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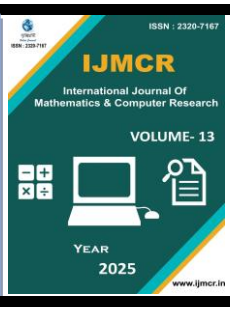

The Effect of Two Stay – Two Stray (TS-TS) Model on Students' Mathematical Connection Ability and Self Efficacy

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ABSTRACT

Mathematical connection ability and self-efficacy are two crucial aspects in mathematics learning that significantly influence students' academic achievement. In an effort to improve both aspects, an innovative learning model is needed. This study aims to investigate the effect of the Two Stay-Two Stray (TS-TS) model on students' mathematical connection ability and self-efficacy. This study uses a quantitative research method and a quasi-experimental research type with a One-Group Pretest-Posttest Design research design. The Two Stay-Two Stray (TS-TS) model is said to be influential if there is a significant difference between the pretest and posttest results. Data analysis was carried out in two stages: first, a paired sample multivariate analysis test (Hotelling's T2) was applied to examine the effect of the Two Stay-Two Stray (TS TS) model on both variables simultaneously. Second, a paired sample t-test was applied to evaluate the differences between the pretest and posttest in more detail on each variable individually. The results of the study showed that the TS-TS model had a significant effect on students' mathematical connection skills and self-efficacy simultaneously, as evidenced by the results of Hotelling's T2. In addition, the results of the paired sample t-test proved that there was an increase between the pretest and posttest in each variable after the application of the TS-TS model. This proves that the Two Stay-Two Stray (TS-TS) learning model has an effect on students' mathematical connection skills and self-efficacy.

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KEYWORDS: Mathematical connection ability; Self-efficacy; Two Stay-Two Stray (TS-TS).

INTRODUCTION

Mathematics is one of the subjects that plays a crucial role in shaping the mindset of the 21st century. According to Freudenthal (2002), mathematics is a human activity, and this view suggests that mathematics is not a finished product but rather a form of activity or process. Mathematics involves many fundamental sciences, fulfilling the needs and abilities of every individual (Kaçan et al., 2020). Excellent mathematics education requires effective teaching that engages students in meaningful learning through individual and collaborative experiences that enhance their ability to understand mathematical ideas (Koskinen & Pitkäniemi, 2022).

The purpose of teaching mathematics in schools is not only to help students understand the existing mathematical content but also to ensure that they develop mathematical skills that will be applied in this rapidly advancing era. According to (Christidamayani & Kristanto, 2020), mathematics education aims to solve mathematical problems. As stated by the National Council of Teachers of Mathematics (NCTM, 2000), school mathematics standards are divided into two categories: content standards and process standards. Process standards include problem-solving, reasoning and proof, connections, communication, and representation. One of the mathematical skills that students are required to possess, based on the process standards presented by the NCTM, is the ability to make connections.

In general, mathematical connections involve both internal links (within mathematics) and external links (beyond mathematics). The ability to make mathematical connections refers to the ability to relate conceptual and procedural knowledge, apply mathematics to other topics, use mathematics in various life activities, and understand the relationships between different topics in mathematics (Coxford, 1995). According to Haylock & Thangata (2007), mathematical connections are a process in mathematics learning that allows students to develop their understanding of mathematical concepts while recognizing the relationships

between real-world experiences, language, images, and symbols in mathematics.

The current condition shows that students' mathematical connection skills have not yet reached an optimal level. Although some students have succeeded in mastering mathematical concepts well, this is not always followed by adequate ability to connect the concepts they have learned to other contexts. The skills in connecting these mathematical concepts, both internally, such as the relationship between concepts in one topic, and externally, such as the application of concepts in real situations or other fields of science, are still underdeveloped. This is in line with research conducted by Septianingrum et al.,(2019) that students still have low mathematical connection skills, indicated by students having difficulty connecting between concepts.

