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**THE COMPARISON OF STUDENT'S LEARNING ACHIEVEMENT USING THE MODEL OF COOPERATIVE LEARNING TYPE STAD ( *STUDENT TEAM ACHIEVEMENT* ) DIVISION ANDNHT( *NUMBERED HEAD TOGETHER* ) GRADE XI IPA STUDENTS IN SMA NEGERI 1 LUBUKPAKAM**

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### **Abstract**

The aimed of this research was designed as a quasi experiment. This quasi experimental research was given to 30 students in grade XI IPA 1 of SMA Negeri 1 Lubukpakam by teaching them using STAD model and to 32 students in grade XI IPA 4 of SMA Negeri 1 Lubukpakam by teaching them using NHT model. Result of research showed that teaching by using STAD model and NHT model can increase the student achievement in the topic human reproductive system. The achievement of student's by using STAD model (  $M = 79 \pm 6.83$  ) was higher than the student's achievement by using NHT model (  $M = 74.3 \pm 6.96$  ). The data analysis revealed that there was a comparison of student achievement in the topic human reproductive system STAD model and NHT model of grade XI IPA students of SMA Negeri 1 Lubukpakam Academic year 2011/2012 ( $t_{\text{account}} = 2,67 > t_{\text{table}} = 2.00$ )

**Key words:** Learning achievement, STAD, NHT

### **A. INTRODUCTION**

Learning is a two-way communication process, teaching that conducted by the teacher as an educator, while the learning is done by the students. In this case, the role of teacher is not merely providing information, but also directing and facilitating the study process to be more appropriate to the learning process (as facilitator). Learning is a process of the study that builds teachers to enhance students' thinking skills, and increase the ability of students to construct new knowledge as a good effort to improve the mastery of subject matter (Syamsudin, 2007).

According to Slavin ( 2005 ) STAD emphasizes the interaction between student activity to motivate each other and help each other to master the subject matter in order to achieve maximum performance. The advantages of cooperative learning STAD model is a type of cooperation in groups and in determining the success of the group's success not only based on the group scores but also depend on the individual ability of the member, so that the students in a group must ensure that their members master the learning topic.

Numbered Heads Together is the model that emphasizes each student accountable for learning the material. Students are placed in groups and each person is given a number (from one to the maximum number in each group). The teacher poses a question and each student has their own responsibility to figure out the answers relate to the predefined number . According to Lie ( 2004 ) NHT can provide benefits for students who are underachieving and high achieving students that work together to complete the task. The students in a group depend on each other for information and for doing the task assigned on them This model can promote mutual respect among the members and the prevent the domination of particular student in a group.

## B. RESEARCH METHODS

The research was carried out in SMA Negeri 1 Lubukpakam Jl. Wahidin No.1 Lubukpakam. The research was conducted on March 2012 until June 2012

The type of this research was a quasi experiment using two samples. The first class will be taught by using STAD and the second class will be taught by using NHT. Both classes experienced the same topic human reproductive system. Pre- test and post-test were designed to obtain data from the treatments. Pre test and post-test activity wer labeled as T1 and T2 respectively. The design can summarized as follows :

**Table 1.** Pre test- Post test Design.

Class	Pre test	Treatment	Post test
XI IPA 1	T1	X1	T2
XI IPA 4	T1	X2	T2

Description :

T1 = Pre test

T2 = Post test

X1 = The Class that was taught using the model of cooperative learning type STAD ( *Student Team Achievement Division* )

X2 = The Class that was taught using the model of cooperative learning type NHT( *Numbered Head Together* ).

Instrument in this study is to test the cognitive or learning achievements in the form of objective test consisting of multiple-choice question 60 items. Questions answered correctly given a score of 1 and if either 0, where the final value (NA) can be calculated as follows:

