International Journal of Business, Law, and Education
Volume 4, Number 2, 2023

THE EFFECTIVENESS OF PAIRS CHECK MODEL WITH A SCIENTIFIC APPROACH TO STUDENTS' LEARNING RESULTS

Halidin[1*]; La Ode Sirad[2]; Marniati[3]
[123]Sembilanbelas November University Kolaka
[2]laodesirad.usnkolaka@gmail.com, [3]bungait@gmail.com
Correspondence: [1]halidinidin@yahoo.co.id

ABSTRACT
This research aims to determine the efficiency of the Pairs Check learning model with a scientific approach to students' mathematics learning results. The data on students' mathematics learning outcomes were acquired using the instrument at posttest. Descriptive statistics and inferential statistics were employed in the data analysis approach. The descriptive study found that the mathematics learning outcomes of 30 students taught using Pairs Check model using a scientific approach had an average value (mean) of 80,533. While the students who were taught using conventional learning consisting of 30 students showed an average score is 76,333. Consequently, it can be argued that learning mathematics using a pair check learning model with a scientific approach is more effective than conventional learning methods.

Keywords:
Effectiveness; Mathematics Learning Outcomes; Pairs Check; Scientific Approach.

INTRODUCTION

According to the Big Indonesian Dictionary, education is the process of developing a person's or group's attitudes and behaviours to educate humans through teaching and training efforts, processes, activities, and methods of education. Every human being has the right to an education in order to avoid being ignorant, impoverished, or enslaved. Furthermore, education was chosen as the primary choice for creating the nation's culture and character, because education is a way of growing the next generation of nation.

The educational objectives must be met into three categories: cognitive (intellectual mastery), emotional (attitudes and values), and psychomotor. (the ability to act and behave). They are not separate entities, but rather an indivisible one with a hierarchical structure. The three must appear as student learning results in class as the objectives to be met. As a result, these three factors must be considered as student learning outcomes from the learning process(Sudjana, 2009:49).

Mathematics is one of the subjects that plays a significant role in schooling. Mathematics is not just a thinking tool that helps us uncover patterns, solve problems, and make conclusions; it is also a tool for communicating our views about many topics in a clear, accurate, and concise way. Mathematics is considered a universal language with distinctive symbols and patterns. This is because mathematics is a fundamental discipline that is essential for learning science and addressing everyday difficulties. It is simple to address difficulties with mathematics because it delivers truth based on logical and systematic reasoning(Kadir Sobur, 2015).

According to Minister of National Education Regulation Number 22 of 2006 regarding Standards of Content for Mathematics Subjects, the objectives of learning mathematics are for students to be able to: (1) understand mathematical concepts,

explain the relationship between concepts, and apply the concept or algorithms in a flexible, accurate, efficient, and precise manner in problem-solving. Problem; (2) Employing pattern and trait reasoning, using mathematical operations to make generalizations, assemble evidence, or explain mathematical ideas and arguments; (3) Problem-solving, which involves the capacity to analyze issues, construct mathematical models, complete models, and interpret the answers found; (4) Communicate ideas through symbols, tables, diagrams, or other media to clarify the situation or issue; and (5) Preserve a sense of respect. The utility of mathematics in life means having curiosity, attentiveness, and interest in learning mathematics, as well as a tenacious and confident attitude in problem-solving.

However, the reality in the field is that many pupils struggle with mathematics. Since that mathematics is one of the basic sciences that may train students to examine logical, critical, and systematic problems, this fact merits consideration.

According to the results of an interview with one of the mathematics teachers, the mathematics learning outcomes of students at MTsS Baitul Arqom Polinggona are still quite inadequate. This is due to pupils' lack of interest in learning anything new. During the learning process, many pupils sit silently and take notes. Few of them appear engaged in learning. Many schools in the Polinggona subdistrict continue to follow the traditional curriculum because children are acclimated to conventional learning models from their prior institutions.

Ansari (2012) disclosed that various research findings indicated that the decline in student learning outcomes in the classroom was partially attributable to (1) the teacher demonstrating how to solve problems; (2) students learning by listening and watching the teacher do the maths, then the teacher solving it himself; and (3) when teaching mathematics, the teacher first explains the topic to be studied, then provides examples and questions for practice. As a result of these learning settings, students cannot communicate and develop themselves.

