CHAPTER IV
RESULTS AND DISCUSSION

This chapter will discuss: Results consist of validity of the contents, The Reliability test, Item Difficulty Level and Item Discrimination Test, Description of Research consists of Data Value pretest Experiment Class and Control Class, Data Value PostesExperiment Class and Control Class, Normality Test, Homogeneity, Hypothesis Test, Data Conceptual Knowledge, Student Activity Data and Discussion.

4.1 Research result

4.1.1 Research Data Description

The data described in this study include data on students' science process skills on elasticity material, which is given different treatment, namely the experiment class with guided incur learning model and control class with conventional learning. In summary, the Science Process Skills data for students can be seen in below.

4.1.1.1 Pretest

The following data shows the student' science process skills pretest obtained both classses (the data can be seen in Appendix 7a page 95)

Table 4.1 Data of Prestest Student' Science Process Skills for Experiment Class

Value Range	Frequency
4.00 - 8.99	9
9.00 - 13.99	5
14.00 - 18.99	3
19.00 - 23.99	6
24.00 - 28.99	0
29.00 - 32.00	1
n= 28	$\sum X_i$= 325 $\bar{X}$ = 13.54 S = 6.86

Based on the description above, we obtained the average of prestest in experiment class is not skilled category. Next the histogram below also represents the data distribution of student' science process skills pretest in experiment class.

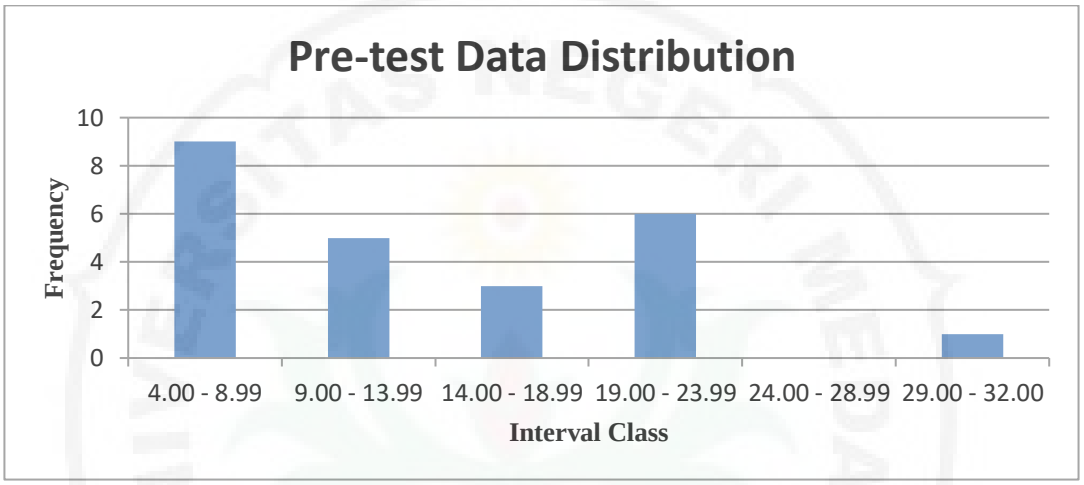

Figure 4.1 The histogram data distribution of student' science process skills pretest in experiment class.

Then, following data below shows the student' science process skills pretest in control class (the data can be seen in Appendix 7b page 97)

Table 4.2 Data of Prestest Student' Science Process Skills for Control Class

Value Range	Frequency
4.00 - 8.99	4
9.00 - 13.99	5
14.00 - 18.99	5
19.00 - 23.00	4
n = 18	$\sum X_i = 254.16$ $\bar{X} = 14.12$ $S = 5.37$

Based on the description above, we obtained the average of prestest in control class is not skilled category. Next the histogram below also represents the daa distribution of student' science process skill pretest in control class.

