THE EFFECT OF RECIPROCAL LEARNING MODEL ON THE LEARNING OUTCOMES OF CLASS X STUDENTS INFORMATICS IN PUBLIC HIGH SCHOOL 1 NGUNUT

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ABSTRACT

This study was motivated by the low learning outcomes of students in class X SMA Negeri 1 Ngunut. The purpose of this study was to determine the effect of the application of Reciprocal Learning model on motivation and learning outcomes of informatics class X SMA Negeri 1 Ngunut. This type of research is a quasi-experiment with the design of the non-equivalent control group design. The samples of this study were taken from 2 classes X SMA Negeri 1 Ngunut. The experimental class was taught using the reciprocal learning model and the control class using the jigsaw learning model. The learning outcome test obtained showed that the average value of the experimental group was 77.60 and the average value of the control group was 65.10. Based on the hypothesis test, the sig value = 0.000 was obtained at a significant level $a = 0.05$. This means that the sig value <0.05 means that the sig value is outside the H0 acceptance area. So it can be concluded that there is an effect of reciprocal learning model on the learning outcomes of class X students of SMA Negeri 1 Ngunut.

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I. INTRODUCTION

LEARN is the main function of the educational process in schools. Learning is an effort to change attitudes and behaviors. It is said that the definition of learning depends on the learning theory applied [1]. Some of the limitations of the definition are as follows: (a) Learning involves changes in the nervous system. (b) Learning is the addition of behavior as a result of experience and practice. From this it can be concluded that learning is a process of action that creates new behaviors or changes old behaviors in such a way that a person is better able to solve problems and adapt to life situations. Meanwhile, understanding the type of learning is a characteristic of each individual that distinguishes him from other individuals in terms of changing his behavior by allowing a person to have skills in life such as intellectual skills, knowledge of attitudes, and skills [2].

Good and adequate learning really needs a two-way relationship between teachers and students. Therefore, the right learning strategy is needed, for example, teachers pay attention to learning situations, interactions with other teachers and students, and pay attention to subjects to achieve learning goals [3]. Many experts focus on the problem of teaching and learning interaction situations. One of them is the use of different strategies and models in learning. The use of learning models is usually not emphasized in learning activities because it can affect the teacher's final results. The independent curriculum is Curriculum 13 which is simplified focusing on learning outcomes per phase, no longer formulated per level of education. In this concept of learning outcomes per phase, schools can use the learning flow and arrange activities according to school conditions so that students can learn according to their abilities (proper learning) to achieve minimum achievement [4].

According to [5], the subject of informatics is expected to be one of the subjects that encourages the realization of the Pancasila student profile, especially in terms of students' critical and creative thinking and diversity cooperation in cyberspace. Logic-based computer skills are found in informatics subjects. This computational thinking ability is an important part of the PISA reading, numeracy and science tests. Through computational thinking skills, informatics subjects can foster an effective, efficient, and optimal way of thinking, contributing to solving problems in various areas of life that are currently inseparable from the use of computers. In addition, informatics subjects also teach technology skills, especially in the use of ICT *tools* to support data analysis and

interpretation, as well as to solve problems [6]. Informatics subjects can encourage the ability to make decisions quickly and adaptively, thereby increasing human resources [7].

The application of the right learning model aims to create learning conditions that allow students to learn actively and enjoyably so that they can achieve optimal learning outcomes and achievements. One of the learning models that can realize this is *reciprocal learning* [8]. According to [9], the *reciprocal learning* model is a learning strategy that has benefits so that learning goals are achieved through independent learning activities and self-motivation by reading, summarizing, and answering questions to solve problems.

