The Effect of Cooperative Learning Model with Two Stay Two Stray Type in Students' Learning Outcomes of 7th Grade Students State Junior High School 1 Onolalu

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Abstract: -This research aims to determine the effect of cooperative learning model with two stay two stray type in students learning outcomes of 7 th grade students of state junior high school 1 Onolalu. The type of this research is a quasi experimental study with the population of this study, namely all 7 th grade students state junior high school 1 Onolalu. The sample of this research consisted of two classes that were directly selected, namely 7th-A gradeas aexperiment class and 7th-B as a control class. The research instrument used are tes of student's learning outcomesof multiple choiceand student's activity sheet.

The research instrument used to measure students' abilities was in the form of multiple choice and student activities during the learning process were observedalternately per group.Content validity were used to determine the instrument's validity, and the test-retest technique was used to verify the instrument's reliability. Using Pearson's product moment correlation analysis, a reliability coefficient as many as0.76 was obtained.

Based on the results of the research, it was obtained thataverage score of the post-test in experimental class is 73.75 with standard deviation (s) is 9.92 and after given the treatment, the average score of the posttest in control class is 62.39 with standard deviation (s) is 10.54. According to the observation of the student activities carried out for 3 meetings, student activity is quite active.

Based on the results of one tail t-test for post-test data in experimental class and control class for probability 0.05 obtained significant 0.02 as than less 0.05. Therefore, H_o is rejected and the otherwise H_a is accepted. Based on the results of this research, it can be concluded that the cooperative learning model with two stay two stray type affected tostudent's learning outcomes of 7 th grade state junior high school 1 Onolalu.

Keywords : -Cooperative Learning Model, Two Stay Two Stray Type,Students' Learning Outcomes.

I. INTRODUCTION

According to law number 20 of 2003 (in Hasbullah 2006: 304) concerning the nationaleducationsystem, explains that: educationis "a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual, religious, control and emotional strength. self, personality, intelligence, noble character, and skills needed by himself, society, nation and state.

To realize these educational goals, of course, must be upheld by improving the quality of education. Improving the quality of national education in the broadest sense and scope is the focus of development in the field of education. In the context of efforts to realize the highest quality, the government and the community from within the ranks of the utilization of educational resources do not stop making improvements to the dimensions that determine the progress of education.

According to Amri (2013: 34) the learning model is a plan or pattern that is used as a guide in planning classroom learning or learning in tutorials and to determine learning tools including books, films, computers, curriculum and others. A professional teacher needs to understand various types of learning models in delivering the subject matter in order to improve cognitive, affective and psychomotor learning outcomes. One of the learning models in question is acooperative learning model with two stay two stray type, which aims to teach students the skills of cooperation and collaboration. In this learning, it is not enough for students to just study the material, but students must learn how to work together and be responsible in their groups.

Based on a documentation study conducted by researchers at state junior high school 1 Onolalu in academic year 2019/2020, it is known that the Minimum Exhaustiveness Criteria for natural science subjects is 67.00 while the percentage of student success is less than 60%. Based on the success of student's, it can be seen that there are still many students who do not complete the integrated science subjects. The average results test of the

nationalexamination of students at state junior high school 1 Onolalu in natural science subjects from the 2016/2017, 2017/2018, and 2018/2019 school years are 37.84, 34.84, and 33.06, respectively, which is low compared to other subjects matter.

Research tries to do a way so that students' become more active in cooperative learning withtwo staytwo stray type, because it is considered very suitable for use in learning physics, which can train students to cooperate with each other in doing the tasks given by the teacher and respect eachother friend's ideas.

Based on the description above, it is deemed necessary to conduct research with the title "the effect of cooperativelearning modelswith two staytwo stray on the students'learning outcomes of7thgradestudents' statejuniorhighschool 1 Onolalu".

II.   LITERATURE REVIEW

A. *Cooperative Learning Model*

According to Anita Lie (in Shoimin 2019: 222) the cooperative learning model is "a teaching system that provides opportunities for students to work together with fellow students in structured tasks". *Cooperative learning* can also be interpreted as a joint task structure in an atmosphere of togetherness among fellow group members. An important goal of cooperative learning is to teach students the skills of cooperation and collaboration. In this learning, students not only learn the material but students must learn how to work together in groups and be responsible in their groups.