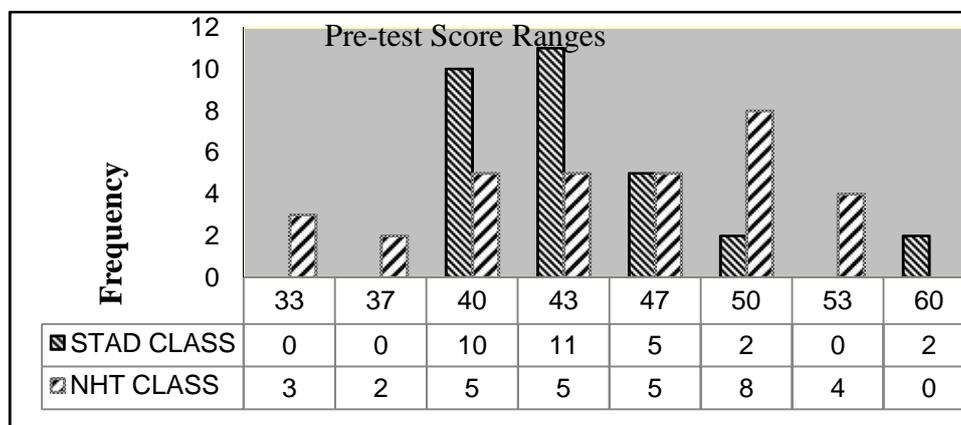
$$NA = \frac{\text{Total Corret Answers}}{\text{Number of Questions}} \times 100$$

Before being used to collect the data, a set of test proficiency level should be tested outside the sample includes feasibility test validity, test reliability, test difficulty level and the different questions.

## C.RESULTS AND DISCUSSION

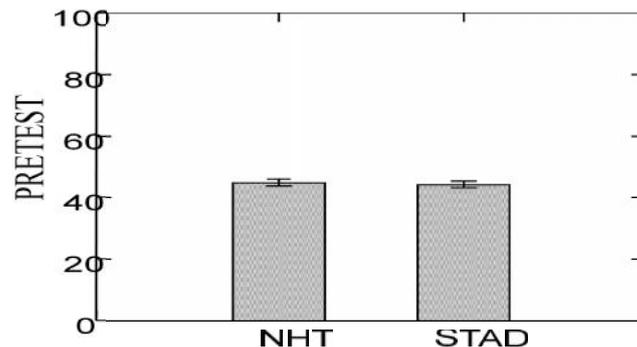
### Description of Pre-test data.

From the pretest results the average student's achievement in the STAD model is 44.3 (SD=5.25). The students in the class using NHT model the average is 44.8 (SD= 6.17).Pre test differences for both groups is summarized in Figure 1.



**Figure 1.** Differences diagram of pre test score ranges in STAD and NHT class.

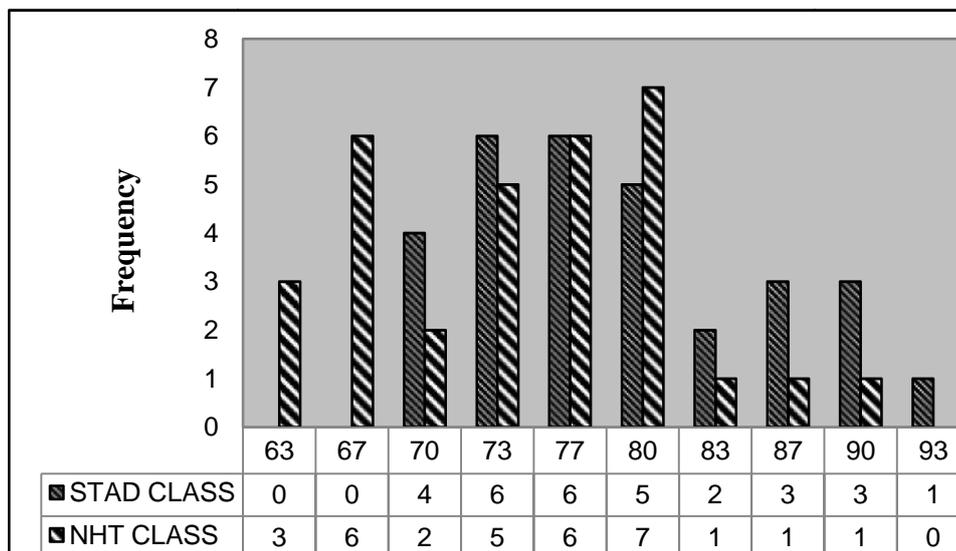
The data shows differences in the results of student's pre-test with STAD model and NHT model. Both classes have the different ranges of pre-test value . The ranges value of pre-test in STAD model were about 40-60. Otherwise the ranges value of pre-test in NHT had more varied ranges of values ranging from 33-53. The average value in STAD class was 44.3 and the average value of pre-test in NHT class is 44.8. The data revealed that the average value of the pre-test in both classes was not different significantly, it meant that the both classes have the same level of student learning achievement . The comparison of student learning achievement based on the pre-test score in STAD class and NHT class can be presented in Figure 2.