Student-centred learning is believed to have the potential to improve student learning outcomes. The 2013 Curriculum has been introduced in Indonesian schools since the 2013/2014 school year. The 2013 curriculum suggests that all lessons, including mathematics instruction, employ a scientific approach. Since 2017, MTsS Baitul Arqom Polinggona has implemented the 2013 curriculum with consistency, even though there are still numerous difficulties, such as lesson planning. All school disciplines demand meticulous planning. Mathematics is one of the disciplines whose implementation of learning activities requires meticulous planning, which can be expressed in lesson plans. The fact that most mathematics teachers have memorized the material to be presented affects the teacher's primary responsibility of planning learning. The limited development of lesson plans that employ particular methodologies or models hinders the educational process. Hence, teachers must refine their lesson plans, particularly in the learning activities section, to encourage students to participate more actively in learning activities.

Because cooperative learning and scientific learning are both student-centred, the application of scientific learning can be paired with other learning models, such as the pairs check cooperative learning model, to assist the learning process. Rusman (2016:202) believes that the essence of cooperative learning is that students learn and collaborate in small groups of four to six individuals with heterogeneous group structures to optimize student learning outcomes.

METHOD

This type of investigation is experimental in nature. Researchers are able to control all external variables that influence the outcome of an experiment (Sugiyono, 2016: 75). Here, the researcher employs posttest-only control design, one form of true experimental design.

In this study, the population consisted of all eighth-grade students at MTsS Baitul Arqom Polinggona during the odd semester of the 2019-2020 academic year, including up to three classes with a total of 90 students. Cluster random sampling was utilized in this work to choose up to two classes: the experimental class (treatment) using the paired check learning model and the control class using the conventional learning model. Before determining the sample for this study, homogeneity analysis was conducted. To establish whether or not the population has the same variance, the average value of mathematics in odd semesters for the three classes will be compared with the Lavene Test statistic, as shown in Table 1.

TABLE I
Population Value Homogeneity Test

Levenne Statistic	df1	*df2*	Sig.
.920	1	54	.342

Based on the statistics in Table 1, the results of the daily mathematics examinations in the three courses are homogeneous, indicating that students in these classes have comparable ability. In this study, sampling was conducted in two stages: (1) the first stage consisted of searching for homogeneous classes; and (2) the second stage consisted of randomly selecting one experimental class, namely the class taught using the pairs check type cooperative learning model (class A), and one control class, namely the class taught using the conventional learning model (class B).

The operational definition of the study is as follows:

1. The efficacy of learning referred to in this study is the extent to which a learning process achieves learning objectives as measured by student learning outcomes. Following the learning process, student enthusiasm, student activity, and student interactions with peers and teachers are indicators of the effectiveness of the learning process.
2. The cooperative learning model is a heterogeneous group learning approach, in which group members work together to solve difficulties by dividing a learning assignment.
3. The pairs check learning model referenced in this study applies group learning with the following steps: (1) working in pairs; (2) dividing partner and trainer roles; (3) the trainer asks questions, and partners respond; (4) checking answers; (5) exchanging roles; (6) conclusion; (7) evaluation; (8) reflection.
4. The scientific approach aims to provide students with the knowledge and skills necessary to recognize and comprehend various learning materials using a scientific approach, recognizing that information or knowledge can come from anywhere, at any time, and is not always dependent on the information provided by the teacher, with learning steps beginning with observation, questioning, information collection, information processing, and communication.
5. Students' mathematics learning results utilizing the pairs check cooperative learning model with a scientific approach and students' mathematics learning outcomes using conventional learning models are the focus of this study. and

6. Conventional learning is teaching that is typically carried out by teachers in schools or methods commonly employed by teachers, namely learning by discovery learning with the following stages: (1) exploring and solving problems to create, combine, and generalize knowledge; (2) student-centered; (3) activities that combine new and existing knowledge.

