

## The Effect of the Cooperative Learning Model of the Two Stay Two Stray Technique on the Communication Skills of Students



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**ABSTRACT:** This study aims to determine the effect of the cooperative learning model of the two stay two strays (TSTS) technique on the communication skills of students. This research is quantitative research with quasi-experimental methods. The design used in this study is Nonequivalent Control Group Design. The subjects of this study were students of grades XI IPA\_3 and XI IPA\_4 Public High School 6 South Tangerang. The results showed that the communication skills of students with the cooperative learning model of the TSTS technique obtained a pretest score of 55.7 and a posttest of 84.97. The communication skills of students in the experimental class increased with an N-Gain of 0.65 in the medium category and the control class obtained an average pretest score of 51.5 and an average posttest score of 71.7 while the N-Gain gain of 0.38 in the medium category. Based on the results of the analysis obtained t count 3.11. It was concluded that the cooperative learning model of the TSTS technique affects the communication skills of students. The implementation of the learning process using the cooperative model of the TSTS technique went very well with an average percentage of teacher activity implementation of 96.5% and students of 89.5% very good criteria. The response of students to the learning process using the cooperative learning model has an average of 80.15% with strong criteria. So the cooperative learning model of the TSTS technique affects the communication skills of students.

**KEYWORDS:** Communication Skills, Cooperative Learning, Two Stay Two Stray

### I. INTRODUCTION

Education is a conscious and planned effort that is sought so that students are active in developing self-abilities, namely, developing the ability to think, emotional, social, spiritual, and moral values, and life skills. Students are expected to be able to run life by the expectations of themselves, family, community, nation, and state. The paradigm in education and learning demands the activeness of learners, but the facts in schools are different.

Based on the results of direct interviews with several biology teachers of Public High School 6 South Tangerang, some information was obtained. The first information, namely in biology learning, is still dominant in the application of conventional teacher-centered teaching even though sometimes it applies to innovative learning such as inquiry learning or problem-based learning (Yew & Goh, 2016).

Learning with the lecture method, teachers do not provide opportunities for students to be more active in building their affective structures, as well as the lack of opportunities provided by teachers in growing students' interests and communication skills. The second information is about students' low communication skills. This is obtained from the results of the evaluation carried out by the teacher at the end of the learning material using essay questions. From the average results, each class has an average below KKM. This shows that students have not been able to answer the description form questions correctly. Furthermore, material that often gets a low KKM value is dominant in even semester material, namely material about organ systems and one of them is respiratory system material.

The results of interviews with several class XII students obtained information about biology lessons. Some students still think that biology lessons are boring lessons. This is because biology lessons themselves have many scientific names that are difficult to understand. In addition, material that explains organ systems in humans such as circulatory system material, five

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sensory systems, and respiratory system. Because the material has a lot of reading that requires students to understand every process that occurs in the organ system. This tends to make students easily bored (Wolff et al., 2015).

Good communication skills are needed by students to support problem-solving skills. The teaching and learning process that takes place should activate students to construct knowledge. Students teach each other with other fellow students so that students will have a confident attitude and easily exchange ideas with their friends, even many studies suggest that teaching with peers is more effective than teaching by teachers so an education is needed that is in line with the 2013 Curriculum where learner-oriented learning is included in communicating (Retnawati et al., 2016).

One way to communicate in learning is through group learning, discussions, and presentations. This activity has often been carried out in learning, especially learning biology, but it is still lacking in its management. In the discussion activity, a group of students were asked to present certain material in front of the class, while the other students sat in their respective chairs. Some students are just spectators or do other activities. This is what makes some students passive in classroom learning activities.

When the question and answer session in the discussion opened, a small number of students asked or responded. This is because the usual discussion methods in learning are less interesting for students, so biology is considered a difficult, scary, and boring lesson. This can result in students becoming less interested in learning. This situation has implications for the low communication skills of students (Kyaw et al., 2019): Communication skills are very necessary, especially in classroom learning activities (Khan et al., 2017). With good communication skills, learning activities will be more fun. To improve the communication skills of students, active learning is needed (Quail et al., 2016). Active learning can be done with group discussions so that students will be trained in good communication.