Based on observations made by researchers at SMA Negeri 01 Ngunut on November 7, 2022, it can be seen that the implementation of the independent curriculum is implemented. The independent curriculum is a form of simplification of the previous curriculum, namely the 2013 curriculum, this independent curriculum is considered simpler and more in-depth because this curriculum will focus on essential materials and the development of students' competencies in its phase. Based on observation data of grade X students of SMA Negeri 1 Ngunut in the Informatics subject, it shows that the learning outcomes or average end-of-semester scores of some students have not reached the minimum completeness criterion (KKM) value standard that has been set at school, which is 75, it is due to the lack of effectiveness of the learning model that has been applied by teachers at SMA Negeri 1 Ngunut, namely *jigsaw.*

The learning outcomes of Informatics in class X of SMA Negeri 1 Ngunut are still not optimal, this is supported by the results of the end-of-semester exam score with the lowest average score of 51.58. In the classroom, there are students who are diligent and not diligent when learning begins, so teachers must take the initiative to pay attention to students one by one or just remind students to focus more while learning is taking place. At the time of the deadline for each group assignment from the teacher, some group members did not do their assignments on time. This makes one of the factors that students feel lacking in motivation to learn Informatics subjects and an inhibiting factor in the learning model process. The lack of student motivation to learn is caused by students who still do not pay attention to the teacher during the learning process. The learning model that has been applied at SMA Negeri 1 Ngunut is *the jigsaw*.

The purpose of this study is to find out whether there is an influence of the reciprocal learning model on the informatics learning outcomes of class X students of SMA Negeri 1 Ngunut. The benefits of this research are as a consideration for choosing the learning model to be used so as to achieve optimal informatics learning outcomes.

II. METHODS

A. Types and Design of Research

This study is an experimental research using quantitative research to determine the influence of the reciprocal learning model on student learning outcomes. According to [10], the research tools used in the collection of analytical data are quantitative or statistical and function to test hypotheses. In this study, the researcher chose to use the Quasi experimental type of research. Quasi research experiments are a type of experimental design in which control experiments influence the choice of research subjects. The design or quasi-experimental design that has been used is a nonequivalent pretest-posttest control group design. The researcher used two sample groups, namely the treatment group and the control group called the comparison group [11]. In the experimental class, the use of the reciprocal learning model is applied, while in the control class, learning is given that has been applied, namely the jigsaw learning model.

Table I Research Design

Class	Test Awal (*Pretest*)	Treatment	Final Test (*Postest*)
Experiment	O1	X	O3
Control	O2	-	O4

Source [12]

Information:
X : Informatics Learning using *the reciprocal learning model*
O1 : *Pretest* in the experimental class
O2 : *Pretest* in the control class
O3 : *Posttest* in the experimental class
O4 : *Posttest* on control class

B. Variable Operational Definition

The title that has been made by the researcher has a meaning or term that needs to be clarified so that there are no errors in understanding and interpretation. The researcher will explain the operational definition as follows [13];

The reciprocal learning model is a learning strategy based on the principle of asking questions where students metacognitive skills are taught through direct teaching and learning modelling by teachers. Learning using reciprocal learning must pay attention to three things, namely students learn to remember, think and motivate themselves. In the application of the reciprocal learning model in the subject of informatics of computational thinking elements to grade X students of SMA Negeri 1 Ngunut, teachers teach students important cognitive skills by creating learning experiences, through learning models, certain behaviors, and then helping students develop these skills through their own efforts by giving them a sense of purpose. In this study, the X1 variable was measured using an obesity sheet

1. Learning outcomes are learning outcomes, namely behavioral changes as learning outcomes in a broader sense covering the cognitive, effective, and psychomotor fields [14]. In simple terms, what is meant by student learning outcomes is the ability that children acquire after going through learning activities. What is intended to express students' abilities in the form of numbers as learning outcomes are the results of an assessment of students' abilities determined in the form of numbers after undergoing the learning process. In this study, the learning results were obtained from the pretest with 18 questions and the posttest as many as 16 questions from the computational thinking element in the informatics subject

C. *Population, sample, and research sampling*

1. Populasi

The population is a group of research subject [15]. The population in this study is class X students of SMA Negeri 1 Ngunut

Table II Research Population

No.	Class	Number of Students
1.	X A	36
2.	X B	36
3.	X C	36
4.	X D	36
5.	X E	36
6.	X F	38
7.	X G	38
8.	X H	38
	Sum	294

2. Sample

Based on the above research, the study uses a sample presented by [16]. The sample in this study was more than 100 students, so the sample was taken 24.5% of the total population, which was x294 = 72 students. So the number of respondents is 72 students in class X of SMA Negeri 1 Ngunut as follows:$\frac{24,5}{100}$

Table III Research Sample

No.	Class	Number of Students
1.	X A	36
2.	X B	36
	Sum	72

3. Research Sampling

The sampling technique in this study uses purposive sampling. According to [12], purposive sampling is a technique for sampling data sources with certain considerations. The sample used in this study was taken from students of class X A and students of class X B. Because the class had almost the same initial ability. This is reinforced by the average score of the final semester exam of the class.

