

Differences Between Students Mark Taught With Co-Operative Learning Model Type TGT With Guess The Words Media Compared With Students Mark Taught With Co-Operative Learning Model With Words Square Media in Hydrocarbon Subject

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Abstract The purpose of this research is to resolve the differences between students mark taught with Co-operative Learning Model type TGT with Guess The Words media compared with students mark taught with Co-operative Learning Model with Words Square Media in hydrocarbon subject. The population used in this research is the whole 11th grade in SMA Negeri 18 Medan that consist of 3 classes of 110 students in total. The sample taken for this research is obtained by random sampling technique from 2 classes, first class as experiment 1, second one as experiment 2. Each class consist of 40 students. The first class of experiment 1 is taught using the Co-operative Learning Model type TGT with Guess the Words media. While the second experiment class taught using the Co-operative Learning Model with Words Square Media. The result shown that, students on experiment class 1 have average pretest score 29,25 + 8,74 and, post test at 81,50 + 6,52 with gain 0.75. Meanwhile, the students on experiment class 2 have average pretest score 34,13 + 9,73 and post-test 82,50 + 6,60 with the average gain 0,74. The statistic test result using t both classes with the gain data obtained that point *t*-hitung at 2,222 while *t*-tabel point at 2,021 at significant level 0.05, therefore *t*-hitung > *t*-tabel. It Shows, there's a difference between students mark taught with Co-operative Learning Model type TGT and Guess The Words media compared with students mark taught with Co-operative Learning Model and Words Square Media in hydrocarbon subject.

Keywords : *learning media , mark, co-operative learning model , TGT type, words square, guess the words, hydrocarbon*

I. INTRODUCTION

Learning process is a interaction process between student and teacher as a lecturer, learning process is adapted by using

pedagogik which conclude strategy, method even learning model [1].

If lecturer want to lectures effectively, they must raises student's study chances (quantity) and Improving their lecturing quality (quality). The more chances the student actively involved in the class, the more study's achievement they will get [2]

Based on the experience of researchers at the Field Experience Program (PPL) at SMA Negeri 1 Tanjung Pura, Tanjung Pura Langkat Sub-district is relatively common because the teachers still apply the lecture method in the delivery of materials and exercises and only centered on the teacher so that the students become less active in the learning process teaching then, students make a vacuum so, student learning activities tend to be individualistic. Therefore, students are less able or less understand the material presented by the teacher so students have difficulty in calculation, naming and reaction then, the student's chemistry learning outcomes are low.

Learning outcomes (marks) are the results of the assessment given by the teacher to the students in learning about the progress and progress of students in schools regarding the mastery of the subject matter. Learning outcomes in general can be grouped into three levels: low learning outcomes, intermediate learning outcomes and high learning outcomes [3]

Acquisition of learning outcomes between students is not same because many factors that affect the learning process. Student learning outcomes are influenced by two factors namely the factor of within the student self and factors from outside the student self [4].

Hydrocarbons are chemicals given to odd semester class XI students discussing how to determine nomenclature, distinguishing alkanes, alkenes, and alkalis, determining the isomers, and their reactions. [5], [6]. The concept of hydrocarbons is one of the concepts of chemistry that is difficult to understand students, because in addition to remember the types of compounds must also be able to recognize the basic structure, write down the name of the compound and can also write or draw the structure formulas from the compound. The inability of students in mastering the basic concept resulted in students not able to master the basic concept of hydrocarbon compounds [7].

Therefore, indispensable a media-based learning model that can assist students in understanding hydrocarbon compounds in students so that the learning process is more active and growing. To help students master the material facilitates hydrocarbon compounds, the highly precise learning is cooperative learning TGT (Teams Games tournaments) [8].

Cooperative learning model is one of the learning model that can increase the interaction between teacher and student. Thus, cooperative learning model is a learning activity by grouping to work together to help construct concepts, solve problems or inquiri [9], [10], [11].

TGT is a learning model that can motivate students and attract student interest because TGT is a fun learning model [12], [13]. In the TGT type learning model, students can be motivated to learn because this learning model involves all students without having any status difference and involves the role of students as peer tutors and contains elements of the game. Learning activities with games designed in cooperative learning of the TGT model enable students to learn more relaxed as well as foster responsibility, teamwork, fair competition and learning engagement. The TGT learning model has practical value in its implementation because it has an element of play [9].