The respiratory system is one of the concepts in Biology lessons in high school and is listed in class XI. The respiratory system is a very important material because it is related to the process of body activities at all times, namely, humans need healthy air that is useful for the respiratory system in the body. In addition, the respiratory system material has a wide and many material coverage to be understood by students such as the name of the organ, the respiratory process that takes place, to diseases that attack the respiratory organs. Therefore it requires an appropriate learning model. So that in the selection of the appropriate learning model, it is expected that the delivery session can provide various learning experiences, understand the concept of the material and have good communication skills (Siddiq et al., 2016).

In the process of teaching and learning activities in schools, some teachers use the lecture method in the respiratory system material. Some teachers assign by reading textbooks only, without any interaction between teachers and students and students with students. Students cannot communicate and are only quiet or passive learners. Paying attention to these problems, teachers as teachers, but do not pay attention to the learning process that strives for active learning, so that there is interaction between teachers and students and students with students, so that the learning model that can bridge these needs is cooperative (Gillies, 2016).

The application of a cooperative learning model is very appropriate to use because the cooperative learning model contains a shared attitude or behavior in working among others in an orderly structure of cooperation in a group, consisting of two or more people, and work success is strongly influenced by the involvement of each group member. This cooperative learning model is based on constructivist learning that prioritizes the active role of learners in their learning. This cooperative learning model has various techniques, one of which is the two stay two stray technique (Aswar, 2020). From the use of the two stay two stray technique, students are required to be able to explain and write down the material learned and obtained during this technique (Mantasiah, 2018). Therefore, students are expected to be able to communicate in writing about the material of the respiratory system, especially in the respiratory mechanism and disorders that occur in the respiratory system.

The cooperative learning model of the two stay two stray technique provides opportunities for students to improve communication skills in expressing ideas or ideas by sharing the results of information accompanied by argumentation in group discussions or between groups. This is to the demands of Basic Competence (KD) in respiratory system material, namely, students can analyze the relationship between the structure of the tissues that make up organs and explain functional disorders that can occur in the respiratory system. Therefore, the use of a learning model with the two stay two stray technique in Biology subjects on respiratory system material is expected to have a good influence on the communication skills of students. Based on the problems that have been developed previously, the purpose of this study is to determine the Effect of the Cooperative Learning Model of the Two Stay Two Stray Technique on Student Communication Skills.

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## II. MATERIAL AND METHODS

This research is quantitative research with quasi-experimental methods. The design used in this study is Nonequivalent Control Group Design. This study involved two classes, namely the experimental class and the control class, where these two classes were given different treatments. The experimental group was given treatment using cooperative learning of the two stay two stray technique, and the control group was given treatment using conventional learning. The population of this study was students of Public High School 6 South Tangerang. The sample in this study amounted to 72 people taken using random sampling techniques. The subjects were divided into 2 groups, namely an experimental group of 37 students and a control group of 35 students. This research has received approval from all samples who have filled out a statement of ability to become a research sample and have met the requirements of the research code of ethics. Data collection techniques in this study are tests and measurements. The instrument used in research is in the form of an essay test and uses a rubric as a measure in providing an assessment of written communication skills. The assessment criteria for students' written communication skills are given a maximum score according to the indicators of communication skills and indicators on the respiratory system material. The study also used observation sheets to determine learning activities using the two stay two stray technique. As well as questionnaires to find out the response of students to the learning model used. After being given treatment, it ends with taking post-test scores to determine the effect of the cooperative learning model of the two stay two strays (TSTS) technique on the communication skills of students. Data analysis techniques in this study use descriptive analysis tests, followed by pre-analysis tests, namely with Normality Test and Homogeneity Test, and continued with T-Test (Independent) and N-Gain test with Microsoft Excel.