Table IV UAS Average Score

No.	Class	Average grade
1	X A	51,58
2	X B	52,97

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D. *Data Collection Techniques*

Data collection techniques are a systematic and standard method to obtain the necessary information [17]. In this study, information or data was obtained through tests, questionnaires and observations.

1. The tests used in this study are in the form of pretest and posttest questions. The pretest is used to determine the initial ability of students in understanding the material in the informatics subject, the element of computational thinking in the material of searching, sorting, and queuing. The pretest questions consist of 18 questions. Meanwhile, the posttest questions are carried out after completing teaching and learning activities with the same material as the pretest, but for the purpose of finding out more about how capable the students are in mastering the material that has been given

2. Angket adalah Teknik pengumupulan data di mana responden diminta serangkaian pertanyaan atau pertanyaan tertulis [18]. In this study, the questionnaire was carried out directly and google form to the respondents, namely class X students of SMA Negeri 1 Ngunut. To measure the value of the variables studied, research instruments are needed. The questionnaire of this study uses a Likert scale instrument. The Likert scale was used to obtain research data on students' attitudes in the affective realm. Where in this questionnaire there are questions about students' attitudes towards the learning process

Table V Scale Likert

Information	Score +	Score-
Strongly Agree (SS)	4	1
Agree(s)	3	2
Disagree (KS)	2	3
Disagree (TS)	1	4

3. Observation

Observation was carried out to observe the application of the reciprocal learning model in TIL learning in class X A and class X B of SMA Negeri 1 Ngunut. An observation sheet is a sheet that contains steps in the reciprocal learning model by putting a check mark on the observation sheet if the step is carried out [19].

E. *Data analysis*

Data analysis is a way of handling or processing data into valid information [20].

1. Test instrument
    a. Validity Test, which means a test of the accuracy or accuracy of a measuring tool [21]. The validity test on each question is if the calculation > the table is at a significant level ($\alpha = 0.05$) then the instrument is considered invalid and if the calculation < the table then the instrument is considered invalid. The calculation of this validity test uses *SPSS version 26.0 software*. In this study, the validity test was used to measure the validity of questionnaire and test instruments.
    b. Reliability Test, which means it can give the right results. The reliability test determines the consistency of the measuring instrument, whether the measuring instrument used is reliable and remains consistent even after repeated measurements [22].
    c. The Difficulty Level Test is an assumption used to get quality questions [23].
    d. The Differentiation Test, according to [24], the Differentiation Test means examining test questions based on the ability test to distinguish between students who are in the weak or low achievement category and students who are in the strong or high achievement category

2. Prerequisite tests
    a. The Normality Test is used to determine whether or not the distribution is normal in the study [25]. The normality test was carried out on the pretest and posttest scores using the Kolmogrov Smirnov formula.
    b. The Linearity Test, used to find out whether the x variable and the y variable have a linear relationship or not [24]
    c. The Homogeneity Test is used to find out whether the samples taken have homogeneous variants or not and to find out the initial capabilities that must be the same [26]. In this study, the Levene test was used

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3. Uji hipotesis
    The hypothesis test in this study uses an independent sample T-test. The purpose of hypothesis testing is to reach a conclusion that the research hypothesis is accepted or rejected.

III. RESEARCH RESULTS

A. Presentation of Research Results Data

The purpose of this study is to determine the influence of the reciprocal learning model on the learning outcomes of grade X students of SMA Negri 1 Ngunut. This study is an experimental research where there are 2 classes that are given different treatments, namely the class that is given special treatment is called the experimental class and the class that is not given treatment is given the control class. In this treatment, the experimental class was given material using the reciprocal learning model while the control class used the jigsaw learning model.

