



**APPLICATION OF STAD MODELS TO IMPROVE STUDENT LEARNING
OUTCOMES IN CLASS X IPA HIGH SCHOOL OF MATHEMATICS ON
COMPOSITION OF FUNCTION AND INVERSE FUNCTION**

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Abstract:

The purpose of the study was to determine whether the application of the Student Team Achievement Division (STAD) Cooperative Learning Model could improve student learning outcomes in mathematics and to find out how much an increase in student learning outcomes in mathematics about the composition of inverse functions and functions after using the Cooperative Learning Model Type Student Achievement Division (STAD) in class X IPA ,SMAN 1 Tajur Halang Bogor. The research method used in this research is analytic descriptive through classroom action research that is a study used to collect data, describe, process, analyze, conclude and interpret data so as to obtain a systematic picture. Descriptive research methods of analysis are used to find out the problem by describing in detail and clearly, as well as conducting a data analysis of the problem to obtain a conclusion with the aim of systematically describing and analyzing a factual fact. The use of cooperative learning model type student team achievement division (STAD) can be a fun learning variation for students so that it is proven to improve student learning outcomes. The magnitude of the increase in student outcomes as follows when the pre-cycle average value of 63.89 then in cycle 1 an increase to 75.14 and in cycle 2 to 83.61

Keywords: STAD , Method, Mathematics learning outcomes

INTRODUCTION

Education is very important in human life, so it becomes an absolute necessity and is an inseparable part of life. Thus education has a big part in the progress of a nation. According to Law No. 20 of 2003 concerning the national education system. National Education functions to develop capabilities and form the character and civilization of a dignified nation in the context of educating the nation's life. Education is a conscious and well-planned effort to create an atmosphere of learning

and learning process so that students actively develop their potential to have religious spiritual power, self-control, personality, intelligence, noble character, as well as the skills needed for themselves, society, nation and state.

But the reality on the ground is that we still find many teachers whose teaching methods have not utilized all of their abilities and potentials in teaching and learning activities so that the results of teaching and learning activities are not optimal as expected.

Teachers in learning activities are still trapped in the conventional mindset, which is the teaching and learning process that is centered on teachers. The indicator of this fact is that the learning process is still dominated by the lecture method.

The use of the dominant lecture method causes students to be less active during teaching and learning activities. Students in general only listen, read, and memorize information obtained from their teacher. In teaching and learning activities such as this impact the lack of mutual interaction between students with other students, also between students and teachers. If this situation takes place continuously then we can be sure the quality and learning outcomes will be low. This is very unfortunate because the teaching and learning process is actually interpreted as a series of actions of teachers and students on the basis of reciprocal relationships that take place in a mutually enjoyable educational situation.

Interaction or reciprocal relationship between teachers and students who immerse is one of the supporters of success in a teaching and learning process. The process of interaction in the teaching and learning process actually has a broader meaning not just the relationship between the teacher and students and the delivery of subject matter, but in the form of educational interactions by instilling an attitude of confidence, respecting the learning process and meaningful in everyday life. One of the causes of the low quality of learning outcomes is the inability of teachers to analyze teaching materials and the application of learning models that are suitable and in accordance with teaching material.

This was proven when the researcher gave an evaluation at the end of the teaching and learning process in Mathematics subject matter composition of functions and inverse functions in class X IPA 2SMA Negeri 1 Tajurhalang Bogor Regency after researchers examined, processed and analyzed the values of 36 students apparently only 12 students got grades above KKM or around 33.33% while 24 students or around 66.67% are still below the expected KKM which is 75 and the average value obtained is only 63.89 This is due to teachers in teaching and learning activities still using the model conventional learning.

From these data it is clear that the learning objectives of mathematics about the composition of functions and inverse functions have not yet been achieved. So that it is necessary to change the teaching and learning process by using a more appropriate learning model, the researcher tries to use the STAD (Student Team Achievement Division) learning model. The consideration of selecting the STAD model because this learning model focuses on the interactive learning process between group members in completing learning tasks together.

