

THE EFFECT OF TALKING STICK TYPE COOPERATIVE LEARNING MODEL ON THE MATHEMATICS LEARNING OUTCOMES OF GRADE III STUDENTS

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ARTICLE INFO	ABSTRACT
Diterima: 02 Februari 2026 Direvisi: 21 Februari 2026 Disetujui: 14 Maret 2026 Tersedia Daring: 30 April 2026 Keywords: <i>Learning Model, Cooperative, Talking Stick, Learning Outcomes, Mathematics</i>	This research aims For Know The Influence of Learning Models Cooperative Talking Stick Types on Learning Outcomes Mathematics Grade III Students Uptd Sd Negeri 122399 Pematangsiantar. This research is studies quantitative as well as design pre-experimental, type design pre -test – post -test group. This design utilized because there is testing in form pre - test, implemented before treatment and post -test were given after treatment as well as utilizing working models The same Based on discussion in chapter this, researcher explain structure problems and hypotheses submitted as well as conclusion withdrawn start of study output obtained, then all over activity study discussed about impact of teaching models cooperative. Impact of teaching models cooperative towards teaching output Mathematics in Class III UPTD SD N 122399 Pematang Siantar is as as follows: Based on the output of the study by eye lessons in Class III UPTD SD N 122399 Pematang Siantar, the average pre-test score in content Mathematics " Measuring Length and Unit Standard " is 33.28 Not reached KKTP value of 70Use of facilities Talking Stick teaching UPTD SD N 122379 Pematang Sanator by eye lesson Mathematics in Class III reached increased learning output as well as the average post-test value is the number reached 85.28 and KKTP was 70. Based on the experimental output implemented and data analysis, test output hypothesis in study This prove existence impact significant. start data checked, can obtained total t count = 27,107 levels the significance (2-tailed) is 0.000, the probability significant <0.05, t count > t table = 27.107 > 1.708, then Ho is rejected and Ha is accepted. Therefore it can concluded amount there is impact types of teaching models cooperative. UPT DSDN 122399 Tongkat talk by the learning output of grade III Pematang students Siantar..
ABSTRACT	
Kata Kunci; <i>Model Pembelajaran, Kooperatif, Talking Stick, Hasil Belajar, Matematika</i>	Penelitian Ini Bertujuan Untuk Mengetahui Pengaruh Model Pembelajaran Kooperatif Tipe Talking Stick Terhadap Hasil Belajar Matematika Siswa Kelas Iii Uptd Sd Negeri 122399 Pematangsiantar. Penelitian ini ialah studi kuantitatif serta desain pra-eksperimental, tipe desain pra-uji – pasca-uji grup . Desain ini dimanfaatkan sebab terdapat pengujian dalam bentuk pra- uji, dilaksanakan sebelum perlakuan dan pasca-uji diberikan setelah perlakuan serta memanfaatkan model kerja sama Beralaskan pembahasan dalam bab ini, peneliti menjelaskan struktur masalah dan hipotesis diajukan serta kesimpulan ditarik mulai output kajian diperoleh, kemudian seluruh kegiatan kajian dibahas mengenai dampak model pengajaran kooperatif. Dampak model pengajaran kooperatif terhadap output pengajaran matematika di Kelas III UPTD SD N 122399 Pematang Siantar ialah sebagai berikut:Beralaskan output kajian oleh mata pelajaran di Kelas III UPTD SD N 122399 Pematang Siantar, nilai rata-rata pre-test dalam konten matematika

"Mengukur Panjang serta Satuan Standar" ialah 33.28 Tidak mencapai nilai KKTP sebesar 70. Penggunaan sarana pengajaran Talking Stick UPTD SD N 122379 Pematang Sanator oleh mata pelajaran Matematika dalam Kelas III mencapai peningkatan output belajar serta nilai rata-rata post-test sebesar Angka tersebut mencapai 85,28 dan KKTP sebesar 70. Beralaskan output percobaan dilaksanakan dan analisis data, output pengujian hipotesis dalam kajian ini membuktikan adanya dampak signifikan. mulai data diperiksa, bisa didapat jumlah $t_{count} = 27.107$ tingkat signifikansinya (2-tailed) ialah 0.000, probabilitas signifikan < 0.05 , $t_{hitung} > t_{tabel} = 27.107 > 1.708$, maka H_0 ditolak dan H_a diterima. Oleh sebab itu, bisa disimpulkan jumlah terdapat dampak jenis model pengajaran kooperatif. UPT DSDN 122399 Tongkat bicara oleh output belajar murid kelas III Pematang Siantar.

