

## Effects of Cooperative Learning Model Type Games Teams Tournament (TGT) and Ability Initial Student to Learning Competence Class XI IPA SMAN 1 Lengayang

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### ABSTRACT

This study begins by learning competencies biology students who are still relatively low. This happens because teachers have not been using cooperative learning and teachers do not pay attention to the initial ability of students in learning. One effort that can be done to overcome these problems is to conduct research to implement cooperative learning model TGT taking into account prior knowledge of students. The purpose of this study was to determine the effect of cooperative learning model TGT against learning competencies taking into account the students' initial ability. This study is a study. *Quasi-experimental* the study population was a class XI student of SMAN 1 Lengayang enrolled in the second semester of academic year 2016/2017. Sampling was done by using *purposive sampling* and got class XI IPA 1 as an experimental class and class XI IPA 3 as the control class. Instruments used in the form of an objective test and observation sheet. Data analysis techniques to test the hypothesis is the t-test, two-way ANOVA test and *Mann Whitney U* test. Based on the results of data analysis and discussion, we obtain some conclusions, namely: the competence of cognitive learning, affective and psychomotor students who take TGT cooperative learning model is better than the students who follow the conventional learning; competence cognitive learning ability students beginning high and low follow TGT cooperative learning model is better than the students who follow the conventional learning; There is no interaction with the learning model students' initial ability to influence students' cognitive learning competencies.

**Keywords:** Effects, Models, Teams Games Tournament, Preliminary Ability, Competence Learning

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### INTRODUCTION

Biology is a science that has contributed in improving the quality of education, in order to support the development of modern technology and promote the power of human thought. Therefore biology needs to be studied at all levels of education to equip students to think logically, critically, creative, innovative and able to work. Biology also one power learning science students to think more creatively and independently. Biological materials related to the widespread and systematic nature, so that biology is not only the procurement of collection of knowledge in the form of facts, concepts, or principles but also a process of observation and invention (MONE, 2003). Biology as the science that studies living

organisms obtained through the process of investigation or research using the scientific method.

Given the importance of biology and in accordance with the teaching of biology, the biology classroom learning should be interesting, pleasant and student-centered. Biology learning involves students seeking comprehensive source of information from various sources. Students should enthusiastically raised their hands to answer questions or contribute thoughts, give opinions or ideas, critical thinking, analysis, and logically so as to create an effective learning environment. This is reinforced by the opinion Warsita (2008: 289) regarding effective learning, namely: 1) students to be the reviewer active against the environment by observing, comparing, finding similarities and differences and forming concepts and generalizations based on similarities were found, 2) teachers provide materials as a focal think and interact in the learning process, 3) the activities of students entirely based on the assessment, 4) teachers are actively involved in the learning process, and 5) a variety of learning techniques.

Based on observations of researchers on August 29, 2016 for class XI SMAN 1 Lengayang learning centered on teachers, where teachers still use conventional learning models namely the delivery of material by the method of discussion, lecture and question and answer and then concludes by giving the exercise, a small portion of students who were active in the learning process as a willingness to ask questions, respond to questions, the lack of the ability of students to work together, students generally tend to receive anything delivered by teachers, and many students who need guidance and direction in completing tasks or problems. As a result, many students are not serious in learning. This affects the creation of participation or lack of interaction between students and teachers or students with students in the implementation of learning biology. The learning process in SMAN 1 Lengayang biology grade XI more emphasis on the student's cognitive, affective and psychomotor aspects while little attention. Weak students' cognitive ability is attributed to the lack of need for students studying biology concepts through the process of thinking, is also affected by the weakness of the initial capabilities of students. If the initial ability of students is low, it will affect the process of the formation of a new understanding in the students themselves. This is because, prior knowledge is the foundation in forming a new learning concept. Teachers do not emphasize the importance of the role of each student in the group to achieve the learning objectives. Students have high capability look to dominate so that when the learning process, students who are willing presentation ahead just that's it, and vice versa, students have the ability to lower / passive does not take advantage of existing opportunities to develop their potential so as to make pupils more passive and rely on friends who are considered capable.

