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THE INFLUENCE OF THE TALKING STICK LEARNING MODEL ON LEARNING OUTCOMES IN MATHEMATICS SUBJECTS

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Abstract. The aim of this research is to determine the effect of the Talking Stick learning model on learning outcomes for fourth-grade elementary school students. This research method uses a quantitative method with a quasi-experimental approach and a non-probability sampling technique. Researchers used pre-tests and post-tests to determine the development and impact of students' learning results by implementing the Talking Stick learning model. The data collection technique in this research uses hypothesis testing (t-test) to determine the effect of the talk stick collaborative learning model on critical mathematical thinking. This is reflected in the results of the hypothesis test (t-test) which has a significance value of 0.006 < 0.05. Therefore, it can be concluded that there is an influence on the learning outcomes of mixed arithmetic operations using the Talking Stick learning model.

Keywords: Talking Stick, Mixed arithmetic operations, Learning Outcomes

I. INTRODUCTION

Mathematics is one of the subjects that is generally tested and studied at all levels of education. Mathematics is a field of study in the curriculum program structure which is a branch of science that is no less important than other branches of science and is even general in nature. [1]

Mathematics can be said to play an important role because it is used in every aspect of life. Mathematics subjects need to be given to all students as a basis for improving logical, analytical, systematic, critical thinking, and work skills. Realizing the importance of mathematics, it is felt that mathematics needs to be understood and mastered by all levels of society, especially elementary school to university students. This means that mathematics as the basis of students' thinking abilities is important to understand and master in society and at all levels of education, from elementary school to university. [2]

One of the lesson materials that needs special attention is regarding mixed arithmetic operations where students are not yet able to distinguish which solution should take precedence when encountering mixed operations, especially as many students still find it difficult for those who have not memorized multiplication. [3] The problem is that students' conditions in Mathematics learning are often dominated by practicing questions, listening to the teacher explain, and still relying on the multiplication tables on the back cover of students' notebooks rather than trying to memorize them. All of these are activities carried out only by the left brain so students often feel bored with learning and lack the initiative to be active individually or in groups. [4]

Active learning supports the achievement of learning success. Dimyati & Mudjiono (2013: 236) said, "Learning activities are experienced by students as a process, namely the process of learning something." Furthermore, it was stated (Riadi, 2020), "When students learn actively, it means students dominate learning activities." So if students play an active role, it means that students are able to master learning activities. For this reason, learning innovations are needed that can be applied to encourage the creation of Mathematics learning, in this case, quality mixed arithmetic operations material that departs from a student-centered learning approach.

Teachers are an important component of the success of education still lies in the way teachers communicate and manage information. Apart from that, teachers should know the condition of their students and their students' learning outcomes as a reference for the future, to find out whether there are still deficiencies and whether they can be improved. One of the challenges for teachers is how teachers can make students understand the material that has been explained by the teacher so that students always actively participate in learning in the classroom. Teachers are also required to be creative and innovative in simulating mathematics learning material, so that mathematics, which has been considered difficult and boring, becomes more fun and attractive to students. [5]

A learning model is a plan or model that can be used to formulate long-term education and curriculum, design curriculum, and guide learning inside and outside the classroom. [6]

The aim of the learning model itself is to improve student's abilities in the learning process. A learning model can be used as a model choice so that teachers can choose the most appropriate learning model to achieve learning goals. [5] Therefore, a learning model is needed that makes students appear confident in expressing their opinions. [7]

Referring to the problems above, there is a need for reform so that all existing obstacles can be quickly overcome, namely efforts that can condition all students to be actively involved in the learning process. One way to ensure that Mathematics learning can take place in an active, creative, effective and fun atmosphere (PAKEM), is that the Talking Stick learning

model will allegedly be better able to improve student learning outcomes.