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1. INTRODUCTION

Every human being should receive education as a fundamental right. Every human being possesses intelligence, making them essential for life. Education is a crucial aspect of life, driven by the need to improve self-esteem and develop dimensions such as ethics, morality, behavior, knowledge, health, skills, and the arts (Banjaranur et al., 2023). The goal of education is to enlighten the nation and develop the entire Indonesian personality (Abidin, 2023).

To achieve these educational goals, the government must make every effort to improve various aspects of the education sector, both in terms of quality and quantity, especially improving teaching methods. One effort implemented by the government is curriculum improvement (Vyasa et al., 2020). The curriculum is a set of subjects and study programs offered by educational institutions, forming a teaching plan given to students at a certain level of education (Aulen, 2024). Curriculum improvement that has been implemented to date is the conversion of the 2013 curriculum into an independent curriculum (Agustini et al., 2022).

According to Riyasaputra (2025), an open curriculum emphasizes a flexible and student-centered educational approach. An open curriculum adapts instruction to the needs and capabilities of students (Nurhasundu et al., 2025). Furthermore, Darmawan and Wenataputra (2020) state that many open curricula strive to facilitate student-centered instruction, strengthen student independence, and emphasize empowerment and the development of 21st-century skills. An open curriculum aims to free students from the constraints of an overly theoretical curriculum and encourage more relevant, appropriate, and real-life teaching. (Ryanto 2020).

Learning is a series of deliberately designed activities with the aim of facilitating the teaching method by students (Salahi et al., 2024). Teaching activities in elementary schools consist of various subjects, one of which is mathematics. Mathematics is the science of studying abstract patterns, structures, and relationships that can be applied in solving everyday problems through logical and systematic thinking (Octavianti et al.,

2025) . Mathematics teaching is a way of interaction between teachers and students in the form of organized activities in obtaining information, as well as having the capability to understand and communicate information that has been previously obtained (Sedabuki et al., 2024). However, in reality, not all elementary school students enjoy learning mathematics. Students consider mathematics too boring and too complicated, so many students experience learning difficulties and student learning output is less than optimal (Suraiya et al., 2022).

According to Hatabrat (2023), student learning outcomes are indicators of educational success in schools and are achieved through teaching methods and reflect the level of success achieved by students after undergoing teaching activities. Learning outcomes are changes that occur in students as a result of starting teaching activities, referring to cognitive, affective, and psychological aspects. (Samusir et al., 2025) . This can be obtained from *TIMSS (Trends in International Mathematics and Science Study) 2023 data*, proving that the number of learning outcomes of elementary school students in Indonesia is relatively low. Indonesia ranks lowest in mathematics learning outcomes among participating ASEAN countries, and scores far below the international average (Abidin, 2023).

Based on the observation output carried out by researchers in Class III of SD Negeri 122399 Pematangsiantar, there are several problems related to mathematics teaching, namely the low level of student activity during the teaching method, because most of the teaching activities are still centered by the teacher. Students only listen to explanations without participating much in discussions, asking questions, or expressing opinions, in the use of teaching models. There is a lack of interest and consider mathematics lessons as a boring and scary subject, and there are still many students who have not completed mathematics lessons in the third grade of elementary school.

Table 1. Daily test scores for Mathematics subjects in Grade III of SD Negeri 122399 Pematangsiantar

Class	Family Card (KKTP)	Amount Student	Students complete	The students are not finished yet.	% Finished	Not finished yet %
third	70	25	10	15	40%	60%

Based on the table, the mathematics learning outcomes in Grade III of SD Negeri 122399 Pematangsiantar are still low, with 15 out of 25 students failing to achieve the 60% proficiency level, and 10 out of 25 students failing to achieve the 40% proficiency level. This means that only 10 out of 23 students are able to achieve the KKTP (Qualified Minimum Competency). This data demonstrates that the mathematics learning outcomes of students are still relatively low and require changes in teaching methods.

Based on the aforementioned problems, new innovations in teaching are needed to address them. One such approach is utilizing teaching models that allow students to actively participate in teaching activities, with teachers no longer acting as the center of instruction but rather as guides and facilitators to achieve maximum learning outcomes.

Therefore, in teaching, it is hoped that teaching models can be implemented to support student activities in the classroom. Teaching models are methods used by teachers in teaching and learning, as well as various variations to prevent student boredom and create a comfortable and enjoyable environment (Gigolo, 2022).

