



The Influence of the Talking Stick Cooperative Learning Model in Science Subjects on the Activeness of Elementary School Students

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Abstract: There are several students who, when answering questions, especially in the subject of science given by the teacher, still feel embarrassed and fearful. Moreover, it is not only the fear of answering; some students also lack the willingness to express their opinions. Consequently, the teaching and learning activities predominantly employ lecture methods, which may not always align with the subject matter being taught. The objective of this research is to examine the influence of the cooperative learning model, specifically the Talking Stick, on the science learning activities of fifth-grade students. The research design is experimental with a pre-test and post-test group design. The researcher included the entire population of fifth-grade students, totaling 30 students, comprising 15 male and 15 female students, at SDN 1 Krembung. In this study, the researcher used a saturated sampling technique with a sample size of 30 respondents. Data were collected through questionnaires and analyzed using a one-sample t-test. The results of the one-sample t-test indicated a ρ value of 0.00 for both pre-test and post-test results, signifying $\rho < \alpha$, with $\alpha = 0.05$. This indicates a difference in students' activity in solving science problems before and after utilizing the Talking Stick model. Based on the group averages, the pre-test average was 56.8, and the post-test group average was 71. Cooperative learning models are developed to achieve student performance, including academic achievement, tolerance, acceptance of diversity, and the enhancement of social skills. The primary goal of cooperative learning is to maximize student performance to improve academic achievement and understanding, both individually and as a group.

Abstrak: Ada beberapa siswa ketika menjawab pertanyaan terutama pada mata pelajaran IPA yang diberikan guru masih memiliki rasa malu dan takut selain itu, bukan hanya takut untuk menjawab saja bahkan para siswa juga masih ada yang tidak kemauan dalam dirinya untuk menyuarakan pendapatnya. Maka model pembelajaran dalam kegiatan belajar mengajar kebanyakan masih menggunakan metode ceramah dan terkadang tidak sesuai dengan mata pelajaran yang diajarkan. Tujuan dalam penelitian ini adalah untuk mengetahui pengaruh model pembelajaran kooperatif tipe Talking Stick padapmata pelajaran IPA terhadap aktivitas belajar siswa kelas V. Desain penelitian adalah eksperimen dengan desain eksperimen sebelum dan sesudah uji coba kelompok tipe 1. Dalam penelitian ini peneliti menggunakan populasi seluruh siswa dari kelas V yang berjumlah 30 siswa dan terdiri dari 15 siswa laki-laki dan 15 siswa perempuan. Penelitian ini dilakukan di SDN 1 Krembung. Sampel dalam penelitian ini peneliti menggunakan teknik sampling jenuh dengan berjumlah 30 responden. Data dikumpulkan dengan menggunakan kuesioner dan dianalisis menggunakan uji t satu sampel. Hasil uji one sample t-test menunjukkan nilai $\rho = 0,00$ dari hasil pre dan post test artinya nilai $\rho < \alpha$, dengan $\alpha = 0,05$, hal ini menunjukkan bahwa terdapat perbedaan aktivitas siswa dalam menyelesaikan soal IPA sebelum dan sesudah menyelesaikan model talk stick. Berdasarkan rata-rata kelompok, rata-rata data pada saat pre-test adalah 56,8 dan rata-rata kelompok post-test adalah 71. Model pembelajaran kooperatif dikembangkan untuk mencapai kinerja siswa berupa prestasi akademik, toleransi, penerimaan keberagaman, dan pengembangan keterampilan sosial. Selain itu, tujuan utama pembelajaran kooperatif adalah untuk dapat memaksimalkan kinerja siswa guna meningkatkan prestasi dan pemahaman akademik, baik secara individu maupun kelompok.

A. Introduction

Teaching is the assistance that educators must provide to students in order for them to acquire knowledge and develop the attitudes and convictions necessary to acquire knowledge (Santosa & Sudirman, 2023). Thus, in this instance, having a learning technique that is tailored to the relevant Indonesian curriculum is imperative. One of them is evident from the components of education that have undergone a paradigm shift (Espino-Diaz et al., 2020). At first, the instructor only imparted classical knowledge to the students and carried out assignments that were intended to be educational exercises. This suggests that one-way communication is still prevalent. As a result, there has been a paradigm shift in education, allowing for two-way communication between educators and learners while upholding their respective limits. Science education that allows students to gain direct experience so that it can increase students' strength to receive, store, and apply the concepts they have learned (Suryawan et al., 2023).