Based on these problems, it is necessary to attempt to improve the quality of teaching biology. One effort that can be done by teachers to help students to be active and to better

understand the learning material is to use cooperative learning model TGT or matches a team game. In a model of cooperative pembelajaran TGT students play a game with other team members to earn extra points on their team score each (Slavin, 1995). With the game done can stimulate students' interest, so that the learning process will thus attract more students to be involved in the learning process and activities. One of the goals of the model of cooperative pembelajaran TGT is to improve the effectiveness of learning outcomes and attitudes (Salam, 2015: 2). TGT cooperative learning model consists of five steps: 1) Presentation of the class, 2) teamwork, 3) Games, 4) match, 5) group choice.

In the learning process, teachers are faced with students' diverse abilities is possible to influence the progress and learning competencies. Ability to describe the beginning of a student's readiness to absorb the lessons that will be presented by the teacher. According Slameto (2010: 25) "How is the new material can be studied, depending on what is known. Thus, the initial ability of students is a prerequisite of the students to be able to follow the lessons, so that it will achieve better learning competencies.

Prior knowledge and learning models are two very important things to be noticed by the teacher before starting the learning process. According Astuti (2015: 7) initial capability is the result of learning obtained prior to obtaining a higher ability. The ability of early learners is a prerequisite to keep learning so that it can execute with good learning process. The ability of someone from the training during their life, and what is brought to the face of a new experience. This study aims to determine the effect of cooperative learning model type *Teams Games Tournament* (TGT) and Capability Against Early Learning Competency Grade XI IPA SMAN 1 Lengayang.

### MATERIAL AND METHODS

The research is a quasi-experimental research (*quasi*). This study cannot control all the relevant variables except some of the variables studied. The study design used is a draft factorial (*factorial design*)  $2 \times 2$  for the cognitive competence and *Posttest-Only Control Design* for affective and psychomotor domains of competence. *Factorial design 2 x 2* can be seen in Table 1.

Table 1. *factorial design 2 x 2* for Cognitive Competence

Learning (Y) initial capability (X)	model cooperative TGT (Y1)	Conventional (Y2)
Height (X1)	$X_1Y_1$	$X_1Y_2$
Low (X2)	$X_2Y_1$	$X_2Y_2$

Source: modification Suryabrata (2006: 119)

Notes:

- X<sub>1</sub>Y<sub>1</sub> Competence cognitive learning ability students beginning high acquire learning by using a model kooperatif learning TGT type.
- X<sub>1</sub>Y<sub>2</sub> Competence cognitive learning ability students who obtain a higher initial conventional learning.
- X<sub>2</sub>Y<sub>1</sub> Competence cognitive learning ability students who obtain a lower initial cooperative learning TGT.
- X<sub>2</sub>Y<sub>2</sub> Competence cognitive learning ability students who obtain a lower initial conventional learning.

### Data analysis techniques

**Normality test:** Normality Test used is test *Kolmogorof Smirnov* with statistical hypothesis as follows:

H<sub>0</sub>: the data follow a normal distribution

H<sub>1</sub>: the data does not follow a normal distribution normality test In this study performed using *software*. SPSS The test criteria is received H<sub>0</sub> if sig. > Significance level ( $\alpha = 0.05$ ), and tolak H<sub>0</sub> if otherwise.

**Test homogeneity:** The test can be done by clicking on the use of test *Levene* with statistical hypothesis as follows:

$$H_0: \sigma_1^2 = \sigma_2^2$$

$$H_1: \sigma_1^2 \neq \sigma_2^2$$

In this study, homogeneity of variance performed with *SPSS*, The test criteria are accepted H<sub>0</sub> if sig. > Significance level ( $\alpha = 0.05$ ), and rejected otherwise.

### Hypothesis Testing

**Hypothesis 1:** The statistical test used for the first hypothesis is the t-test. The test criteria is when the Sig. > 0.05 then H<sub>0</sub> is received and H<sub>1</sub> rejected, otherwise the value of Sig. < 0.05 then H<sub>1</sub> received and H<sub>0</sub> is rejected.

**Hypothesis 2:** statistical test used for the first hypothesis is the t-test. The test criteria is when the Sig. > 0.05 then H<sub>0</sub> is received and H<sub>1</sub> rejected, otherwise the value of Sig. < 0.05 then H<sub>1</sub> received and H<sub>0</sub> is rejected.

**Hypothesis 3:** statistical test used for the first hypothesis is the t-test. The test criteria is when the Sig. > 0.05 then H<sub>0</sub> is received and H<sub>1</sub> rejected, otherwise the value of Sig. < 0.05 then H<sub>1</sub> received and H<sub>0</sub> is rejected.

