

# The Effectiveness of Implementation of Cooperative Learning Model Using Student Teams Achievement Divisions (STAD) and Jigsaw to Students Analysis Capability

(Quasi Experimental Study on Economic Subjects on International Trade Material in Class XI IPS MAN 1 Bandung)

Emi Minarni<sup>1</sup>, Dr. H. Eeng Ahman<sup>2</sup>, Dr. Hj. Neti Budiawati<sup>3</sup>

<sup>1</sup>S.Pd., <sup>2</sup>Prof.M.S., <sup>3</sup>M.Si., Economic Education, School of Postgraduate Studies  
Universitas Pendidikan Indonesia

Corresponding Author: Emi Minarni

## ABSTRACT

This research departed from the phenomenon of low ability learners analysis of Class XI IPS in Madrasah Aliyah 1 Bandung. Many factors affect, one of those was a model of learning. The purpose of this research was to know the difference in capability analysis of students before and after using cooperative learning model of type Student Teams use Achievement Division (STAD) and type of Jigsaw. This research was experimental research using the method of Quasi experiments. Quasi experimental design form used Nonequivalent Control Group Design. The subjects of research were students in Class XI IPS.A, IPS.C and XI IPS.D in MAN 1 Bandung. Data were collected by giving a test in the form of reserved descriptions. The question of tests that will be used before the test was done, test the validity of reliability, power and difficulty level of the test criterion. Data processing technique used he test of normality, test its homogeneity, the Gain and to hypothesis testing using the test average difference (paired samples t-test and independent sample t-test). Based on the results of this research, it can be concluded that there was a difference of capacity analysis of learners instructional model. Using cooperative with Student Teams Achievement Division (STAD) and Jigsaw were higher than capability analysis of learners who use conventional methods and there was a difference of increased analysis capabilities between learners who use cooperative learning model STAD with classes that did not use the model cooperative learning, Jigsaw type. Learning by using the cooperative model Jigsaw was more effective for improving analysis capabilities compared to using learning model cooperative type STAD and conventional methods.

**Key Words:** cooperative learning model, STAD, jigsaw, students analysis capability

## INTRODUCTION

The problem being the study of this research is the low ability learners analysis of Class XI IPS. Indirectly, the learning objectives that do not achieve maximum results, one of which is due to the low ability analysis of learners in understanding economic subjects, so that teaching and learning are not capable of achieving the objectives learning well. Learning

objectives were indicated by any change in self learners or often referred to as achievements. The problem of low ability analysis occurs on most learners in Indonesia. This is evidenced by the results of the reflection of the TIMSS results that the average percentage of correct answers on domain knowing the learners (hapalan) 31%, applying domain (application) 23%, and 17% reasoning domain as well as an

average of the percentage of correct answers the learners Indonesia is under the average of international answer, namely 49% to hapalan (knowing), 39% for the application (applying), and 30% for reasoning (Mullis et al, 2012).

In the world of education is currently every country tries to do transformasi education in order to increase human resources in the future. In accordance with the results of the research carried out by PISA then every country should be able to produce individuals who can develop their ability to optimally. Based on Mckinsey report Indonesian's Today and a number of summary data of the Ministry of education and culture (in Edupost, 2012) stated that only 5% of Indonesia student who has the ability to think analytically, while most other Indonesia students have the ability to know the extent. One of the causes of the other because it is not learning in schools less demanding learners to develop their thinking ability. Learners tend to be trained to answer questions with, so recite the liveliness and power tingkat high thinking learners are less developed.