This study employed a posttest-only control strategy. Each of the two groups in this design is determined at random (R). The first group received treatment (X), while the second did not. The treated group was known as the experimental group, whereas the untreated group was known as the control group. Examine Table 2 below:

TABLE 2
Design of the Study

Class	Treatment	*Post test* group
R	X	O_2
R	-	O_4

With: R: Random X: Pairs Check Model Learning -: Learning Using Conventional Models
O2: Posttest experimental group
O4: Posttest control group

In this study, information was gathered through tests, observations, and documentation. A test is a more formal information-gathering instrument than other instruments due to its restrictions (Arikunto, 2006:47). In this study, one exam was administered to each class in order to measure the mathematical communication skills of the students after they had received a lesson.

Observation is a method of data collection that involves direct observation and methodical recording of the thing under study. Observation-based data gathering approaches are utilized when studying human behavior, work processes, or natural occurrences, and where the number of respondents observed is not excessive (Sugiyono, 2016:145). The outcomes of this study's observations are firsthand observations of the teaching and learning process conducted to gather information on the object under investigation. While the technique of gathering data with documentation is a collection of files that seeks data about things in the form of notes, transcripts, books, and lesson plans, the documentation itself is a search for data about things.

This study utilized exam questions, observation sheets, and documentation as its instruments. The purpose of this inquiry is to assess the value of students' mathematical learning outcomes. Both the couples check learning model with a scientific approach and conventional learning courses administer examinations at the conclusion of the learning process. Observation sheets are used to determine student activities during learning and teacher actions in managing classrooms in both paired check learning models and conventional learning classes. Observer-assisted data collection was carried out during the learning process. Before a test is administered, its validity and dependability are evaluated. Documentation is used to collect data, which is subsequently evaluated. This study's documentation contains the syllabus,

lesson plans, lesson plans, student observation sheets, teacher observation sheets, student responses, and photographs.

This study employs descriptive data analysis and inferential data analysis for its data analysis. The formulas used for descriptive data analysis include mean, standard deviation, and variance. whereas inferential analysis consists of pre-requisite tests and testing of hypotheses. Before hypotheses are tested on the data, a pre-requisite analysis test in the form of a normality test is performed to determine whether or not the data acquired from each variable is normally distributed. The Kolmogorov-Smirnov test will be used to assess normality, with the following hypothesis formulation:

H0: The data have a normal distribution

H1: The data do not follow a normal distribution

In addition to the Kolmogorov-Smirnov test, the following statistics are defined:

$$D = \underset{1 \le i \le n}{Max}\left(\left|F(z_i) - F_{n-1}(x_i)\right|, \left|F(z_i) - F_n(x_i)\right|\right)$$

Where is the empirical cumulative distribution function and F(z) is the theoretical cumulative distribution function.

The Kolmogorov-Smirnov test consists of the following steps:

a. Order the data from least to greatest.
b. Build a cumulative list of serving frequency (F_{n_i})
c. Convert value to (F_{n_i-1})
d. Convert value Xi to Zi
e. Determine the data region beneath the normal curve $F(Z_i)$
f. Find value $a_i = \left|F(Z_i) - F_{n_i-1}(X_i)\right| dan\ b_i = \left|F(Z_i) - F_n(X_i)\right|$
g. Calculate the value of $D = \underset{1 \le i \le n}{Max}(a_i, b_i)$

If value $D \le D_{tabel}$ is then H_0 approved, and if value is $D > D_{tabel}$ then H_0 rejected. Nasrum (2017:2)

The hypothesis will next be tested using the following statistical hypothesis formulation:

$H_o : \mu_1 \le \mu_2$ and $H_1 : \mu_1 > \mu_2$

With:

μ_1 : The average mathematics learning outcomes of pupils taught utilizing the paired check learning model with a scientific approach are characterized by the following parameters

μ_2 : Learning outcomes parameters for students taught using the traditional learning model.

To determine whether the proposed hypothesis is accepted or rejected, the t-test is utilized (t-test). If the number of samples in each class differs between the two classes, then the t-test formula used for testing is Polled Variant.

$$t = \frac{\overline{X_1} - \overline{X_2}}{\sqrt{\frac{(n_1 - 1)s_1^2 + (n_1 - 1)s_2^2}{n_1 + n_2 - 2}\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Sugiyono. 2016: 259)

With:

t : Statistical test price

$\overline{X_1}$: The average posttest scores of the experimental class

$\overline{X_2}$: Average post-test control class

n_1: Many examples of the experimental category

n_2: Numerous control class samples

s_1^2 : Variation of class experimental data

s_2^2 : Control class data variance

Using the one-party hypothesis (t-test statistic) and a significance level of =0.05, with a criterion test, if $t_{hitung} < t_{tabel}$ it is accepted H_o, in other cases, it is H_i rejected. Vice versa if $t_{hitung} \geq t_{tabel}$ it is H_o rejected in this case it is accepted H_i ..