## III. RESULTS AND DISCUSSION

### Results

After conducting research located at Public High School 6 South Tangerang, researchers obtained data that had been collected from the results of tests on students' communication skills, observation sheets, and questionnaires. The number of questions used in this study was 12 questions with essay forms given in two classes, namely classes namely in class XI Science 3 and XI Science 4. The data obtained are as follows:

#### a. Descriptive Analysis

##### Pretest average score

Pretest which is carried out as a benchmark in research to determine the extent of students' communication skills. The average score of the pretest provides an overview of the initial ability of students before learning, especially in the respiratory system material. The results of obtaining student pretest scores in experimental and control classes can be seen in Table 1 as follows.

**Table 1. Pretest Results of Student Communication Skills**

Class	Top marks	Lowest score	Sum	N	Average pretest
Experimental Class	75,00	35,42	2062,5	37	55,7
Control class	70,83	33,33	1829,8	35	52,2

The pretest results in Table 1 show that the average of the control class and the experiment obtained a low average. This gives the idea that the written communication skills of the two classes are still low. After obtaining the average pretest results, normality and homogeneity tests are carried out as follows.

#### b. Analysis Prerequisite Test

##### 1. Normality Test

The Normality Test used in this study is the Chi-Squared Test. The Normality Test is used to determine whether the data comes from a normally distributed population or not, provided that the data comes from a normally distributed population if it meets the criteria of  $X^2 \text{ count} < X^2 \text{table}$  is measured at a certain level of significance and confidence level. The calculation results of the Normality Test between the experimental class and the control class can be seen in Table 2 as follows:

**Table 2. Normality Test Calculation Results**

Class	N	$X^2 \text{ count}$	$X^2 \text{table}$ ( $\alpha = 5\%$ )	Conclusion
Experiment	37	6,7125	11,07	Data comes from normally distributed Population
Control	35	6,145	11,07	

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Table 2. Shows that the results of the Normality Test at a significant level of 5% obtained results with a normal distribution. These results suggest that both classes belong to normally distributed populations.

### 2. Homogeneity Test

The homogeneity test or similarity test of two variances is used to find out whether both sample groups come from the same population (homogeneous) or not. The test criteria used are that both groups are said to be homogeneous if  $F_{\text{calculate}} \leq F_{\text{table}}$  are measured at a certain significance and level of confidence. The results of the calculation of the Homogeneity Test in the sample group can be seen in Table 3. as follows.

**Table 3. Homogeneity Test Calculation Results**

Group	N	F count	F table	Conclusion
Experiment	37	1,07	2,30	The sample comes from the same or homogeneous population
Control	35			

The calculation results of the Homogeneity Test are obtained by calculating the results with  $F_{\text{calculate}} \leq F_{\text{table}}$ . These results indicate that the sample came from the same or homogeneous population.

### c. Test the Hypothesis

After testing the analysis requirements, then hypothesis testing is carried out. Testing was conducted to determine whether there was an influence of the cooperative learning model of the two stay two stray technique on the communication skills of students.

Hypothesis testing is tested using the t-test, with the test criterion that is, if count < t table then H<sub>0</sub> is accepted and H<sub>1</sub> is rejected. Meanwhile, if the t count ≥ t table, H<sub>1</sub> is accepted H<sub>0</sub> is rejected, at a confidence level of 99% or a signification level of 1%. Based on the calculation results, a t count of 3.11 and a t table of 2.66 were obtained. The results of these calculations show that t calculate ≥ t table so that H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, or in other words, there is an influence of the cooperative learning model of the two stay two stray technique on the communication skills of students.

### d. N-Gain Test

#### 1. Analysis of Student Communication Skills Using the Cooperative Learning Model of the Two Stay Two Stray Technique on Respiratory System Material.

The results of the analysis of pretest, posttest, and N-Gain data obtained from the class using the cooperative model of the two stay two stray technique on respiratory system material can be seen in Table 4 as follows.