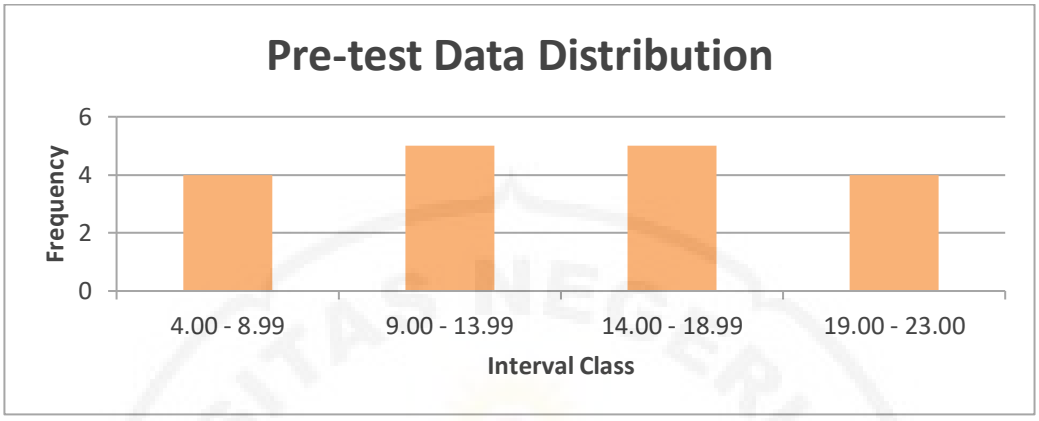

Figure 4.2 The histogram data distribution of student' science process skills pretest in control class.

Based on Table 4.1 and 4.2 a summary of pretest data on science process skills in the experimental class has an average value of 13.58 with a standard deviation of 6.86, while the control class has an average value of 14.12 with a standard deviation of 5.37 and each class is 24 students and 18 students. Based on Figure 4.1 the bar diagram of the distribution of pretest values can be seen the difference in frequency in the experimental class and the control class.

4.1.1.2 Posttest

The following data shows the student' science process skills posttest obtained both classses (the data can be seen in Appendix 8a page 99)

Table 4.3 Data of Posttest Student' Science Process Skills for Experiment Class

Value Range	Frequency
14.00 - 18.99	2
19.00 - 23.99	0
24.00 - 28.99	0
29.00 - 33.99	10
34.00 - 38.99	4
39.00 - 43.99	1
44.00 - 48.99	2
49.00 - 53.99	5
n = 28	$\sum X_i$= **879.16** $\bar{X}$ = **36.63** S = **9.82**

Based on the description above, we obtained the average of posttest in experiment class is less skilled category. Next the histogram below also represents the data distribution of student' science process skills posttest in experiment class.

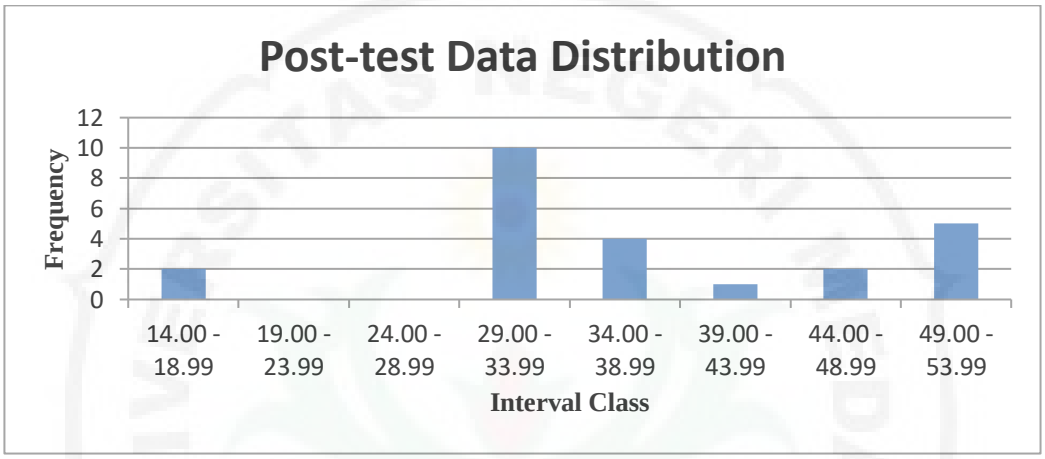

Figure 4.3 The histogram data distributionof student' science process skills posttest in experiment class.

Then, following data below shows the student' science process skills posttest in control class (the data can be seen in Appendix 8b page 100)

Table 4.4 Data of Posttest Student' Science Process Skills for Control Class

Value Range	Frequency
7.00 - 11.99	3
12.00 - 16.99	5
17.00 - 21.99	3
22.00 - 26.99	3
27.00 - 31.99	4
n = 18	$\sum X_i$= 350 $\bar{X}$ = 19.44 S = 7.69

Based on the description above, we obtained the average of posttest in experiment class is not skilled category. Next the histogram below also represents the data distribution of student' science process skills posttest in control class.

