CREATIVITY IN INQUIRY LEARNING BASED MULTIMEDIA TOWARDS THE STUDENTS ACHIEVEMENT ON TOPIC BOND CHEMISTRY

Retno Dwi Suyanti[1] and Efrida Sormin[1*]
[1]Postgraduate, State University of Medan, Medan, Indonesia
*Corresponding author: dwi_hanna@yahoo.com

Abstract-The research has the purpose to know: (1) the effects of inquiry learning based multimedia towards student's achievement; (2) the effects of students creativity levels towards student's achievements; (3) the interaction between inquiry based multimedia and the creativity levels to influence student's achiements. The population of this research are all student classes of X SMA at academic year 2012/2013. The research used *quasi experiments* method. This research results showed that the data are normal distribution and samples are homogeneous. Experimental class which is taught by inquiry based multimedia can increased the student's achievements in average of gain is 0,69. And in control class which is taugh by conventinal is 0,52. The statistic data of student's achievement shown the significance different with the sig $0,017 < 0,05$. The creativity levels shown the sig $0,041 < 0,05$ and the interaction between inquiry learning based multimedia and the creativity levels shown sig $0,367 > 0,05$. The hypothesis conclude that: (1) the inquiry learning based multimedia influenced the students achievements, (2) the creativity levels influenced the student's achievement and (3) there is no interaction between inquiry based multimedia and the creativity levels to influence students achiements.

Keywords: inquiry, multimedia, creativity levels, student's achievement, bond chemistry

1. INTRODUCTION

The essence of education is essentially human interaction, coaching and development of human potential, last a lifetime, compliance with the capacity and level of development of students, the balance between freedom and authority subject teacher students, and improving the quality of human beings. The quality of human resources (HR) can be improved by education. Improvement of human resources through education objectives are clear, so that each generation can follow the development of science and technology and be able to anticipate changes.

As professional educators, surely the problems faced are not an obstacle but a challenge to be more creative and innovative. For that various attempts have been made to improve student learning outcomes in the study of chemistry, including by maximizing the use of multiple media learning. In the study Silaban, R. (2010), entitled Influence of Macromedia Flash, Powerpoint Program and Learning Outcomes Concept Map Of Chemicals In Highlights Hydrocarbons can be concluded that there is a chemistry learning outcome of students taught using macromedia flash, powerpoint and media concept maps (Silaban, R. 2010).

In addition to the utilization of instructional media, another thing that is not less important in the learning process is the selection of learning strategies. Learning strategy is an art and a science to bring learning such that the learning objectives can be achieved efficiently and effectively (Raka Joni T., 1980). Indrawati (2000) states that a study will generally be more effective when conducted through the learning models that are berkaita information process. The essence of good thinking is the ability to solve problems. The basis of solving the problem is the ability to learn in the situation of the process of thinking, therefore students should be taught how to learn covering what is taught, the type and condition of learning and gain new insight, one that is included in the model are the processing of inquiry learning model (Downey in Joyce, 1992).

The results of field observations and interviews with subject teachers, assuming temporary factors cause poor performance class X student is part of the students claimed that the chemistry lesson is a lesson that is new to them, because when in junior high did not get the subject matter of chemistry, partially students assume that the chemical subjects is difficult and can not be imagined (abstract) as well as unappealing. The most fatal consequences of this inability, most students conclude and declare

that the election of class XI majors later they prefer Social Studies (IPS), by reason of fear of not being able to master the subject matter of science, especially chemistry.

Inquiry learning strategy is a strategy where the process discovered by the students is a core component. This activity is contained in meaningful activities to produce the findings obtained ynag students are no longer on the results given set of facts, but rather the results of his own discovery of the fact that it faces (Roestiyah, 2001).

Likewise with Setiawati (2012) with the title Influence of Media MS Frontpage Motivation and Learning Outcomes of High School Students In Learning Chemistry Subject Matter Institute of Chemical-based inquiry with the conclusion that the results of studying chemistry students taught using the media MS Frontpage higher than students taught without using MS Frontpage media. In this study, the research object is students with materials lesson topic Chemical Association (Setiawati, D. 2012).

Based on the above, the authors propose research on "The Effect of Creativity in Multimedia Learning Inquiry Based Learning Outcomes Of High School Class X Highlights In Chemistry Association".

2.   METHODS

2.1   Location and Time Research

This research was conducted in SMA Dharma Bakti Private Lubukpakam Deli Serdang North Sumatra Province starting in November 2012 in the Class X Semester 1 of the school year 2012/2013.

2.2   Research Population and Sample

The study population was all students of class X SMA 2012/2013 academic year. Samples are part of the study population were selected randomly, in this case the samples are taken only in the tenth grade high school students one semester of Academic Year 2012/2013 at Dharma Bakti Private High School Lubukpakam Deli Serdang.