The problem of low ability learners towards analysis of the subjects of economy there is also Madrasah Aliyah at State 1 Bandung, as mentioned previously a condition of low ability analyze the impact on the results of the study learners do not reach the maximum value. Based on the preliminary results of a study conducted on economic subjects the author material taxation in class XI in even-numbered years semester 2017/2018, authors gain data about achievement tests skunder ability analysis of learners. As for the description of the value analysis capability can be seen in table 1.1 Achievement Tests the ability of the Learner Analysis XI IPS MAN 1 Bandung as follows:

**Table 1.1: Achievement on Test of Analysis Capabilities of students Class XI IPS MAN 1 Kota Bandung Year 2017/2018**

No.	Criteria (KKM/standard = 75)	Frequency	Presentation
1.	Score $\geq$ KKM	12	10,81 %
2.	Score $\leq$ KKM	99	89,19 %

Source: Data pre-research which was analysed

From table 1.1 above, it can be seen that, of the three class XI IPS that add up to 111 people, learners have the ability under the criteria analysis KKM more i.e. amounting to 89.19% compared with learners analysis capabilities with the above criteria KKM i.e. of 10.81%, it shows that the capability analysis of learners class XI IPS MAN 1 Bandung city can be said to be still lower. In an attempt to resolve the problem of low ability learners analysis, one of the alternatives that can be implemented is through the application of the learning model. Pembelajaran models that can improve the effectiveness in learning and can increase the activity of learners is a model of cooperative (Ardiyanto Agus, et. al. 2013, p. 3). Cooperative learning model in General is a form of learning with the way learners learn and work in small groups in collaborative whose members consist of four to six people with the nonprofit group structure heterogeneous (different abilities, genders, and others) to achieve the learning objectives have been formulated (Rusman, 2012, pp 202).

On the research of several types of cooperative learning cooperative, two types that will be used by researchers, namely type STAD and Jigsaw. Both of these cooperative learning methods, both can improve learning outcomes. Student Team Achievement Division (STAD) is one of cooperative learning strategy in several small groups of learners with varying levels of academic ability cooperate to complete the learning objectives (Huda, 2014, 210 pp.). Cooperative learning model of type Student Teams Achievement Division (STAD) put on the active participation of the students in the study group and is one type of cooperative learning, which emphasizes the existence of activities and interactions among the learners to mutually motivate and help each other in mastering the subject matter in order to achieve maximum learning result (Isjoni in Gumay Olivia Daughter Caroline, et.al, 2016, pp 79)

Learning models can further enhance the ability of the learner analysis i.e. cooperative learning, Jigsaw-type model is a cooperative learning model consisting of four to five people in one group in charge of mastery learning materials section and being able to teach such material to other members in the Group (Lie in Lukman

Syahril, 2015. pg. 115). Based on the explanation on the background of the above then the purpose in this study was to compare the ability of analysis among learners who are taught using cooperative model type Student Team Achievement Division (STAD) and learners taught by using cooperative learning, Jigsaw-type model.

## METHODOLOGY

This research was Quasi Experimental research. The research design used was a Non Equivalent Control Group Design. This research was carried out in MAN 1 the city of Bandung in the lesson 2017/2018. The subject of the research was the students of Class XI IPS C as 32 people as a class experiment 1 taught with a model cooperative type of student Teams use Achievement Division (STAD), the students

of Class XI IPS D as much as 42 people as a class experiment 2 cooperative learning model taught Jigsaw type and class is a class of control XI IPS with as many as 37 people using conventional methods. Engineering data collection using the test essay as much as 10 reserved. Reliability test sebsar 0.724. Data processing technique using the test of normality is determined by the test of Shapiro-Wilk and its homogeneity of data specified with test Leven, Gain and to hypothesis testing using the test average difference (paired samples t-test and independent sample t-test).

## RESULT AND DISCUSSION

### Result

#### 1.1 Result of paired test of students analysis capabilities before dan after using the Cooperative Learning Model of Student Teams Achievement Division (STAD).

Test result comparison capability analysis of students before and after the application of the cooperative model with learning type STAD can be seen in table 1 as follows:

Table 1: Paired test between Score Pretest and Posttest Analysis capabilities of students in class STAD Paired Samples Test

	Paired Differences			95% Confidence Interval of the Difference	t	df	Sig. (2-tailed)		
	Mean	Std. Deviation	Std. Error Mean					Lower	Upper
Pair 1 Pretest-Posttest	-27.33750	4.93439	.87229	-29.11654	-25.55846	-31.340	31	.000	

In table 1 by using a paired sample t-test is obtained probability value (Sig.) =  $0.000 < 0.05 = \alpha$ , then  $H_0$  is rejected and the  $H_1$  is accepted. Thus, there is a pretest score difference and score posttest kemampuan thought analysis of learners class STAD on kels experiment 1.