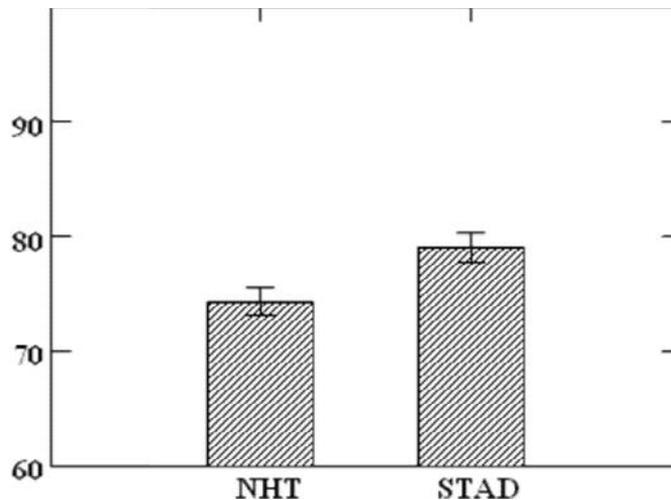
**Figure 2.** The Comparison of Student Learning Achievement on Pre-test

#### Description of Post test data.

The average value of student's achievement using STAD model is 79 (SD = 6.83 ) whereas the result of student achievement using NHT model is 74.31 ( SD = 6.96) respectively. The difference of student's score ranges was summarized in the table 4.2 and figure 3 and the comparison of student learning achievement on post-test can be presented in figure 4



**Figure 3.** Differences diagram of post-test score ranges in STAD class and NHT class.



**Figure 4.**The Comparison of Student's Learning Achievement on Post-test

The figure 3 summarizes the ranges of post-test score of STAD model ( 70 – 93 ), and NHT has the range of students value from 63 to 90. The average score of post- test of STAD class is 79 and NHT class only reach 74.31. The ranges of student's were achievement different between both models implemented. Then obtained data showed that there was a comparison of student learning achievement

### HYPOTHESIS TESTING

Hypothesis testing was conducted on pre-test and post-test using t-test to explore whether the both classes had the significant differences of student's learning achievement. The average scores for both results on pre-test were 44.3 (STAD) and 44.8(NHT). The variance combination for both pre-tests was 5.74 . By using the average score and variance combination from both treatments, the value of  $t_{(calculated)}$  was 0.395 and  $t_{(table =0.05)}$  df (60) is 2.00. This explained that the alternative hypothesis was rejected and null hypothesis ( $H_0$ ) was accepted. There was not a significant differences of student' achievement between both classes. It mean that the student's learning achievement on pre-test was equal.

The average scores for both classes were 79 (STAD) and 74.31(NHT). The variance combination for both posttests was 6,90 . By using the average score and variance combination from both treatments, the value of  $t_{(calculated)}$  is 2.67 and  $t_{(table =0.05)}$  df (60) is 2.00  $t_{calculated} > t_{table}$  ( 2.674 > 2.00). Based on the results of hypothesis testing on  $\alpha = 0.05$  revealed that the result of student's learning achievement in stad class and nht class was significantly different. Then the further hypothesis testing using  $\alpha = 0.01$  ( $t_{table}$  df (60) = 2.66).the result also revealed that  $t_{calculated} > t_{table}$  ( 2.674 > 2.66) ,it meant that the student's learning achievement in both classes (stad and nht) was very significantly different. This explained that the alternative hypothesis was accepted and null hypothesis ( $h_0$ ) is rejected. There was a significant differences of student' achievement between stad class and nht class

### D. CONCLUSION

1. There was an increase result of student's learning achievement from the value 44.3 to 79 with the increasing percentage 43.96% using STAD model on the topic human reproductive system of grade XI IPA students in SMA Negeri 1 Lubukpakam for academic year 2011/2012.
2. There was an increase result of student's learning achievement using NHT model from the value 44.8 to 74.3 with the increasing percentage 39,65% on the topic

human reproductive system of grade XI IPA students in SMA Negeri 1 Lubukpakam for academic year 2011/2012.

3. There was a comparison of student's achievement between STAD model and NHT model as amount as 1.06 : 1 with the differences percentage 5.95% on the topic human reproductive system of grade XI IPA students in SMA Negeri 1 Lubukpakam for academic year 2011/2012.

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