According to Hayati (2017: 15) states that in participating in cooperative learning, several levels of skills must be possessed by students:
- Beginning level: using agreement, appreciating contributions, using a low voice, taking turns and sharing tasks, being in a group, being on assignment, encouraging participation, inviting others to speak, completing assignments on time, name and look at speaker, overcoming distractions, helping without giving an answer, respecting individual differences.
- Intermediate level: showing appreciation and sympathy, using my message, expressing disagreement in an acceptable way, listening actively, asking questions, summarizing, interpreting, organizing and organizing, checking for accuracy, accepting responsibility, using patience, staying calm.
- Advanced level: elaborating, scrutinizing, asking for truth, suggesting a position, setting compromise goals, dealing with specific problems.

Furthermore, Lundgren (1994: 5), explains some of the basic elements ofcooperative learning as follows:
- Student must perceive that they "sink or swim together"
- Student are responsible for everyone else in the group, as well as for themselves, learning the assigned material
- Student must see that they all have the same goals
- Student must devide up the tasks and share the responsibilities equally among group members
- Students will be given one evaluation or reward that will apply to all member of the group
- Student share leadership while they acquire skills for cllaborating during learning
- Students will be held ividually accountable for material worked on in cooperative group

B. *Differences between Cooperative Learning and Traditional Learning*

The following will be shown in Table 1 the difference between cooperative learning and traditional learning.

Tabel 1. Differences between cooperative learning groups and traditional groups

Cooperative learning groups	Traditional groups
Shared leadership	One Leader
Positive interdependence	No interdependence
Heterogeneous membership	Homogeneous membership
Instruction in cooperative skills	Assumption of effective social skills
Responsibility for all group members' achievement	Responsibility for individual achievement
Emphasis on task and cooperative relationship	Emphasis only on task
Support by teacher	
One group product	Direction by teacher
Group evaluation	Individual products
	Individual evaluations.

Source: Lundgren (1994: 5)

The cooperative learning model consists of many types, one of which is the two stay two stray type developed by Spencer Kagan in 1992. According to Spencer Kagan (inShoimin, 2019: 222) that "the two stay two stray type of cooperative learning model aims to provide opportunities for groups to share results and information with other groups".

C. *Syntax and Movement of Group Members of Cooperative Learning ModelOn Two Stay Two Stray Type.*

There are six mayorphases or steps involved in a cooperative learning lesson as shown in Table 2.

Table 2 Steps of the Cooperative Learning Model

Phases	Teacher Behaviour
Present goals and set	Teacher goes over objectives for the lesson and establishes learning set
Present information.	Teacher presents information to students with either demonstration or text
Organize students into learning teams	Teacher explains to students how to form learning teams and helps groups make efficient transition
Assit team work and study	Teacherassists leaning team as they do their work

Test over materials	Teacher tests over learning materials or groups present results of their work
Provide recognition	Teachers finds ways to recognize both individual and group efforts and achievement.

Source: Arends (1997: 13)

One of the special characteristicsthat distinguishes this *twostay twostray* type of cooperative learning model from other types, especially in group formation with the following strategy:

- Students work in groups of four as usual, then the teacher gives assignments in the form of problems that they must discuss the answers to.
- When finished, two people from each group left their group to meet with another group.
- The two people living in the group are tasked with sharing their work and information with their guests.
- Two people who serve as guests are required to visit all groups. When they have finished their task, they return to their respective groups.
- After returning to the original group, both the students on duty to visit and those in charge of receiving guests matched and discussed the results of their work.