**Hypothesis 4:** statistical test used for the fourth hypothesis is two-way ANOVA test. The test criteria is when the Sig. > 0.05 then  $H_0$  is received and  $H_1$  rejected, otherwise the value of Sig. < 0.05 then  $H_1$  received and  $H_0$  is rejected.

**Hypothesis 5:** statistical test used for the fifth hypothesis is the test). *Mann Whitney U* Criteria testing this hypothesis that if the significance value that is greater than 0.05 then  $H_0$  is accepted, and if the significance value obtained is less than 0.05, then  $H_1$  received.

**Hypothesis 6:** statistical test used for the fifth hypothesis is the test *Mann Whitney U* criteria for testing this hypothesis that if the significance value that is greater than 0.05 then  $H_0$  is accepted, and if the significance value obtained is less than 0.05, then  $H_1$  accepted.

In brief experiment in class learning the steps as follows:

a. Introduction

Teachers open the lesson and prepare students to learn.

b. core activities

1. Teachers form the of students into study groups.
2. Teachers give numbers for each group.
3. Learning is done through cooperative learning TGT with the following steps:

a. a class presentation

Submission of materials through the question and answer teachers and students, teachers' notes on the material that is poorly understood.

b. Teamwork

Students discuss in the group working on the assignment of teachers, the tasks in preparation for the tournament.

c. Games and tournaments

1. Teachers take a representative of the entire team.
2. Teachers take each group of students a powerful and low-ability students to be matched at table tournaments.

d. Award

Master's presented awards to the winning team of the tournament.

c. closing

teacher and students make inferences material being studied.

Students are given the task of reading in the home and answer the questions on the worksheet.

## RESULTS

**Cognitive Domains Data Description:** Data cognitive learning competencies in this study was obtained through the assessment carried out at the last meeting in each of the basic competencies. This assessment is done through a final test with the technique of multiple choice written test given to second grade sample. Overall the data competence cognitive student studying biology after treatment is given in the form of cooperative learning model TGT disclose information about the total score, the highest score, lowest score and the average of each class. Data Description cognitive learning competencies are presented in Table 2.

Table 2. Average value, Normality Test, Test Experiment Class Homogeneity and Cognitive Control in the Sphere.

No	Parameter	Treatment		Description
		Experiment	Control	
1	Average	80.22	70.89	
2	Normality Test	P = 0.200	P = 0.200	Normal
3	Homogeneity tests			Homogeneous

Table 2 unknown final test results are given in both classes shows that the average value of the obtained in the experimental class is higher than the control class. From this data it can be seen that the experimental class students' cognitive competence treated with cooperative learning model TGT higher than the control class. The research data cognitive learning competence based on prior knowledge presented in Table 3.

Table 3 Cognitive Domains Competency Based Early Ability Students in Grades and Grade Control Experiment.

class	Ability beginning	N	$\bar{x}$	xmin	Xmak	S
Experiment	High	18	85.88	82.00	94.00	3.53
	Low	18	74.55	68.00	80.00	4.27
Control	High	18	76.33	72.00	86.00	6.24
	Low	65.44	18	60.00	70.00	3.34

Based on Table 3 known to the average value of cognitive learning competencies of students based on ability early in the experiment class scored higher on average than the control class. This suggests that the cognitive competence of students in the experimental class using the type kooperatif TGT learning model is higher than the control class by using the conventional model based on high initial capability is low.

**Data Description affective competencies:** observations conducted by the observer using affective student assessment format. Affective competencies Data are presented in Table 4.

Table 4. The average value, maximum value, minimum value, of the Class Experiment and Control Competencies Affective Sphere.

Class	N	$\bar{x}$	xmin	xmax
Experiment	36	71.99	62.50	91.66
Control	36	61.37	48.61	77.77

Based on the calculations in Table 4 above, it is clear that the affective learning competency classes using TGT type learning model obtaining maximum and minimum values better than the students who follow the conventional learning. The average value of final test affective student learning competencies that uses TGT learning model type is 71.99 and those using conventional learning is 61.39.

