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Application Of Make A Match And Scramble Learning Models Scramble Learning Model With Probing Prompting Technique To Increase Students' Achievement Motivation To Learn Physics

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Abstract
This type of research is experimental research with the design use group pre test – post test by randomize control design. The research aims to know what the differences between the students. The purpose of study was to determine the differences in achievement motivation physics student taught by learning model Make A Match using Probing Prompting technique and Scramble using Probing Prompting technique.
The population in this research were students of class X SMA N 5 Kupang. The sample was X IPA 1 and X IPA 2 graders each class numbered 36 and 32 people. Sampling was done by simple random sampling technique. Instruments used the insruments syllabus, lesson plans implementing, and evaluation instruments such as students achievement motivation questionnaire.
From the analysis of the data using qualitative descriptive analysis in order to obtain that (1) there are differences in achievement motivation among students of physics students are taught using learning model of Make A Match using Probing Prompting technique and Scramble using Probing Prompting technique with the significant level (α = 0,05) and freedom degree of 66 obtained result tcount = 2,295 > ttable = 1,996. (2) achievement motivation physics students taught using learning model of Make A Match using Probing Prompting technique higher achievement motivation than physics students taught using learning model Scramble using Probing Prmpting technique with the significant level (α = 0,05) and freedom degree of 66 obtained result tcount = 2,295 > ttable = 1,669.

Keywords: *Learning Model Make A Match, Learning Model Scramble, Probing Prompting technique, Achievement Motivation Physics Students.*

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I. INTRODUCTION

Education is a very important thing that every child in Indonesia must get. The lack of education obtained by every child can cause the downturn of the Indonesian nation as is happening at this time. With education, the Indonesian nation will experience changes for the better. Education is also one of the important aspects in the development of community life and national progress that is carried out consciously and deliberately to change human behavior. This conscious and deliberate effort is carried out through a learning or educational process called educational interaction or teaching and learning interaction. Learning interaction implies the existence of interaction activities from teaching staff who carry out teaching tasks with learning citizens (students) who are learning to achieve certain goals in this case creating quality humans.

The above statement is in accordance with the educational objectives listed in Law No. 20 of 2003 Article 3 which reads, "National education functions to develop abilities and shape the character and civilization of a dignified nation in order to educate the nation's life, aims to develop the potential of students to become human beings who are faithful and devoted to God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent and become democratic citizens as well as responsible citizen". Efforts to educate the nation mean improving the quality of Indonesian human beings which can basically be realized through educational activities including the teaching and learning process at school.

Three important components play a role in efforts to improve the quality of education, namely teachers, students and educational facilities. Teachers as educators and teaching staff in the process of educational interaction must be able to create conditions that stimulate and direct student learning activities to gain knowledge, skills, values and attitudes that can bring about changes in behavior and changes and self-awareness as a person. One of the functions of education is to shape students' attitudes and orientation towards learning, instill a positive attitude and thirst for knowledge, and to develop effective learning skills. The success of students in their education is also influenced by their achievement motivation.

Natural Science (IPA) is related to how to find out about natural phenomena systematically, so that science is not only mastery of a collection of knowledge in the form of facts, concepts, or principles but also a discovery process. Science education is expected to be a vehicle for students to study themselves and the surrounding environment, as well as prospects for further development in applying it in everyday life. Science education is directed to find out and do so that it can help learners to gain a deeper understanding of the natural world.

Physics is a branch of science that underlies the development of advanced technology and the concept of living in harmony with nature. The purpose of learning physics is to provide knowledge about physics, ability in process skills and improve creativity and scientific attitudes. More clearly, the target desired by the curriculum covers three domains, namely cognitive through knowledge, understanding, application, analysis, synthesis, and evaluation; affective through the development of scientific attitudes; psychomotor through improving process skills both with physics experiments and without experiments. Studying physics means training students to understand physics concepts, solve and discover why and how events occur and students more easily apply physics problems in everyday life by understanding physics concepts.