The talking stick learning model is one of the learning methods that takes place in a spitting game which aims to create a fun and active learning situation, make students more active, and make the learning process more interesting. The 'Learn with a Stick' learning model affects students' thinking abilities because they participate more actively in their learning process. [8]

The syntax of Talking Sticks instruction is that the teacher prepares the stick, presents the material, students read the entire lesson, the teacher takes the stick, hands the stick to the student who received the stick, and the teacher's question is answered, passes the stick to another student, and the teacher asks another question. The teacher draws conclusions, reflects, and evaluates. [5]

Learning models can be interpreted as curricular implementation activities or as a conceptual framework for presenting teaching materials that cover all aspects before and before learning carried out by educators in order to achieve the teaching and learning process. [9]

When researchers conducted research in class 4 at SDN Kelapa Dua Wetan 03 Pagi, students when taking part in mathematics learning tended to be passive and inactive, because in learning mathematics at SDN Kelapa Dua Wetan 03 Pagi, especially in class 4, the teacher in the learning process was more monotonous. evaluation and materials so that students think mathematics is difficult and scary. so the Talking Stick learning model is needed to improve student learning output and this learning model can be used as a reference to be applied at SDN Kelapa Dua Wetan 03 Pagi.

According to researchers, the Talking Stick learning model is very appropriate in accordance with the description of student characteristics. Researchers hope that this learning model can make students think actively, understand and master the material well, all students can show their activities, the class will be lively, and fun, and student learning outcomes are expected. will increase.

This talking stick has also been proven by Siti Rahayu in her research entitled The application of the talking stick model to improve the mathematics learning outcomes of class III students at SD N 1 Sudagaran, Banyumas in the 2012/2013 academic year. The results of his research showed that before the implementation of the action, the percentage of student learning completion was 45%. After the implementation of the first cycle of action, the percentage of student learning completion increased to 65%. Then, after the second cycle of action was held, the percentage of student learning completion increased to 90%. [10]

Seeing the importance of learning outcomes in a lesson to help students achieve learning mastery, it seems necessary to conduct research to find out more about the application of the talking stick learning model to improve mathematics learning outcomes for class IV students Kelapa Dua Wetan 03 Pagi.

Based on the background above, the problem raised in this research is as follows: "Can using the Talking Stick learning model improve student learning outcomes in mathematics subjects, mixed arithmetic operations material for class IV students, Kelapa Dua Wetan 03 Pagi, academic year 2022-2023"? The aim to be achieved in this research is to determine the increase in student learning outcomes in mathematics subjects mixed arithmetic operations material for class IV students Kelapa Dua Wetan 03 Pagi 2022-2023 academic year.

II. RESEARCH METHODS

This research uses a quantitative type of research. Quantitative research is research whose activities consist of collecting, processing, analyzing, and presenting data based on the amount or quantity which is carried out objectively to solve a problem or test a hypothesis to develop general principles. [11]

The type of quantitative research used is experimental. This experimental quantitative research follows the design of scientific research which includes a hypothesis, variables manipulated by the researcher, and variables that can be measured, calculated, or compared. Experimental research has the aim of determining (dependent) relationships. between two variables, namely the dependent (independent) variable and the independent variable.

In this study, the researcher wanted to see the learning outcomes of students in class IV elementary school where students in the school had formed their own groups (already consisting of several classes). So the research design used is quasi-experimental. Quasi-experiments are carried out when the process of appointing participants is not random (non-random assignment). Additionally, quasi-experiments do not require a true control group and simply use a comparison group. The comparison group is a group that receives different treatment. In this research, a different treatment is the application of the talking stick learning model in mathematics subjects, mixed arithmetic operations material in fourth-grade elementary school. [12]

Table 1. *Nonequivalent Multiple-Group Design*

Group	*Pretest*	*Treatment*	*Posttest*
IV A	O1	X	O2
IV B	O1	X1	O2

Details:
O1:Initial test (pre-test) before treatment is administered
X: Treatment with the talking stick learning model
X1: Treatment with the conventional method
O2: final test (post-test) after treatment

In this research, researchers used non-probability sampling techniques. Non-probability sampling is a sampling technique that is not chosen randomly. Then the researcher also chose a sampling technique with a saturation sampling type. Saturation sampling or saturated sampling is used when all members of the population are used as samples.

Because the total number of students is 63 students, the researcher will take samples and conduct research in class IV of SDN Kelapa Dua Wetan 03 Pagi with a total of 63 students.