Learning process is a process of communication and takes place in a system then the learning media occupies an important position as one component of the learning system. Without media, communication will not occur and the learning process as a communication process will also not be biased optimally. Learning media is an integral component of the learning system [14].

Guess the word is the delivery of teaching materials by using short words formed in the form of game cards so that children can receive learning messages through the card. Through guess words, students are directed to understand and know the messages contained in the material. So with the ability of students to guess the word means to reflect the ability of students in mastering and understanding the existing material [15].

Through word guess games, in addition to children being interested in learning also facilitates in embedding the concept of lessons in students' memories. So, the teacher invites students to play guess words by using card media from cardboard in the subjects that take place [16], [17].

Learning media words square is a learning medium that uses a box - the box in the form of a puzzle as a tool in delivering teaching materials in teaching and learning process. The prepared boxes will be filled in by students or shaded with the existing letters which is the answer to the questions prepared by the teacher. Thus, there are two things that are required in using this learning media that is making boxes and questions or statements in order to fill the box [15].

Learning media is good used in order to improve students' minds randomly and facilitate students in understanding the teaching materials. In addition, using this medium will increase student learning activities, because students are invited to actively seek answers or line - the box line that he considered correct with the existing questions [18].

In the model of cooperative learning type TGT can be used as a tool of learning media in teaching and learning process. Through instructional media, teachers can present abstract lesson material to be concrete so that it is easy to understand and can eliminate verbalism [19]. Hydrocarbons abstract can be understood more easily, if this material is explained through the media among which guess the words media and hangman words square media.

Based on some previous research using cooperative learning model of teams games tournaments type of student learning outcomes have increased as in research revealed that Team Game learning model Tournament (TGT) on colloidal subjects can improve students' chemical learning outcomes. [20], [21], [22].

In addition to the learning model, the use of media is one of the important components in the learning process in schools. Media is one of the learning resources in the learning activities that can deliver the material with the right target. Based on research [23] states that there is an increase in student's chemical learning outcomes by using word square media on hydrocarbon material. Media guess words, based on research [24] states that there is an increase in student chemistry learning outcomes.

II. METHODS

This research was conducted at *SMAN 18 Medan in Jalan Wahidin no 15, Medan*. The study was conducted in the odd semester that is in August 2014. The population of this study is the entire class *XI SMAN 18 Medan T.A 2014*.

Sampling is done by using purposive random sampling technique by taking as many as two classes, where one class becomes experiment class I and the other class become experimental class II. The experimental class I was given treatment with Cooperative Learning model of teams games tournament type using word guess and second experimental class given treatment with Cooperative Learning model of teams games tournament type using word square media.

The research instrument used is a multiple choice (objective) test consisting of 50 questions with 5 options (a, b, c, d and e). The test is tested to the students before implementing the teaching (pretest) to know the students'

initial ability then after the material of the completed hydrocarbon compound is taught then to find out where the learning outcomes have been done so that it is done posttest at the end of the learning of the hydrocarbon compound.

This type of research is quasi experimental research. Thus the design of this study can be seen in the following table:

Table 1 Research Design

Class	Pre - Test	Behaves	Outcomes
Eksperiment 1	T ₁	X ₁	T ₂
Eksperiment 2	T ₁	X ₂	T ₂

Explanation:

T₁: Pre Test

T₂: post Test (learning outcomes)

X₁: Chemistry learning with media Guess Words and Cooperative Learning Model TGT

X₂: Chemistry learning with Words Square media and Cooperative Learning Model TGT Type

In conducting this research, the research stage can be described in the form of a flow chart as shown in the figure:

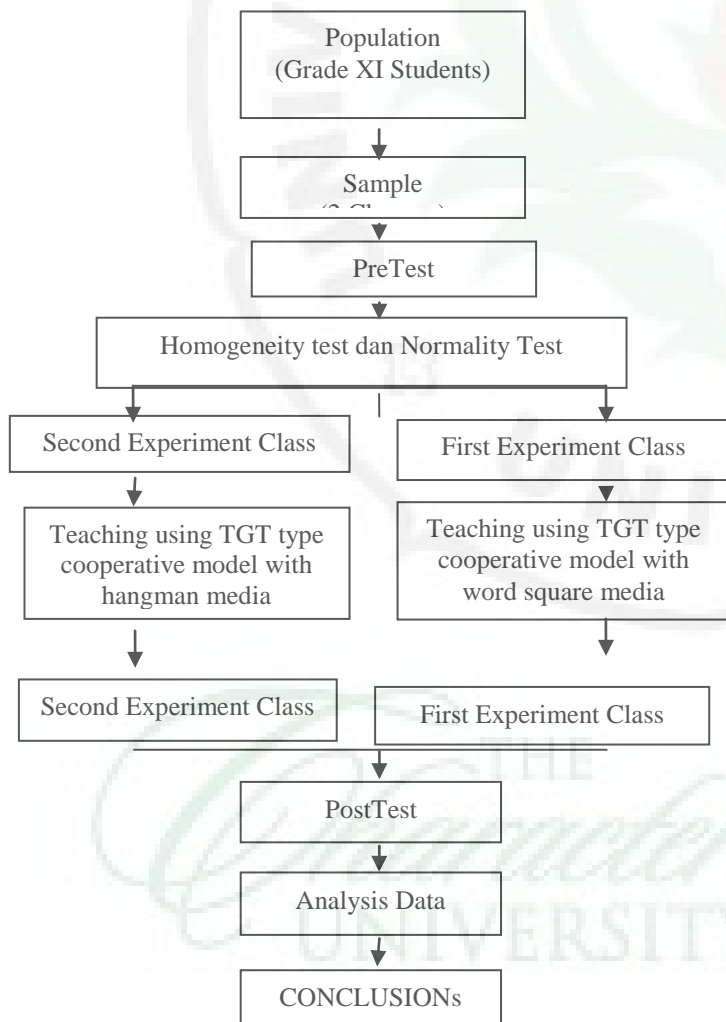


Figure 1. Flow Chart Design Research

Table 2. The procedure of this study is done by following the steps as follows:

No.	Phase	Steps that have to do
1.	Resereach Preparation	The teacher prepares the necessary learning tools such as the Lesson Plans (RPP), prepares the learning instrument, prepares the discussion and answers key from the learning outcomes, and prepares the media. Guess the word to be used in the experimental class I and prepare the Words Square media to be used in the classroom experiment II.
2.	Doing Pre test	Before the teaching and learning process begins, first tests are conducted for both experimental classes. This initial test was conducted to find out the extent of the students' knowledge on the subject of Hydrocarbons and get the initial test scores.
3.	Implementati on of Teaching	In each experimental class is taught about Hydrocarbon subject by using different types of learning that is Tebak Kata media with cooperative learning model type TGT in experiment class I and Words Square media with cooperative learning model type TGT in experiment class II.
4.	Doing Post Test	After the material has been taught, the final test will be given to the two classes to obtain the student's chemical learning result data.
5.	Hypothesis testing	Hypothesis testing is done by comparing the value of learning outcomes between the two experimental classes.

III. RESULT AND DISCUSSION

A. Research Results

The sample used is the students of class XI IPA1 as experimental class I and class XI IPA2 as experiment class II. In both classes, there are 3 stages of activity, namely pre test, learning and post test. Pre-test is used to determine students' initial ability and test sample requirements (normality and homogeneity). The post test is used to determine the final ability of students after getting the treatment of learning. Problems used in the pretest and posttest are the same questions, so as to know the student's improvement appropriately.

Differences in the two classes is the treatment of learning media that is in experimental class I using Guess the Word media, while in experiment class II using Word Square media. Before used in the research first done some test items

against test instruments such as validity, reliability, difficulty, and test differentiation.