The difference can be further emphasized with the average value of n-gain the ability to think the analysis class the STAD can be seen in table 2 below:

Table 2: N-Gain Analysis capabilities of students in class Experiment 1

Data	Rata-rata Skor	Peningkatan	N-gain
Pretest	26.5375	27.3375	0.3756
Posttest	53.8750		

Based on table 2 it can be known that there is an increase in the ability of the learners prior to analysis after the use of cooperative learning model of type Student Teams use Achievement Division (STAD) in experimental class 1 with an average increase in of 27.3375, and note also the average n-gain of 0.3756, thus it can be concluded that there is a difference in capability analysis of students before and after using cooperative learning model of type Student Teams use Achievement Division (STAD) in experimental class 1 with the category of being.

### 1.2 Result of paired test of students analysis capabilities before and after using Cooperative Learning Model of Jigsaw.

Test result comparison capability analysis of students before and after the application of the cooperative learning model with Jigsaw type can be seen in table 3 as follows:

**Table 3: Paired Test between Score Pretest and Posttest Analysis capabilities of students in class Jigsaw Paired Samples Test**

	Paired Differences				t	Df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1 Pretest – Posttest	-31.65476	7.05595	1.08876	-33.85355	-29.45597	-29.074	41	.000

In table 3 by using a paired sample t-test is obtained probability value (Sig.) =  $0.000 < 0.05 = \alpha$ , then H0 is rejected and the H1 is accepted. Thus, there is a difference score of pretest and posttest score thinking ability analysis of the Jigsaw classroom learners

The difference can be further emphasized with the average value of n-gain the ability to think the analysis class the STAD can be seen in table 4 below.

**Table 4: N-Gain analysis capabilities of students in class experiment 2**

Data	Rata-rata Skor	Peningkatan	N-gain
Pretest	27.1905	31.6547	0.4363
Posttest	58.8452		

Based on table 4 can be known that there is an increase in the ability of the learners prior to analysis after the use of

cooperative learning, Jigsaw-type model in experimental class 2 with an average increase of 31.6547 and also known to the average n-gain of 0.4363, thus it can be concluded that there is a difference in capability analysis of students before and after using the model of cooperative learning, Jigsaw classroom experiment on type 2 with the category of being.

### 1.3 Result of paired test of students analysis capabilities before and after using conventional method.

Test result comparison capability analysis of students before and after the application of the cooperative learning model with Jigsaw type can be seen in table 5 as follows:

**Table 5: Paired test between Score Pretest and Posttest Analysis capabilities of students in class control Paired Samples Test**

	Paired Differences				t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower				Upper
Pair 1 Pretest – Posttest	-23.39730	6.13440	1.00849	-25.44261	-21.35199	-23.200	36	.000

In table 5 by using a paired sample t-test is obtained probability value (Sigs.) =  $0.000 < 0.05 = \alpha$ , then H0 is rejected and the H1 is accepted. Thus, there is a difference score of pretest and posttest score thinking ability analysis of learner control class.

**Table 6: N-Gain analysis capabilities of students in class control**

Data	Rata-rata Skor	Peningkatan	N-gain
Pretest	24.9270	23.3973	0.3115
Posttest	48.3243		

Sumber: Lampiran

The difference can be further emphasized with the average value of n-gain the ability to think the analysis class the STAD can be seen in the following table 6:

Based on table 6 it can be known that there is an increase in the ability of the learners prior to analysis after the conventional method on the control class with an average increase of 23.3973 and also known to average n-gain of 0.3115, with Thus it can be concluded that there is a difference in capability analysis of students

before and after using conventional methods on the control class with good category.

