
The Difference of Physics Learning Result Between Cooperative Learning Model Type Predict, Observe, Explain With The Conventional Learning at The Students Class X MAN 3 Padang.

Noftiana

Prodi Tadris Natural Sciences (Physics) Fakultas Tarbiyah IAIN IB Padang
mifthahullana.syarifah@gmail.com

ABSTRACT

The learning model is used to help the students in understanding the abstracted learning materials and make the teacher easy when doing the teaching-learning process activity. This research is aimed to know the difference of the Physics learning result between cooperative learning model type Predict, Observe, Explain (POE) with the conventional learning at the students class X MAN 3 Padang. The formulated hypothesis is that there is a significant difference at the Physics learning result between cooperative learning model type Predict, Observe, Explain (POE) with the conventional learning at the students class X MAN 3 Padang. The research which is used is quasy experiment with the research design is randomized control group only design. Population of this research is all the students of class X MAN 3 Padang that number 118 students with sample is class X₂ as experiment class and class X₁ as control class. The tabulation of final test data is done through the hypothesis test which uses t-test, because the data distributed normally and homogeny. It is chosen three of Physic education experts who participate in validating process. The highest validation score at cognitive aspect by using the POE method is 75, 25. Whereas at affective aspect is 84, 51 and at physic motorist aspect is 77, 00. It is from the three of validators recommend that the POE method is appropriate for being used as one of models in learning Physics at MAN.

Key word: the learning result. The POE method electric dynamic materials

Introduction

Ozdemir, etc (2011) states apply the learning that can help to get a better understanding of scientific concepts. POE is a learning model of learning strategies that engage students, where teachers dig an understanding of learners by way of asking them to carry out three main tasks, namely: Predict (P), Observe (O), and (E) Explain or explanations (White and Gunstone, 1992). White and Gustone first developed this method to uncover each student skills in predicting and on the reasons that they create to describe an event or occurrence. POE stands for Predict-Observe-Explain. POE is often also called a model of learning where teachers dig an understanding of learners by way of asking them to carry out the 3 main tasks prediction,

observation, and give an explanation (Explain). (Novita Sari, 2010:1). POE can identify the level of deficiency in the process of studying and evaluating performance of users especially teachers who apply and students as object, the start of planning, designing and managing (Kseniya, 2016:1). Suryobroto (2009:1) what is meant by keynotes is the method of teaching information and speaking orally by teachers against his class by using tools like the image, so his became more obvious conventional methods aiming to identify the use of visual material existed in the teaching writing bouquet can increasestudent achievement (Tara sat, 2014; 1). One of the learning that can enhance student learning results is to use the method of POE, this

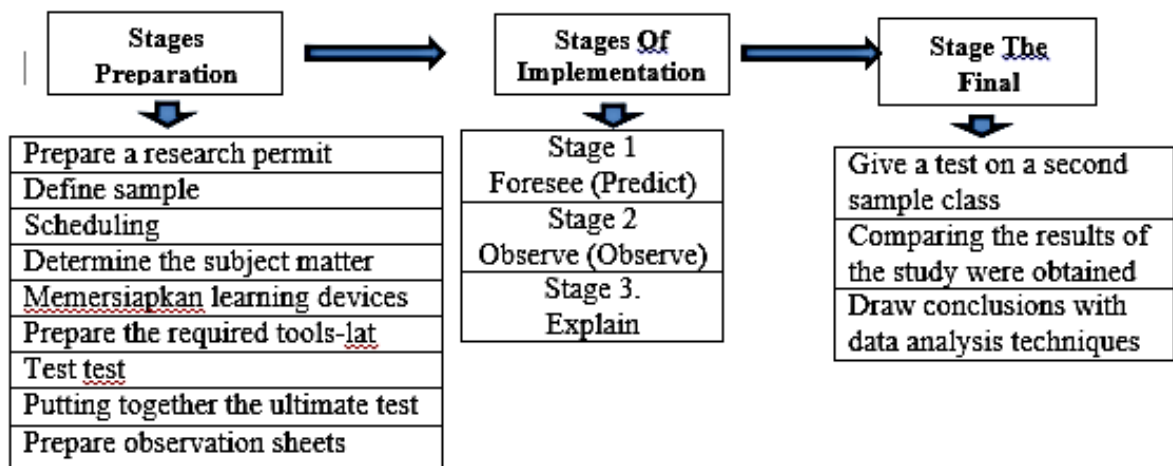
method used processed experiments on subjects of dynamic Power. This material typically taught by lecturing method and calculate the formula much, so learning is becoming less attractive and not concentrations again. To overcome was created a new breakthrough, which can improve student learning outcomes, one of which research about POE. The model of learning is more students POE actively in learning, inquiry and problem solving are authentic (in force), so students are more active in learning (Rachel Ding, 2016:204-209). The purpose of the research was to: 1) find out if there is a difference in student learning outcomes increased significantly between classes that are applied to the model class that is not POE applied model of POE, on the subject of dynamic electrical grade X MAN 3 The desert? 2). Knowing response

grade X MAN 3 Pasture towards the application of model POE power dynamic subject.