This is in line with the opinion of Izzaty, et al (2008: 116 - 117) that "the characteristics of high school class students, like to form peer groups and have a curiosity and want to learn".

With the STAD (Student Team Achievement Division) model it is expected that the participation of students in the learning process will increase which will have an impact on learning outcomes.

From the description above, the researcher determines the title of Classroom Action Research (PTK) is "Application of Cooperative Learning Model Type Student Team Achievement Division (STAD) To Improve Student Learning Outcomes in Mathematics Subjects About Composition of inverse functions and functions in Class X IPA 2 SMA Negeri 1 Tajurhalang Bogor Regency Semester 1 Academic Year 2018/2019

METHODS

The research method used in this research is analytic descriptive through classroom action research that is a study used to collect data, describe, process, analyze, conclude and interpret data so as to obtain a systematic picture. Descriptive research methods of analysis are used to find out the problem by describing in detail and clearly, as well as conducting a data analysis of the problem to obtain a conclusion with the aim of systematically describing and analyzing a factual fact.

The learning research site is located at SMA Negeri 1 Tajur halang, Bogor Regency. The subjects of the research were students of Class X IPA 2 of SMA Negeri 1 Tajurhalang, Bogor Regency with 36 students consisting of 14 men and 22 women. When the teacher teaches about the composition of functions and inverse functions the average value achieved is 63.89 while the KKM is determined 75. Students who score above KKM are 12 people or 33.33%, and those who have not received the same value or above KKM 24 people or 66.67%. Whereas the material composition of functions and inverse functions felt by the teacher is quite simple, if these learning conditions cannot be overcome then the learning objectives are not achieved. This research was carried out in semester 1 of the 2018/2019 academic year because the material composition of inverse functions and functions in Class X Science 2 of semester 1 was conducted in September and October.

Classroom action research is an assessment process through a system that recycles various learning activities consisting of four interrelated and continuous stages. These stages are: (1) planning (planning), (2) implementing the action (action), (3) observing (observing), and (4) reflecting (reflecting). Visually, the stages can be seen in Figure 1 below.

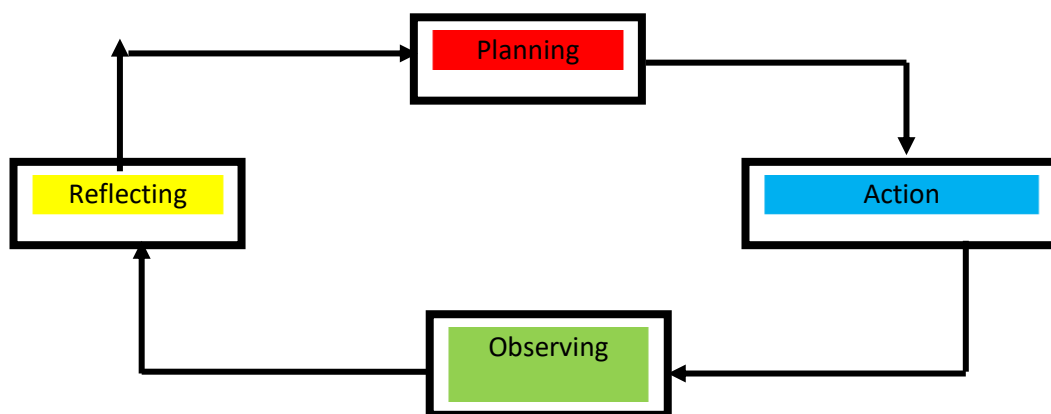
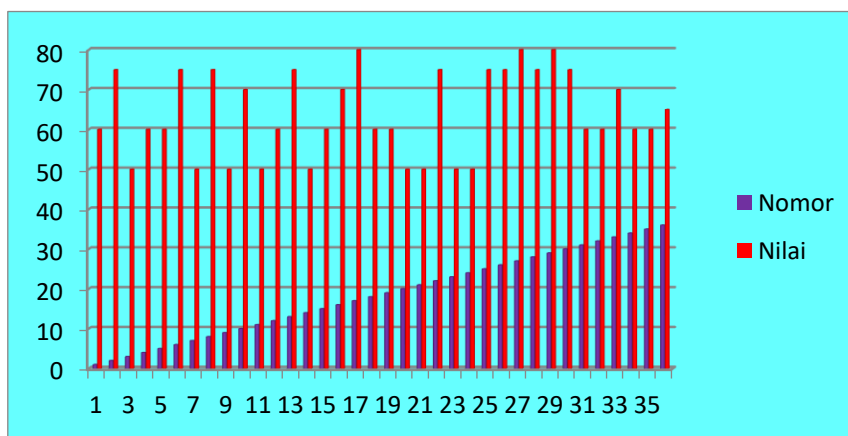