Test the validity of the device in the form of confirmation and relevant questions. In this research, the validity test uses the validity construct. Validity is a specific and specialized

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evaluation of the methods used in this research. The data collection technique in this research is the results of student learning in mathematics lessons regarding mixed arithmetic operations. This test is given twice, before students receive treatment (pre-test) and after students receive treatment (post-test). Data analysis was carried out by carrying out a normality test to determine whether the data obtained was normally distributed or not, a homogeneity test was used to determine whether the measuring scale had the same value or not and tested the research hypothesis t-test using SPSS 26 for Windows. [13]

III. RESULT AND DISCUSSION

To determine the effect of mathematics learning through the Talking Stick learning model on class IV students at Kelapa Dua Wetan 03 Pagi, research procedures and analysis of research data were carried out. The data used in this hypothesis are data from the pretest and posttest results of students in the experimental class and control class. The purpose of this hypothesis test is to determine temporary assumptions in the research. To find out the researcher's hypothesis, the researcher must carry out a normality test and homogeneity test first. These two tests are to find out whether the data is normally distributed or not. If the data is normally distributed then the hypothesis test is carried out using parametric tests, whereas if the data is not normally distributed then the hypothesis test is carried out using non-parametric tests. In the paired samples t-test using SPSS 26 for Windows. [14]

1. Normality test

In this research, the normality test was obtained using the Kolmogorov-Smirnov formula. The normality test is used to determine whether the data is normally distributed or not. In this normality test, researchers used SPSS 26. The basis for making normality test decisions is as follows. [15]

Signifikansi > 0,05 = Normal
Signifikansi < 0,05 = Tidak Normal

Normality testing for the pre-test using the Kolmogorov-Smirnov formula in SPSS 26 in the experimental class and control class can be seen in the following table.

Tests of Normality

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Kelas	Statistic	df	Sig.	Statistic	df	Sig.
Hasil Belajar Siswa	PreTest Eksperimen	.139	30	.143	.909	30	.014
	PostTest Eksperimen	.139	30	.144	.909	30	.014
	PreTest Kontrol	.144	30	.115	.902	30	.009
	PostTest Kontrol	.139	30	.143	.909	30	.014

a. Lilliefors Significance Correction

The results of the normality test from the table above show that the research data for the student numeracy ability variable when the pre-test was carried out in the experimental class (the class that received treatment with the Talking Stick learning model) had a sig. > 0.05, namely 0.143. Likewise, the control class (the class that received treatment with conventional methods) has a sig value. > 0.05, namely 0.115. Then for the student numeracy ability variable when the post-test was carried out in the experimental class (the class that received treatment with the Talking Stick learning model) it had a value of sig. > 0.05, namely 0.144. Likewise, the control class (the class that received treatment with conventional methods) has a sig value. > 0.05, namely 0.143. So it can be concluded that all data is normally distributed.

2. Homogeneity test

The homogeneity test is one of the requirements in comparative analysis such as the Independent Sample T Test and the Anova test, although the homogeneity test is not an absolute requirement. The purpose of carrying out a homogeneity test is to determine whether the variants between groups compared in a comparative test are identical or not. Homogeneity is not an absolute requirement, meaning that even though the data variants are not the same or homogeneous, the Independent Sample T Test can still be carried out to analyze research data. [16]

In this research, the homogeneity test was demonstrated using Levene's Test method by comparing significance values. The basis for making normality test decisions is as follows.

Signifikansi > 0,05 = Homogen
Signifikansi < 0,05 = Tidak Homogen

Homogeneity testing for the pre-test using SPSS 26 in the experimental class and control class can be seen in the following table.

		Levene Statistic	df1	df2	Sig.
PreTest Matematika	Based on Mean	.071	1	58	.791
	Based on Median	.026	1	58	.871
	Based on Median and with adjusted df	.026	1	57.970	.871
	Based on trimmed mean	.077	1	58	.782

Homogeneity testing for the post-test using SPSS 26 in the experimental class and control class can be seen in the following table.