The rapid development in the field of information and communication technology today is triggered by findings in the field of information and communication technology today is triggered by findings in the field of material physics through the discovery of microelectronic devices that are able to contain a lot of information with a very small size. As a science that studies natural phenomena, physics also provides good lessons to humans to live in harmony based on natural laws. Management of natural resources and the environment as well as reducing the impact of natural disasters will not run optimally without a good understanding of physics. Therefore, conducive physics learning in the classroom is needed so that students really understand about physics itself.

For that conducive physics learning required a collaborative role between students and teachers. In this case, learning that takes place in the classroom should apply two-way learning. However, sometimes without realizing it in the learning process students have not been actively involved or learning is monotonous. Student activities are more about listening and recording what the teacher says. Student involvement is still lacking and comprehensive and is only dominated by certain students.

This is what results in low motivation from students to excel. Therefore, renewal in education is needed, especially renewal of learning techniques or models. A teaching technique is said to be relevant if it is able to lead students to achieve educational goals in general and physics learning objectives in particular that are expected to be accomplished through teaching. Learning models and techniques are external factors that affect student activeness in learning. Learning models and techniques can also spur the learning process to always apply teaching between teachers and students in two directions, not only from teachers to students. By inviting, stimulating, and providing opportunities for students to participate in expressing opinions, learning to make decisions, working in groups, making reports, and so on means that the teacher brings students to a real learning atmosphere.

The make a match cooperative learning model is a learning model that is entertaining and fun, makes students not feel like they are learning, can be an alternative for understanding and deepening the material, and makes students excited and enthusiastic about learning. The characteristic of the make a match learning model is the game "find a partner" game. The game of finding pairs uses cards that contain questions and cards that contain answers. Learners try to find the answers to the questions in their cards found on the cards held by other students.

Meanwhile, the scramble cooperative learning model is a learning model that provides question sheets and answer sheets accompanied by alternative answers available. Students are expected to be able to find answers and ways to solve problems. In this scramble learning model, the answers to the questions have been written but in random form, students are tasked with correcting (flipping the words) the answers so that they become the right and correct answers. Scramble learning model is active. Students are required to actively cooperate in completing the question cards to get points for their groups and students have their own responsibilities in completing their tasks.

To complement the cooperative learning models above, one of the learning techniques that teachers can use in a two-way learning model is the probing prompting technique. The probing prompting technique is a learning technique in which the teacher presents a series of questions that guide and explore students' ideas so as to improve the thinking process that is able to link students' knowledge and experience with the new knowledge being learned.

This technique is one of the effective questioning techniques in guiding students' thinking process so that they are able to find their own concepts or principles that are being achieved. Questioning plays an important role in addition to the learning model, because well-constructed questions with the right questioning techniques will increase student participation in teaching and learning activities, arouse students' curiosity about a problem being discussed and develop thinking patterns and active learning methods from students. Thinking itself is actually asking questions, guiding the students' thinking process. Because good questions will help students determine good answers, and focus students' attention on the issues being discussed.

Researchers use the make a match learning model and scramble learning model using probing prompting techniques with the aim of arousing and increasing student achievement motivation. Achievement motivation is the drive to do a task as well as possible based on standards of excellence in order to achieve the highest possible learning achievement. So, achievement motivation is not just an urge to do, but refers to a measure of success based on an assessment of the task one is doing. Students will be encouraged to study diligently in order to achieve the desired learning achievement.

Model is understood as an object or concept that is used to represent something. For example, a motor model made of iron, plastic, engine, and glue is a real model of an airplane as expressed by Meyer (Trianto, 2009: 21) something real and converted to a more form. Comprehensive learning model is a plan or a pattern used as a guideline in planning classroom or tutorial learning.

Learning in the classroom or learning in tutorials. According to Arends (Trianto, 2009:22), a teaching model leads to a particular learning approach including its objectives, syntax, environment, and processing system.