If the data distribution is normally distributed and the variance of the two sample groups is not homogeneous, then the t' test (t accent) is used to assess the average resemblance in the following manner:

$$t` = \frac{\overline{X_1} - \overline{X_2}}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

Sundayana (2010) (2010)

With

$\overline{X_1}$: Experimental class average

$\overline{X_2}$: Control class average

n_1 : Lots of experimental class data

n_2 : Lots of control class data

s_1^2 : Standard deviation experimental class

s_2^2 : Standard deviation control class

RESULTS AND DISCUSSION

Analysis of student mathematics learning outcomes, analysis of teacher observation sheets, and analysis of student activity observation sheets comprised this study's descriptive analysis.

1. Examination of teacher's observation forms

The teacher's observation sheet is used to evaluate the learning process conducted by the teacher in accordance with the syntax of the Pairs check learning model and the traditional learning model with a scientific approach. The results of the observation sheet are shown in the table below.

TABLE 3
Observation Sheet of Teacher's Activity Results

Meeting	Eksperimen Class	Control Class
I	87.50%	75%
II	93.75%	83.33%
III	93.75%	100%
Average	91.67%	86.11%

Based on the results of the analysis of the teacher's observation sheet presented in Table 3, it is evident that every eighth-grade teacher meeting adhered to the pairs check learning model's learning steps. With an average teacher activity of 91.67% in the experimental class and an average teacher activity of 86.11% in the control class, the majority of learning steps are implemented in the control class.

2. Examination of student's activity observation forms

Student engagement during the learning process is measured using activity assessment sheets. The results of the observation sheet are shown in the table below.

Table 4
Observation Sheet on Students' Activity Results

Meeting	**Eksperimen Class**	**Control Class**
I	73.84%	74.54%
II	84.61%	81.81%
III	87.61%	83.63%
Average	82.02%	79.99%

Table 4's study reveals that the average student activity in the learning process with the pairings check the class model VIIIA is 82.02%, suggesting that student activities in the learning process are regarded as good. Class VIIIB average student participation in the learning process with the usual model is 79.99%. This shows that the student's activity is rated as positive, or that he or she is actively engaged in the learning process.

3. Analysis of students' mathematical achievement

The descriptive analysis results are presented in Table 5 below:

TABLE 5
Description of Mathematics Student Learning Outcomes

Analysis	Eksperimen Class	Control Class
Lots of Data	30	30
Average	78.98	73.17
Variance	141.92	131.35
Standard Deviation	11.91	11.41

Based on the descriptive analysis presented in Table 5, the mathematics learning outcomes of students taught using the Pairs check learning model (experimental class) averaged 78.98, whereas the mathematics learning outcomes of students taught using the conventional learning model (control class) averaged 73.17. This demonstrates that learning mathematics with relation and function content for the experimental class yields equivalent or superior results. As part of the inferential analysis, tests for normality, homogeneity, and hypothesis testing have been conducted.

The Kolmogorov-Smirnov test was employed to determine the normality of the experimental class's data. Based on the tests conducted, the results D_{hit} equal 0.120 and the value D_{tabel} equals 0.190. Because $D_{hit} < D_{tabel}$ (0.120 0.190) therefore H0 is accepted, i.e. the sample is representative of a normally distributed population. Similarly, the normality of the data for the control class was evaluated using the same test, yielding D_{hit} = 0.159 and value D_{hit} = 0.190. Because $D_{hit} < D_{tabel}$ (0.159 0.190), H0 is accepted, i.e. the sample is representative of a normally distributed population.

The homogeneity test was conducted using Fisher's exact test to determine whether the sample variance was comparable. Based on the analysis performed, the values F_{hitung} = 1,014 and F_{tabel} = 1,840 were determined. Because $F_{\text{hitung}} < F_{tabel}$ (1.014 1.840) is equal to one, it may be deduced that the data have the same variance.