The dynamics of the movement of group members in the cooperative learning model of the two stay two stray type of learning is shown in Figure 1
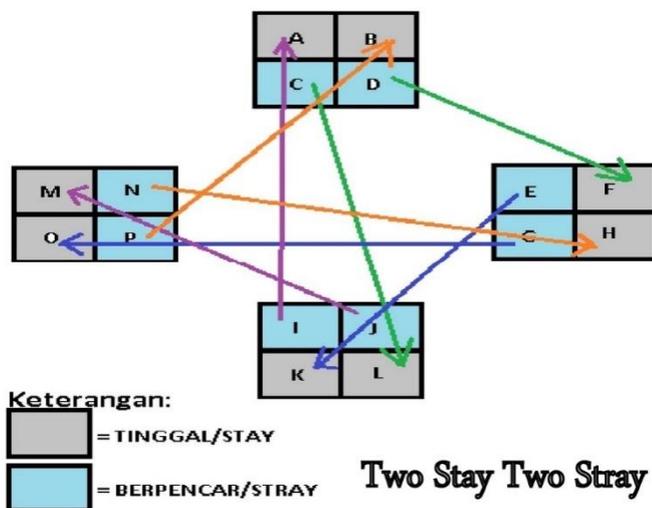
Figure 1. Movement of Group Members in Cooperative Learning Steps with Two Stay Two StrayType.

D. Team Achievement Award

After the quiz, the teacher checks the students' work and is given a number with a range of 0 - 100. Furthermore, the teacher can give awards for group success by doing the following steps.

➤ *Calculating IndividualScores*
According to Slavin1995: 80), to determine the improvemenet points of individual scores, it is calculated based on quiz scores as shown in Table 3.

Table 3.Scoring Procedures for Cooperative Learning Model of Two Stay Two Stray Type

Quiz Score	Improvement Points
More than 10 points below base	0 points
10 points below to 1 point below base	
Base score to 10 points above base	10 points
More than 10 points above base	
Perfect paper (regardless of base)	20 points
	30 points
	30 points

Source: Slavin (1995: 80)

➤ *Recognition of Cooperative Effort.*
A final important assessment and evaluation task unique to cooperative learning is recoginizinng student effort and achievement. The score is calculated by averaging the development scores of group members, namely by adding up all the individual development scores of group members. In accordance with the average group development score, the recognizing team accomplishments is shown in Table 4.

Table 4. Recognizing Team Accomplishments

Criterion (Team Average)	Award
0 ≤N ≤5	-
6 ≤N≤ 15	Good Team (Good Team)
16 ≤N ≤20	Great Team
21 ≤N≤ 30	Super Team

Source: Slavin (1995: 80)

After each group or team has obtained a predicate, the teacher gives a award to each group according to the prizes that have been prepared by the previous teacher.

E. Learning TheoryThat UnderliesCooperativeLearning

In this cooperative learning model with two stay two stray type refers to several learning theories.

➤ *Social Learning Theory*
According Bandura (in Slavin, 1997: 174) that sosial learning theory emphasizes learning through observation of others. This theory applies behavioral principles and internal mental processes, and emphasizes the influence of ideas on action. Furthermore, Bandura (in Woolfolk, 1995: 257) emphasizes that the role of observation in learning and in cognitive processes that cannot be observed, such as thinking and knowing.

Learning through observation occurs through vicarious conditioning and imitation of high-status models and involves attention, storage of information or messages, production of behavior, and repetition of behavior through reinforcement or motivation.

➢ *Learn by Observing Others*

There are two types of learning through observation or observational learning, namely learning through observation can occur through conditions experienced by others or vicarious conditioning.

• *Elements of Learning Through Observation*

✓ *Attention*

According to Woolfolk (1995: 237) that in learning, teachers must ensure that students pay attention to important parts of the lesson by givingclear emphasis by underlining important points.Furthermore, Bell Gredler and Margaret (1994: 185) argue that in this process the observer's attention to the model is influenced by several factors, including the characteristics of the model, the functional characteristics and values of the observed behavior, and the characteristics of the observer. Meanwhile, observer characteristics are related to perceptual devices, sensory capacity, observation skills, and previous experience.

✓ *Retention*

According to Woolfolk (1995: 222) in order to imitate the behavior of a model, a student must remember the observed behavior.

Remembering that includes describing the actions of the model in various ways, it can be various verbal steps or visual images or both. In order for behavior to be remembered, it needs to be repeated. Retention can be facilitated through mental repetition and actual practice.

✓ *Production*

According to Woolfolk (1995: 232), repeated practice makes the behavior can be imitated smoothly and more proficiently. The belief that a student is able to perform a task (self-efficacy) is important in this phase and affects the student's motivation to perform.