The population in this study is all class X of SMA Negri 1 Ngunut. Based on the sampling, class X A with a total of 36 students and class X B with a total of 36 were obtained. The sampling uses the purposive sampling technique because the two classes have the same initial ability. There are 2 types of tests used in this study, namely posttest and pretest, where the pretest consists of 18 questions and the posttest consists of 16 questions. After conducting a trial and knowing the results, the next research was carried out. The research data was processed with SPSS 26.0 For Windows. The following is the average pretest and posttest scores of the experimental class and the control class.

Table VI Average of Control Class grades

No.	Class	*Pretest*	*Posttest*
1.	Control	49,53	65,10

Based on the data of the pretest and posttest results of the control class, it can be concluded that the resulting value category is still not good. This is evidenced by the fact that there are still many student scores that are below the KKM that has been set by the school, which is 75.

Table VII Average Experimental Class Scores

No.	Class	*Pretest*	*Posttest*
1.	Experiment	52,77	77,60

Based on the data of the pretest and posttest results of the experimental class, it can be concluded that the value category produced in the pretest of the experimental class is still not good. Meanwhile, the posttest in the experimental class of the resulting value category is good.

B. Data analysis and hypothesis testing

1. Test Instrument
    a. Validity test

Table VIII First Pretest Validity Test

No. Item	r calculate	Criterion
1.	0,449	Valid
2.	0,382	Valid
3.	0,245	Invalid
4.	0,349	Valid
5.	0,286	Invalid
6.	0,503	Valid
7.	0,324	Valid
8.	0,615	Valid
9.	0,040	Invalid
10.	0,536	Valid
11.	0,477	Valid
12.	0,499	Valid
13.	0,333	Valid
14.	0,368	Valid
15.	0,255	Invalid
16.	0,531	Valid
17.	0,460	Valid

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No.	r calculate	Criterion
18.	0,333	Valid
19.	0,148	Invalid
20.	0,401	Valid
21.	0,340	Valid
22.	0,278	Invalid
23	0,020	Invalid
24.	0,557	Valid
25	0,455	Valid
26.	0,188	Invalid

Table IX First Posttest Validity Test

No. Item	r calculate	Criterion
1.	0,191	Invalid
2.	0,590	Valid
3.	0,291	Invalid
4.	0,498	Valid
5.	0,324	Valid
6.	0,217	Invalid
7.	0,575	Valid
8.	0,310	Invalid
9.	0,505	Valid
10.	0,077	Invalid
11.	0,359	Valid
12.	0,338	Valid
13.	0,464	Valid
14.	0,532	Valid
15.	0,188	Invalid
16.	0,505	Valid
17.	0,257	Invalid
18.	0,549	Valid
19.	0,766	Valid
20.	0,052	Invalid
21.	0,447	Valid
22.	0,319	Invalid
23	0,456	Valid
24.	0,410	Valid
25	0,405	Valid
26.	0,276	Invalid

In the validity test of each question item on the *pretest* and *posttest instruments* as shown in the table above, it was found that the question item with the highest calculation r, namely for *the pretest of* question item number 8 with a calculation of 0.615 while for *the posttest* question item number 19 with a calculation of 0.766, and a question item with an calculation of 0.766, and a question item with an calculation of r_{was} foundThe lowest is for *the pretest of* question item number 23 with an r_{count} of 0.020 while *the posttest* of question item number 20 with an r_{count} of 0.052. In the validity test of each question item, it was also found that there were 8 questions for *the pretest* and 10 *questions for the posttest* which were below the r_{table} 0.320. Namely questions number 3,5,9,15,19,22,23,26 for *pretest* questions, and for *posttest* questions number 1,3,6,8,10,15,17,20,22,26 are declared as invalid question items to be used as test instruments. Then the validity test was carried out again to ensure the validity or not of the 18 *pretest questions* and 16 posttest questions that had been declared valid in the first validity test.