The Polled Variant t-test is used to test the null hypothesis if the data are normally distributed and homogenous, as determined by the preceding tests. Based on the results of the hypothesis testing investigation utilizing the t-test, t = 1,743 and t table = (α = 0.05; dk = $n_1 + n_2$ - 2 = 58) = 1,685. Because t count > t table (1,743 >

1,685), H0 is rejected; that is, there is a large difference between the control class and experimental class's mean value.

This study was conducted at MTsS Baitul Arqom Polinggona, which consisted of the control class and the experimental class. In the experimental class, students are instructed using the scientific Pairs check learning paradigm, whereas in the control class, students are instructed using the conventional learning model. The Pairs check model is a group learning style that needs independence and the ability to handle teacher-assigned issues, while also enhancing students' social lives.

The discussion section of the research results comprises a discussion of the outcomes of descriptive analysis and inferential analysis, based on the previously reported research results. The debate involves (1) the mathematics learning outcomes of students, (2) the competence of teachers to regulate learning, (3) student involvement in the learning process, and (4) the success of mathematics education. The following will be a description of the discussion:

1. A teacher's capacity to facilitate learning

The ability of teachers to manage learning in both the experimental class and the control class is often successfully implemented, based on the observer's observations of three consecutive meetings. This is due to the fact that both experimental and control classes are taught by the same instructor, who has fostered an environment that is favorable, comfortable, and welcoming. So that it might drive pupils to be more engaged in the learning process and its activities.

The average percentage of teacher involvement in the learning process in the experimental class is 91.67 percent, whereas the average percentage of teacher involvement in the learning process in the control class is 86.1 percent. The average value of the percentage of teacher activity in the learning process indicates that both the experimental class and the control class have teachers whose activities in the learning process fall within the very active group.

2. Following the Learning Process Student Activities

The observer's observations of student activities in the learning process in both the experimental class and the control class revealed that, for 3 (three) meetings, all aspects seen were executed satisfactorily. In the experimental class, the average percentage of student participation in the learning process is 82.02%. In contrast, the average percentage of student engagement in the control group is 79.99%. The average value of the percentage of student activity during the learning process suggests that students in experimental classrooms or classes taught using the paired check learning model with a scientific approach are more active than students in traditional classes. These findings confirm the hypothesis that one of the benefits of the pairs checks learning model with a scientific approach is that it can boost student learning activity.

3. Mathematics Learning Results

The learning outcomes articulated by Slameto (2010:25) are the level of actual abilities that are measurable in the form of mastery of learning materials, skills, and attitudes achieved by students in the mathematics learning process at school, as well as the assertion that students' mathematics learning outcomes are influenced by the learning model applied during the learning process.

Pairs check using a scientific approach is the learning model that can improve students' maths learning outcomes. Pairs check is one of the learning strategies that encourages students to explore new ideas and be active participants in the learning process, so making the learning more vibrant and imaginative and familiarizing students with problem-solving by maximizing their cognitive ability.

The descriptive findings of the mathematics learning of 30 students taught utilizing the paired check learning model and a scientific approach revealed a mean of 80,533, a variance of 97.4 and a standard deviation of 9,869. Comparatively, 30 students who were taught following the usual methodology had a mean of 76,333, a variance of 96,022, and a standard deviation of 9,799. For the eight grade mathematics learning outcomes of MTsS Baitul Arqom Polinggona, this demonstrates a distinction between the two applied models, namely the pairs check to learn model with a scientific approach and the conventional learning model. On the basis of these three factors, the descriptive analysis using the pairs check learning model in the experimental class is more successful than the descriptive analysis using the conventional learning model in the control class.

The results of hypothesis testing performed on the posttest results of the experimental class and control class using the independent sample t-test with significant level obtained t count that = 1.743 and because the hypothesis testing with the t-test indicates that it is rejected, this implies that there is an average difference between the two groups. Comparing the average mathematics learning outcomes of pupils taught using the paired check model with a scientific approach versus those taught using the standard style.