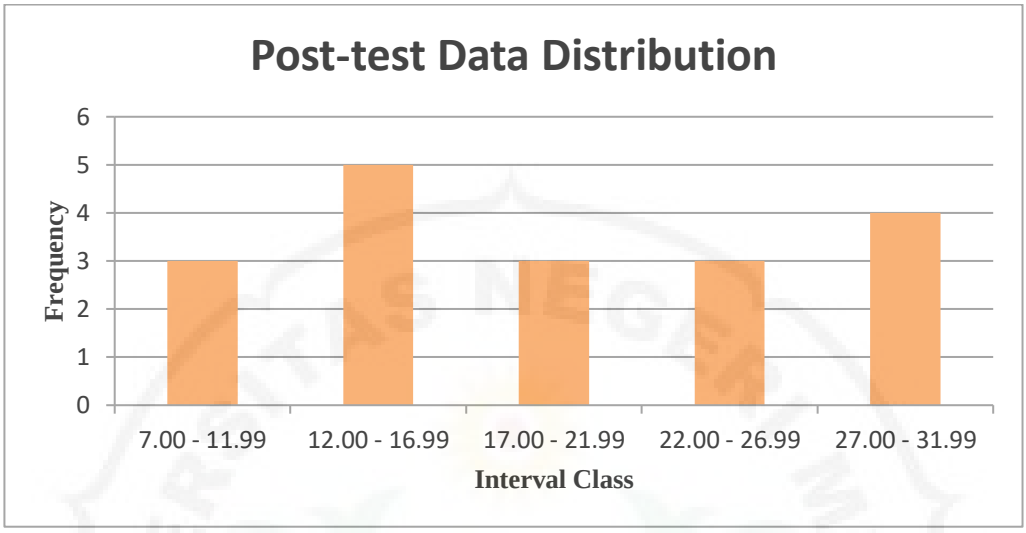

Figure 4.4 The histogram data distribution of student' science process skills posttest in control class.

Whereas after the study gave different treatment to the two sample groups, the average grade of the experimental class with the guided inquiry learning model was 36.63, while the control class with the conventional learning model was 19.44. This means that student learning outcomes in the experimental class increased by 23.09 and in the control class by 5.32.

4.1.2 Normality Test

The normality test in each class uses the Lilliefors test. Based on the table below it is obtained that $L_{count} < L_{tabel}$ which identifies that the pretest and posttest data of each class is normally distributed. A summary of the normality test data for pretest and posttest Science Process Skills can be seen in Table 4.5 (the data can be seen in Appendix 10 page 106)

Table 4.5 Normality Test Data for Science Process Skills Assessment.

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 obtainedL_h= 0.0806 and the posttest value is obtained by the price L_h = 0.1315. at a significant level a = 0.05 and n = 24 obtainedL_{table} = 0.1476 then $L_{count}<L_{table}$ .While in the control class the pretest value is obtained by the price L_h= 0.1440 and the posttest value is obtained by the priceL_h = 0.1465 at a significant level$a$ = 0.05 and n = 18 obtainedL_{table} = 0.1476 then$L_{count}<L_{table}$. Thus, it can be concluded that data from the two samples come from normally distributed populations.

4.1.3. Homogeneity Test

Homogeneity testing is done to determine whether the class of sample is from a homogeneous population or not, meaning that the sample used in this study can represent the entire population. Homogeneity testing of data is done by testing F. value$F_{count} < F_{table}$which identifies that the two samples used in this study were declared homogeneous. A summary of the homogeneity data of students' pretest problem solving skills and creative thinking can be seen in Table 4.6 (the data can be seen in Appendix 11 page 111)

Table4.6 Homogeneity Test of Pretest Data and Posttest of Science Process Skills.

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 n_1 = 24, n_2 = 18 obtainedF_{table} = 1.76 then$F_{count}<F_{table}$ .Thus, it can be concluded that the data obtained is homogeneous or can represent the entire population.

From tables 4.3 and 4.4 above it can be concluded that the research data has normal and homogeneous distribution, then it has fulfilled the requirements for hypothesis testing.

4.1.4 Pretest Average Test (Two-tailed t test)

The pretest results for the experimental class obtained an average value of 13.54 and the pretest results for the control class obtained an average value of 14.12. A summary of the calculation of hypothesis testing for pretest ability in the experimental class and control class can be seen in Table 4.7. (the data can be seen in Appendix 12a page 114)

Table4.7 Average Equivalence Test in Pretest Science Process Skills.

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 4.5 summary calculation of the average similarity test pretest of Science Process Skills in the experimental and control classes with grades$t_{count} = 0.3083$which has a lower value than$t_{table} = 1.9966$it can be concluded that the initial ability in both classes is the same for Science Process Skills.

4.1.5 Pretest Average Equivalence Test (One party t test)

After students in the experimental class were given treatment by applying the guided inquiry learning model, the results of the posttest in the experimental class obtained an average value of learning outcomes of 36.63 and in the control class obtained an average value of learning outcomes of 19.44. It can be seen that the average value of the experimental class posttest is higher than the average value of the control class posttest with a difference in the increase in learning outcomes of 17.19. A summary of the calculation of the hypothesis test for the posttest ability in the experimental class and the control class can be seen in table 4.8. (the data can be seen in Appendix 12b page 116)

Table 4.8 Posttest Mean Equivalence Test for Science Process Skills.