Along with that, at the stage of learning mathematics, student activities are greatly influenced by students' self-confidence in their own abilities in dealing with problems related to real life. This is important so that learning objectives can be achieved, which is known as self-efficacy. According to Cai et al., (2019) self-efficacy is the belief and hope of each student regarding the ability they have to achieve the expected learning goals. This is in line with research conducted In'am, (2014) that motivation and self-efficacy are part of one of the crucial elements in the learning process that plays a role in determining the achievement of expected learning outcomes.

Self-efficacy is one of several forms of self-confidence in an individual's ability to do or complete mathematics assignments (Bhowmick et al., 2017). Self-efficacy can also have an effect on the activities carried out by students, where if students have low self-confidence in learning, students tend to always distance themselves from tasks, but if students have high self-confidence, students will be more enthusiastic and active in participating in the learning process (Mccoach et al., 2013). In line with that, Schunk (2012) said that self-efficacy is related to a person's belief in their actions regarding their abilities and beliefs about the results achieved because of their actions.

Various methods are needed to improve cognitive and non-cognitive aspects, one of which is by using a learning model that can attract students' interest. One of these learning models is the Two Stay-Two Stray (TS-TS) type cooperative learning model. This model is part of a cooperative learning approach that emphasizes the importance of interaction and collaboration between students in the learning process. According to Gull & Shehzad (2015) Two Stay-Two Stray (TS-TS) has succeeded in improving students' mathematical connection skills and facilitating the exchange of information between groups. Two Stay-Two Stray (TS-TS) is a cooperative learning method that can encourage student motivation by emphasizing individual responsibility for personal learning as well as contribution to the group (Elisabet et al., 2020). In addition, Gillies (2016) said the Two Stay - Two Stray (TS-TS) model is one of the techniques in cooperative learning used to increase interaction and collaboration between students. After the initial discussion, two students from the group remain in their group to explain, while the other two students visit other groups to learn about what has been discussed by other groups.

At the beginning of the learning process, the teacher first introduces the basic concept of plane shapes including various shapes such as squares, rectangles, triangles, and circles. Each plane shape is briefly explained regarding its properties, area and circumference formulas, and examples of its use in various aspects of daily life. After students have a general idea of plane shapes, the teacher then divides students into small groups of four. The learning process with the Two Stay-Two Stray (TS-TS) model begins when two students in each group act as "stays" and are tasked with staying in their places to explain the results of their group discussions. The other two students have the role of "strays" who will move to other groups to gain additional knowledge about different plane shapes. In this role, the "strays" are tasked with collecting information from other groups to bring back to their original/initial group.

After the stray session is over, the group members regroup and discuss the information/knowledge gained from other groups. At this stage, all students share new insights that they gain from the exchange of information, strengthening the group's understanding of various types of plane figures and their uses. This process creates an active and dynamic learning environment, where students not only learn from the teacher, but also learn from each other with their friends, allowing them to develop their skills, one of which is mathematical connection skills in a more interactive way. This model provides opportunities for students to be actively involved in the learning process, deepen their understanding of plane figures, and grow their confidence in conveying ideas. The Two Stay-Two Stray (TS- TS) learning model not only focuses on connection skills, but also on understanding concepts, developing self-confidence, collaboration, and commitment in groups.

However, from a number of studies, there are still few that examine the use of the Two Stay-Two Stray (TS- TS) cooperative learning model to develop students' mathematical connection skills and self-efficacy, especially on plane figure material. In fact, based on the initial observation data obtained in the field, there are still many students who have difficulty in solving problems related to connecting various scientific concepts, both internal and external, even though they have high, medium, or low levels of self-efficacy.

In connection with the explanations above, it is necessary to apply a learning model that emphasizes interaction and collaboration between students, such as the Two Stay-Two Stray (TS-TS) model, with the aim of improving students' connection skills and self-efficacy.

RESEARCH METHOD

This study uses a quantitative approach with a quasi-experimental research design. This study was conducted using one group/class, namely the experimental class which was given treatment with the Two Stay - Two Stray (TS-TS) cooperative learning model. In this class, testing will be carried out on students' connection skills and self-efficacy before and after the learning process is carried out with the model. The research design used is One-Group Pretest-Posttest Design.