This is in accordance with the notion established by earlier researchers, as the pairs check learning model with a scientific approach and traditional learning models differ in syntax. The syntax of the pairs check learning model with a scientific approach is to divide students into small groups and then have them work in pairs, with a division of roles, namely partners and trainers. Students are given tasks, and their partner's answer. While the syntax of conventional learning models (Discovery learning) consists of a problem statement (problem identification), stimulation or stimulation, data collection or data collection, data processing or conclusion, the syntax of discovery learning consists of a problem statement (problem identification), stimulation or stimulation, data collection or data collection, Observing the two syntaxes of the learning model reveals that in the pairs check learning model with a scientific approach, students are guided by individual or group experiences during the learning process, whereas in the conventional learning model, students are only guided by individual experiences. This is also due to the fact that students who are taught using the pairs check learning model with a scientific approach engage in learning more actively and creatively, and that learning using pairs check with a scientific approach can help students explore their inner abilities further in addition to providing opportunities for students to develop their creativity. Moreover, according to Karim (2013), learning using the paired check approach can foster student learning motivation, which can eventually influence student learning success.

With the use of partners check to learn with a scientific approach, students are more engaged in the learning process, as opposed to students who are taught using traditional learning methods.

4. Academic effectiveness

In class VIII MTsS Baitul Arqom Polinggona, both the pairs check learning model with a scientific approach and the conventional learning model are effective for teaching material relationships and functions. Comparing the average value of students' mathematics learning outcomes (post-test) reveals, however, that the learning outcomes of students who are taught using the pairs check learning model with a scientific approach are superior to those of students who are taught using the learning model. conventional. The difference between the two means is statistically significant. This indicates that the application of the pairs check learning model with a scientific approach produces more effective mathematics learning outcomes for pupils than the application of standard learning models. In other words, the scientific application of the paired checks learning paradigm has increased mathematics learning results among students. In order to maximize the mathematics learning results of pupils, it is necessary to implement the paired check model with a scientific approach to studying mathematics. In conclusion, class eight MTsS Baitul Arqom Polinggon use the paired check learning model with a scientific approach to effectively teach mathematics.

CONCLUSION

This research was undertaken at MTsS Baitul Arqom Polinggona, including the control and experimental classes. Students in the experimental class are trained using the scientific Paired check learning paradigm, whereas students in the control class are instructed using the conventional learning model. The Pairs check model is a group learning method that requires independence and the ability to handle teacher-assigned challenges while increasing students' social lives.

The discussion section of the study results includes a discussion of the descriptive and inferential analysis results based on previously stated research results. The discussion focuses on (1) the mathematics learning outcomes of students, (2) the ability of teachers to govern student learning, (3) student participation in the learning process, and (4) the effectiveness of mathematics education. The subsequent will be a summary of the discussion:

1. the capacity of a teacher to foster learning

According to the observer's observations of three consecutive sessions, teachers' abilities to manage learning in both the experimental and control classes are frequently successfully applied. This is because both experimental and control classes are taught by the same instructor, who has built a positive, comfortable, and accepting environment. So as to encourage students' participation in the learning process and related activities.

In the experimental class, the average percentage of teacher participation in the learning process is 91.67 percent, whereas in the control class, the average percentage of teacher involvement in the learning process is 86.1 percent. The average value of the percentage of teacher activity in the learning process suggests that both experimental and control classes contain teachers whose activities in the learning process fall within the very active category.

2. Student Activities Observing the Learning Process

Observations made by the observer of student activities during the learning process in both the experimental class and the control class revealed that, for 3 (three) meetings, all features observed were implemented satisfactorily. In the experimental

class, the average involvement rate in the learning process is 82.02 percent. In contrast, the average student engagement rate in the control group is 79.99 percent. The average value of the percentage of student activity during the learning process implies that experimental classrooms or classes taught utilizing the paired check learning model with a scientific approach have more active students than standard classrooms. These results corroborate the premise that one of the benefits of the scientifically-based pairs-checks learning model is that it increases student learning activity.

3. Mathematics Education Outcomes

Slameto (2010:25) defines learning outcomes as the level of actual abilities that are measurable in the form of mastery of learning materials, skills, and attitudes achieved by students in the mathematics learning process at school, as well as the assertion that students' mathematics learning outcomes are influenced by the learning model applied during the learning process.

Pairs check utilizing a scientific method is the learning model that can improve mathematics learning outcomes for children. Pairs check is one of the learning tactics that allows students to explore new concepts and be active participants in the learning process, so making learning more vivid and inventive and acquainting students with problem-solving by maximizing cognitive ability.