The learning model is a series of presenting material in learning which consists of all aspects of learning and facilities provided by the teacher to be used in carrying out the process of learning activities directly or indirectly (Yuliansyah & Ayu, 2021). In a cooperative learning model is a learning model used in providing several tasks given to students. The students are formed into small groups that are equally divided, namely, there are students who already understand and do not understand the subject matter (Anis et al., 2021). Then after the task is done, the students must present the results of the task they have done in front of the class. After each group presents its task, the group that has not advanced to the front of the class will get an assignment from the teacher, namely responding to the results of the tasks of other groups, so that the teaching and learning process in the classroom can be active and not monotonous. In learning, one of the learning models that can be used is the talking stick learning model because this learning model can increase students' curiosity and develop students' ability to express their respective opinions (Morcom, 2014). In its implementation, to apply this model, the first step taken by the teacher is to explain what learning material the teacher will discuss. Then the teacher gives the opportunity to some students to read first and understand the material in the book. This learning model as one of the most effective ways to be used in learning activities because by applying this learning model makes students more independent and not dependent on other students and the learning process becomes more active.

Talking stick is a talking stick learning model where in applying this learning model using a stick (Pour et al., 2018). The stick will be held by the teacher then given to students and the last student holding the stick must answer a question that has been given by the teacher related to the material that has been taught before. This learning model is very effective for teachers to use in the teaching and learning process because this learning model really helps students in improving cooperation between group members and can also train speaking and expressing opinions. There fore, this talking stick learning model is designed and made so that students can express their respective opinions boldly and firmly and learning carried out in the classroom becomes more active (Chen et al., 2021).

One of the learning models used to solve a problem is the talking stick learning model. There are several steps in the problem-solving-based learning process in this learning model including : The teacher conducts questions and answers with students about "Temperature and Heat", Students answer teacher questions with very varied answers, The teacher divides students into 5 groups or according to the existing groups, the teacher distributes student worksheet to students which contains "Temperature and Heat". After reading the book students are ordered to close the book again. The teacher takes a stick and gives it to the students. Then the teacher gives questions and the group holding the stick must answer the questions given by the teacher. And so on until all groups get a part to answer questions. After the questioning activity answer by using a stick students ask topwork on the learner worksheet that has been distributed, Students discuss temperature and heat and work on the learner worksheet that has been distributed, The teacher appoints several students to advance to present the results of the learner worksheet, Students come forward to present the results of the answers to the learner worksheet, The teacher asks the rationale students about temperature and heat, students convey the rationale for this, the teacher gives the opportunity to ask questions for students who are unclear or do not understand, the teacher discusses temperature and heat and straightens the concept of material based on student presentations, the teacher motivates students who are less or have not actively participated in learning activities so that they can be more active in the next meeting. The learning models used by teachers in the learning process each have different advantages and disadvantages. One of them is this talking stick learning model. The advantages of the talking stick cooperative learning model are, testing the readiness of students in learning, accelerating students in practicing understanding of learning materials, making students more active in teaching and learning activities and training students to express opinions in every learning activity (Febrina, 2023). In addition to having advantages, this learning model also has disadvantages, so the disadvantages of the talking stick learning model when applied in teaching and learning activities are, there are still some students who cannot quickly understand the material explained by the teacher and students become anxious and worried because they are afraid if they get a stick because they cannot answer the questions given by the teacher.

This Talking Stick students to voice their ideas and fostering student connection and engagement in the classroom (Adiko & Djafar, 2022), this Talking Stick can help foster meaningful and enjoyable learning experiences. It is anticipated that students using this cooperative learning model will participate more actively in the learning process, which will help them pay attention to the material more quickly, assess their own readiness for learning, and create a more lively and active learning environment that promotes respect for one another (Dyson & Casey, 2016). In order to help students recall the content they have studied more easily it is recommended that they be courageous in standing out and voicing their ideas. The Talking Stick type cooperative model aims to motivate students to be more prepared in answering questions or expressing their opinions without submitting or appointing themselves first (Wismath & Orr, 2015).