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 4.6, it was found that $t_{hitung}$of 6.43. Whereas based on the Distribution List t with t_{table} of 1.99. by comparing between t_{count} andt_{table}, then$t_{hitung} > t_{table}$ or 6.43 > 1.99. Based on the hypothesis testing criteria, H_a is accepted and H_o 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.

4.2 Discussion of Research Results

The results showed that there was a significant influence using the guided inquiry learning model on the science process skills of students on the subject matter of elasticity in class XI odd semester PONPES MAWARIDUSSALAM Deli Serdang T.P. 2019/2020. This is reinforced by the acquisition of the average pretest score of students in the experimental class by 13.54 and the average posttest was 36.63 while in the control class the average value was 14.12 and the average posttest score was 19.44.

Based on the hypothesis test that is using a two-party t-test for pretest data and one-party t-test for posttest data seen in table 4.5 and table 4.6. based on the two parties' t test in get $t_{count} < t_{table}$ that is 0.3 < 1.99 so it can be concluded that the initial ability of students in the two sample classes is the same.

Based on t one party is obtained $t_{count} > t_{table}$ that is 6.43 > 1.99 so it can be concluded that there are differences in student learning outcomes in the experimental class with student learning outcomes in conventional classes. Based

on the hypothesis test, it means that the sample with normal distribution can be seen from the results of the normality test in Table 4.3 where $L_{count}<L_{table}$.

The results of this study using the experimental inquiry guided learning model are the most influential results. When the students do the learning through experiments as has been done, the results of this study more enchanced than existing conventional models.

The results of this study are in line with previous studies studied by Atikah (2016) which stated that the average value of the experimental class posttest was higher than the average value of the control class. In addition, the results of this study are also in line with the results of Tiarmaida's research (2015) which obtained the posttest value of the experimental class higher than the control class.

The research applies the guided inquiry model in learning where this model provides an opportunity for each student to be actively involved in the teaching and learning process and aims to practice the students' abilities in researching, explaining phenomena, and solving scientific problems as well as building their own knowledge through exercises conducted in learning (Wahyudi and Desri, 2015).

The influence of the inquiry inquiry guided learning model gives the difference that there are student learning outcomes in the aspect of knowledge because it has five learning phases that make student knowledge better and increase. During the research took place at the first meeting until the second meeting was found that at the first stage which is formulating the problem, the researcher gave the problem to the students so that students could respond to the questions given by the researcher, at the first meeting the students still looked confused and were less active in giving responses, there were still many quiet , but at the second meeting students have begun to give responses, so many students who have started arguing or giving questions with learning stimuli provided by researchers.

The second, third and fourth stages are formulating hypotheses, designing experiments and conducting experiments, where students formulate hypotheses or provide temporary answers to problems given in the Student Worksheet, then design the practicum according to the work procedures in the Student Worksheet and conduct the practicum. At the first meeting there was a commotion among students because of the unusual group division done on learning so that the researchers found it difficult to manage, then students were confused and commented on the problems given by the researchers because they had never had a physics problem in previous learning so the researcher explained again and again about the problem which is presented until they understand what is imposed on the problem, but after being seen from the second meeting more conducive to students more understanding about the problems presented and practical activities run well.

The fifth stage is to draw conclusions, at the first meeting many students ask and are confused about how to make conclusions and students are not biased to connect the concept findings obtained during the practicum with the concepts written, so that the conclusions do not match the given problem, so the researcher returns to explain students so that the conclusions obtained must be in accordance with the problems given by researchers and be able to connect concepts found in practicum with concepts in books or other references, then at the second meeting students have increasingly understood the conclusions obtained as expected.

In conducting research, researchers have followed procedures that have been made in the planning stage but during the use of this model still found obstacles in the implementation of each phase. One of them is the classroom atmosphere that is not conducive to the implementation of face III organizing students to design experiments, some students who just sit still or do not participate in carrying out practical work in their groups. in phase IV, this makes the use of time inefficient. Moreover when students develop better learning outcomes with the same learning model. Collaboration between researchers and subject teachers at the school to join so that during the research the teacher can see

firsthand the atmosphere and teaching and learning activities. Besides this it is also useful for researchers so that they can exchange ideas or share information with the next subject teacher in developing the results of the practicum to be presented, at the end of the meeting the researcher urges each student to bring literature related to the material to be discussed at next meeting to add student learning references.