One teaching model that can be utilized to improve student learning outcomes is *the Talking Stick cooperative teaching model*. *The Talking Stick* is a model originally used by Native Americans to encourage everyone to speak or express their opinions in forums or inter-tribal meetings. *The Talking Stick* is used as a sign of the number of people who have the right to speak, given in turns (Irene et al., 2024). *The Talking Stick cooperative teaching model* is a group teaching model and the assistance of sticks (Hasreddin and Asrol, 2020). *The Talking Stick teaching model* is played and uses sticks accompanied by music, sticks are used as turns in providing feedback or answering questions given by the teacher while students are studying the lesson (Karniasi et al., 2024). The group holding the first stick needs to answer questions from the teacher after reading the main content. This activity is repeated continuously until all groups have had a turn in answering questions from the teacher (Sukmadewi & Ganing, 2020).

Talking canes are suitable for elementary school. Besides developing speaking skills, the use of these canes creates a space for students to be enthusiastic and actively participate. *Talking canes* are also considered an effective way to boost students' confidence in speaking in front of others. The use of rotating canes also helps motivate students to work quickly and accurately and assesses their ability to understand the material (Sari, 2017).

As has been shown by previous studies, the use of the Talking Stick cooperative teaching model can improve student learning output. This study, conducted by Vita Sari Anggarini et al. (2022), entitled "The Effect of the *Talking Stick Type Teaching Model* on Mathematics Learning Output in Class VB of SD Negeri 5 Merik Batin. Based on the analysis of pre-test and post-test data using the t-test (paired sample t-test), the calculated $t > t$ table is $5.956 > 2.110$ and the significance level is $0.000 < 0.05$, so H_1 is accepted and H_0 is rejected. Therefore, it can be concluded that the number of uses of the Talking Stick type cooperative teaching model has an effect on students' mathematics learning output. In addition, the average student score by post-test increased from 54.426 to 67.778 and an increase of 13.352 points. Therefore, it can be concluded that the number of impacts of the *Talking Stick type cooperative teaching model* on learning output.

Based on the explanation above, the researcher *sees the importance of using the Talking Stick Cooperative Teaching Model in teaching activities*. Therefore, the researcher is interested in conducting a study entitled the impact of the *Talking Stick Cooperative Teaching Model* on the Mathematics Learning Output of Grade III Students of SD Negeri 122399 Pematangsiantar.

2. METHODS

The type of research used in this study is quantitative. According to Sugiuno (2022), quantitative research methods are based on the philosophy of positivism, are used to study specific populations or samples, collect data using research instruments, and

conduct quantitative/statistical data analysis. The goal is to test a predetermined hypothesis (Pantas & Surbakti, 2020).

This research is a quantitative study with a pre-experimental design, using a pre-test-post-test group design. This design is used because it includes testing in the form of a pre-test, conducted before treatment, and a post-test after treatment. It utilizes a cooperative learning model. This method allows for more accurate assessment of treatment outcomes because it can be compared to pre-treatment conditions (Molan et al., 2020).

The one-group pre-test - post-test design is presented as follows:

This research will be conducted at UPTD SD Negeri 122399 located at Jl. Mawar, West Siantar District, Pematang Siantar City, North Sumatra. This research will be conducted in the equivalent semester and the 2025/2026 academic year. According to Sugiyono (Wardah & Fitria, 2021) a population is a general area containing objects/subjects and certain quantities and characteristics determined by the researcher in the study and then the results are taken. Thus, the population is the entirety of the things that are the target of the study and the sample will be taken from this population. In this study, the population in this study is all students of Class III UPTD SD N 122399 Pematangsiantar, namely 25 students, consisting of 10 boys and 15 girls.

According to Sugiyono (2022), a sample is a portion of the population's size and characteristics. Therefore, the sample used in this study is a non-probability sampling technique, where the sample used is a saturated sample. Saturated sampling is a sampling technique when all members of the population are used as samples. Saturated sampling is carried out when the population is relatively small, less than 30 people. The sample in this study was all third-grade students of the UPTD SD Negeri 122399 Pematangsiantar. The number of samples in this study was 25 students, consisting of 10 male students and 15 female students (Zulhairah et al., 2020).

The definition of a variable concept is a description that explains the meaning of a variable and provides a clear explanation of the related activities and how the variable is measured in a study. According to Sugiyun (2022), a study variable is a characteristic, trait, or value of a person, object, or activity in which several changes are determined by the researcher to be studied and then conclusions are drawn. In this study, the variables used are the independent variable and the dependent variable.