Methodology

The research was carried out in MAN 3 fields. In the first year of Lessons 2011-2012. This type of research is research quasi experiment/quasi experiments (Suryabrata, 2005:92), with a draft of the study was randomized control group only design (Prof. Dr. Sugiyono, 2010). To see the difference in student learning outcomes by using the method of POE, then selected one class as the class control (class X₁) and one more a class experiment (class X₃). Research procedure using this method of POE attended three ways, generally seen in Table 1.1 :

Diagram 1.1 Procedure Research Methods of POE



Class experiments using model learning (P.O. E), while the class control using conventional learning through model methods lectures. The selection of this class is done using Cluster Random Sampling (Zainuddin, 2011) i.e. by means of random, because it populations derived from the variance homogeneity. This research uses 3 variables, namely the free variable (the

Independent Variable), variable (the Dependent Variable) and a variable control. Free variables is a model of learning through experimentation and POE model accounting for learning through lecture method, whereas the variables bound to the result cognitive aspects of learning after being given the treatment, which is the variable control is a matter of learning, teachers who teach and

study the same length of time between the experimental and control classes. Designs

Table 1.2: Design Research

Class	Treatment	Test
Experiments Class	X	T
Control Class	-	T

(Source: Suryabrata, 2005)

Description:

X = treatment on experimental classes with models of POE

T = the ultimate test on experimental class and grade control

The data retrieved is the primary data i.e. cognitive aspects of learning outcome data of students on the results of the students in the form of daily repeat of pretest and post test. Pretest was given before the study began or before being given treatment, the purpose to find out the score early learning outcomes students. While the post test given after treatment implemented, the aim to find out whether there is an increased score result on learners learning classroom experiments, so the gain is obtained, i.e. the difference between the score of pretest and post test scores. While the data collection technique used is using the test and non-test. Engineering tests were conducted to measure the cognitive aspects of learning results of students.

An increase in cognitive aspects of learning results can be seen and measured with a pretest and post test to question the same. The test technique of objective test which are shaped in the form of multiple choice with four options (a,b,c,d) many as 40 grains. Notes techniques to find out attitudes (effective) and skills (psychomotor) students during the learning process takes place. The data obtained by observing the students ' effective four indicators in the format of effective students, namely: receptive, willing to respond, would appreciate, to involve themselves in the system (Maitalataf: 2009).

used are illustrated in table 1.2 below:

Data research results are analyzed in statistic. On the cognitive aspects of whether a hypothesis is accepted or rejected, data analysis can be done through three tests i.e. test of normality that aims to see if normal distributed sample data or not with the level of significance is 5% or 0.05. The largest absolute price is expressed with L_0 , to reject or accept the hypothesis, then compared with critical values between L_0 with L on Liliefors test (Sudjana, 2002:466), if the $L_0 < L$ then normal data instead. Then the second test used is the test of its homogeneity, which functions to see if the samples have a variant of a homogenous or not (Sudjana, 2002:262-264). If $F_{table} < F$ calculate then groups the data has a variance homogeneity, the last test used in the study was a test of the hypothesis, the test aims to see the difference in learning outcomes students class experiments that apply POE better than learning the class control that uses conventional learning methods lectures. Hypothesis test determined decision criteria: If $t_{hitung} > t_{table}$ ($p < 0.05$) then the hypothesis zero (H_0) is rejected and the H_1 is accepted, meaning there is a difference of meaning between the control and the experimental class.

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No	Statistics	Experiment Class	Kontrol Class
1	N	39	39
2	\bar{X}	75,25	68
3	Max	88	84
4	Min	54	50
5	S	10,47	10,76
6	S ²	109,72	115,78

meaning between the control and the experimental class.

Results and Discussion

The data to be described from research that has been done is the result of data studied physics students to the realm of cognitive, effective and psycho motor the experiment

class X_3 and X_1 of the control class. As for the three data obtained are:

- a. The cognitive domain final test result data description can be seen in table 1.3 are the following:

From table 1.3 results of look studied physics experimental class taught students with models of cooperative learning to use POE has an average rating of 75.25 with the highest value obtained by students is 88 and the lowest value is 54. While on student learning outcomes control classes have an average of 68 with the highest value and lowest value is 84 50, looks clear that experimental classes have an average higher than in the control class.