**Table 4. Average value per indicator of students' communication skills using the cooperative learning model technique. Two Stay Two Stray**

Communication Proficiency Indicator	Pretest	Posts	N-Gain	Information
Create a blurb	19,5	27,5	0,6	Keep
Reading Charts	3,8	6,5	0,65	Keep
Reading Images	1,5	3,24	0,70	Keep
Change the shape of the presentation	2	3,46	0,73	Tall
Average			0,68	Keep

The data in Table 4 shows that the results of obtaining Posttest scores in experimental classes have increased from pretest scores with an average calculation result of N-Gain of 0.68 with a medium category, this shows that students have improved written communication.

#### 2. Analysis of Student Communication Skills Using Conventional Learning Models on Respiratory System Material

Data from the pretest, posttest, and N-Gain analysis results obtained from the control class with conventional learning on respiratory system material can be seen in Table 5 as follows.

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**Table 5. Average Value Per Indicator of Student Communication Ability with Conventional Learning**

Capability Indicators Communication	Pretest	Posts	N-Gain	Information
Create a blurb	19,6	1 8,6	0,08	Low
Reading Charts	1,7	2,1	0,06	Low
Reading Images	1,1	2,9	0,62	Keep
Change the shape of the presentation	1,9	3	0,52	Keep
Average			0,38	Keep

The data in Table 5 show that in the control class, the calculation of N-gain is obtained on average with medium criteria. But it is lower when compared to the experimental class. In addition, in the indicators-making descriptions, there is a decrease in post-test results. This is because students are less focused on doing problems. The response of students in the respiratory system material using the cooperative learning model of the two stay two stray technique was obtained based on taking from the results of student questionnaires. Data samples were taken from as many as 37 students in an experimental class using the cooperative model of the TSTS technique and 35 students using the lecture model as a control class. At the end of the learning process, students are instructed to fill out the response questionnaire, the response questionnaire includes all indicators that have been determined by the learning model that has been used in the respiratory system material, the response questionnaire is used as a benchmark for student response after learning using the cooperative model of TSTS techniques and learning using the lecture method.

Learner response data has been analyzed using Likert scale calculations. The response of students using the cooperative learning model of the TSTS technique was obtained on average by 80.15% with the strong category and in the control class using the lecture method obtained an average of 54.5% with the medium category. The results of the comparison of student responses in experimental and control classes can be seen in Table 6 as follows.

**Table 6. Recapitulation of Student Response Results**

No	Indicators	Experimental Class	Category	Control Class	Category
1	Learners' Response to biology lessons	80,2%	Strong	59,9%	Keep
2	Student response to learning with lecture method (conventional)	-	-	48,34%	Keep
	Student response to learning with the cooperative learning model of the two stay two stray technique	84,7%	ery powerful	-	-
3	Demonstrate students communication skills	75,55%	Strong	55,3	Keep
Average		80,15%	Strong	54,5%	Keep

### DISCUSSION

The results of the research will be described into three sub-chapters consisting of:

#### 1. Learning in the Experimental Class with the Cooperative Model of the Two Stay Two Stray Technique and Control Class with Conventional Learning

The implementation of learning using the cooperative model of the TSTS technique is observed directly by observers, the cooperative model has stages carried out by students and teachers during learning. The learning stages will be observed using teacher and student observation sheets. According to (Putri et al., 2020) Observation sheets are used to determine the increase in teacher and student activities in learning activities.

The implementation of the learning process using the cooperative learning model was carried out in three meetings in class XI Science 3. The results of the teacher's implementation observation at the first meeting of learning were not carried out optimally, the stage that was not carried out was that the teacher did not provide perception to students. Giving apperception is an important thing to be conveyed by teachers, namely in the form of questions related to the material to be presented,

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teachers need various efforts to foster readiness in students to receive lessons. In addition, the provision of apperception is also used to carry out the next learning steps, namely motivating students to be ready to learn. This is in line with research conducted by (Carless & Boud, 2018) that the provision of apperception is very important to build the enthusiasm of students in learning so that they can focus their attention on learning.