Data collection techniques are an important step in the study, because the aim is to obtain data that is relevant, accurate and appropriate to the needs of the study. The data analysis technique in this study was carried out using the IBM SPSS statistical program. The purpose of data analysis is to determine whether the Talking Stick Cooperative Learning Model has an effect on students' mathematics learning output and to compare pre-test and post-test scores.

3. RESULTS AND DISCUSSION

Explanation findings study

This presents the student's teaching output in eye lesson mathematics through use of teaching models cooperative type stick talk. study This carried out by class students three Elementary Schools of UPTD Negeri 122399 Pematangsiantar by April 2026. The

purpose of the study This is in know impact of teaching models cooperative type stick talk towards learning output students. Instrument study utilized namely pre-test and post-test in measure capability beginning and end of the student in understand material after given treatment. Study sample This totaling 25 people, while the other 25 students utilized in trial instrument so that amount participants to 50 students (Subekhan, 2019).

Instrument study arranged Based on questionnaire consists of Starting with 30 questions. After validation, 25 valid questions were obtained. Instrument the Then tested through validity, reliability, level tests difficulties, and discrimination. Instrument in accordance in utilized Then given to students. Data is collected covering pre-test and post-test scores, analyzed in a way descriptive, and checked utilize normality tests and hypothesis tests (t-tests) in determine increased learning output.

Test Output Instrument

Instrument the given to class students three at the UPTD SD Negeri 122355, Jl. Bah Bolon, Pematangsantar. Instruments the consists of starting from 30 questions choice double covers topic measurement long as well as unit standard. After the student completes test, data collected processed in evaluate validity every questions. After evaluation, questions declared valid for use as instrument in study this is the analysis output question the is as following :

Validity is size prove level validity something instrument. Valid instrument have level validity high. validity test output implemented utilise SPSS 24 application. A grains question is said to be valid if calculated r value $> r$ table as well as level significance of 5% or 0.05, and vice versa if calculated r value $< r$ table so grains question the it is said invalid. In determining calculated r value, product r can obtained start table moment and $N = 25$ then obtained = 0.396.

Based on the above, it looks amount there are 25 questions true and 5 false questions. Questions Correct utilized in pre-test and post- test. Testing reliability measure reliability instrument studies, as well as assumptions amount instrument the Enough reliable and can trusted in utilized as tool data collection. In testing reliability this, researcher utilise Cronbach's alpha formula and tools SPSS 24 software. The criteria is : if Cronbach's alpha value is higher big starting from 0.6, the data is considered reliable. if Cronbach's alpha value ≤ 0.6 , the data is considered No reliable. Based the table above, found amount Cronbach's alpha value is 0.956 as well rtable 0.396 and obtained total $0.956 > rtable 0.396$. Because it can concluded amount instrument utilized in study This Can reliable and fulfilling criteria reliability tall.

Test difficulty implemented in determine level difficulty instrument utilized. Test difficulty based on the number students answer something questions. The more Lots students answer as well as right, the more easy question the

Based on the table above, can concluded amount starting 25 questions tested, 2 questions including in category easy, 18 questions including in category medium, and 5 questions including in category difficult.

Power test output discrimination question

Purpose of starting power test discrimination in study This is in evaluate capability grains question in differentiate between able students high and capable students low power output discrimination classified as bad, fair, good, and very good in every grains question

Teaching output data

This section will present data on student learning outcomes, *obtained from pre-learning tests* and post-learning tests. The data below relates to the learning outcomes of third-grade students at State Elementary School 122399 Pematangsiantar UPTD.

Explanation of pre-treatment study output

The rules for assessing student learning output are based on KKTP (criteria for achieving teaching objectives), which is ≥ 70 . From the table above, it can be concluded that the number of students who did not complete the pre-test was 25 students, whereas when the treatment was given and the post-test was carried out, the number of students who completed the pre-test was 25 students.