✓ *Phase of Motivation and Reinforcement*

Motivation and reinforcement can play several roles in learning through observation

If the student anticipates getting reinforcement when imitating the actions of a model, the student is more motivated to pay attention, remember, and produce that behavior. In addition, reinforcement is important in maintaining learning.

According to Bandura (in Woolfolk, 1995: 235) identify three forms of reinforcement that can encourage learning through observation. First, the observer can produce model behavior and receive immediate reinforcement. Second, reinforcement does not have to be direct like that, reinforcement can also be in the form of vicarious reinforcement. The third form of reinforcement is controlling reinforcement that comes from within oneself or self-reinforcement.

➢ *Constructivist Theory*

New cognitive learning theories in educational psychology are grouped under constructivist theory. According to the constructivist view, knowledge is the result of cognitive construction through one's activities.In constructing knowledge, Von Glassersfeld (in Wheatley, 1991: 9) explains that constructivism does not aim to understand reality, but rather to see how we become aware of something.

From this understanding, Shapiro (in Suparno, 1996: 21) argues that there are many forms of reality and each depends on the framework and interaction of the observer with the object being observed. In line with Shapiro's opinion, Abruscato (2004: 21) states that what we learn depends on what we will think and how our perceptions and thought patterns interact. In this view, constructivists argue that the truth of a knowledge construction lies in the ability of a knowledge to operate. The existence of this constructed knowledge can be used in dealing with various phenomena and problems related to that knowledge.

• *Piaget's Constructivist Theory*

According to Piaget (in Suparno, 1996: 31), the theory of knowledge is basically a theory of adaptation of the mind into a reality, as organisms adapt to their environment.

Piaget's work specifically highlights how individuals construct knowledge from their interactions with experiences and objects they encounter. Piaget argues, without interacting with objects or experiences, a person will not be able to construct knowledge in his mind.

Piaget (in Slavin, 1994: 44) suggests that humans grow, adapt, and change through cognitive development. In his view, knowledge comes from action. Cognitive development largely depends on how far the child actively manipulates and actively interacts with his environment. Piaget distinguished four cognitive developments, namely: (1) sensorimeterstages, (2) pre-operational stages, (3) concrete operational stages, and (4) formal operational stages. Cognitive development runs in all levels of a person's thought development from birth to adulthood.

The implications of Piaget's constructivist theory (in Slavin, 1994: 45) are as follows:
✓ Focus on thinking or mental processes, and not just on the results. In addition to the truth of students, the teacher must understand the process used by the child to arrive at the answer.
✓ Prioritizing the role of students in self-initiative and active involvement in learning activities. In the classroom, the presentation of ready made knowledge is not emphasized, but children are encouraged to find their

own knowledge through spontaneous interaction with their environment.
✓ Beunderstanding that there are individual differences in terms of the same developmental progress, but that growth takes place at different rate.

Piaget in the principles of learning emphasizes (1) learning through discovery and real experiences and the manipulation of tools, materials, or other learning media, (2) the role of the teacher as someone who prepares an environment that allows students to gain various learning of broad experiences.

The constructivist approach to teaching emphasizes top-down rather than bottom-up teaching. Top-down means that students start from complex problems to solve. Bottom-up means that students start with basic skills which are gradually learned to be developed into more complex skills.

- *Vygotsky's Constructivist Theory*
    Learning according to Vygotsky (in Suparno, 1996: 45) is a development of understanding. Like Piaget's constructivist view, Vygotsky's sociocultural constructivist emphasizes the importance of one's activeness in learning.However, Vygotsky emphasizes the importance of the social environment, while Piaget focuses more on the formation of individual knowledge. According to Vygotsky, learning occurs when children work or learn to handle tasks that have not been learned but the tasks are still within the range of their abilities or the tasks are in their zone of proximal development.

According to Slavin (1994: 49), "zone of proximal development is the level of development immediately above a person's present level". Vygotsky further believes that higher mental functions generally appear in conversation or cooperation between individuals before the higher mental functions are absorbed into the individual.