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
hasil belajar mtk	Based on Mean	3.237	1	58	.077
	Based on Median	2.356	1	58	.130
	Based on Median and with adjusted df	2.356	1	48.030	.131
	Based on trimmed mean	2.705	1	58	.105

Based on the table data above, it is known that the significance value of the pre-test class for the Talking Stick learning model (experimental class) and the pre-test conventional method (control class) has a sig value. > 0.05, namely 0.791, which means the data is

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homogeneous. Then the significance value of the post-test class for the Talking Stick learning model (experimental class) and the conventional method post-test (control class) has a sig value. > 0.05, namely 0.077, which means the data is homogeneous.

3. Independent samples t-test

Hypothesis testing uses a t-test with parametric statistics, namely the formula used is the Independent Sample T Test. In this test, researchers used SPSS 26. Independent Sample T Test analysis was carried out on the post-test results of students who used the Talking Stick learning model (experimental class) and students who used the conventional method (control class). This test aims to determine whether or not there is a significant influence between student learning outcomes as indicated by high or low post-test scores for students who use the Talking Stick learning model and students who use conventional methods when mixed arithmetic operations mathematics learning is implemented. The conclusion of the research hypothesis is stated using the following criteria. [17]

Ho: There is no significant influence between the learning outcomes of students who use the Talking Stick learning model and the learning outcomes of students who use conventional methods.
Ha: There is a significant influence between the learning outcomes of students who use the Talking Stick learning model and the learning outcomes of students who use conventional methods.

Before carrying out the Independent Sample T-Test for the post-test using SPSS 26 in the experimental class and control class, the average value of the post-test results was calculated which can be seen in the following table.

Group Statistics

	Kelas	N	Mean	Std. Deviation	Std. Error Mean
Hasil Belajar Matematika	Hasil Belajar Kelas Eksperimen	30	71.3667	19.16081	3.49827
	Hasil Belajar Kelas Kontrol	30	57.1667	19.00650	3.47010

From the table above, it is known that the average post-test score for the experimental class (the class whose learning activities used the Talking Stick learning model) was 71.3667. Then the average value of the post-test results for the control class (the class whose learning activities used conventional methods) obtained a value of 57.1667. From this we can see the difference in the average value of the post-test results between the experimental class and the control class, where the average value of the experimental class is higher than the average value of the control class.

After seeing the average value of the post-test results, an Independent Sample T Test was carried out for the post-test using SPSS 26 in the experimental class and control class, which can be seen in the following table.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Hasil Belajar Matematika	Equal variances assumed	.008	.930	2.882	58	.006	14.20000	4.92742	4.33670	24.06330
	Equal variances not assumed			2.882	57.996	.006	14.20000	4.92742	4.33668	24.06332

Based on the results of post-test calculations assisted by the use of SPSS 25, the results of the sig. (2-tailed) in the Equal variances assumed table is 0.006 where this value is below the value of 0.05 (0.006 < 0.05) which can be concluded that Ho is rejected and Ha is accepted. Thus, there is a significant influence on the post-test group between the numeracy skills of students who use the Talking Stick learning model in class A (experimental class) and class B (control class) which uses conventional methods.

So, based on the results of this hypothesis test, it can be concluded that there is a significant influence between the learning outcomes of students who carry out mixed arithmetic operations mathematics learning using the Talking Stick learning model which is characterized by a difference in average scores for students who carry out learning using conventional methods. It can also be said that students in class A (experimental class) who carried out learning using the Talking Stick learning model had significantly higher post-test results than students in class B (control class) who used conventional methods.

In research carried out at SDN Kelapa Dua Wetan 03 Pagi, the aim was to determine the effect of using the Talking Stick learning model on the learning outcomes of fourth-grade elementary school students in mathematics learning on mixed arithmetic operations. This research is quantitative research. Quantitative research is a research method that tests several theories by examining the relationship between variables. The form of data presentation in this quantitative research is in the form of numbers and the analysis uses statistical calculations.

This research involved two classes, namely the experimental class and the control class. The experimental class is a class whose mathematics learning activities include mixed arithmetic operations using the Talking Stick learning model and the control class is a class whose mathematics

learning activities include mixed arithmetic operations using conventional methods.