Figure 1.
Action Flow in Class Action Research Based on the Kurt Lewin Model

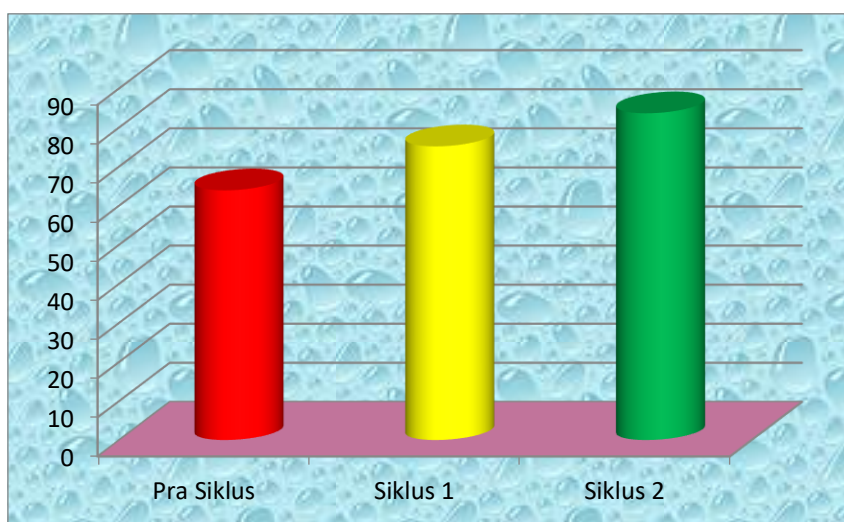
RESULTS AND DISCUSSION

Before taking action in the study the researcher made preliminary observations in class X IPA 2 SMA Negeri 1 Tajurhalang, Bogor Regency. Observation results showed that the learning outcomes of students in Mathematics subjects were still low. Based on this the researcher tried to use the cooperative learning model type student team achievement division (STAD) in the process of learning mathematics about the composition of inverse functions and Learning begins by conducting an initial test (prasiklus) in class X IPA 2 to determine the students' initial ability in Mathematics about the composition of functions and inverse functions. Initial test scores (prasiklus) are used as material to determine the using a cooperative learning model type Student Team Achievement Division (STAD). So the results will be described in the action cycle 1 and cycle 2 action after collecting and processing data. Following is the final result of pre-cycle tests. Lowest value of 50 Top Rated 80 Number of students who have finished 12 Number of students who haven't completed 24 Percentage of completeness 33.33%.