Active student learning is a process of learning activities and teaching that requires students to be actively involved and participate in the learning process so that they are able to change student behavior (Rahman et al., 2023). The activeness of student learning can be observed in student activities when the learning process takes place. The active learning of students can be seen from the enthusiasm for learning and the enthusiasm for learning of students, so that students have a high curiosity to take part in learning, students will try to solve problems, search, think critically and conclude learning (Que et al., 2022). In addition, students who have a passion for learning will have high attention to learning by giving opinions and asking questions. Convey that the active learning experienced by students is related to all activities carried out both physically and non-physically. The activeness of students in learning is one of the important assessments expected in the learning process (Rahman et al., 2023; Wijaya et al., 2023). The learning process involves the activeness of students during learning, including students who are expected to be active in viewing, asking questions, giving responses, concluding, and re-explaining their understanding of the material to other friends. Convey that students are said to be active if they have the following characteristics: there is activeness in asking questions related to science learning materials or problem solving, students are able to express their opinions directly, students complete all assignments by thinking critically, conducting analysis, solving problems, and applying knowledge that has been learned in everyday life. The importance of the activeness of students in learning. Learning is said to be successful and of good quality if all or at least most of the students are actively involved, both physically, mentally and socially in the learning process.

The findings from observations conducted by researchers at SDN reveal that various learning models, including the Talking Stick learning model, are employed in adjusting the instructional material. The Talking Stick model involves dividing students into small groups of 3-4 members, where they collaboratively address and solve problems. Despite the perceived effectiveness of these models, challenges may arise, such as the observation that students in these activities tend to be reticent and less inclined to exchange ideas, leading to suboptimal learning experiences in the classroom.

In light of the issues identified through these observations, this study aims to investigate the impact of the Talking Stick learning model on teaching and learning activities in fifth-grade students at elementary. The research question formulated is: "Does the cooperative learning model, specifically the Talking Stick, influence the learning activities of fifth-grade students in elementary school science subjects?" The researchers posit that the Talking Stick model emphasizes fostering a conducive environment for students to confidently express their opinions during the teaching and learning process.

B. Method

The type of research used is quantitative experimental research. This type of quantitative research is a type of research that examines predetermined populations and samples (Mohajan, 2020), so that the data collection stage uses instruments which are then

analyzed using statistical data with the aim of testing the hypotheses used by researchers. In this experimental research is a research method that can be used by researchers to find the effect of treatment on a controlled condition. The author intends to employ experimental research as her research methodology. Due to the fact that the pre-experimental research design incorporates a one group pretest and posttest design that involves testing just one group in both the pretest and posttest. A pretest and posttest were used in this study in the hopes that the results would be more accurate when comparing the treatment-treated and untreated groups of research. Researchers employed a single group pretest and posttest for this investigation. Before students participate in learning activities utilizing this learning model, researchers use it as a pretest. After students employ this learning model in teaching and learning activities, researchers use a post-test. The data that will be collected during the research is obtained from test data (*pretest and posttest*). For this research, the test is useful as a tool used as a measuring tool in measuring the skills, abilities or talents and knowledge of students. This assessment, which measured students' skills and comprehension of the science curriculum, was administered as a written essay. This test is given at the start and finish of the learning process, and the topic of "Temperature and Heat" will be utilized as the test for the research. The One Group Pretest Posttest design used in the study can be characterized as follows:

$$O_1 \text{ X } O_2$$

Information:

O_1 = pretest value (before giving treatment)

O_2 = posttest value (after giving treatment)

Effect of treatment on student learning activeness = $(O_2 - O_1)$

This study employed two variables: the independent variable, known as the cooperative learning model of the talking stick type (x), which is the influencing variable, and the dependent variable, referred to as student learning activity (y), which is the influenced variable. The research was conducted at SD Negeri Krembung 1, with a population of 30 participants. The sampling technique utilized was non-probability sampling, specifically a predetermined and saturated sampling approach. Saturated sampling involves including all members of the population to minimize errors in generalizing findings.

The participants underwent a pretest posttest, with the control class receiving instruction through the lecture method and the experimental class through the talking stick model. Data collection involved the use of questionnaires and documentation. The instrument, a student learning activity questionnaire sheet, employed a Likert scale to measure opinions, attitudes, and perceptions. Response options ranged from Strongly Disagree (SD), Disagree (D), Undecided (UD), Agree (A), to Strongly Agree (SA). Each

response received a score, which was totaled after respondents completed the questionnaire.

The student learning activeness questionnaire sheet, used to assess students' engagement in learning, comprised indicators derived from expert theories. These indicators included: (1) participation in assigned tasks, (2) involvement in problem-solving, (3) seeking assistance from teachers or peers when facing difficulties, (4) willingness to search for information to address problems, and (5) active participation in discussions directed by the teacher.

