The Effectiveness of Contextual Teaching and Learning with Multimedia to Increase Student's Achievement on Hydrocarbon Topic

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Abstract

This research have objective to increase student achievement taught with contextual teaching and learning is better than student achievement taught with direct instruction in hydrocarbon topic, to growth characteric of comunicative in learning with contextual teaching and learning is better than learning with direct intruction. to know the effectivity of student achievement taught by contextual teaching and learning compare than student's achievement taught by direct instruction. Population of this research are SMAN 16 Medan, SMAN 1 Sunggal and MAS PAB 2. Sample on this research are X grades. The study followed by pretest as the preliminary evaluation. then give treated Contextual Teaching Learning in experimental class, Direct Instruction in control class. And give postest as evaluation test. In pretest, average of pretest in experiment class is 36.11 and in control class is 39.11. In postest, experiment class is 82 and control class is 73.11. The comparison based on gain of pretest and postest data of experiment and control is 71 and 55, the effectivity is 22.53. So, student's Achivement in class that teaching with Contextual Teaching Learning is significant better than control class that teaching with Direct Instruction. the percentage of students character in experiment class is 67.80 and control class is 58.20

Keyword : contextual teaching and learning (CTL) , multimedia based on computer, students achievement.

1. Introduction

Curriculum 2013 focused on the goal to encourage learners or students, better able to make observations, ask questions, reasoning, and communicating (present) what they earn after receiving the subject matter. National education serves to develop and form the character and civilization of dignity in the context of the intellectual life of the nation (Republic law number 20 of 2003 on National Education System). Based on the functions and objectives of the national education curriculum development must be rooted in the national culture, national life today, and the life of the nation in the foreseeable future.

Chemistry is a difficult subject. That is the asumption of chemistry, that is two factor that influence to difficulty chemistry on school. First factor is assume of student that chemistry is difficult, second factor is

strategy learning using of teacher is not suitable or make student difficult for understanding the subject matter. Some school have difficult for preparing media learning and make teacher difficult for doing variation in learning. Exactly its make student's interest and help student for studying about chemistry. The impact of less learning media create monoton learning and not interest for student and make student not have motivation for studying chemistry.

Contextual Teaching and Learning (CTL) that help teacher relate the content to be studied and encourage student to make connection between the knowledge possessed by the application in everyday life. CTL model is a type of learning model that better applying to student. Because with this model student will understand nature phenomena related to chemistry subject to help students see meaning in the academic material they are learning by linking academic subjects in the context of their daily lives. Contextual teaching and learning (CTL) applying chemistry to real thing in around of us. Student will can conduct chemistry to their real life, so it will more understand because not just imagine, not assume that all chemistry is abstract matter.

Computer-based instructional media that is able to present real subject, as we know Chemistry is abstract matter. We learning about knowledge in around of us that cant we see directly. With computer we can presenting that subject with real picture or real video. Hydrocarbon is about alkanes, alkenes and alkynes, grouping of hydrocarbon based on aromatic and aliphatic, saturated and unsaturated, isomer

and reaction, and uses of hydrocarbon in daily life. Many application of Hydrocarbon in our daily life. With contextual learning conduct chemistry to real life, so student required to memorize and understand many concept because student know directly in real world.

Chemistry is abstract matter will understand by student will use modern technology that are computer, with computer wee can see materi of chemistry by picture, video or slide which we cant see with our eyes directly. Chemistry as difficult subject matter will understand by student with use learning model (CTL), with CTL student will understand nature phenomena or daily incident connected to knowledge and be democration because they working together in their group for solve problem.

2. Method

2.1 Time and location.
Taught in class X grade senior high school in even semester at academic year 2013/2014 in SMAN 1 Sunggal, SMAN 16 Medan and MAS PAB 1

2.2 Population and Sample.
The population of this research are all of student X grade in SMAN 1 Sunggal there are 4 class of X grades, SMAN 16 Medan there are 4 class of X grades and MAS PAB 2, there are 2 class. Sample are X ia 1-2 in SMAN 16 Medan (70 students), X ia 1-2 in SMAN 1 Sunggal (60 students) and X ia 1-2 in MAS PAB (50 students). Total of sample is 180 students.

2.3 Research Procedure.
Give treatment in class 1 using Contextual

Teaching and Learning with multimedia based on computer and give treatment in class 2 using Direct Instruction. Before give treatment, both of class give pretest for know their initial knowledge about this topic. After we give treatment in each class, give postest in both of class. From postest we get the data. That data will be analysis and after we analysis, we can conclude result of research. During give treatment in both of class, observer would observe the communicative of student. Both of class will observe. Observe student character based on indicator in observation sheet, every indicator has scale. After get data of observation, that data would be analysis for get conclude of the research.

2.4 Research Instument.

For student's achievement or learning outcomes using for postest and pretest. the number of item are 40 multiple choice but give for give to student just 25 multiple choice questions with 5 options answer choices.25 question include 7 indicator. Before give treatment to the class, to student give 25 question as pretest and after give treatment to the class, give 25 question to student as postest. And item has validity by 3 validator and validity in the school.