2.3   Variable

There are 3 variables of this research which will be together used to reach the goal of the research they are: (1) Independent Variable: Inkuiri Learning Model based Multimedia in experiment class in Colloid topic and applied Conventional Model in Control class in Chemical Bonding; (2) Dependent Variable: The student's achievement in Colloid topic, this data gotten by giving pretest and posttest; and (3) Control Variable: Learning material that is used in both of experiment and control class is chemical bonding topic. The time allocation for experiment and control class is same and also teacher competence is same in both of class.

2.4   Research Instrument

Instrument test was used to determine how far the student's understanding of the material that has been taught by the researcher. Then the data obtained from the instrument test will be analyzed to determine the improvement of student's achievement.

The instrument test that is used in the form of written test that is pretest and evaluation test (post-test). This test is made and given to the student in beginning and the end of study. This test are consisted of 30 question of multiple choice about Chemical bonding. Before giving the post-test, the questions are have been standarized based on the standardization process. The questions on the evaluation tests are tried out to senior high school students, and the items on the tests are assessed to investigate the normality, homogeneity, validity, reliability, and difficulties level of the instrument ts. Then finally, researcher can obtain the students achievement.

2.5   Instruments Test

The instrument is tested before using to analyze the quality. The test including validity test, reliability test, difficulty level test, different index test and testing by using statistic.

Validation Tests

Validity relates to the ability to measure exactly something to be desired. "The validity of the tool with respect to the accuracy of the assessed valuation of the concepts that really judge what should be judged. The correlation coefficient, item can be declared invalid matter if $r_{count} > r_{Table}$, r_{count} value matched with rtabel product moment at 5% significance.

Reliability Test

Reliability tests related to the problem of trust. To test the reliability of the test used Kuder Richardson formula 20 or better known as KR-20. To interpret the price of those consulted about the price of the price Table to Table r criticism Product Moment with $\alpha = 0.05$, the matter stated reliable if $r_{count} > r_{tabel}$.

2.6 Research Design and Research Procedure

Research design that is used for this research is experiment with two sample class where the first sample class X-Science as experiment class and the second sample class X Science as control class. The design of this research is as shown in the Table 1 below.

Table 1. Research design

Parameter	Learning Strategy	
	Inquiry Based Multimedia (Experiment Class)	**Conventional (Control Class)**
High Creativity	A_1B_1	A_2B_1
Low Creativity	A_1B_2	A_2B_2

A_1B_1 : Score gain experimental class with students who have a high degree of creativity
A_2B_1 : Score gain control class the students who have a high degree of creativity
A_1B_2 : score gain experimental class with students who have a low level of creativity
A_2B_2 : core gain control class with students who have a low level of creativity

For the first treatment both of class is given pre-test. Giving the test intended to measure the cognitive aspects of students before and after action. After doing pre-test, for experiment class is taught by Inkuiri Learning model based Multimedia whereas the control class is taught by conventional model with the same topic of hemial bonding. After teaching treatment, for both of sample is given post-test in order to know the achievement of students after doing teaching treatment as the evaluation of the study. Then testing the hypothesis to get the conclusion.

2.7 Technique Of Data Analysis

Techniques of data analysis that used are normality test, homogeneity test, normalized gain, and hypothesis. Techniques of data analysis in this research by using statistic calculation.

Normality Test

Test used Kolmogorov Smirnov normality. Data is said to be normally distributed if a significant probability value (2-sided) > 0.05 significance level.

Homogenity Test

Homogeneity test aims to determine whether the dissemination of data in the population is homogeneous. Homogeneity test performed by Chi-square, otherwise data is homogeneous significant when the probability value (2-sided > 0.05 level of significance).

Hypotehesis Test

To test the hypothesis of the research used to test the General Linear Model (GLM) univariate using SPSS 15 for windows. If the value is a significant probability of learning outcomes by the level of creativity < 0.05 then Ho is rejected. And jiika significant probability value of inquiry-based

interaction pembeljaran multimedia strategy with a level of creativity in affecting learning outcomes <0.05 then Ho is rejected.