Graph 1. Pre Cycle Value Data Results

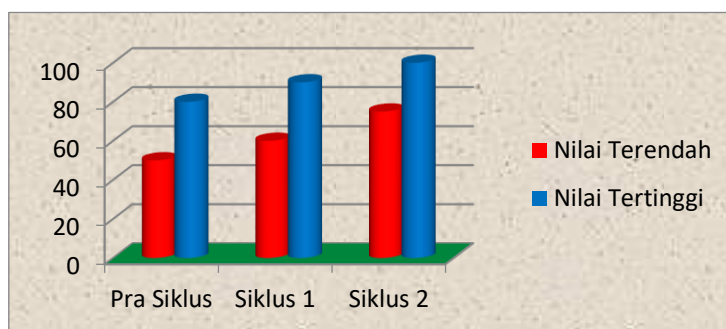
Based on the results of the study for 2 cycles which aim to improve student learning outcomes the composition of inverse functions and functions seen in the implementation of cycles I and II have shown an increase in the learning process of Mathematics about the composition of inverse functions and functions by using cooperative learning models Student Achievement Division (STAD)) the interaction of students and teachers begins with the learning process begins with questioning and group discussion. Then when the learning process takes place, the teacher manages the class interactively, guides students and motivates them to play an active role in learning activities. At the end of the lesson, the teacher and the students conclude the learning material that they have learned. And the last activity the teacher evaluates students by giving questions that are in accordance with the learning material. Based on this it can be concluded that there has been an increase in learning activities of students in Mathematics about the composition of functions and inverse functions. This can be seen from the increase in the average learning outcomes of the pre cycle, cycle I, cycle II which are illustrated in the graph below



Graph 2. Average Pre-Cycle Value Results, Cycle I, Cycle II

Based on the recapitulation graph the percentage of KKM achievement, it seems clear at the time of the pre-cycle average of only 63.89 then in the first cycle increased to 75.14 and in the second cycle increased to 83.61. This fact shows that the application of the Student Achievement Division (STAD) type of cooperative learning models in the learning process in cycle I and cycle II is able to improve student learning outcomes in mathematics about the composition of functions and inverse functions.

The increase in the average value of students is also supported by an increase in the lowest value and the highest value of students each cycle as illustrated in the following graph 3.



Graph 3. Increasing the Lowest and Highest Value for Each Cycle

From the graph 4.9 above, it is found that the lowest value in the pre cycle is 50 then increased to 60 in cycle I and increased again to 75 in cycle II. Furthermore, the highest value in the pre cycle is 80 then increased to 90 in cycle I and increased again to 100 in cycle II. This proves that the use of the Student Achievement Division (STAD) cooperative learning model is suitable to be applied to the material composition of functions and inverse functions.

CONCLUSION

Based on Classroom Action Research (CAR) carried out, it can be concluded that students are more active when learning mathematics about the composition of functions and inverse functions.

From the results of research improvement studies conducted by researchers can draw the following conclusions that:

1. Mathematics learning outcomes material composition of functions and inverse functions of students in class X IPA 2SMA Negeri 1 Tajurhalang Bogor Regency after using the cooperative learning model type Student Team Achievement Division (STAD) activities of students in following learning in the first cycle there are 61.11% or 22 active students, 22.22% or 8 students were quite active, and 16.67% or 6 students were less active during learning. After the teacher corrects the results of reflection in the first cycle, in the second cycle 88.89% or 32 active students gained during learning and 11.11% or 4 students who were quite active during the study and 0.00% or no students not active during learning.
2. The learning process will run effectively and productively if the teacher has the ability to choose various learning models and makes it easy for students with elaborations that are easy to understand and fun, able to use media, methods, and learning strategies that are appropriate to the characteristics of their students . This is evident in the process of learning mathematics about the composition of functions and inverse functions in class X IPA 2SMA Negeri 1 Tajurhalang, Bogor District, an increase after using the cooperative learning model type Student Team Achievement Division (STAD).
3. The use of cooperative learning model type student team achievement division (STAD) can be a fun learning variation for students so that it is proven to improve student learning outcomes. The magnitude of the increase in student outcomes as follows when the pre-cycle average value of 63.89 then in cycle 1 an increase to 75.14 and in cycle 2 to 83.61

REFERENCES

- Abdurrahman, Mulyono. 2003 ,*Test Prestasi*. Yogyakarta : Pustaka Belajar
 Adjie dan Maulana. 2009. *Pemecahan Masalah Matematika*. Bandung : UPI PRESS.
 Anitah, Sri, dkk (2007). *Strategi Pembelajaran*. Jakarta: Universitas Terbuka.