Steps of this research The research began with the provision of a pretest to measure students' initial abilities, especially in terms of mathematical connection abilities and students' self-efficacy. The treatment applied used the Two Stay-Two Stray (TS-TS) learning model. Furthermore, to measure the effect of the treatment, a posttest was conducted by providing descriptive questions and a self-efficacy questionnaire. The test was used to measure mathematical connection abilities, while the questionnaire was used to measure students' self-efficacy. The paradigm of this research is described in the following table:

Table 1. Research Design

Pretest	Treatment	Posttest
O_1	X	O_2

This research was conducted at SMP Muhammadiyah 3 Yogyakarta in the even semester of the 2023/2024 academic year. The population of this study included all students of class VII of SMP 3 Muhammadiyah Yogyakarta. Based on this population, the researcher selected a sample by applying the simple random sampling technique. This sampling technique was chosen because the students of class VII of SMP 3 Muhammadiyah Yogyakarta have been grouped into classes that have homogeneous characteristics. The classes used as samples in this study were selected randomly and obtained class VII-A as many as 30 students.

The research instruments used in this study consisted of test questions and questionnaires that were compiled independently by the researcher. In the process of compiling it, the instrument was based on the results of an in-depth study of various references that were relevant to the research objectives. These references include books, journal articles, and previous research that support the validity and reliability of the instrument. The research instrument focuses on two main aspects, namely mathematical connection skills and student self-efficacy.

The mathematical connection ability test is designed in the form of descriptive questions to measure the extent to which students can connect mathematical concepts with other contexts, both those related to mathematics learning and beyond. These questions are given to students in two stages, namely during the pretest to measure students' initial abilities and during the posttest to measure the increase in abilities after being given treatment. Each question is arranged by considering the level of difficulty and relevance to the material being taught, so that it can provide a comprehensive picture of students' mathematical connection abilities. Preparation of test instruments according to mathematical connection ability indicators. Indicators function as tools that help identify the achievement of goals or measure the success of a process by focusing on relevant and measurable aspects. Mathematical connection indicators cover three aspects: a) the relationship between different mathematical concepts or topics, b) the relationship between mathematical concepts and other disciplines, and c) the relationship between mathematical concepts and real-world phenomena (Son, 2022). The indicators of mathematical connection ability used in this study are:

Table 2. Indicators of students' mathematical connection abilities

No	Indicators
1.	Relating one mathematical topic to another to solve a problem.
2.	Finding connections between mathematical topics and other fields outside of mathematics.
3.	Applying mathematics to solve problems in everyday life.
4.	Recognizing the relationship between one mathematical topic and another to form a new formula to solve a problem.

In addition to the students' mathematical connection ability instrument, a self-efficacy questionnaire was designed to assess students' level of confidence in facing and completing mathematical tasks. This questionnaire contains statements related to students' affective aspects, which are then filled in according to their personal perceptions and experiences. The self-efficacy indicators used in this study include: a) confidence in managing existing tasks, b) confidence in completing tasks with varying levels of difficulty, c) students' confidence reflected in actions to achieve goals, d) students' confidence in their perseverance and tenacity in completing mathematical tasks, e) students' confidence in facing various situations when learning mathematics, f) confidence in solving various kinds of mathematical problems.

This self-efficacy questionnaire is designed in the form of a checklist (√), which aims to facilitate data collection regarding students' self-confidence in facing learning challenges. Each question item in this questionnaire applies a Likert scale where there are four answer choices that allow respondents to express their level of agreement with the statement given. The four answer choices consist of: strongly agree (SS), agree (S), disagree (TS), and strongly disagree (ST), which reflect various levels of student confidence in their abilities. In order to make the assessment process of the questionnaire answers more structured and objective,

alternative criteria are provided for scoring, which are specifically designed to facilitate the analysis of students' self-efficacy test results. The scores given will later reflect the level of student confidence in completing the tasks and challenges faced, especially in the context of mathematics learning. These scoring criteria are designed to make it easier for researchers to interpret the data and provide a clearer understanding of the level of self-efficacy of students involved in this research process.