Before the two classes were given different treatment, both classes were first given a pre-test which aimed to determine student learning outcomes in each class. From the results of this pre-test, an average score for the experimental class was 71.3667 with the highest score being 100 and the lowest score being 43. Meanwhile, the average score for the control class for the pre-test was 57.1667 with the highest score being 86 and the lowest score being 29. Then, from obtaining the values for this pre-test, a normality test can be carried out using the Kolmogorov-Smirnov formula with the help of SPSS 26. In normality testing for this pre-test, the significance value for the experimental class was 0.143 and for the control class, it was 0.115. From the results of these significance values, it is known that both have significance values greater than 0.05, which means that the pre-test test data for the experimental class and control class are normally distributed.

From the normality test for the pre-test in the experimental class and control class, homogeneity testing can also be carried out to find out whether the data is homogeneous in terms of each variable or not. Through homogeneity testing assisted by SPSS 26 using the Levene Statistics formula, a significance value of 0.071 was obtained based on the average value of the experimental class and control class. This significance value is greater than 0.05, so it can be said that the pre-test test data for the experimental class and control class are homogeneous. Furthermore, the two classes were given a different treatment, where the experimental class used the Talking Stick learning model in mathematics learning mixed arithmetic operations material and the control class used the conventional method. After that, both classes were given a post-test to see whether or not there were differences or influences from the treatment given to the two classes. From this treatment, the results obtained can be seen from the average score obtained for the experimental class of 71.3667 with the highest score of 100 and the lowest score of 43. Meanwhile, the average score of the control class was 57.1667 with the highest score of 86 and the lowest score of 29. Then from the obtained scores For this post-test, a normality test can be carried out using the Kolmogorov Smirnov formula with the help of SPSS 26. In the normality test for this post-test, the significance value for the experimental class was 0.144 and for the control class, it was 0.143. From the results of these significance values, it is known that both have significance values greater than the significance level of 5% or 0.05, which means that the post-test data for the experimental class and control class are normally distributed.

Similar to homogeneity testing for the pre-test in both classes, after carrying out a normality test based on the results of the post-test test data for the experimental class and control class, homogeneity testing can also be carried out. This homogeneity test is carried out to find out whether the data is homogeneous in terms of each variable or not. Through homogeneity testing assisted by SPSS 26 using the Levene Statistics formula, a significance value of 0.791 was obtained based on the average value of the experimental class and control class. This significance value is greater than the significance level of 5% or 0.05, so it can be said that the post-test test data for the experimental class and control class are homogeneous. After collecting research data, hypothesis testing is then carried out. Testing this hypothesis uses the t-test with parametric statistics. The formula used is the Independent Sample T-Test with the help of SPSS 26. This hypothesis testing analysis was carried out on the post-test results of students in the experimental class and control class. This test aims to determine whether or not there is a significant influence between student learning outcomes which is characterized by high or low student post-test scores. From the results of hypothesis testing, the significance value or Sig. (2-tailed) of 0.006. This significance value is smaller than the significance level of 5% or 0.05 and it can be concluded that the hypothesis is accepted. In other words, there is a significant influence from the use of the Talking Stick learning model on student learning outcomes in mathematics subjects, mixed arithmetic operations material, for class IV students at SDN Kelapa Dua Wetan 03 Pagi.

IV. CONCLUSION

Based on the results of the research and discussion that researchers have obtained regarding the influence of the use of the Talking Stick learning model on the learning outcomes of mixed arithmetic operations in mathematics subjects in class IV students, it can be concluded as follows.

1. There is a t-test calculation result using the Independent Sample T Test formula of 2.882 with p = 0.006. The p-value in the t-test calculation is smaller than the significance level of 0.05, so that from the test results there is a significant influence between the learning outcomes of students who use the Talking Stick learning model and the learning outcomes of students who use conventional methods.
2. The Talking Stick learning model can have an influence on student learning outcomes in mathematics lessons on mixed arithmetic operations material for class IV students at SDN Kelapa Dua Wetan 03 Pagi which can be seen from the student's average score. The average score obtained for class IV A as the experimental class or the class that used the Talking Stick learning model got an average score of 71.3667 and the average score for class II B as the control class or the class that used the conventional method got an average score of 71.3667. average of 57.1667. From this average value, it can be concluded that the average learning outcomes of students who use the Talking

Stick learning model are much higher than the average numeracy skills of students who use conventional methods.