- Aqib, Zainal. 2016. *Kumpulan Model Pembelajaran Kreatif dan Inovatif*. Satu Nusa. Bandung BSNP.(2006). *Kurikulum KTSP Mata Pelajaran Matematika*. Jakarta: BSNP.
- Ngalimun, 2015, *Strategi dan Model Pembelajaran*, Yogyakarta, Aswaja Pressindo
- Slameto, (2007), *Belajardan Faktor-Faktor yang Mempengaruhinya*, Jakarta, Rineka Cipta.
- Suprijono, (2009)*Cooperative Learning Teori dan Aplikasi PAIKEM*.Yogyakarta Pustaka Pelajar.
- Susilawati, (2012),*Penerapan Model Pembelajaran Kooperatif Pendekatan*.
- Sofiraeni, Hj. Renny. (2004). *Model-Model Pembelajaran*. Bandung: LPMP.
- Trianto, 2007.*Model – Model Pembelajaran Inovatif Berorientasi. Konstruktivistik*, Jakarta, Prestasi Pustaka
- Istiqamah, I. (2019). Pembelajaran Menulis Karangan Deskripsi Dengan Model Kooperatif Tipe Stad Terhadap Siswa Kelas X Man 3 Aceh Utara. *Jurnal Ilmiah Didaktika: Media Ilmiah Pendidikan Dan Pengajaran*, 19(2), 216-235
- Udin. S. Winatapura, dkk. (2008).*Teori Belajar dan Pembelajaran*. Jakarta. Uni
- Wahyudin, H. Dinn, dkk. (2007). *Pengantar Pendidikan*. Jakarta: Universitas Terbuka.
- Wardani, I.G.A.K, Julaeha. S dan Marsinah.N. (2005).*Pemantapan Kemampuan Profesional*. Jakarta. Universitas Terbuka.
- Winatapura, Udin. S, dkk.(2004). *Strategi Belajar Mengajar*. Jakarta: Universitas Terbuka.
- www.rumusmatematikadasar.com/2015/01/pembahasan-fungsi-komposisi-dan-fungsi-invers.html
- Zaenal Aqib dan Ali Murtodlo, 2016, *Kumpulan Metode Pembelajaran*, Satu Nusa. Bandung
- Juita, H. R., & Widiyanto, S. (2019, March). The Effectiveness of Cooperative Learning Methods: A case study of writing learning at Junior High School. In *Second Conference on Language, Literature, Education, and Culture (ICOLLITE 2018)*. Atlantis Press.
- Widiyanto, S., & Ati, A. P. (2019). Pengaruh Metode Snow Ball Throwing Dan Minat Belajar Terhadap Keterampilan Menulis Kalimat Argumen Siswa Smk Insan Mulia Kota Bekasi. *Judika (Jurnal Pendidikan Unsika)*, 7(1), 36-45
- Widiyanto, S. (2018). Pengaruh Metode Cooperative Scrift dan Peran Orang Tua Terhadap Prestasi Belajar Bahasa Indonesia. *Khazanah Pendidikan*, 11(1).
- Widiyanto, S. (2017). Pengaruh Metode Student Teams Achievement Division (STAD) dan Pemahaman Struktur Kalimat terhadap Keterampilan Menulis Narasi. *Lectura: Jurnal Pendidikan*, 8(1).
- Widiyanto, S., & Ati, A. P. (2019). Pengaruh Metode Snow Ball Throwing Dan Minat Belajar Terhadap Keterampilan Menulis Kalimat Argumen Siswa Smk Insan Mulia Kota Bekasi. *Judika (Jurnal Pendidikan Unsika)*, 7(1), 36-45.