Researchers will conduct both validity and reliability tests to assess the questionnaire they have developed. For the validity test, the Product Moment method will be employed to calculate the correlation coefficient between the total score of the questionnaire and the scores of individual items. If, at a 5% significance level, the calculated coefficient value is less than 0.666, the questionnaire item will be considered invalid; otherwise, it will be deemed valid.

Furthermore, the researchers utilized the Cronbach Alpha formula to assess the reliability of research instruments, including questionnaires. If the Cronbach's Alpha value exceeds 0.60, the questionnaire is considered reliable and consistent; if it falls below 0.60, it is deemed unreliable or inconsistent.

The data analysis technique employed by the researcher involves using simple linear regression to determine the impact of the independent variable (Talking Stick learning model) on the dependent variable (student learning performance). The analysis also includes stages such as normality and homogeneity tests before proceeding to the t-test. The normality test, conducted using the Kolmogorov-Smirnov technique, assesses whether the data distribution is normal. If the probability (p) is greater than 0.05, the data is considered normal; otherwise, it is not. For homogeneity testing, if the probability is greater than 0.05, homogeneity is affirmed; otherwise, it is rejected.

The decision hypothesis is then tested using the t-test to determine whether the Talking Stick learning model variable influences student learning activity variables. The SPSS application is utilized for data analysis, including the validity test with the corresponding formula.

$$: r = \frac{n(\sum xy) - (\sum x \sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2] [n \sum y^2 - (\sum y)^2]}}$$

Information:

r = Correlation coefficient

x = Item score

y = Total item score

n = number of samples (respondents)

Validity test is done by correlating the rating of each item with the total rating of each variable. The correlation results are compared with the critical value at a significant level of 0.05 or 5% if the coefficient results are greater than the critical value. then the meter is considered valid. When the validity test is calculated with SPSS, the results of the validity test appear in the Total Correlation column of the Adjusted Item as the calculated r value. The calculated r value is adjusted to the r table value. If the calculated R value is greater than the R table value, the title is declared valid. If you want the r-table to be adjusted to the number of respondents used for the validity test, look at the r-table values in the column r Product Moments. This reliability test can be measured with an interval consistency model using alpha reliability techniques. The criterion is if the reliability coefficient > rtable, then it can be said to be reliable. And it can be calculated by the formula:

$$r_i = \frac{(k) [1 - \sum ab^2]}{k - 1 \quad at^2}$$

Information:

ri = instrument reliability,

k = Number of questions,

ab² = Number of variance items, at² = Total variance

In the SPSS calculation of validity and the instrument is declared reliable if it has a Cronbach's Alpha value > 0.60. The data analysis technique used is observation.

C. Result and Discussion

Result

Before the research instrument was made as a data collection tool, the researcher tested the validity and reliability so that research data would be obtained that were in accordance with the objectives and were valid. The results of the validity test can be seen in the following table:

Table 1. Instrument Reliability Results

Cronbach's Alpha	N of Items
.957	10

The table above shows that the Cronbach's alpha value is above 0.6 so that this research instrument can be declared reliable because the Cronbach's alpha value = 0.957 > 0.6.

Table 2. Instrument Validity Test Results

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-pTotal Correlation	Cronbach's Alpha if Item Deleted
Soal	13.60	14.317	.955	.946
Soal	13.60	14.317	.955	.946
Soal	13.60	15.352	.657	.958
Soal	13.80	15.062	.738	.955
Soal	13.60	14.317	.955	.946
Soal	13.70	14.907	.764	.954
Soal	13.70	15.114	.706	.956
Soal	13.70	14.907	.764	.954
Soal	13.80	15.062	.738	.955
Soal	13.70	14.493	.882	.949

The table above shows that to find out the results of the validity test, what is seen is the calculated r value in the corrected item total correlation column. The calculated r value seen in the corrected item total correlation column must be above the r table value. The value of r table in this study = 0.444 ($n = 20$), the value of r calculated in the corrected item total correlation column was obtained from the calculation of the SPSS program where the value obtained from the questionnaire that was filled in by the respondents was entered in the data tabulation then the calculation was carried out with the SPSS program and obtained r count value. The results of the validity test in this study showed that the value of r calculated for all questions above the value of r table, namely for questions number 1, 2 and and number 5 the value was 0.995, question number 3 obtained a value of 0.657, question numbers 4 and 9 obtained a value of 0.738, question number 6 and 8 obtained a value of 0.764, question number 7 obtained a value of 0.706 and question number 10 obtained a value of 0.882. These results indicate that all the calculated r values in the research instrument items are above the r table values so that the research instrument is declared valid. The normality test is to see whether the residual values are normally distributed or not. So, the normality test is not carried out on each variable but on the residual value. The results of the normality test obtained the following results:

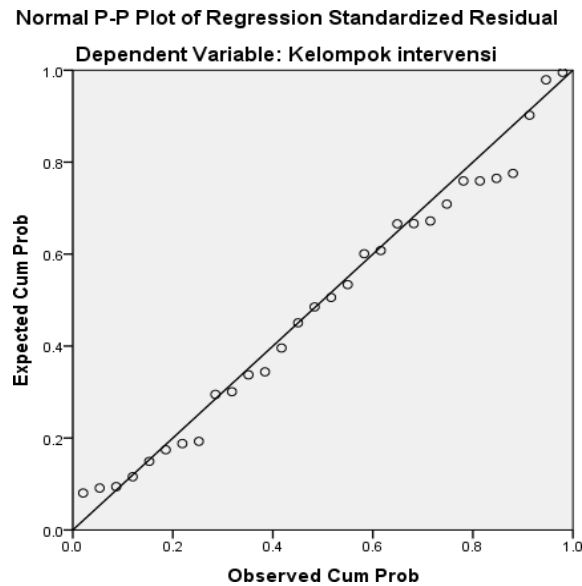


Figure 1. Data Normality Graph

For the graphic image above is a graph where at the beginning students with the lecture learning model were not active in ongoing learning, with the talking stick learning model students became active in learning.

From the results of the pretest testing carried out with the following results:

Table 3. Frequency Distribution of Pretest Standard Scores

No	Nilai	X_i	f_i	$f_i X_i$	X_i^2	$F_i X_i^2$
1	40-45	37.5	4	150	1406.25	5625
2	46-50	43.5	5	217.5	1892.25	9461.25
3	51-55	49.5	6	297	2450.25	14701.5
4	56-60	55.5	5	277.5	3080.25	15401.25
5	61-65	61.5	6	369	3782.25	22693.5
6	66-70	67.5	4	270	4556.25	18225
Jumlah			30	1581	17167.5	86107.5

For this table see the score value Pretest.

From the results of the posttest testing carried out with the following results:

Table 4. Frequency Distribution of Posttest Standard Scores

No	Data	X_i	f_i	$f_i X_i$	X_i^2	$f_i X_i^2$
1	60-65	42.5	6	255	1806.25	10837.5
2	66-71	68.5	7	479.5	4692.25	32845.75
3	72-77	74.5	7	521.5	5550.25	38851.75
4	78-83	80.5	7	563.5	6480.25	45361.75
5	84-90	87	3	261	7569	22707
Jumlah		353	30	2080.5	26098	150603.75

For this table see the score value posttest

Variance value as follows:

Table 5. Variance Value

	Pretest	Posttest
S ²	9.8	14.7
N	30	30

$$\begin{aligned}
 F_{\text{hitung}} &= \frac{\text{the biggest variance}}{\text{smallest variance}} \\
 &= \frac{14.7}{9.8} \\
 &= 1.5
 \end{aligned}$$

Upon analyzing the data, it is evident that the experimental class and the control class exhibit similar variances, indicating homogeneity. The results from the Kolmogorov-Smirnov normality test presented in Table 1 reveal that all significant scores for both the pre-test and post-test learning outcomes surpass 0.05 (0.213 for the pre-test and 0.051 for the post-test). Consequently, the conclusion can be drawn that the data follows a normal distribution.

The outcomes of the one-sample t-test indicate a ρ value of 0.00 for both the pre-test and post-test results, suggesting that $\rho < \alpha$, given $\alpha = 0.05$. This implies the existence of differences in student learning outcomes in scientific problems before and after the implementation of the talking stick method. Examining the group averages, the pre-test material averages 56.8, while the post-test group average is 71.

Cooperative learning is defined as a collaborative instructional approach that provides students with opportunities to work collectively on structured assignments. It entails shared attitudes and behaviors during work or assistance, particularly in an organized cooperative structure within groups comprising two or more individuals. The success of the task relies heavily on the personal contributions of each group member.