**Psychomotor competency data description:** Observations made by the observer using psychomotor student assessment format while the average for the overall competence of psychomotor students can be seen in Table 5. Based on the calculations in Table 5 above, it is clear that the affective learning competency classes using model types TGT obtain maximum and minimum values over tubs of the students who take the conventional learning. The average value of final test affective student learning competencies that uses TGT learning model type is 88.59 and those using conventional learning is 65.63.

### Testing Requirements Analysis

#### Normality Test:

Table 5. Normality Test Results Value Competency Student

Descriptive		StudentCompetency	
Class	Ability	Sig.	Description
Experiment	High	0.200	Normal
	Low	0.060	Normal
	Total	0.200	Normal
Control	High	0.093	Normal
	Low	0.200	Normal
	Total	0.200	Normal

**Homogeneity Test of Variance:**

Table 6. Homogeneity Test Results Value Competency Student

Class	Ability	Learning Competency	
		Sig.	Description
Experiment Control	High	0.481	Homogeneous Variance
Experiments Control	Low	0.081	Variance Homogeneous
Total		0,806	Variance Homogeneous

**Hypothesis Testing**

**Hypothesis 1:** Calculation Results Table 7 shows that cognitive sphere of competence students have value Sig. <0.05 means that  $H_0$  is rejected. This means that the value of cognitive competencies learners experimental class have significant differences with the control class. It can be concluded that cognitive learning competencies of students who take TGT cooperative learning model is better than cognitive learning competencies of students who take conventional learning.

Table 7. Calculation Results First Hypothesis

Class	Sig	A	Conclusion
Experiment	0.000	0.05	$H_1$ received $H_0$ is rejected
Controls			

**Hypothesis 2:** Table 8 shows the results of the calculation that the realm of cognitive competence students have value Sig. <0.05 means that  $H_0$  is rejected. This means that the value of cognitive competencies learners experimental class have significant differences with the control class. It can be concluded that students' cognitive learning competency-capable high initial modeled cooperative learning TGT better than cognitive learning competencies capable students who followed the high initial conventional learning.

Table 8. Results of the second hypothesis

Class	Ability	Sig	A	Conclusion
Experiment	High	0.000	0.05	$H_1$ received $H_0$ is rejected
Controls				

**Hypothesis 3:** Calculation results Table 9 shows that the cognitive domain competence students have value Sig. <0.05 means that  $H_0$  is rejected. This means that the value of cognitive competencies learners experimental class have significant differences with the control class. It can be concluded that cognitive learning competencies lower initial ability



students who follow TGT cooperative learning model is better than the students' cognitive learning competencies berkemampuan low entry that follows the conventional learning.

Table 9. Results of the third hypothesis

Class	Ability	Sig	A	Conclusion
Experiments	Low	0.000	0.05	$H_1$ received $H_0$ is rejected
Controls				

**Hypothesis 4:** Calculation results Table 10 shows that the cognitive competence students have value Sig.> 0.05 is 0.808 means  $H_0$  accepted. This means it can be concluded that there is no interaction between learning model in influencing students' cognitive learning competencies.

Table 10. Calculation Results Fourth hypothesis

variance Source	Sum of	square- freedegree	square Means	F <sub>count.</sub>	Sig
Model	1568.000	1	1568.000	104 670	0,000
initial Capability	2222.222	1	2222.222	148 342	0.000
Interaction	0.889	1	0.889	0.059	0.808
Error	1018.667	68	14 980		
Total	415832.000	72			
Corrected Total	4809.778	71			

**Hypothesis 5:** calculation results Table 11 shows that the Sig. <0.05 is 0.000, which is obtained from the analysis using SPSS. It can be concluded that learning competency domains afektf students who take TGT cooperative learning model is better than affective learning competencies of students who take conventional learning.

Table 11. Results of a calculated hypotheses fifth

Class	Sig.	A	Conclusion
Experiment	0.000	0.05	$H_1$ HReceived $_0$ is rejected
Controls			

**Hypothesis 5:** calculation results Table 12 shows that Sig. <0.05 is 0.000, which is obtained from the analysis using SPSS. It can be concluded that the psychomotor learning competencies of students who take TGT cooperative learning model is better than the psychomotor learning competencies of students who take conventional learning.