The implementation of learning at the second meeting was achieved to the maximum, meaning that all stages or learning steps were passed and the criteria were very good. This happens because teachers and students follow every step and learning process conductively. This is in line with research conducted by (Nidzam & Ahmad, 2017) that a conducive classroom environment is an important dimension that must be considered. The learning environment that is created plays the role of students as learning subjects, and a sense of comfort, security, and enjoyment can be felt by students (Tisza & Markopoulos, 2021).

In the implementation of learning in the third meeting there are learning steps passed, after being analyzed on the teacher's observation sheet there are stages that are missed in providing motivation. This motivation is something that must be conveyed by teachers to provide enthusiasm and encouragement so that students are more active in learning. According to (Lin & Chen, 2017) Motivation can also function as a driver of student effort in achievement and students can select actions to determine what they must do so that it is beneficial for the goals they want to achieve.

In the implementation of the cooperative learning model with the two stay two stray technique several stages are not carried out by students, after being analyzed on the observation sheet, namely, students do not grow motivation in students because students in passive classes mean that students just stay silent and observe without answering questions from teachers related to the topic to be discussed. Learners must have good motivation when starting to learn. In addition, students do not listen to perceptions, some students do not listen to learning objectives and students do not make conclusions at the end of learning.

In the second meeting, there was a learning stage that was not carried out, namely, students did not give conclusions at the end of learning and did not answer greetings from the teacher, this was not carried out because class hours were not conducive so that the learning that took place was not carried out optimally. The percentage of meetings of the three student implementation activities reached 100% with very good criteria, meaning that all stages or steps in the learning process using the two stay two stray technique went well.

The implementation of learning in the control class has good criteria. At the first meeting, some stages or steps were not carried out by the teacher, meaning that the learning stages were not achieved optimally, after analysis some stages were passed including the teacher did not convey learning objectives and evaluate learning. According to (Al-fraihat et al., 2019) Giving evaluations is very important for teachers to do because by providing evaluations, students can find out the extent of success that has been achieved during learning. At the second meeting on the implementation of activities, teacher and student activities had good criteria.

The second meeting in its implementation had several stages passed by teachers and students, namely the teacher had not provided opportunities for students to ask questions and give awards to students. While students are less active in giving opinions or questions and do not answer questions from the teacher. According to research conducted by (Alawamleh & Al-twait, 2020) That giving questions to students is important to improve students' communication skills, besides that teachers need to improve their knowledge of questioning skills.

The third meeting resulted in the implementation of teacher and student learning and saw an improvement from the first and second meetings, but there were some missed learning steps, namely giving awards and evaluations after completing learning, this was due to insufficient time so that learning did not run optimally. Evaluation is an important factor in lesson planning (Xian et al., 2018). The evaluation aims to assess whether a program is implemented according to plan and achieves the expected results or not

### **2. Communication Skills of Students in Experimental and Control Classes**

Communication skills are very necessary, especially during learning activities. The communication skills of students are analyzed based on the pretest and posttest scores carried out at the beginning and end of learning activities, from the N-Gain results obtained after conducting the pretest and posttest to see the comparison of students' cognitive learning outcomes. The value is calculated using the N-Gain formula to find out how much the increase or success of students during the learning process in answering questions (Antika, 2019). The achievements obtained by students are detailed based on the Competency Achievement Indicators (GPA) of respiratory system material.

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Data from the analysis of students' communication skills using the cooperative learning model of the two stay two stray technique showed that the increase with an average pretest of 55.7 and an average posttest of 84.97 and N-Gain produced of 0.68 in the medium category. According to (Foronda et al., 2016) The communication skills of students can provide an atmosphere of active learning, where students have confidence in expressing their aggression and become a means of developing empathy in respecting differences of opinion.