The research instruments that have been designed will go through a validation process before being used in the main research. In this study, the validation used is construct validation. This process aims to ensure that the measuring instrument used is able to measure accurately and consistently according to the concept to be measured. The research instruments include tests and non-tests, both of which are verified through construct validation to ensure their validity. As a first step, the feasibility of the test questions and questionnaires was tested on 30 students included in the pre-sample group to identify and correct any deficiencies that may exist. Data from the results of the trial were then analyzed to ensure that each item of the instrument met the validity criteria. The results of this analysis are the basis for making revisions so that the instrument is more effective and in accordance with research needs. In addition, this validation helps ensure that the instrument is not only theoretically relevant but also practically when applied in the field. Thus, the validated instrument can provide reliable data to support research objectives.

This study aims to investigate the effect of the Two Stay-Two Stray (TS- TS) learning model on students' mathematical connection skills and self-efficacy. The analysis was applied by comparing the pretest and posttest results on both variables. The simultaneous influence experiment used the Hotelling T^2 test in the MANOVA framework to determine whether the TS-TS model had an effect on mathematical connection skills and self-efficacy simultaneously. The results of this test were applied to test the hypothesis, the null hypothesis (H_0) proposed in this study was that there was no significant difference between the pretest and posttest scores, which means that the Two Stay - Two Stray (TS-TS) model had no effect. Conversely, if H_0 is rejected. Thus, it can be concluded that the Two Stay-Two Stray (TS-TS) model has an effect on students' mathematical connection skills and self-efficacy.

Before conducting the Hotelling T^2 test, a normality test was conducted to ensure the assumption of normal distribution in the population. After that, a paired sample t-test was applied to evaluate significant increases in each variable element, namely mathematical connection ability and self-efficacy, by comparing the pretest and posttest values after implementing the Two Stay-Two Stray (TS-TS) learning model. The results of the paired sample t-test with a p value < 0,05 indicate a significant increase in both variables.

RESULTS AND DISCUSSION

This innovation of mathematics learning was carried out at SMP Muhammadiyah 3 Yogyakarta, in class VII-A consisting of 30 students and using an innovative learning model. According to Joyce & Calhoun (2015) a learning model is a way to create a learning environment that encourages students to learn and interact with elements around them such as teachers and other students. The learning model emphasizes certain achievements (knowledge, attitudes, and abilities) and increasing student competence in the personal, social, and academic domains.

The learning model used is the Two Stay-Two Stray (TS-TS) type cooperative learning model. Two Stay-Two Stray (TS-TS) aims to improve students' mathematical connection skills and self-efficacy in flat shape material. This study was conducted for 5 meetings, where the first meeting gave a pretest to students to determine their initial knowledge, the 2nd-4th meeting started learning using the Two Stay - Two Stray (TS-TS) cooperative learning model, then the last meeting gave a posttest to students to measure the extent to which the Two Stay- Two Stray (TS-TS) learning model affects students' mathematical connection skills and self-efficacy. The data that has been collected in this study is in the form of data on students' mathematical connection skills and self-efficacy obtained by applying a test instrument consisting of pretest and posttest test sheets.

After the data is obtained and tabulated by the researcher, the data will be analyzed against two analyzes, namely descriptive data analysis and statistical conclusion analysis. The results of the descriptive analysis include observation data on the implementation of learning and test results obtained from students' mathematical connection abilities and Self-efficacy before and after the implementation of the Two Stay - Two Stray (TS-TS) learning model. Descriptive data analysis is carried out on pretest and posttest data. Pretest and posttest data are used to see the effect of the Two Stay - Two Stray (TS-TS) model on students' mathematical connection abilities and Self-efficacy. The pretest and posttest data collection amounted to 5 essay questions representing all indicators of students' mathematical connection abilities. The pretest and posttest data for mathematical connection abilities are presented in Table 3 below:

Table 3. Pretest and posttest results of students' mathematical connection abilities

Description	Connection Ability	
	Pretest	Posttest
Average	55,93	84,93
Standard Deviation	9,392	4,495
Variance	88,20	20,20
Maximum Value	75	95
Minimum Value	40	80

In Table 3, it is clearly seen that the mean/average pretest score for students' mathematical connection ability is 55.93, which shows the level of students' understanding of mathematical concepts before the implementation of the Two Stay - Two Stray (TS-TS) learning model. This score is also accompanied by information about the distribution of data calculated using a standard deviation of 9.392, which illustrates how much variation there is in students' pretest scores. The variance for the pretest was recorded at 88.20, which further clarifies the variation in the results obtained by students, with a minimum score recorded at 40 and a maximum score of 75. These figures illustrate a fairly wide range of scores and indicate a large difference in students' abilities at the beginning of the measurement.