The descriptive findings about the mathematics learning of 30 students taught using the paired check learning model and a scientific method indicated a mean of 80,533, a variance of 97.4, and a standard deviation of 9,869. Comparatively, 30 students taught using the traditional method had a mean of 76,333, a standard deviation of 9,798, and a variance of 96,022. With regard to the eight grade mathematics learning outcomes of MTsS Baitul Arqom Polinggona, this illustrates a distinction between the two applied models, namely the pairs check to learn model with a scientific approach and the conventional learning model. Based on these three characteristics, the descriptive analysis utilizing the pairs check learning model in the experimental class is more effective than the descriptive analysis utilizing the conventional learning model in the control class.

The rejection of the null hypothesis with the t-test suggests that there is an average difference between the two groups. Compare the average mathematics learning outcomes of students taught using the paired check model with a scientific approach to those taught using the conventional method.

This is consistent with the theory proposed by prior researchers, as the pairs check learning model with a scientific approach differs in syntax from standard learning models. The scientific grammar of the pairs check learning model is to divide students into small groups and then have them work in pairs, with the responsibilities of partners and trainers divided. Students are assigned assignments, to which their partners respond. While conventional learning models (Discovery learning) consist of a problem statement (problem identification), stimulation or stimulation, data collection or data collection, data processing or conclusion, discovery learning syntax consists of a problem statement (problem identification), stimulation or stimulation, data collection or data collection, data processing or conclusion.

Observing the two syntaxes of the learning model reveals that in the pairs check learning model with a scientific approach, students are guided during the learning process by individual or group experiences, whereas in the conventional learning model, students are only guided by individual experiences. This is also due

to the fact that students who are taught using the pairs check learning model with a scientific approach engage in learning more actively and creatively, and that learning using pairs check with a scientific approach can help students further explore their inner abilities as well as provide opportunities to develop their creativity. Moreover, according to Karim (2013), learning using the paired check approach can increase student learning motivation, which can ultimately impact student learning success.

Students are more interested in the learning process when using partners check to learn using a scientific approach, as opposed to when using traditional learning techniques. 4. Academic Effectiveness.

For teaching material relationships and functions in eighth grade MTsS Baitul Arqom Polinggona, both the pairs check learning model with a scientific approach and the conventional learning model are effective. Comparing the average value of students' mathematics learning outcomes (post-test) demonstrates that the learning outcomes of students taught using the pairs check learning model with a scientific approach are superior to those taught using the learning model. Statistically, the difference between the two means is significant. This suggests that the adoption of the pairs check learning model with a scientific approach delivers more effective mathematics learning outcomes for students than standard learning models. In other words, it has been demonstrated that the scientific use of the paired checks learning paradigm improves students' mathematics learning outcomes. To enhance students' mathematical learning outcomes, it is vital to combine the paired check model with a scientific approach to mathematics study. In conclusion, class eight MTsS Baitul Arqom Polinggon effectively teaches mathematics using the paired check learning model and a scientific approach.

REFERENCE

Ansari, B. I. 2012. Komunication Mathematic and Politic. Banda Aceh: Yayasan Pena.

Ansari, Bansu I. 2016. Mathematical Communication Thinking Strategy and Learning Management Banda Aceh: Yayasan Pena.

Arikunto, Suharsimi. 2006. Educational Evaluation Basics. Jakarta :Bumi Aksara

Nasrum, Akbar. Statistical Determination of Kolmogorof-Smirnov (D) by Using Manual Way. Jurnal Vol.2 No.2. ISSN: 2541-6723

Rusman. 2016. Learning Models. Jakarta: Rajawali Pers.

Sundayana, R. 2014. Statatistic Research. Bandung: Alfabeta

Sugiyono. 2016. Quantitative, Qualitative, and R&D Research Methods. Bandung: Alfabeta.

Santoso, Edi dan Mite Setiansah. Comunication teori. Yogyakarta: Graha Ilmu, 2012.

Slameto. 2010. Learning and the Factors That Influence It. Jakarta: Rineka Cipta

Sudjana, Nana.2009. Assessment of the Results of the Teaching and Learning Process. Bandung: Remaja Rosdakarya