The results of the per-indicator question analysis on the communication skills of students have a medium category, except for the indicator of changing the form of presentation, which has a high category. That is, in this written communication ability students tend to be able to change the form of presentation to change into the form of pictures. Based on the results of N-Gain shows success in the process of achieving student learning outcomes. The causative factor of the results of student learning achievement is the selection of appropriate learning models. The teacher plays a major role in the learning process. A teacher's intelligence in determining the learning model will be apparent if the learning model used is by the learning material discussed.

The learning model must be by the characteristics of the learners involved in the learning process. As much as possible the learning model used can provide direct experience to students. This is in line with the opinion (Lai, 2015) that the use of effective learning models will facilitate teachers teaching. Learning activities will also be fun for teachers and students.

The communication ability of students without using the cooperative learning model of the two stay two stray technique in the control class has improved. The increase was obtained based on learning outcomes using the lecture method, and posttest results of 71.7 with good categories. The increase in posttest results obtained by the control class was lower than that of the class using the cooperative model of the TSTS technique.

According to (Singh et al., 2020) The use of less varied learning models can lead to lower learning outcomes because learners are less active during the learning process. The data from the calculation of N-Gain showed that in the control class, the average obtained by 0.38 had medium criteria, but lower than the average obtained in the experimental class. The score per indicator of students' communication skills in making descriptions and reading graphs shows low criteria while in reading pictures and changing the form of presentation the resulting criteria are medium.

The low learning outcomes of students due to a lack of understanding of the material obtained make it difficult to express ideas and ideas in the form of written tests in the form of questions that include indicators of communication skills. Using a more teacher-centered lecture method, so that learners feel bored and cannot understand widely about the respiratory system material.

Learning conditions that tend to be passive cause students to be unable to explore creative ideas in solving the problems presented (Tseng et al., 2016). The lecture method and less involving students in the control class make students more passive and difficult to understand the material presented. The learning process carried out by a teacher must pay attention to the components of learning. The learning component consists of learning objectives, teachers, learners, methods, media, learning resources, and evaluation, from these components each other support each other in achieving learning success.

### **3. Student Response to the Learning Model**

The results of research data processing in experimental classes using cooperative learning models, two stay two stray techniques, and control classes using lecture methods on respiratory system material showed significantly different results. The results showed that in the control class or without using the cooperative learning model of the two stay two stray technique, the response of students to the implementation of learning with an average value of 54.5% with a moderate category.

Different results were seen in the experimental class where the overall response of students to learning with the cooperative learning model of the two stay two stray technique had an average of 80.15% or could be categorized as strong. This average indicates that students respond well and like the cooperative learning model of the two stay two stray technique when the learning implementation process takes place. This is in line with the opinion (Fauzan & Fikri, 2022) which states that the selection of the right learning method by the teacher will provide a good response and increase student learning activity. Not only the selection of learning methods and models by teachers, but positive responses also affect the mastery of good learning and processing methods or models by teachers.

The response of students to cooperative learning of the two stay two stray technique can be caused by the active role of students during learning, students feel involved in the learning process, and this is inversely proportional to the implementation of learning in the control class. Learning with the cooperative model of the two stay two stray technique students are more motivated and enthusiastic in learning activities. Because students feel the need and are well motivated, students will be able to understand well the material learned and of course, will easily apply it in the form of oral and written

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communication. This is my opinion (Harandi, 2015) That if motivation grows in students, then students will be happy in carrying out the learning process, optimal and satisfying results, and achieving learning goals optimally according to what is contained in the curriculum.

### IV. CONCLUSION

Based on the results of the study, conclusions can be drawn in this study: Learning using the cooperative model of the two stay two stray technique is better than learning using the lecture method. This is evidenced by the acquisition of the t-test with t count results greater than the t table, namely t count 3.11 and t table 2.66. Then there is a significant difference. The implementation of learning using the cooperative learning model of the two stay two stray technique on respiratory system material in teacher and student activities has a very good category. While the implementation of learning using the lecture method in teacher and student activities has a good category. The response of students in the experimental class has a strong category. While the average acquisition of student responses in the experimental class was better than the responses of students in the control class.

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