The main implications ofVygotsky's theory in education are as follows:
✓ Requires the class setting in the form of cooperative learning, so that students can interact with each other.
✓ Emphasizing scaffolding in learning, with students becoming more and more responsible for their own learning.

In learning, the teacher's role is as an expert "partner" for students in problem solving. The teacher's roles include (a) stimulating students' interest in cognitive tasks, (b) simplifying tasks so that students can complete them, (c) motivating students and giving instructions, (d) providing feedback, and (c) showing actions. action to be taken.

Based on the various descriptions, the theoritical frameworkis described as shown in Figure 2.
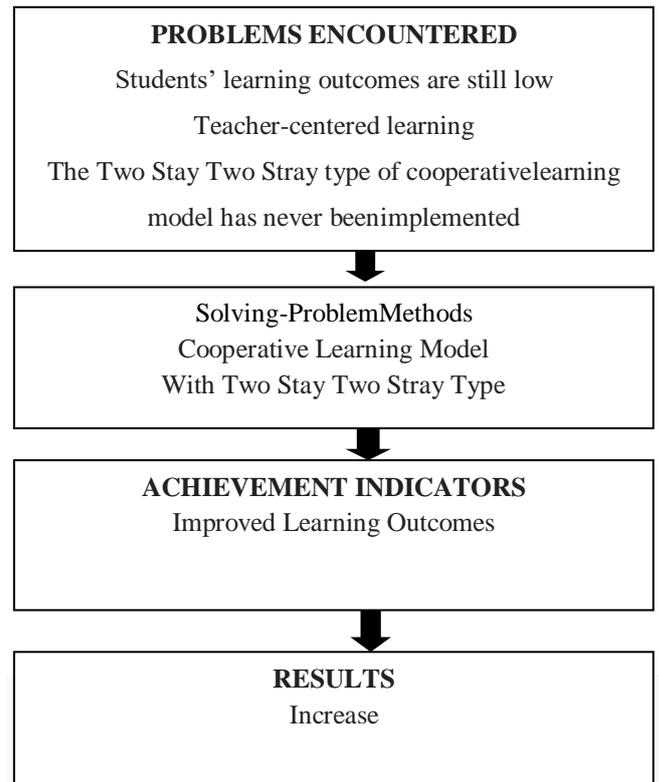
Figure 2. TheoriticalFramework

- *Research Hyphotesis*
    Based on the theoritical framework, further formulatedthis research hypothesis is "there is an effect cooperative learning model withtwo staytwo stray typeto the students' learning outcomes of natural science of physicson 7[th]studentsgrade state junior high school 1 Onolalu"

III.RESEACH METHODS

A. Population and Samples
    The population in this study were all students of 7[th]grade state junior high school 1 Onolalu, South Nias which consisted of 2 classes as many as 45 people. Meanwhile the sample of this research consisted of two classes, namely 7th-A as the experimental class and 7th-B grade as the control class, each of which amounted to 24 and 21 people whose withdrawals were carried out by non-randomsampling with purposive samplingtechnique.

B. Research Design
    The type of research conducted isa quasi-experimental with anonequivalent controlgroup design, as shown in Table 5.

Table 5. *Non Equivalent Control Group Design*

Class	Pretest	Treatment	Posttest
Experiment	O_1	X	O_2
Control	O_1	Y	O_2

Source: Tuckman (1978: 141)

Where; X represent the treatment via cooperative learning model withtwo stay two stray type, and Y denotes the treatment via traditional learning model. Meanwhile O_1 and O_2 represent are pretest and posttest.

C. Research Instruments

The instruments used were objective test questions in the form of multiple choice and observation sheets. Before the problems were tested on the research sample, it was first try out on 7th grade state junior high school 2 Onolaluto find the index of reliabilityis 0.76 classified as reliable, the validity coefficient of each item is classified as valid as evidenced by $r_{count} > r_{table}$,and the level of difficulty of the problems is classified middle.

Tests of analytical requirements such as tests of normality and homogeneity for the purposes of testing the research hypothesis and simple linear regression were also carried out. Meanwhile, observations of student activities during the learning process were also recorded and all data were analyzed using Microsoft Excel software and SPSS version 23application.