The posttest score taken after the implementation of the Two Stay - Two Stray (TS-TS) cooperative learning model showed a significant increase, with an average or mean score reaching 84.93. This shows that there has been quite rapid progress in students' mathematical connection ability after following the Two Stay - Two Stray (TS-TS) cooperative learning model. The standard deviation value for the posttest was recorded at 4.495, indicating that the variation in student scores after learning tended to be smaller compared to the pretest, indicating higher consistency in the results obtained by students. The variance for the posttest was 20.20, further supporting the finding that the distribution of results was more focused after learning. The minimum score on the posttest was recorded at 80, while the maximum score reached 95, proving that the majority of students produced higher scores and were close to the highest possible score. Furthermore, to evaluate the impact of the TS-TS learning model on increasing student self-efficacy, further analysis was carried out by looking at the recapitulation of pretest and posttest self-efficacy data. The results of this analysis will be presented in Table 4 below:

Table 4. Results of pretest and posttest self-efficacy

Description	Self-efficacy	
	Pretest	Posttest
Average	33,20	75,67
Standard Deviation	6,446	6,121
Variance	41,545	37,471
Maximum Value	45	85
Minimum Value	20	60

Table 4 shows that the average pretest value for self-efficacy is 33,20, the standard deviation value is 6,446, the variance is 41,545, the minimum value is 20 and the maximum value is 45. Meanwhile, related to the posttest value, the average value is 75,67, the standard deviation value is 6,121, the variance is 37,471, the minimum value is 60 and the maximum value is 85. The data that has been obtained will begin by conducting an assumption test, namely by means of a multivariate normality test. The multivariate normality test aims to determine the overall normality of the distribution, both for students' connection abilities and self-efficacy. To test multivariate normality, the researcher used the Shapiro-Wilk statistical test with the help of IBM SPSS Statistics 25 software. If the significance level value is greater than 0,05, then the data is considered normally distributed and acceptable. However, if the significance level value is less than 0,05, the data is considered not normally distributed and cannot be accepted. The results of the multivariate normality test are presented in Table 5 below:

Table 5. Results of multivariate normality tests for connection ability and self-efficacy

Shapiro - wilk	**Connection Ability**	***Self - efficacy***
Sig.	0,107	0,214
Decision	Normal	Normal

In Table 5, it can be seen that the results of the data normality test using the Shapiro-Wilk test show that the data on the connection ability and self-efficacy variables are normally distributed. The statistical significance value obtained for connection ability is 0,107, and for self-efficacy is 0,214. Both values are greater than 0,05, so it can be concluded that the data on both variables meet the normality assumption. Thus, further statistical analysis can be carried out, namely the Hotelling T^2 test, because the assumption of normal distribution in the population has been met. This Hotelling T^2 test aims to assess the effect of the Two Stay-Two Stray (TS-TS) learning model on students' mathematical connection abilities and self-efficacy simultaneously. This method allows researchers to evaluate whether there is a significant difference in the combination of the two dependent variables between groups that apply the Two Stay-Two Stray (TS- TS) learning model. The results of the Hotelling T^2 test are shown in Table 6 below:

Table 6. Hotelling's T^2 Test Results

F	p-value
485,041	0,000

Based on Table 6, the results of the multivariate T^2 Hotelling test reveal that the Two Stay-Two Stray (TS-TS) cooperative learning model has a significant effect on the dependent variables, namely connection ability and self-efficacy. The multivariate statistics in the table show significance with a p-value < 0,05, in the table it can be seen that the p-value is 0,000 < 0.05. Thus, the null hypothesis (H_0) which states that the TS-TS model has no effect on students' mathematical connection ability and self-efficacy can be rejected. The rejection of H_0 proves that the TS-TS model has a significant effect on students' mathematical connection ability and self-efficacy. Furthermore, to examine the effect of the Two Stay-

Two Stray (TS-TS) type cooperative learning model on each element of the dependent variable in more detail, a paired sample t-test was conducted.