Table X Second Pretest Validity Test

No. Item	rcalculate	Criterion
1.	0,450	Valid
2.	0,392	Valid
3.	0,355	Valid
4.	0,532	Valid
5.	0,394	Valid
6.	0,629	Valid
7.	0,571	Valid

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8.	0,500	Valid
9.	0,527	Valid
10.	0,332	Valid
11.	0,344	Valid
12.	0,519	Valid
13.	0,511	Valid
14.	0,391	Valid
15.	0,366	Valid
16.	0,369	Valid
17.	0,495	Valid
18.	0,478	Valid

Table XI Second Posttest Validity Test

No. Item	rcalculate	Criterion
1.	0,640	Valid
2.	0,626	Valid
3.	0,350	Valid
4.	0,531	Valid
5.	0,552	Valid
6.	0,360	Valid
7.	0,377	Valid
8.	0,479	Valid
9.	0,599	Valid
10.	0,552	Valid
11.	0,598	Valid
12.	0,774	Valid
13.	0,477	Valid
14.	0,488	Valid
15.	0,400	Valid
16.	0,353	Valid

From the second validity test table as shown in the table above, all 18 items of *pretest* questions and 16 items of *posttest* questions were declared valid. By finding the question item with the highest calculation r, namely for *the pretest* of question item number 6 with an r_{count} of 0.629, and *posttest of* question item number 12 with an $r_{count\ of}$ 0.774. It was found that the question item with the lowest calculation r was for the *pretest of* question item number 10 with an r_{count} of 0.332, and for *the posttest* item number 16 with an r_{count} of 0.353.

b.   Reliability Test

Table XII Pretest Question Reliability Test

Cronbach's Alpha	Tableable	N of Items
0,771	0,320	18

Table XIII Posttest Reliability Test

Cronbach's Alpha	Tableable	N of Items
0,776	0,320	16

The results of the reliability test value are known to be greater than $>_{r\ table}$ (attachments 18, 19, and 20), which means that if the reliability test results meet the criteria. After the questionnaire is stated to have met the validity and reliability test, the questionnaire can be used as an instrument in this study.

c.   Difficulty Level

Table XIV Pretest Difficulty Test

Question No.	Difficulty Level	Question Item Status
1.	0,82	Easy
2.	0,58	Keep
3.	0,79	Easy
4.	0,61	Keep
5.	0,74	Easy
6.	0,74	Easy

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7.	0,63	Keep
8.	0,84	Easy
9.	0,82	Easy
10.	0,79	Easy
11.	0,74	Easy
12.	0,66	Keep
13.	0,58	Keep
14.	0,79	Easy
15.	0,87	It's very easy
16.	0,50	Keep
17.	0,74	Easy
18.	0,74	Easy

Table XV Posttest Difficulty Test

Question No.	Difficulty Level	Question Item Status
1.	0,87	It's very easy
2.	0,71	Easy
3.	0,87	It's very easy
4.	0,26	Difficult
5.	0,89	It's very easy
6.	0,89	It's very easy
7.	0,32	Keep
8.	0,97	It's very easy
9.	0,95	It's very easy
10.	0,89	It's very easy
11.	0,92	It's very easy
12.	0,95	It's very easy
13.	0,39	Keep
14.	0,89	It's very easy
15.	0,76	Easy
16.	0,26	Difficult

Based on the table above, it is known that for *pretest questions* there is 1 question item including the very easy category, 11 questions in the easy category, and 6 questions in the medium category. As for *the posttest,* it is known that there are 10 questions in the very easy category, 2 questions in the easy category, 2 questions in the medium category, and 2 questions in the difficult category. It can be seen in appendices 21 and 22.

d. Difference Test

Table XVI Difference Test Pretest Questions

Question No.	*Corrected Item-Total Correlation*	Interpretasi
1.	0,357	Enough
2.	0,465	Good
3.	0,349	Enough
4.	0,423	Good
5.	0,682	Good
6.	0,545	Good
7.	0,468	Good
8.	0,418	Good
9.	0,441	Good
10.	0,311	Enough
11.	0,528	Good
12.	0,411	Good
13.	0,398	Enough
14.	0,388	Enough
15.	0,580	Good
16.	0,439	Good
17.	0,393	Enough
18.	0,374	Enough