Table 12. Hasil a calculatedhypothesis Sixth

Class	Sig.	A	Conclusion
Experiment	0.000	0.05	$H_1$ HReceived $_0$ is rejected
Controls			

**Competence cognitive domains:** Using the model of cooperative learning TGT, then the student will be able to learn actively and creatively because in this learning students discuss in small groups, in which they help each other in the understanding of the material. When the TGT cooperative learning model is used well in the learning process, the learning objectives to be achieved will be realized in line with what was expected. In accordance with the opinion of Ibrahim (2000: 20) cooperative learning *Teams Games Tournament* (TGT) is a cooperative learning, where teachers present the students' learning and cooperate with each other in doing LKS then held the tournament at the end of the lesson.

The implementation of cooperative learning model TGT a positive impact on students' cognitive learning competencies. In line with the research Adnyana, et al. (2014: 8) in small groups all students are actively involved to participate solve the existing problems within the group and the learning process can take place optimally so as to improve student learning outcomes either individually or in groups. The combination of cooperative learning model TGT a positive impact on teachers, because most of the time to devote to guide student learning. The positive impact for students that may affect patterns of interaction of students because it gives equal opportunity to called for every individual in every group that foster a sense of responsibility, self-confidence and actively participate in the learning process.

Based on the description of the data that has been described previously seen the average value of competence biology experimental class students who follow the model of cooperative learning TGT significantly better than the control class that follows the conventional learning. According to research conducted by Valia et al. (2015: 369) shows that with the application of TGT learning model can improve the learning outcomes of students with better and more significant. The high value of the average competence grade students experiment is 81% compared to 72% in the control classes due to the provision of treatment given to the experimental class that is a model of cooperative learning TGT. This is in line with the results Rohendi, et al. (2010: 22) states that there are significant differences between the study of students using TGT learning model compared with conventional learning models.

From the results of hypothesis testing, the high value of the acquisition of the experimental class due to the learning model types TGT who are important in the learning process, it is not independent of initial ability of students, compared with the conventional learning model in the ability of understanding the concept of learners with an average activity of 81 % in the experimental group and 72% in the control group. If the observed average value of the learning competencies of learners cognitive biology experimental class taught by cooperative learning model TGT better than the control class is taught by conventional methods.

**Competency domains affective:** With TGT cooperative learning model can build teamwork and social skills. Learners are expected to understand their role in the group, receiving the views of others, can give a sense even to people who perhaps do not they enjoy as well as cooperative learning model TGT can motivate or to arouse the interest of the self-learners, because we create a problem with the job context , The learning process requires students to be independent with the business of learning. The spirit of "responsible for learning" (Taufik Amir: 28-84).

This above shows that the implementation of cooperative learning model TGT can maximize students' affective competencies. This learning model provides a different atmosphere in the learning process, because every student has the responsibility to foster self-confidence to ask questions or respond to the friend. Based on the above, it can be concluded that the affective learning competencies of students who follow the model of cooperative learning TGT better the significance of the affective learning competencies of students who take conventional learning.

**Competence psychomotor aspect:** Competence psychomotor can not be separated from cognitive and affective competencies of the students after implementation of cooperative learning model of TGT. Wahyuningsih, et al (2011) revealed that the psychomotor learning outcomes with the skills or the ability to act after students receive specific learning experience. The results of this study actually advanced stage of the affective learning outcomes. This above shows that the implementation of cooperative learning model TGT can maximize students' psychomotor competency.

Based on the above, it can be concluded that the psychomotor learning competencies of students who follow the model of cooperative learning TGT significantly better than cognitive learning competencies of students who take conventional learning.

## CONCLUSION

Based on the research that has been carried out, it can be concluded as follows: (1) Competence of students in cognitive modeled cooperative learning TGT significantly better than cognitive learning competencies of students who take conventional learning, (2) Competence of students in the cognitive ability of high initial modeled cooperative learning TGT significantly better than cognitive learning competency-capable high initial students who take conventional learning, (3) Competence of students in low baseline cognitive ability that follows the model of cooperative learning TGT significantly better than cognitive learning competencies lower initial ability of students who take conventional learning, (4) There is no interaction between learning model with students 'initial ability to influence students' cognitive learning competencies, (5) Affective learning competencies that follow the model of cooperative learning TGT significantly better than affective learning competencies of students

who take conventional learning, (6) Psychomotor learning competencies that follow the model of cooperative learning TGT significantly better than the psychomotor learning competencies of students who take conventional learning.

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