increased knowledge.

Based on the results of research on guided inquiry learning models conducted by Khairani (2015), it shows taht the use of guided inquiry learning models can improve student learninf activities. The nexr reseacher is Ardani adan Suprapto (2014). Their results showed the average value of mastery learning outcomes in the experimental class was better than the control class.

The constraints in this study are that the researchers have not been maximized in managing time so that all syntaxes are less effective when implementing the learning process, the limitations of researchers in allocating time when students submit the results of their discussions so that not all groups can present their discussion results, the lack of researchers' experince in managing class so research becomes less efficient.

## CONCLUSION AND SUGGESTION

Based on the research data that has been obtained, data analysis and hypothesis testing it can be concluded as follows: (1) Student learning outcomes with guided inquiry learning model on the material elasticity and hooke law in class XI semester 1 PONPES MAWARIDUSSALAM Deli Serdang T.P.

2019/2020 increased with an average of 23.09. It can be seen that before being given treatment - the average pretest value of 13.54 with a standard deviation of 6.86 and after being given an average treatment of a posttest value of 36.63 with a standard deviation of 9.82. (2) Student learning outcomes with conventional learning on material elasticity and hooke law in class XI semester 1 PONPES MAWARIDUSSALAM Deli Serdang T.P. 2019/2020 increased with an average of 5.32. It can be seen that before being given treatment - the average pretest value of 14.12 with a standard deviation of 5.37 and after being given an average treatment posttest value of 19.44 with a standard deviation of 7.69. (4) There is a difference due to the influence of the guided inquiry learning model on student learning outcomes in the material Elasticity and Hooke's Law in class XI semester 1 PONPES MAWARIDUSSALAM Deli Serdang T.P. 2019/2020. This is intended by comparison of the value of tcount of 6.43 which is greater than the ttable of 1.99.

Based on the results and conclusions in this study, the researcher has several suggestions, namely: (1) At the beginning of learning, the next researcher should inform students to study the material before starting learning and experimenting and explain how the steps in the learning model are applied. (2) Researchers should be good at regulating the sitting position of students appropriately so that learning can run conducive and smoothy.

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