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Table XVII Difference Test Posttest Questions

Question No.	Corrected Item-Total Correlation	Interpretasi
1.	0,557	Good
2.	0,506	Good
3.	0,633	Good
4.	0,397	Enough
5.	0,464	Good
6.	0,654	Good
7.	0,409	Good
8.	0,431	Good
9.	0,541	Good
10.	0,464	Good
11.	0,527	Good
12.	0,737	Excellent
13.	0,318	Enough
14.	0,393	Enough
15.	0,455	Good
16.	0,598	Good

Based on the results of the analysis that has been carried out, it is expected that 18 pretest multiple-choice questions and 16 posttest multiple-choice questions can be found that for *pretest questions,* 7 items of questions are included in the sufficient category, and 11 items of questions are included in the good category. Meanwhile, in the posttest multiple-choice questions , it can be known that 3 questions are in the sufficient category, 12 questions are in the good category, and 1 question is in the very good category

2. Prerequisite Test
   a. Normality Test
      The normality test was carried out with *SPSS 26.0 For Windows software*. Using the *Kolmogrov-Smirnov* test using a significance level of 5% or 0.05 and the data was declared normally distributed if the significance was greater than 5% or 0.05. The test in this way is carried out by comparing the probability level (*sig*) with *the alpha* value (α).

Table XVIII Results of the Normality Test

No.	Instruments	Ex Value	Control Value	Information
1.	*Pretest*	0,102	0,097	Normal
2.	*Posttest*	0,068	0,054	Normal

   b. Linearity Test
      The ariable method 2525 for the linearity test is that if the significance of the Deviation From Linearity < 0.05, then the relationship between the two 25ariables is not linear.

Table XIX Results of Linearity Test

No.	Instruments	Value	Information
1.	*Pretest*	0,703	Linier
2.	*Postest*	0,289	Linier

   c. Homogeneity Test
      After the data in the study is declared to be normally distributed, the next step is to find the homogeneity value. In this study, homogeneity was obtained by conducting a variance homogeneity test. This homogeneity test is intended to test whether the two variants of the research sample are homogeneous or not. The decision making of the homogeneity test is that if the significance > 0.05, H0 is accepted (same variant) and if the significance is < 0.05, then H0 is rejected (different variant).

Table XX Homogeneity Test Results

No.	Instruments	Value	Information
1.	*Pretest*	0,379	Homogeneous
2.	*Posttest*	0,705	Homogeneous

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3. Uji Hipotesis

The analysis used for the research hypothesis test is the Independent T-test analysis. The T-test was used to test the mean difference of two independent sample groups. In this study, a significant level of 5% ($\alpha = 0.05$ was used.

There is one hypothesis that will be tested, namely, (Ha1), There is an influence of the reciprocal learning model on the learning outcomes of grade X students of SMA Negeri 1 Ngunut.

The criterion used is that H0 is rejected if the significant value is $< \alpha$ (the level of significance used), meaning that there is a significant influence between the independent variable (X) and the bound variable (Y).

Table XXI Hypothesis Test Results

No.	Variable	Sig Value
1.	Learning Outcomes	0,000

Based on these calculations, it can be described as follows:

In accordance with these calculations, it can be known that the significance value is 0.000. Where 0.000 < 0.05 which can be interpreted as Ho1 is rejected, Ha1 is accepted so that there is a difference in the learning outcomes of the control class and the experimental class, so it can be concluded that there is an influence of the reciprocal learning model on the learning outcomes of students in class X of SMA Negeri 1 Ngunut.

C. Discussion

The population in this study is all students of class X of SMA Negeri 1 Ngunut for the 2022/2023 school year which totals 294 students. The sampling used the purposive sampling technique, namely class X B as the control class and class X A as the experimental class. This technique is used based on certain criteria, namely that the two classes have the same average initial learning ability. The independent variable in this study is the recipcrocal learning model, while the bound variable is learning motivation and learning outcomes.