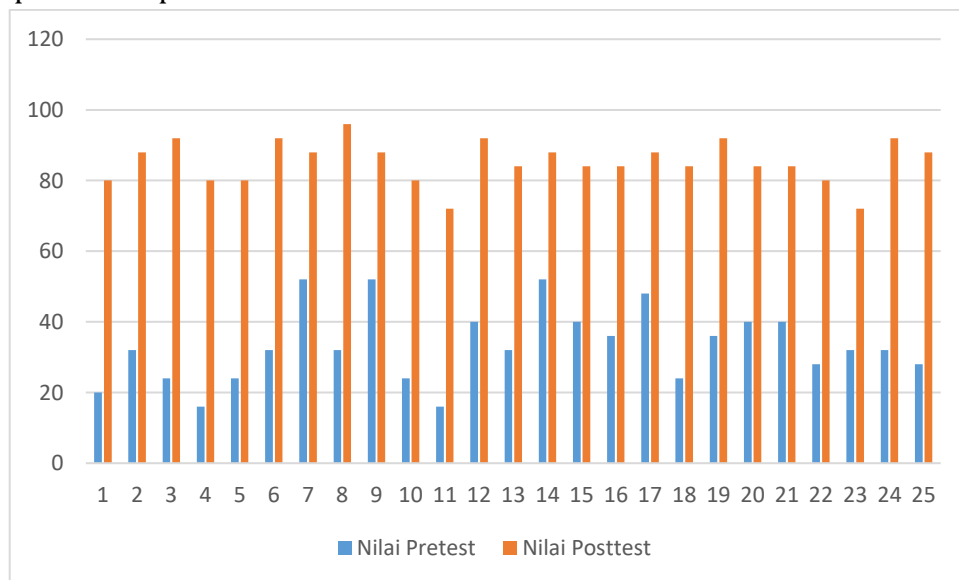


Figure 1. Pre-test and post-test diagram

The diagram above proves the comparison of the pre-test and post-test output of students. There is a significant increase in scores after utilizing the Talking Stick type cooperative teaching model. by pre-test output, 25 students scored below the Teaching Objective Achievement Criteria (KKTP), as well as the lowest score of 16 and the highest score of 52. The average pre-test score proves that the number of students' initial understanding of the material is still low. After the teaching is completed, positive changes are seen by the post-test output. All students with Output obtained scores above KKTP, as well as the highest post-test score of 96 and the lowest score of 72. All students experienced an increase in scores, proving the effectiveness of the Talking Stick type cooperative teaching model.

Data Analysis Techniques

Normality test

After the *pre-test* and *post-test*, the next step is the normality test to determine whether the collected data is normally distributed or not. The Shapiro-Wilk method was used in this study. The decision-making data used in this test are:

- A. If >0.05 then the data is normally distributed.
- B. If <0.05 then the data is not normally distributed.

The following is a normality test of the learning output data of grade III students at the UPTD of State Elementary School 122399 Pematangsiantar.

Table 2. Normality test of *pre-test* and *post-test* data

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	DF	Sign.	Statistics	DF	Signature
Pre-test	0.149	25	.161	0.945	25	0.190
Post-test	0.153	25	0.136	0.932	25	0.099

(Data source: SPSS 24 output)

Based on the data above, the first significance value is $0.19 > 0.05$, meaning that the data obtained is normally distributed and the *post-test* output is $0.09 > 0.05$, so it can be concluded that the amount of data is normally distributed.

Hypothesis testing (t-test)

The following is the output of the hypothesis test carried out at the UPTD of State Elementary School 122399 Pematangsiantar.

Table 3. T-test output

		Mean	PMS Deviation	Stand. Error Meaning	95% confidence interval starting from the difference	On	thre	DF	Sign (2 tails)
Pair 1	Pre-Test Score - Post-Test Score	52,000	9.59166	1.91833	55.94074	48.05926	27,107	24	0,000

Based on Table 4.7 above, the calculated *t* value is obtained as $= 27.107$ and the significance level (2-tailed) 0.000 significant probability <0.05 , $t_{\text{count}} > t_{\text{table}} = 27.107 > 1.708$ then H_0 is rejected and H_a is accepted. This explanation proves that there is an impact of the *Talking Stick type cooperative teaching model* on mathematics learning output in Class III UPTD SD Negeri 122399 Pematangsiantar.

Discussion of study output

Based on data analysis, the test instrument was first tested for validity using the SPSS 24 program by 25 students. The validity test output proved that from 30 questions were tested, 25 were valid, and the *t*-table value was 0.396 . These questions met the

validity criteria and were then considered appropriate and used *as pre-test* and post-test instruments in this study. After the instrument was validated, a reliability test was conducted to ensure the consistency of the instrument, and *the Cronbach's alpha value* of 0.956 proved that the number of instruments was highly reliable. With this valid and reliable instrument, the study can continue to measure student learning outcomes effectively. Next, a test of the difficulty level of the questions was conducted to determine the level of difficulty of the questions used. Starting from the analysis output, 2 questions were found in the easy category, 18 questions in the medium category, and 5 questions in the difficult category (Nurfitriani & Hidayat, 2023). This distribution reflects the balance of the instrument's ability to measure student capabilities comprehensively. Furthermore, the discriminatory power test proved that most of the questions had discriminatory power: 12 items were in the very good category, 12 items in the good category, and 1 item in the fair category, while no items were in the very poor category. This proves that the number of questions' capabilities in differentiating students and different capabilities is quite good (Palupi, 2018).