To foster student engagement, teachers should be adept at implementing various cooperative learning models. Enhancing student learning to achieve higher academic success, both individually and collaboratively, aligns with the objectives of embracing the cooperative learning paradigm. The Talking Stick learning model serves as an illustrative teaching strategy suitable for fifth-grade students in elementary school. This model, among many cooperative learning approaches, employs a stick as a tool during the learning process. The stick serves as a means to designate students who take turns answering questions posed by the teacher based on its positioning.

Implementation of the Talking Stick learning model necessitates group participation, requiring the teacher to organize students into equitable groups. Prior to engaging in learning activities using the Talking Stick, each group is expected to review the materials provided by the teacher. This preparation ensures that the group is well-equipped to respond to questions posed by the teacher during the learning session.

Discussion

According to the findings presented in the aforementioned study, the Talking Stick learning model demonstrates significant influence in enhancing the active participation of elementary school students. This aligns with the observations made by [Kimbark et al \(2017\)](#), asserting that the talking stick learning model is particularly effective for subjects that significantly impact students' comprehension and engagement levels. [Veronika et al \(2023\)](#) further corroborates this, highlighting the increased effectiveness of the Talking Stick cooperative learning model in its second cycle compared to the initial cycle. This improvement is attributed to the teacher's meticulous preparation and execution of the lesson, capturing students' attention and transforming them from passive participants into active contributors. As noted by [Siegle \(2014\)](#), the Talking Stick model fosters an environment that encourages students to express their opinions, initiating the learning process with the teacher's introduction of the topic and providing opportunities for students to read and study the module.

The study's results underscore the prevalent use of a conventional, teacher-centered learning model for fifth-grade elementary students, resulting in suboptimal levels of student activity. The role of teachers is pivotal in determining students' success in learning. To enhance learning outcomes, particularly in science subjects, teachers must possess the ability to create engaging lessons that capture students' interest. Apart from knowledge dissemination, instructors should consider the intellectual readiness of students to prevent mental fatigue, boredom, irritation, or resentment toward science subjects. Employing the Talking Stick collaborative learning model can make learning more enjoyable and stimulating, encouraging students to actively explore and expand their knowledge independently.

[Bature \(2020\)](#) argue that conventional, teacher-centered learning models fail to inspire enthusiasm or boost student activity. Therefore, teachers should employ more innovative and creative learning models to improve student achievement. Alongside adopting flexible and innovative models, teachers should develop diverse learning resources to make learning more engaging and encourage students to actively explore different materials. Implementing the Talking Stick collaborative learning model has the potential to make learning activities more interesting and enjoyable, fostering student participation and independent exploration.

The pre-test learning results indicate that student activity levels are not significantly satisfactory, prompting the adoption of a more innovative and creative learning model, namely the "Talking Stick" learning model, to enhance student engagement. The post-test results demonstrate satisfactory student scores, indicating that the Talking Stick learning model effectively contributes to increased student activity in science subjects for fifth-grade elementary students.

D. Conclusion

Upon analyzing and discussing the results, the following conclusions can be drawn: (1) The Talking Stick learning model significantly influences student activity, as evidenced by the experimental group, taught using this model, exhibiting a higher average compared to the control class instructed in science learning. (2) The Talking Stick learning model has a significant effect on student activity, with the experimental group showing a higher average than the control group, also taught science learning. (3) The Talking Stick learning model influences the activeness of elementary school students. Suggestions are provided for enhancing learning and addressing the identified deficiencies in this study.

Several recommendations arise from the conducted research: (1) Students should actively participate in classroom teaching and learning activities to facilitate an effective and efficient learning process. (2) Elementary school teachers are encouraged to implement the Talking Stick learning model to optimize student activity in science subjects. This entails preparing sticks, student worksheets, and lesson plans (RPP) aligned with the material being studied. (3) Schools are urged to provide facilities supporting learning activities aligned with educational objectives. Additionally, schools should facilitate teacher training, focusing on the development of applied learning models. Teachers should consistently provide motivation at the commencement of learning activities to inspire student engagement.

In conclusion, the application of the Talking Stick learning model in teaching and learning activities directly enhances the activeness and argumentative abilities of fifth-grade students at SDN. The study suggests that the talking stick learning model contributes to increased active learning among elementary school students. Future researchers are encouraged to explore and understand various learning models, including the talking stick, to expand knowledge and insights. Subsequent research could involve implementing this learning model in different classes to supplement and broaden the dataset.

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