B. Data Research Results

Based on the research results obtained pre-test data and post-test data. Based on the calculation that has been done, the average value of pretest, post-test and gain of experimental class I and experimental class II summarized in table 3.1 below

Table 3. Data Research Results

Class	Pre- test		Post – test		Gain	
	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD
Experiment I	29.25	8.74	81.50	6.52	0,75	0,071
Experiment II	34.13	9.73	82.50	6.60	0,74	0,064

Based on the above data can be seen that the average increase in learning outcomes (gain) in the experimental class I is greater than the average increase in learning outcomes (gain) in the experimental class II. The learning result data can be seen in the graph below :

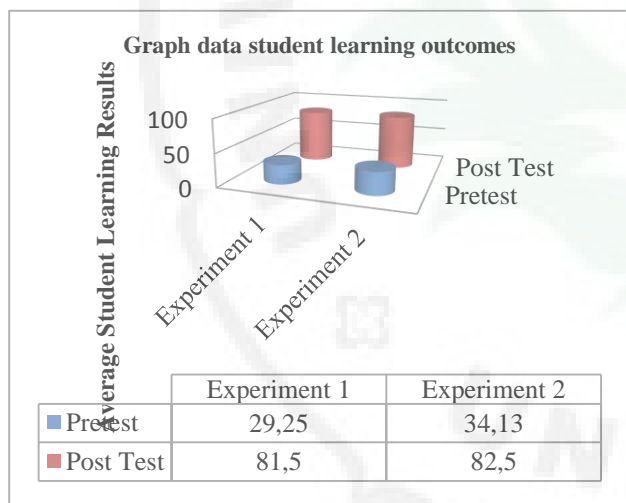


Figure 2. Graph data student learning outcomes

C. Data Analysis Research

Test Data Normality

Normality test is used to determine the normal or not the study population of each research variable. Normality test is done by Chi Square test. The results are summarized in Table 3.2.

Table 4 Normalitas Data Pre-test, Post-test dan Gain

Class	Pre- test		Post – test		Gain		Exp
	$(X^2)_{hi}$	$(X^2)_{ta}$	$(X^2)_{hi}$	$(X^2)_{ta}$	$(X^2)_{hi}$	$(X^2)_{ta}$	
	tung	bel	tung	bel	tung	bel	
Eksperimen I	7.14	11,07	4,56	11,07	6,71	11,07	Data Normal
Eksperimen II	6,34	11,07	5,53	11,07	4,34	11,07	Data Normal

Normality test used is Chi Square Test. This test is done by comparing the price of Chi Squares (X^2) count with Chi Square Pricing (X^2) table at the significant level $\alpha = 0.05$ with $db = 5$. Based on the provision if $(X^2) \text{ count} < (X^2) \text{ table}$, then the data is normally distributed .

In Table 3.2 it appears that Chi Square (X^2) calculates pretest data, posttest and gain data in experimental class I and experiment class II is smaller than Chi Square (X^2) table then all pretest, posttest and gain data are normally distributed. This means that the increase of learning result data can be used to test the hypothesis.

Data Homogeneity Test

Homogeneity test is used to determine the level of quantitative data dispersed in one group of data. Homogeneity test is needed to analyze the data continued, so that the data can be done t test. Homogeneity test is done by comparing the largest variance data with the smallest variance. The homogeneity test of pretest, posttest and gain of experiment class I and experiment class II is presented in table 3.3 below:

Table 5 Homogeneity of Pretest, Posttest and Gain Data

Class	Data	Varians (S^2)	F_{hitung}	F_{tabel}	Explanation
Experiment I	Pretest	$S^2 = 76,35$	1,241	1,69	Homogen
Experiment II		$S^2 = 94,73$			
Experiment I	Posttest	$S^2 = 43,59$	1,026		Homogen
Experiment II		$S^2 = 42,56$			
Experiment I	Gain	$S^2 = 0,0043$	1,154	Homogen	
Experiment II		$S^2 = 0,0036$			

From the above table it is concluded that pretest, posttest and gain have F count $< F$ table which means the data is declared homogeneous.