Based on the assessment tool, *a pre-test was given to 25 third-grade students of SD Negeri 122399 Pematangsiantar before the teaching method began. The average pre-test score was 33.28 and the standard achievement of teaching objectives (KKTP) was 70, although not all students achieved this achievement (Salimah Inayatus, 2021).. This output proves that the number of students' initial understanding of the material on length measurement and standard units is still relatively low. After implementing the Talking Stick type cooperative teaching model, a post-test was conducted to measure the increase in learning output. The post-test output showed a significant increase and an average score of 85.28 where all students achieved or exceeded the KKTP (Alfiyana et al., 2018).*

To measure the effectiveness of teaching, *normality analysis was carried out using pre-test and post-test data and the help of SPSS 24. The analysis output proved a normality value of $0.19 > 0.05$ by t pre-test and a normality value of $0.99 > 0.05$ by post-test. This proves that the number of output signals by pre-test and post-test is greater starting from 0.05, so the data is said to be normally distributed. In addition, the t-test analysis produced a calculated t value of 27.107 and a significance level of 0.000. because the significant probability is much smaller starting from 0.05, namely 0.000 and the calculated t value $> t$ table ($27.107 > 1.708$), then H1 is rejected and H2 is accepted. This strengthens the number of Talking Stick Type Cooperative Teaching Models are very effective in improving student learning output by the material Parts of the Earth (Agustin et al., 2019).*

The Talking Stick Cooperative teaching model with Output creates an active, creative, and enjoyable learning environment. This environment enables students to learn better, resulting in significant improvements in conceptual understanding and learning outcomes. Thus, the Talking Stick Cooperative teaching model plays an important role in improving the quality of mathematics teaching in Grade III of SD Negeri 122399 Pematangsiantar.

4. CONCLUSION

Based on discussion in chapter this, researcher explain structure problems and hypotheses submitted as well as conclusion withdrawn start of study output obtained, then all over activity study discussed about impact of teaching models cooperative. Impact of teaching models cooperative towards teaching output Mathematics in Class III UPTD SD N 122399 Pematang Siantar is as following :

- a. Based on the results of the study by eye lessons in Class III UPTD SD N 122399 Pematang Siantar, the average pre-test score in content Mathematics " Measuring Length and Unit Standard " is 33.28 Not reached KKTP value of 70.
- b. Use means Talking Stick teaching UPTD SD N 122379 Pematang Sanator by eye lesson Mathematics in Class III reached increased learning output as well as the average post-test value is the number reached 85.28 and KKTP was 70.
- c. Based on the experimental output implemented and data analysis, test output hypothesis in study This prove existence impact significant. start data checked, can obtained total t count = 27,107 levels the significance (2-tailed) is 0.000, the probability significant < 0.05 , t count $> t$ table = 27.107 > 1.708 , then H_0 is rejected and H_a is accepted. Therefore it can concluded amount there is impact types of teaching models cooperative. UPT DSDN 122399 Tongkat talk by the learning output of grade III Pematang students Siantar.

Recommendation

Study output prove amount a number of step Can taken in increase success teaching in schools, including :

1. For school

School responsible answer in develop and implement various teaching models in increase quality teaching. One of the model can utilized is a teaching model Cooperative Stick Talk (Talking Stick Cooperative Learning Model).

2. For teachers

stick talk has recommended as a teaching model alternative create interaction active between students, especially in eye lesson mathematics.

3. For students

Although this model is basically motivate, keep important in prepare self as well as Good before participate. Read material lesson moreover formerly will help students participate more meaningful moment implementing teaching models Talking Stick cooperative.

4. For researchers

The researchers plan study This expected Can in a way systematic develop teaching models cooperative stick talk as reference and consider student situation during study. Because of this that, it is recommended in expand study as well as research variables relevant others, such as method teaching, teaching strategies, facilities teaching, interest learning, and student characteristics. This important in identify factors influence student learning output more Good.

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