Normalized Gain

According to Meltzer to calculate the student's achievement is applied formula gain normalization or g factor (gain score normalized).
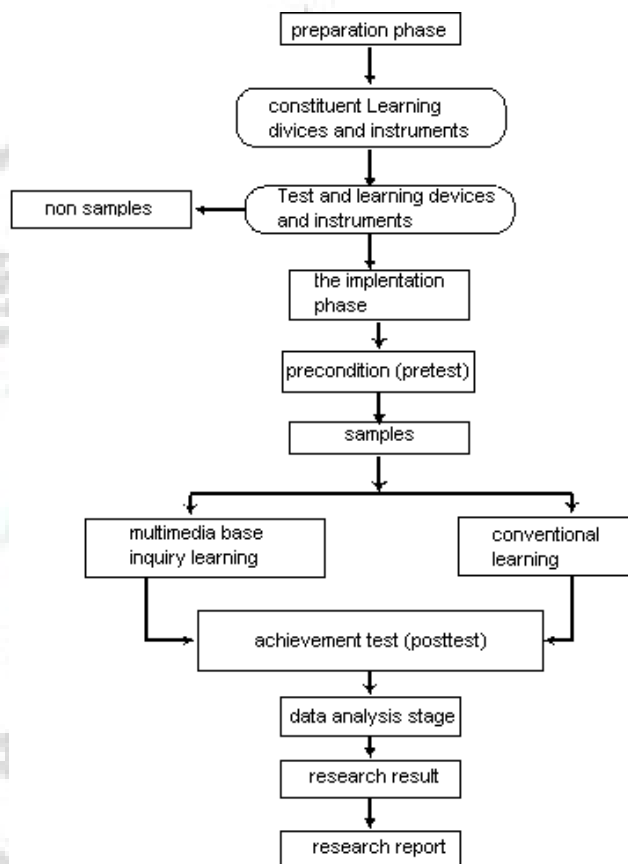

Figure 1. The overview of research design, the implementation of inquiry learning model based multimedia to increase student's achievement in chemical bonding topic

3. RESULTS AND DISCUSSION

This research had been conducted to grade X students school that is SMA Dharma Bakti Lubuk Pakam. There are two classes involved in this research they consisted of experimental class which taught by using Inquiry Learning Model based Multimedia and the other one is controlled class which taught by using Conventional Learning Model. The instrument use to measure student's achievement that tested by validity test, difficulty level, different index, and reliability test. The results of this research is taken by observing data of pretest and posttest. The results of pretest and posttest is analyzed by homogeneity test, normality test, hypothesis test, and normalized gain from both of class experiment and control class. Data of this experiment analyzed by using statistic calculation by *SPSS 15 for windows.*

Table 2. Gain Ternormalisasi Hasil Belajar Kimia Siswa Kelompok Eksperimen dan Kelompok Kontrol

Class	N	Minimum	Maximum	Average	Deviation Standart
Gain Control Group	30	0,33	0,74	0,52	0,10
Gain Eksperimen Group	30	0,50	0,96	0,69	0,13

Tabel 3. Normalitas Hasil Belajar Eksperimen dan Kontrol

One-Sample Kolmogorov-Smirnov Test

		Pretes_IBM	Postes_IBM	N_Gain_IBM	Pretes_Konv	Postes_Konv	N_Gain_Konv
N		30	30	30	30	30	30
Normal Parameters[a,b]	Mean	6.8000	22.8333	.6963	9.0667	20.0333	.5261
	Std. Deviation	2.73420	3.37418	.13103	2.67728	2.70992	.10472
Most Extreme Differences	Absolute	.196	.107	.090	.165	.139	.165
	Positive	.097	.107	.090	.122	.107	.165
	Negative	-.196	-.102	-.067	-.165	-.139	-.090
Kolmogorov-Smirnov Z		1.073	.584	.495	.903	.763	.903
Asymp. Sig. (2-tailed)		.200	.885	.967	.388	.605	.388

a. Test distribution is Normal.

Table 4 Test of Homogeneity of Variances

Levene Statistic	df1	df2	Sig.
1.952	1	58	.168

Table 5. Hypotesis by ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.435	1	.435	30.911	.000
Within Groups	.816	58	.014		
Total	1.251	59			

Value kolmogorov smirnov = 1.07 with the proportion of 12:20 (asymp. Sig. (2-tailed). Terms of the data is called normal if the proportion or $p > 0.05$ at kolmogorov smirnov the above table shows that the value of $p > 0.05$, it is known that variable data results of learning students at the top is a normal distribution, or meet the requirements of normality test. The calculation of homogeneity test using spss software to test levene statistics. The data show that levene statistic is 1,952 (levene statistics > 0.05), which means that the data variation is homogeneous. According to the table anova obtained value significant probability of learning outcomes by the level of creativity <0.05 then ho is rejected. And the value of the probability of a significant interaction pembeljaran inquiry-based multimedia strategy with a level of creativity in affecting learning outcomes <0.05 then ho is rejected.

4. CONCLUSIONS

1. Student's achievement in experiment class that is taught using i quiryy learning model based multimedia is significantly higher than control class that is taught using conventional method in chemical bonding topic.
2. Experimental class which is taught by inquiry based multimedia can increased the student's achievements in average of gain is 0,69. And in control class which is taugh by conventinal is 0,52. The statistic data of student's achievement shown the significance different with the sig 0,017 < 0,05. The creativity levels shown the sig 0,041 < 0,05 and the interaction between inquiry learning based multimedia and the creativity levels shown sig 0,367 > 0,05. The hypothesis conclude that: (1) the inquiry learning based multimedia influenced the students achievements, (2) the creativity levels influenced the student's achievement and (3) there is no interaction between inquiry based multimedia and the creativity levels to influence students achiements.

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