D. Experimental Procedure

The procedure for the research took the researcher through three stages, namely the pretest stage, the treatment stage and the post treatment stage. The research procedure included three stages: a pretest, a treatment, and a post treatment stage.

Stage I (Preparing): Informing the school about research activities, carry out observations, arrange research schedule, and determining the population and samples.

Stage II (Implementation): Conduct pretest in the experimental class and control class to determine the initial abilities of students, givingcooperative learning with two stay two stray in the experimental class and traditional class in control class, and conduct posttests in the experimental class and control class to determine student learning outcomes on the material being taught.

Stage III (Data Collection and Processing): Collect pretest and posttest data, data analysis, and summarizingof research results.

E. Analysis Of Data

Furthemore, test requirements analysis (normality test, homogeneity test) as well as research hypothesis testing and simple linear regression test, which were also analyzed using Microsoft Excel software and SPSS version 23 application. The average and standard deviation were analysis by using the descriptive statistics utilized to answer the study question while inferential statistics such as t-test statistics at the 0.05 level of significance,used to test hypotheses and answer research problems.

F. Research Hypothesis

Hypotheses were analyzed using t-test statistic, at the 0.05 level of significance, all hypotheses were teste:

$H_o : \mu_1 \leq \mu_2$, there is no difference students' learning outcomes of 7^{th}gradestudentsstate 1 OnolaluJuniorHigh School with cooperativelearning modelwithtwo staytwo stray type

$H_a : \mu_1 > \mu_2$, there is a difference students' learning outcomes of 7^{th}gradestudentsstate 1 Onolalujuniorhigh school with cooperativelearning modelwithtwo staytwo stray type.

Test criteria, H_0 is rejected if $t_{count} > t_{(1-\square\square}$, sig. ($p_{value}$) > 0.05, with df = $(n_1 + n_2 - 2)$, and the otherwise H_a is accepted.Hypothesis t'Y'Y'Yesting was carried out based on the results of research data analysis by using SPSS version 23application.

IV. RESULTS

Based on the analysis of the research data, the summary of the pretest and posttest scores is shown in Table 6.

Table 6. Average Score and Standard Deviation
forExperiment and Control Class

Data	Class			
	Experimental		Control	
	x_e	s_e	x_c	s_c
Pre Test	36.25	7.42	39.57	9.28
Post Test	73.75	9.92	62.39	10.54

Source: Output data processing of SPSS version 23.

Where,x_e and x_c are represent average score of experiment class and control class, meanwhile $s_e$and $s_c$represent standard deviation of experimen class and control class.

A summary of the results of the normality test analyzed with the help application of Output data processing of SPSS version 23is shown in Table 7.

Table 7. Data Normality Test

Data	Class	Sig. (p_{value})	Probability	Conclusion
Pretest	Experiment	0.20		
	Control	0.05	0.05	Normal
Posttest	Experiment	0.20		
	Control	0.112		

Source: Output data processing of SPSS version 23.

Based on Table 7, it is found that the pretest and posttest data are normally distributed. This can be seen from the significance value of 0.05 which indicates that the data is normally distributed**.** Furthermore, a summary of the results of the homogeneity test is shown in Table 8.

Table 8. Summary of Homogeneity Test

Data	Class	Significant	Probability	Conclusion
Pretest	Experiment	0.63	0.05	
	Control			Homogeneous
Posttest	Experiment	0.59	0.05	
	Control			

Source: Output data processing of SPSS version 23.

Based on Table 8, it was found that the samples in the experimental class and control class came from a homogeneous population. There is a significant p_{value} for the pretest of 0.63> 0.05 and a significant p_{value} for the posttest of 0.59 > 0.05.

The hypothesis test used is a twotail t-test in the experimental class pretest and control class pretest, and the one tail t-test in the experimental class posttest and control class posttest as shown in Table 9.