REFERENCES

[1] M. Dra. Susanah, Matematika dan Pendidikan Matematika, Jakarta: Universitas Terbuka, 2014.

[2] W. K. Dyah Retno Kusumawardani, "Pentingnya Penalaran Matematika dalam Meningkatkan Kemampuan Literasi Matematika," *PRISMA Prosiding Seminar Nasional Matematika,* vol. I, pp. 588-595, 2018.

[3] W. R. Eulis Martiani, "Penerapan Model Problem Posing Untuk Meningkatkan Hasil Belajar Matematika Tentang Operasi Hitung Campuran," *Ibtida'i,* vol. III, no. 2, pp. 157-168, 2016.

[4] R. R. W. M. Pd.I, Pembelajaran Matematika Untuk Calon Guru MI/SD, Medan: CV. Widya Puspita, 2019.

[5] D. N. L. Moch. Bahak Udin By Arifin, "Pengaruh Model Pembelajaran Kooperatif Tipe Talking Stick Terhadap Kemampuan Berpikir Kritis Siswa Kelas 4 PADA Mata Pelajaran Matematika," *Pendas : Jurnal Ilmiah Pendidikan Dasar,* vol. VII, no. 02, pp. 1031-1042, 2022.

[6] E. F. F. Nurdyansyah, Inovasi Model Pembelajaran Sesuai Kurikulum 2013, Sidoarjo: Nizamia Learning Center, 2016.

[7] S. M. A. Putri Khoerunnisa, "Analisis Model-model Pembelajaran," *FONDATIA : Jurnal Pendidikan Dasar,* vol. IV, no. 1, pp. 1-27, 2020.

[8] N. S. Menza Hendri, "Upaya Meningkatkan Minat dan Hasil Belajar Fisika Siswa Dengan Menggunakan Model Pembelajaran Talking Stick pada Materi Listrik Dinamis di Kelas X SMAN 10 Muaro Jambi," *EduFisika : Jurnal Pendidikan Fisika,* vol. II, no. 01, pp. 61-69, 2017.

[9] M. Syaharuddin, Strategi Pembelajaran IPS: Konsep Dan Aplikasi, Banjarmasin: Program Studi Pendidikan IPS, FKIP, ULM, 2020.

[10] R. L. I. Pambudi, "PENERAPAN MODEL PEMBELAJARAN TALKING STICK UNTUK MENINGKATKAN HASIL BELAJAR MATEMATIKA PADA SISWA KELAS IV," *Basic Education,* vol. VI, no. 01, pp. 70-80, 2017.

[11] N. Duli, Metodologi Penelitian Kuantitatif : Beberapa Konsep Dasar Untuk Penulisan Skripsi & Analisis Data Dengan SPSS (1st ed.), Yogyakarta: Deepublish Publisher, 2019.

[12] M. G. Isnawan, Kuasi - Eksperiment, Nusa Tenggara Barat: Nashir Al-Kutub Indonesia, 2020.

[13] M. R. Lu'lu' Nafisah, "The Effect Of Structure Analysis Synthesis (SAS) Method With Book Which Entitled "Bacalah"," *JPPGuseda (Jurnal Pendidikan dan Pengajaran Guru Sekolah Dasar),* vol. VI, no. 02, pp. 138-142, 2023.

[14] G. A. M. A. L. Rukminingsih, Metode Penelitian Pendidikan Penelitian Kuantitatif, Penelitian Kualitatif, Penelitian Tindakan Kelas, Yogyakarta: Erhaka Utama, 2020.

[15] Usmadi, "Pengujian Persyaratan Analisis (Uji Homogenitas Dan Uji Normalitas)," *Inovasi Pendidikan,* vol. VII, no. 01, pp. 50-62, 2020.

[16] R. Sianturi, "Uji homogenitas sebagai syarat pengujian analisis," *Jurnal Pendidikan Sains, Sosial, dan Agama,* vol. VIII, no. 01, pp. 386-397, 2022.

[17] V. L. W. Amanda Ross, "Independent Samples T-Test," *BRILL,* pp. 13-16, 2017.