The paired sample t-test aims to test the average difference between two paired measurements, namely pretest and posttest, to see if there is a significant increase in each dependent variable. In the context of statistical analysis, the paired sample t-test is conducted after the multivariate test if the multivariate results show a significant effect. The following are the results of the paired sample t-test that show the connection ability, which are presented in Table 7:

Table 7. Results of paired sample t-test on students' mathematical connection abilities

Statistics	Mean	t	df	Sig.
Paired sample t-test	23,433	14,586	29	0,000

From table 7, the results of the paired sample t-test indicate a significant difference between the pretest and posttest scores on the variable of students' connection ability. The t-test statistic of 14,586 with a degree of freedom (df) of 29 and a significance value (p-value) of 0,000 indicates that there is a significant increase in students' connection ability after learning is carried out using the Two Stay-Two Stray (TS-TS) learning model. The p-value of 0,000 which is smaller than the significance level of 0,05 confirms that H_0 (no increase between pretest and posttest) can be rejected. This indicates that the application of the TS-TS learning model significantly improves students' connection ability. The average difference (mean difference) of 23,43 indicates that the posttest score is better or there is an increase from the pretest score given before the treatment was given. This indicates that there is an increase in students' mathematical connection ability after the application of the TS-TS model, because the mean difference which is greater than 0 indicates an increase between the pretest and posttest scores. Next, a paired sample t-test will be applied to self-efficacy. The results of the paired sample t-test on self-efficacy are presented in Table 8 below:

Table 8. Results of paired sample t-test on self-efficacy

Statistics	Mean	t	df	Sig.
Paired sample t-test	42,467	25,733	29	0,000

From table 8, the results of the paired sample t-test application show a significant difference between the pretest and posttest scores on the student self-efficacy variable. The average difference (mean) between the posttest and pretest is 42,467, with a t-test statistic of 25,733, degrees of freedom (df) of 29, and a significance value (p-value) of 0,000. This indicates that there is a significant increase in student self-efficacy after learning using the Two Stay-Two Stray (TS-TS) learning model. If the p-value of 0,000 obtained is smaller than the significance level of 0,05, it confirms that H_0 (no increase between pretest and posttest) can be rejected, which means that the use of this learning model significantly increases student self-efficacy. The average difference (mean difference) of 42,467 indicates that the posttest score is better or higher compared to the pretest score. This shows the fact that there was an increase in students' self-efficacy after the implementation of the TS-TS model, because the mean difference which was greater than 0 indicated an increase between the pretest and posttest.

The results obtained from this study prove that Two Stay - Two Stray (TS-TS) is very effective in improving students' mathematical connection skills and self-efficacy, especially in flat geometry material. The TS-TS model creates a more participatory or interactive and dynamic learning experience because it trains students to share understanding and skills directly. Students who act as "stay" must have a deep understanding of the material to be able to explain it well to other students who are "stray." This encourages them to understand the concept more thoroughly, not just memorizing formulas.

During the implementation of the Two Stay-Two Stray (TS-TS) cooperative learning model, the researcher's observations showed a significant increase in student enthusiasm and active participation. This interaction process triggers critical and reflective discussions, which strengthen conceptual understanding and improve or develop students' mathematical connection skills. In addition, interactions in the Two Stay-Two Stray (TS-TS) model also develop important social skills, such as collaboration, empathy, and mutual respect between group members. Students learn to appreciate each other's roles, both as listeners and as conveyors of information. In this way, Two Stay-Two Stray (TS-TS) not only trains cognitive skills but also interpersonal skills that will be useful for students in various aspects of life.