Table 9 Summary of HypothesisTest

Data	Class	X	Sig. (p_{value})	t_{table}	Conclusion
Pretest	Experiment	36.25	0.24	0.05	H_o accepted
	Control	39.56			
Postes	Experiment	73.75	0.02	0.05	H_a accepted
	Control	62.39			

Source: Output data processing of SPSS version 23
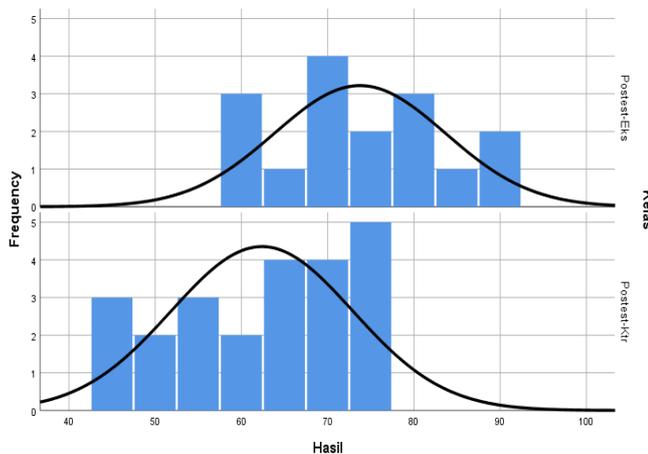
Figure3.Diagram of Posttest Results ofExperiment Class and Control Class

Based on Table 9and Figure 3,note that the data posttest experimental class and control class is the sig.(p_{value})<0.05, so that H_a receivedand the otherwise of H_o rejected, so we concluded that there is significant influence cooperative learning model with two stay two stray type to the students'learning outcomes of7th grade state junior high school 1 Onolalu.

Based on the results of the study with posttest averagescore is 73.75 and the average score of the observation sheet for the twostay twostray cooperative

learning model is 71.48, a simple linear equation is obtained, namely Y = 13.16 + 0.85X. The value of 0.85 is the coefficient of the X-variablethat effects the direction of linear regression and states the change in the average variable Y. With a positive value of the coefficient of the X-variable, it states that there is a significant of effect cooperative learning model with the two stay two stray typeto students'learning outcomes of 7thgrade state junior high school 1 Onolalu.

V. DISCUSSIONS

The pretest score of students in the experimental class had aaverage score of 36.25 with a standard deviation (s)is 7.42 and in the control class had a mean of 39.57 with a standard deviation (s)is 9.28.

Based on the results of the calculation of the twotail t-test hypothesis, it is obtained that $t_{sig. (p_{value})}$ is 0.24 and t_{table} is 0.05, then $t_{sig. .(p_{value})}>t_{table}$, so it can be concluded that the initial ability of students in the experimental class is the same as the initial ability of students in the control class. before being given treatment. Moving on from the initial abilities of the same students, the research was continued by giving treatment through cooperative learning model with twostaytwostray typefor the experimental class and taditional learning models in the control class as a comparison of results. So that the posttest scores of students in the experimental class with an average score of 73.75 and a standard deviation (s)is 9.92 were obtained, while the control class average scoreis 62.39 with a standard deviation (s)is 10.54.

Based on the results of the analysis of the one-tail t-test hypothesis, it is obtained that $t_{Sig..(p_{value})}$ is 0.02 and t_{table} is 0.05 with $t_{count} < t_{table}$, then Ha is accepted and the otherwise H_0 is rejected, so it can be concluded that there is a significant effect of cooperative learning model with two stay two stray typeto the natural science learning outcomes of 7th grade students of junior high school 1 Onolalu on Newton's law subject matter. In the experimental class, the observation of cooperative learning model with two stay two straytypeobtained the student' average score is 71.48. Based on the posttest value and the value of the student's activity, a linier regression test of the correlation of each variable with the results obtained Y = 13.16 + 0.85 X, so that from the observations made by the observer, it was found that the student's activity had a positive increase.

VI. CONCLUSION AND SUGGESTIONS

A. Conclutions
There is a significant effect cooperative learning model withtwo staytwo stray typeto the students' learning outcomes of natural science of physicson 7thstudents grade state junior high school 1 Onolalu".

B. Suggestions

Based on the results of the research and discussion as well as conclusions, the authors would like to give suggestions to carry out further research to students at different levels of education units, and by taking a larger sample.Thus, this learning model is expected to be used as one of the important indicators in the preparation of the curriculum, especially in physics lessons that are even better in the future.

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