3. Result and Discussion

Contextual learning or contextual teaching and learning (CTL) is a concept which helps teachers learn to associate the learning material with real-world situations students and encourage students to make connections between the knowledge possessed by its application in daily life. students' knowledge and skills obtained from the students

construct their own knowledge and new skills when he studied. Student will know teori of what that happen in their around based on chemistry subject, learning with the real application is more easy to remember because can see the real learning.

3.1 Result of Experiment class

Table. 1 Result of Experiment Class

No.	Note	Pretest	Postest
1	Average	36.11	82
2	Standard deviation	7.92	7.75
3	N	90	90
4	Maximum	50	95
5	Minimum	20	65

Based on the table above get result: average of experiment class, in pretest is 36.1 and in postest is 82 with total of student is 90. For standard deviation in experiment class, in pretest is 7.92 and in postest is 7.75. for value of maximum score, in pretest is 20 and in postest is 95. For minimum score, get data in pretest is 20 and in postest is 65.

3.2 Result of Control Class

Table 2 Result of Control Class

No.	Note	Pretest	Postest
1	Average	39.11	73.11

2	Standard deviation	7.99	7.74
3	N	90	90
4	Maximum	50	85
5	Minimum	20	50

Based on the table above get result : average of control class, in pretest is 39.11 and in postest is 73.11 with total of student is 90. For standard deviation in experiment class, in pretest is 7.99 and in postest is 7.74. for value of maximum score, in pretest is 50 and in postest is 85. For minimum score, get data in pretest is 20 and in postest is 65.

3.3 Discussion

In pretest, average of pretest in experiment class is 36.11 and in control class is 39.11. its means that initial knowledge of both classes is same initial. After given treatment in both of class, in the final meeting give postest data. In postest, in experiment class is 82 and in control class is 73.11. and the comparison based on gain of pretest and postest data of experiment and control is 71% and 55% . So, student's Achivement in class that teaching with Contextual Teaching Learning (CTL) is higher than control class that teaching with Direct Instruction.

Same like previous research in (According to Mananti M tambunan (2010) Data gain scores (the difference between the pretest posttest) obtained results an average value of 19.58 experimental classes while the average value of the class controls 11.50 . Hypothesis testing using test t-tes (one side) . results of calculation obtained that tcount $3.07 \geq 1.667$ t table at 0.05 alpha level (5 %) df = 78 . test the hypothesis obtained t greater

than ttable it was concluded that the results of computer -based learning higher than conventional teaching based media). The effectivity of effectivity of student achievement taught by contextual teaching and learning (CTL) compare than student's achievement taught by direct instruction is 22.53 % from experiment's gain is 71% and control gain is 55 %.
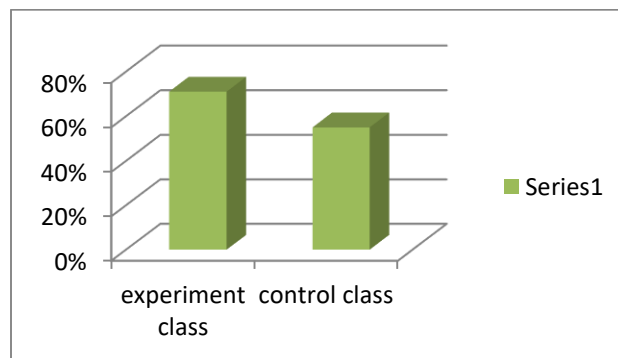

Figure. 1 Percentage of Student's Achievement.

Based on data above, hypothesis can conclude that there are significant different in student's Achievement taught by Contextual Teaching Learning (CTL) with multimedia based on computer compare with student's achievement taught Direct Instruction on hydrocarbon topic in X grades.

Ha : Grow of comunicative's student in learning taught by contextual teaching and learning (CTL) is significant better than learning taught by Direct Instruction.

Table.3 Hypothesis Test of Student's Achievement.

	Gain Score	
	Equal variance	Equal variance not

			assumed	assumed
Levene's test for quality of variance		F sig	0.790 0.375	
T- test for equality of means		T Df Sig Mean difference Std. Error Difference	7.896 178 0.000 0.16133 0.02044	7.896 176.841 0.000 0.16133 0.02044
	95 % confidence interval of the difference	Lower upper	0.12100 0.20166	0.12100 0.20166

From data above the sig 0.000 < 0.05. this means From the data get result is sig(1tailed) = 0.000,, its means sig < 0.05 and Ha is accepted. The increasing student achievement taught by Contextual Teaching and Learning (CTL) with multimedia based on computer is significant higher than student achievement taught by Direct Instruction.

Improving of student's Achievement calculated by using an average of gain in experiment class and the control class. Based on the calculation that contained :

Increasing of Student's Achievement taught by contextual teaching and learning (CTL) as experiment class is 71 % Increasing of

Student's Achievement taught by Direct Instruction as control class is 55 %. So the differences of improving student's Achievement in experiment class with control class is 71 % - 55 % = 16 %.

4. Conclusion

Based on the above result, can conclude that :

1. Student's achievement taught by contextual teaching and learning (CTL) is significant better than student achievement taught by Direct Instruction with sig of hypothesis is 0.000,
2. The effectivity of student's achievement taught by contextual teaching and learning (CTL) with multimedia based on computer is 22.53 % compare than student's achievement taught by direct instruction.

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