**1.4 There is a difference of capability improvement of students' analysis capabilities between class using cooperative learning model Student**

**Teams Achievement Division (STAD) and class conventional method.**

Analytical thinking ability test results of students between classes that implement the cooperative model type STAD with classes that either using conventional methods can be seen in table 7 below:

**Table 7: Paired Test N-Gain Test of analysis capabilities Between Class Experiment 1 (STAD) and Class Control Independent Samples Test**

		t-test for Equality of Means						
		t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
N-gain	Equal variances assumed	3.431	67	.001	.0642508	.0187269	.0268719	.1016298
	Equal variances not assumed	3.442	66.311	.001	.0642508	.0186642	.0269898	.1015119

In table 7 using the t-test is obtained probability value (Sigs.) = 0.001 < 0.05 =  $\alpha$ , then H0 is rejected. Thus, there is a difference n-gain analysis between thinking ability test grade experiment 1 (STAD) and control classes.

As for the average N-Gain in class 1 and class control experiments can be seen in table 8 average N-Gain analysis of thinking ability learners experiment class 1 and class control as follows:

**Table 8: Average N-Gain of analysis capabilities of students in class experiment 1 and class control**

Class	Score average N-Gain	Index N-Gain	Interpretation
Experiment 1	0.3757	'g > 0,70 0,30 < g ≤ 0,70 'g ≤ 0,30	High Good Low
Control	0.3114		

Based on table 8 shows that the average value of N-1 experiment on the class Gain higher than the class of the control. If seen from the index N-gain both i.e. experimental class 1 and class control is in the good category.

**1.5 There is difference of improvement of students' analysis capabilities after using cooperative learning model Jigsaw compared using conventional method.**

Analytical thinking ability test results of students between classes that implement the cooperative model type Jigsaw with classes that either using conventional methods can be seen in table 9 below:

**Table 9: Paired Test N-Gain Test of analysis capabilities Between Class Experiment 2 (Jigsaw) and Class Control Independent Samples Test**

		t-test for Equality of Means						
		T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
N-gain	Equal variances assumed	6.317	77	.000	.124856	.019767	.085496	.164217
	Equal variances not assumed	6.388	76.823	.000	.124856	.019546	.085934	.163779

In the table 9 by using the test-t retrieved the value of probability (Sig.) = 0.000 < 0.05 =  $\alpha$  then H0 is rejected. Thus, there is a difference n-gain analysis between thinking ability test grade experiment 2 (Jigsaw) and control classes.

As for the average N-Gain in class 2 and class control experiments can be seen in table 10 average N-Gain analysis of

thinking ability learners experiment class 2 and class control as follows:

**Table 10: Average N-Gain Analysis capabilities of students Class experiment 2 and Class control**

Class	Average Score N-Gain	Index N-Gain	Interpretation
Experiment 2	0.4363	g > 0,70 ≤ 1,00 0,30 < g ≤ 0,70 'g ≤ 0,30	High Good Low
Control	0.3114		



Based on table 10 shows that the average value of N-Gain in the classroom experiment 2 is higher than the class of the control. If seen from the index N-gain both i.e. class 2 and class control experiments are in good category.

**1.6 There is difference of improvement of students' analysis capabilities between class using cooperative learning model**

**Student Teams Achievement Division (STAD) and class using cooperative learning model Jigsaw.**

Test result analysis ability learners between classes that use the cooperative model type STAD with classes that use the Jigsaw learning model can be seen in the following

Table 11:

**Table 11: Paired Test N-Gain Test of analysis capabilities Between class Experiment 1 and class Experiment 2 Independent Samples Test**

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
N-Gain	Equal variances assumed	1.357	.248	-2.973	72	.004	-.060606	.020387	-1.01246	-.019965
	Equal variances not assumed			-3.063	71.796	.003	-.060606	.019785	-1.00049	-.021163

11 on the chart by using the t-test p-value obtained value (sig 2 tailed) = 0.004 < 0.05 = α, then the test result can be summed up very significantly so that H0 is rejected and the H1 is accepted. Thus it can be concluded that there is a difference of capacity analysis of learners between classes that use cooperative learning, Jigsaw-type model with classes that use cooperative learning model of type Student Teams Achievement Division (STAD).