- The Effect of the Reciprocal Learning Model on Learning Outcomes

The research on learning outcomes is carried out by conducting test evaluations. Before the test is tested on the respondents of the research sample, the test is first tested to see the level of validity, reliability, level of difficulty and differentiation to determine the question items that are feasible and unsuitable to be used as a test. Using the Item Total Correlation technique using the SPSS 26.0 For Windows application, the data on the pretest statistical questions was obtained from 26 questions, 18 questions were declared valid. While in the posttest obtained from 26 questions, there are 16 valid questions.

To determine the influence of the reciprocal learning model on learning outcomes using the T-test test formula, but before using this formula, the research data must meet several assumptions, namely normal, linear, and homogeneous distributed data. Using the help of SPSS version 26.0, the results of the kolmogrov smirnov test can be concluded that the average data is normally distributed because it has an Asymp.Sig > 0.05. The pretest learning results of the experimental class had a sig of 0.102 > 0.05, and the control class had a sig of 0.097 > 0.05 for the posttest learning results of the experimental class had a sig. 0.068 > 0.05 and the control class has a sig. 0.054 > 0.05 so it can be concluded that the data is normally distributed. Based on the linearity test, the pretest table showed a sig of 0.703 > 0.05 and the posttest showed a sig. 0.289 > 0.05, so the data can be said to be linear. Based on the homogeneity test, the pretest sig table was 0.379 > 0.05, and the posttest showed sig. 0.705 so that the data can be said to be homogeneous.

After that, research began to be carried out in both classes, namely class X A (experimental class) and class X B (control class). Before the treatment was carried out, both classes were given a pretest to find out the learning ability of each student. Then in the experimental class, learning was given with the recipcrocal learning model and the control class was carried out jigsaw learning. After the learning process was carried out, both classes were given a posttest with the same material to see the learning results of each class.

Before the data was analyzed by the T-test, the student learning outcome questionnaire data was grouped based on the learning model used. This was done to determine the average learning outcomes of students in the experimental class that used the reciprocal learning model and the control class that used the jigsaw learning model. Based on the calculation results, it was found that the average pretest experimental group was 52.77 and posttest 77.60 with 36 respondents. Meanwhile, the control class had an average pretest of 49.53 and a posttest of 65.10 with a total of 36 respondents.

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The results of the analysis of the T-test showed that there was an influence of the reciprocal learning model on the learning outcomes of grade X students of SMA Negeri 1 Ngunut. This is in accordance with the calculation of the SPSS Version 26.0 program where the results of the data calculation show that the sig value = 0.000 then H0 is rejected and Ha2 is accepted. So it can be concluded that there is an influence of the use of the reciprocal learning model on the learning outcomes of class X students of SMA Negeri 1 Ngunut.

IV. CONCLUSION

A. Conclusion

Based on the theoretical and empirical discussion of the data from the research results on the influence of the reciprocal learning model on the learning outcomes of class X students of SMA Negeri 1 Ngunut, the author gives the following conclusions

- The experimental class had an average score of 52.77 and a posttest score of 77.60 with a total of 36 respondents. Meanwhile, the control class had an average pretest of 49.53 and a posttest of 65.10 with a total of 36 respondents. The results of the analysis of the T-test showed that there was an influence of the reciprocal learning model on the learning outcomes of grade X students of SMA Negeri 1 Ngunut. This is in accordance with the calculation of the SPSS Version 26.0 program where the results of the data calculation show that the sig value = 0.000 then H0 is rejected and Ha2 is accepted. So it can be concluded that there is an effect of the use of reciprocal learning on the learning outcomes of class X students of SMA Negeri 1 Ngunut.

B. Suggestion

For the sake of the progress and success of the implementation of the teaching and learning process in order to improve the quality of education, the author provides the following suggestions:

1. Suggestions for the next researcher
   a. For future researchers who will conduct the same study, they can develop research objectives to be researched and focus more on what is being researched, especially the influence of the reciprocal learning model on student motivation and learning outcomes.
   b. The researcher must understand the focus of the study to be researched by increasing the literature study on the reciprocal learning model related to the focus of the study to be researched.
   c. For future researchers, it is recommended to improve the accuracy both in terms of completeness of the data obtained from the journal and from observation

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