The findings of this study are clarified based on the results of research conducted by Septianingrum et al (2019), based on the research findings obtained after conducting research on the problems presented, it can be concluded that the mathematical connection skills taught with the Two Stay - Two Stray (TS-TS) cooperative learning model assisted by the Geogebra program are better demonstrated through the t-test. This finding is also reinforced by the results of research conducted by Habibullah (2020), based on the improvements that occur in the process and outcomes of students' mathematics learning, as reviewed from the level of student self-efficacy in each evaluation that has been carried out, it can be concluded that students' mathematical self-efficacy can be increased through the application of cooperative learning applications with the Two Stay-Two Stray (TS-TS) type.

The Two Stay-Two Stray (TS-TS) model allows students to experience dual roles, both as learners and teachers. This

enriches the learning experience, builds self-confidence, and increases resilience in facing academic challenges. In this way, students become better prepared for future learning challenges because they are accustomed to a collaborative and supportive learning environment. Through these findings, teachers can adopt the Two Stay-Two Stray (TS-TS) method to facilitate richer discussions in the classroom and improve student learning outcomes, especially in topics that require deep conceptual understanding.

This is reinforced by the opinion of Leonard et al (2019) who stated that the Two Stay Two Stray learning model is one part or member of cooperative learning that presents students with the experience of sharing knowledge either with their respective groups or with other groups, and also through the exchange of ideas or information can guide students to think creatively and enthusiastically in learning. The Two Stay - Two Stray model optimizes the role of students during learning that involves the exchange of opinions between groups (Gulo & Mendrofa, 2024). This model can be applied in various mathematics materials, giving students a more comprehensive and meaningful learning experience.

The advantages of implementing learning by implementing the Two Stay-Two Stray (TS-TS) learning model are that it provides an opportunity for each student to participate directly in the learning process and collaborate in developing students' mathematical communication and connection skills. This is supported by Gull & Shehzad (2015) who said that Two Stay - Two Stray (TS-TS) succeeded in improving critical thinking skills, students' connection abilities, and the flow of information between groups. In addition, the Two Stay-Two Stray (TS-TS) type of cooperative learning model is able to build trust and collaboration between students and between groups, which encourages them to think collectively and find solutions to the problems they face. This supports the improvement of students' connection skills and self-efficacy. This is supported by Elisabet et al., (2020) who said that Two Stay - Two Stray (TS-TS) cooperative learning provides the possibility to strengthen creativity, self-confidence, connection skills, and critical thinking.

CONCLUSION AND SUGGESTIONS

Referring to the results of the research and discussion that have been presented in the previous chapter regarding the influence of the learning model of the Two Stay - Two Stray (TS -TS) type cooperative learning model on students' mathematical connection abilities and self-efficacy in flat shape material, 2 conclusions were obtained. First, this study shows that the Two Stay - Two Stray (TS-TS) learning model has a significant effect on students' mathematical connection abilities and self-efficacy. This is evidenced by the Hotelling T^2 test. Second, there is a significant increase in both variables, namely mathematical connection abilities and self-efficacy, after the application of the Two Stay-Two Stray (TS-TS) learning model, which is evidenced by the results of the paired sample t-test, this is shown from the results of the difference in the average pretest and posttest scores which reflect the success of the application of this learning model in improving the quality of student learning.

Specifically, the Two Stay-Two Stray (TS-TS) model has been proven to encourage students to improve their understanding of mathematical concepts as a whole, not just memorizing formulas, thus increasing their confidence in solving mathematical problems. Therefore, the application of this model can be used as a good alternative in mathematics learning, especially to improve students' mathematical connection skills and self-efficacy.

Based on the results of this study, several suggestions can be made. First, in using the Two Stay-Two Stray (TSTS) cooperative learning model, the classroom atmosphere is slightly not conducive because students are required to exchange ideas with other groups, so the teacher's task must remain firm so that the classroom atmosphere remains conducive. Second, the Two Stay-Two Stray (TS-TS) cooperative learning model requires students to be confident (self-efficacy), so it is better after learning, active students are given awards to motivate the self-confidence of other students. Third, For further researchers, in order to make this research a reference and develop it better so that the use of the Two Stay-Two Stray (TSTS) type cooperative learning model can produce better achievement results for students.

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