As for the average N-Gain in experimental class 1 and class 2 experiments can be seen in table 12 average N-Gain analysis of thinking ability learners class experiment 1 and experiment 2 class as follows:

**Table 12: Average N-Gain Analysis capabilities of students in Class Experiment 1 and Class Experiment 2**

Class	Rata-Rata Skor N-Gain	Indeks N-Gain	Interpretasi
Experiment 1 tipe STAD	.3757	g > 0,70 ≤ 1,00 0,30 < g ≤ 0,70	Tinggi
Experiment 2 tipe Jigsaw	.4363	'g ≤ 0,30	Sedang Rendah

Based on table 4.12 shows that there is a difference the upgrade thinking analysis of learners between the classroom experiment 1 and experiment 2 class. Improvement of the ability of thinking

classroom learners analysis experiment 1 and experiment 2 were in class categories are based on the average value of N-Gain indicates a class experiment 2 experiment class was higher than the 1.

The first hypothesis test results indicate that there is a difference of increased analysis capabilities learners before and after using cooperative learning model type STAD on international trade. The research was supported by the results of the research the Van Dat Tran (2013, PG. 9) States that the cooperative Learning cooperative type of Student Teams use Achievement Division (STAD) can improve the academic and affective growth due to the interaction of lead that often occurs among participants in group treatment stimulates cognitive activity, increase the level of the higher achievement and increase positive attitudes towards learning. The same research results obtained by o. Ocampo Ronald, et. al (2015, PG. 116) States that participants in the experimental group (exposed STAD) have a better attitude toward physics and learners who are exposed on the Division of the student Team Achievement have better academic performance.

The results of the second hypothesis suggests that there is a difference of increased analysis capabilities learners before and after using the model of cooperative learning, Jigsaw-type material on international trade. The research was supported by the results of research Jhonson and Jhonson (Rusmana in 2012, p. 219) doing research on cooperative learning, Jigsaw type whose results showed that cooperative interaction has a variety of positive influence on the development of children, the influence was to improve learning outcomes, enhance memory, can be used for high level reasoning tarap, encouraging the growth of motivation (individual awareness), improving relations between humans are heterogeneous, increasing positive child attitude towards school, increasing positive attitude towards teachers, improve children's self esteem, increases positive social adjustment behavior and improving life skills working Brewers.

Hypothesis test results to show that there were three differences increased the ability of the learner analysis before and after using conventional methods on international trade.

Then, there is a difference between analysis and improved skills of I experimental class that uses the type of cooperative learning model STAD with class control using conventional methods. The results of this study in accordance with the research by Michael M van Wyk (2013, pp. 1155) his findings indicate that STAD Findings reveal that STAD as a cooperative learning strategies improve learning contemporary economic problems at the level of middle school class compared to traditional direct instruction.

The results of the hypothesis that there is a difference between thinking ability improvement analysis class experiment 2 a cooperative learning model uses the type of the control class with a Jigsaw using conventional learning model. The results of this study in accordance with research by Gulsen Cagatay, et al (2013, p. 36) that the

results showed students group experiments with cooperative learning techniques taught jigsaw a lot better in the post-test than students the control group who were taught with traditional instruction. The same research results obtained by Mawinda Nora, et al (2014, PG. 64) that the results of the learning learners who use cooperative learning, Jigsaw-type model is better than using a direct learning model.

The hypothesis that there is a difference of capacity analysis of learners in the classroom experiment I implemented a model of cooperative learning, Student Teams use type Achievement Division (STAD) with a class that implements the model 2 experiments cooperative learning, Jigsaw type. The results of this research are consistent with research conducted by DjuliLabu (2016, pp. 505) that there is a difference in the results of learning to read understanding discourse between a group of students who learn through the method Jigsaw with a group of students who learn through method of STAD.

## **CONCLUSION**

1. There is a difference between learners analysis capabilities before and after a class learning is done by using the model of cooperative learning, Student Teams use type Achievement Division (STAD).
2. There is a difference between learners analysis capabilities before and after a class learning is done by using the model of cooperative learning, Jigsaw type.
3. There is a difference between learners analysis capabilities before and after the learning done by using conventional methods.
4. There is a difference of increased analysis capabilities between learners who use cooperative learning model of type Student Teams use Achievement Division (STAD) and control classes using conventional methods.
5. There is a difference of increased analysis capabilities between learners

who use cooperative learning, Jigsaw-type model with the class a control using conventional methods.