Hypothesis testing

Having known that the data is normal and homogeneous distributed it can be tested hypothesis using t test statistical test. This test is to determine whether the hypothesis in this study is accepted or rejected. Criteria testing if $t_{hitung} > t_{tabel}$ then alternative hypothesis accepted and null hypothesis or null hypothesis rejected. Data of hypothesis test results can be seen in table 3.4 below:

Table 6 Hypothesis Test Results Post Test Data

Class data		t_{hitung}	t_{tabel}	Explanation
Experiment I	Experiment II	2,222	2,021	Ha accepted, Ho rejected
$t_1 = 0,75$ SD = 0,071 $S^2 = 0,0043$	$t_2 = 0,74$ SD = 0,064 $S^2 = 0,0036$			

From the t distribution data obtained t table = 2.021. whereas based on calculations obtained t arithmetic = 2.222 so that the price of t count > ttable (2.222 > 2.021). Thus the thesis hypothesis testing criteria t count > ttable fulfilled. This means that H₀ is rejected, H_a accepted which means there are differences in student learning outcomes taught through Cooperative Learning Model TGT (Teams Games Tournament) with Media Guess Word compared to student learning outcomes taught through Cooperative Learning Model TGT Type (Teams Games Tournament) with media Words Square on the subject of hydrocarbons.

Percentage of Improved Learning Outcomes

The result of percentage improvement of learning result can be directly searched from the average gain value of all students for each class can be seen in table 3.5 below):

Table 7 Percentage of Improved Learning Outcomes

Class	Criteria	Exp :	G	Explanation
Experiment I	G < 0,3 = Low	$\Sigma g = 29,8$ $\Sigma g^- = 0,75$	75%	High
	0,3 < G > 0,7 = Medium	$\Sigma g = 29,7$ $\Sigma g^- = 0,74$		
Experiment II	G > 0,7 = High		74%	High

Based on the table above can be seen that the increase in learning outcomes in experimental class II is higher than the increase in learning outcomes in the experimental class I. The data increase learning outcomes in the two experimental classes can be seen in the following graph:

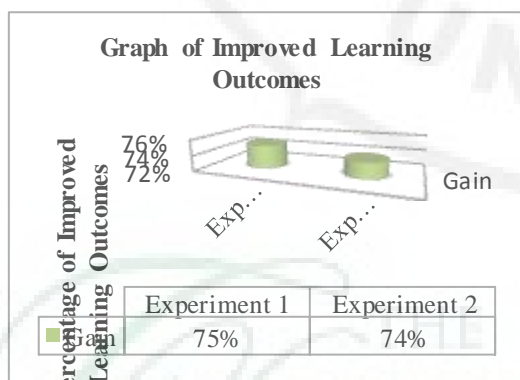


Figure 4 Graph of Student's Improved Learning Outcomes

At the time of study took place in experimental class I researcher use Teams Games Tournament learning which combined with Media Guess Word on hydrocarbon subject. At the time students do the word guess, the students look so enthusiastic and motivated to make students more active in the learning process. Researchers provide direction and views

on each group on group performance and provide an explanation of student answers that have not been right.

In experiment II class, the researcher gives Teams Games Tournament and Media words square learning. Media words square presented in the form of a random word game in the box associated with hydrocarbon matter where the answer to the question is contained in a box full of irregular letters and students are asked to look for it. The use of word square media aims to revive the enthusiasm of students who have started to sluggish, encouraging students to compete forward, create excitement and train certain skills, foster solidarity and can impress students so that the material taught is difficult to forget.

Based on the results that have been obtained, it can be said that the application of Teams Games Tournament learning model and media Words Square is good because it can improve students' chemistry learning outcomes. This is evident from the results of statistics and observations of researchers during the learning process. By applying Teams Games Tournament learning model and Words Square media, students become more familiar with hydrocarbon matter easily. This is because Words Square media is able to attract the enthusiasm and motivation of students to learn hydrocarbons because they feel challenged, so the level of student activity in this class is higher than the class that was taught by Words Square media. The advantage of Words Square media compared with the media Guess the word is more in the know students and more challenging students to solve the problem of hydrocarbons.

So based on research that has been done in SMA Negeri 18 Medan can be concluded that the application of learning model TGT (Teams Games Tournament) with media Words Square or media Guess Words can improve student learning outcomes during the learning process takes place.

IV. CONCLUSION

Increased interest in learning so that learning activities rise significantly, because students are faced with a method of teaching that is a game so not too monotonous in the learning process. There was a difference in the students' learning outcomes in the second experimental class (Test Post: 82.50 + 6.60 and 74% gain) compared to the students' learning outcomes in the experimental class I (Post Test 81.50 + 6.52 and 75% gain) of the hydrocarbon subject. The magnitude of the difference in student's learning achievement is 1%.

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