- b. The Affective Domain of learning outcome data for research can be seen in the following table:

Table 1.4. Data Assessment The Results Of The Activity Of The Experimental Class Students And Controls

No	Indicator	Experiments					\bar{X}	Control					\bar{X}
		Encounter						Encounter					
		I	II	III	IV	V		I	II	III	IV	V	
1	Want to receive	97,43	93,58	93,59	91,66	95,51	94,35	78,20	84,61	82,69	82,05	87,82	83,07
2	Want to respond	68,58	66,66	51,28	57,05	64,10	61,53	33,33	39,74	42,30	53,89	40,38	41,91
3	Want To Appreciate	94,87	83,97	94,87	92,94	91,66	91,66	85,89	87,17	83,97	78,20	92,94	85,63
4	Want to immerse yourself	95,51	85,25	91,02	86,53	94,23	90,50	87,17	87,82	82,05	78,84	76,92	82,56
	\bar{X}						84,51						73,29

From the table above that percentage 1.4 student activity on the effective in class experiments better and higher than in the control class. Student learning outcomes data aspects of effective acquired through observations at each meeting. Assessment of students' effective aspect noted by researchers for experimental classes and control classes with attention to 4 aspects:

receptive, willing to respond, respect and involvement. Following the results of the proportion of students effective aspects based on 4 aspects, seen in table 1.5.

Table 1.5 Proportion Difference Results Learning Activities of students Effective Aspects inthe classroom Sample

Indicator	Average Experiments Class	Ket	Average control class	Ket
Want to receive	94,35	A	83,07	A
Want to respond	61,53	B	41,91	C
Want To Appreciate	91,66	A	85,63	A
Want to immerse yourself	90,50	A	82,56	A

Based on the above table 1.5 differences the proportion of effective aspect above, on each indicator can be inserted into the table with a compare between the experimental and control classes. So it can be concluded that

the average value of experimental class in high and better than average control class.

c. Aspects of Psychomotor aspects of learning outcome data for research can be seen in table 1.6 below:

Table 1.6 Data Assessment aspects of Psychomotor Control experiments and Class

No	Indicator	Experiments					\bar{X}	Control					\bar{X}
		Encounter						Encounter					
		I	II	III	IV	V		I	II	III	IV	V	
1.	1	76,9 2	82,0 5	84,6 1	89,7 4	92,3 0	85, 12	69,2 3	74,3 5	79,4 8	84,6 1	87,1 7	78, 96
2.	2	58,9 7	64,1 0	69,2 3	76,9 2	82,0 5	70, 25	53,8 4	58,9 7	64,1 0	69,2 3	74,3 5	64, 09
3.	3	71,7 9	76,9 2	82,0 5	87,1 7	89,7 4	81, 53	66,6 6	71,7 9	76,9 2	82,0 5	84,6 1	76, 40
4.	4	53,8 4	58,9 7	64,1 0	69,2 3	74,3 5	65, 09	51,2 8	58,9 7	64,1 0	71,7 9	76,9 2	64, 61
5.	5	71,7 9	79,4 8	84,6 1	87,1 7	89,7 4	82, 55	64,1 0	69,2 3	74,3 5	76,9 2	74,4 8	71, 81
	\bar{X}						77, 00						71, 17

Based on table 1.6 above that percentage psychomotor aspects of student activity the experimental class higher of control class. Assessment on psychomotor aspect can be over 4 aspects: Skillfully prepared, skilled and diligent work in groups,

using a very effective, able to work together, and creative and precise in displaying results of the discussion. For an analysis of the proportion the percentage of student learning outcomes on psychomotor aspects can be seen in table 1.7, the following:

Table 1.7: Percentage proportion of Student Learning Outcomes On Psycho motor Aspect

Indicator	Average Experiments Class	Description	Average control class	Description
1	85,12	very successful	78,96	very successful
2	70,25	Successfully Managed	64,09	Successfully Managed
3	81,53	very successful	76,40	very successful
4	65,09	Successfully Managed	64,61	Successfully Managed
5	82,55	very successful	71,81	Successfully Managed

From the table above seen that classroom experiment on psycho motor aspects of higher value compared to the control class. Based on the results of the data tables and diagrams on the cognitive, effective and psycho motor the above experimental results class learn to better compared with class sample. According to researchers increasing

Conclusion

Based on the data analysis and discussion, conclusions can be drawn as follows: Cooperative learning model to type Predict, Observe, Explain have proven to successful and can improve the results of learning physics grade X MAN 3 field. This increase can seen from the results obtained from experimental class that implements POE compared to control class using the conventional method of learning. Onclass of experiments that test results obtained average value of experimental class students' physics better than the average scoreclass control that apply to conventional learning methods. While the average value of effective aspects in experimental class students also gain better value compared with the class of control, and the average value of experimental class students psycho motor aspect is also better compared to the control class.

So there is a difference of meaning between

student learning outcomes in the classroom experiment caused due to a new method that can improve learning outcomes by using cooperative learning type Predict, Observe, Explain (POE), here the students learn independent and tried to solve the problem without help of the teacher

the learning outcomes learning model cooperative type Predict, Observe, Explain with conventional learning in students of class X MAN 3 Padang. Cooperative learning methods Predict, Observe, Explain (POE) can successfully improve the results studied physics students in the realm of cognitive, effective and psycho motor.

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