6. There is a difference of capacity analysis of learners in classes that use cooperative learning model of type Student Teams use Achievement Division (STAD) with a class that uses the type of Jigsaw.
7. The results of this research also shows that the capability analysis of learners by using cooperative learning, Jigsaw-type model is higher compared to the capabilities of the learners are taught the analysis with the model of cooperative learning type STAD. Thus, cooperative learning, Jigsaw-type model is more effective to improve the ability of the learner analysis compared with the model of cooperative learning type STAD.

#### REFERENCES

- Ardiyanto Agus, Sigit Susanto & Sudiyanto.2013. Efektivitas Penerapan Model Kooperatif Tipe Jigsaw Terhadap Prestasi Belajar Mata Pelajaran Akuntansi Siswa di SMA Negeri 2 Karanganyar Tahun Ajaran 2011/2012. 1-11.
- Cagatay Gilsen & Gokkan Demircioglu. (2013). The Effect of Jigsaw Cooperative Learning Technique on Student;s Undestanding About basic Organic Chemistry Concepts. 4 (2), 30–37.
- Gumay olivia Putri utami, Eti Kodarsih & Budi Mulyanto. (2016). Pengaruh Model Pembelajaran kooperatif Tipe Student teams Achievement Division (STAD) Terhadap hasil Belajar Fisika Siswa Kelas X SMA negeri 2 Muara Beliti. 5,77-78.
- Huda, Miffitahul. (2014). Model-Model Pengajaran dan Pembelajaran. Yogyakarta: Pustaka Pelajar.
- Lukman Syahril, Muhammad Gamal Rindarjono & Puguh Karyanto. (2016). Pengaruh Model Pembelajaran Kooperatif Tipe Jigsaw dan STAD Terhadap Hasil Belajar Geografi ditinjau dari Motivasi Belajar Siswa kelas VII SMP Negeri Jatinom Klaten, 2 (92), 114-127.
- M. Miicheal Van Wyk. (2013). The Effect of Student Teams Achievment Division As a Teaching Strategy on Grade 10 Learner’s Economics Knowledge. 4 (2), 1153 -1157.
- Mawinda Nora, Zulkifli Naansah & Hanesman. (2014). Pengaruh Model Pembelajaran Kooperatif Tipe Jigsaw Terhadap Hasil Belajar Siswa Pada Mata Pelajaran Dasar Kelistrikan dan Elektronika Kelas TAV di SMKN 1 Padang. 2 (2), 75-79.
- Mullis, Ina, dkk. (2012). TIMSS 2011 International Result in Mathematics. Boston Collega:TIMSS 2011.
- Nikou Faeahnaz Rimani, Alireza Bonyadi & Khatereh Ebrahmi. (2014). The Effect of Student Team –Achievment Division (STAD) on Languange Achievement of Irianian EFL Stunder Across Gender. 3 (4), 936-949.
- O.Ocompo Ronald, Rema Bascos-Ocampo. (2015). Effectiveness of Students’Team Achievment Division on Students’ Attitude Towards Physics. 3 (4), 112-117.
- Rahayu Endang Sri. (2013). Model Application Of Learning Cooperative Learning Type Jigsaw For Increase Learning Outcomes Social Studies. 2nd International Seminar on Quality and Affordable Education (ISQAE).
- Rusman. (2012). Model-model Pembelajaran Mengembangkan Profesionalisme Guru. Jakarta: PT RajaGrafindo Persada.
- Tran Van Dat. (2013). Effects of Student Teams Achievement Division (STAD) on Academic Achievement and Attitudes of Grad 9th Secondary School Students Towards Mathematics. 2, 5-12

How to cite this article: Minarni E, Ahman HE, Budiawati HN. The effectiveness of implementation of cooperative learning model using student teams achievement divisions (STAD) and Jigsaw to students analysis capability. *International Journal of Research and Review*. 2018; 5(8):9-16.

\*\*\*\*\*