According to Joyce and Weil (Rusman, 2014: 133) a learning model is a plan or pattern that can be used to form a curriculum (long-term learning plan), design learning materials, and guide classroom learning or others. Learning models can be used as a pattern of choice, meaning that teachers may choose learning models that are appropriate and efficient to achieve their educational goals.

So it can be hypothesized that a learning model is a conceptual framework that describes systematic procedures in organizing learning experiences to achieve learning objectives and serves as a guide for learning designers and teachers in designing and implementing learning models.

This learning plan includes planning, implementing and evaluating learning. The learning model directs teachers in designing learning to help students so that learning objectives are achieved. A learning model is a form of learning that describes activities from beginning to end that are typically presented by the teacher. The success or failure of a learning model is largely determined by the teacher's ability to master the classroom atmosphere, the way of speaking, and the systematics of the conversation, the amount of material presented, the ability to provide illustrations, the number of subjects listening and others. Learning models are needed to combine the learning process effectively. An effective learning model is a learning model that has a theoretical foundation that is humanistic, flexible, addictive, and oriented to the times. In addition, the learning model must have a simple form, easy to do and can achieve goals.

The characteristics of learning models are different from strategies, methods or procedures because in learning models the constituents must be rational, must achieve learning objectives and the learning is learner-centered. The use of a learning model requires the development of a learning tool for a particular topic in accordance with the learning model developed Of the various kinds of learning models, it is not uncommon for certain models to be frequently and practically used by teachers in teaching, according to Arends (Trianto, 2009:25), namely: presentation, direct teaching, concept teaching, cooperative learning, problem-based teaching, and class discussion. This shows that basically there is no best learning model, because each learning model has its own advantages and disadvantages, and must be adapted to specific subject matter.

Before determining the learning model to be used in learning activities, there are several things that teachers must consider in choosing it, namely: Consideration of the objectives to be achieved. Questions that can be asked are:

1. Are the learning objectives to be achieved with regard to academic competence, personality, social and vocational competence or what used to be termed the cognitive, affective or psychomotor domain?
2. What is the complexity of the learning objectives to be achieved?
3. Does achieving the goal require academic skills?

Considerations related to the learning materials:

1. Is the subject matter facts, concepts, laws or theories?
2. Does the learning material require prerequisites or not?
3. Are relevant materials or resources available to learn the material?
4. learning the material?

Considerations from the learner's or student's point of view:

1. Is the learning model appropriate for the maturity level of the learners?
2. Is the learning model appropriate to the learners' interests, talents and conditions?
3. Does the learning model suit the learners' learning style?

Other non-technical considerations:

1. Is one model enough to achieve the objectives?
2. Is the learning model we decide on the only model that can be used?
3. Does the learning model have effectiveness or efficiency value?

1.1 POPULATION AND RESEARCH SAMPLE

The research was conducted at SMA NEGERI 5 Kupang in 2022/2023. The research time was conducted in September until completion. The population in this study were X grade students of SMA NEGERI 5 Kupang. From the population, two classes were taken as samples, namely class X IPA 1 as the experimental class and X IPA 2 as the control class. Sampling was done using simple random sampling technique because the ability of students in each class was the same.

1.2 RESEARCH VARIABLES

The variables in this study are:

1. Independent variable (X)

The independent variables in this study are the application of Make a Match learning model using Probing Prompting technique and the application of Scramble learning model using Probing Prompting technique.

2. Bound Variable (Y)

The dependent variable in this study is students' physics achievement motivation.

Control variables include:

a. The initial ability of the experimental class and control class must be the same.
b. The time required in the teaching and learning process is controlled by equalizing the number of lesson hours.
c. The subject matter, which is given the same, is taking circular motion material as well as the similarity of the questionnaire sheet.
d. Teacher control by setting the researcher himself as a teacher.

1.3 RESEARCH DESIGN

This research is a type of experimental research. The research design used in this research is *randomized control group pre testpost test design* (Jahil in Soko, 2009:52). This study aims to determine whether there are differences in achievement motivation in learning physics of students taught using the *make a match learning* model with *probing prompting* techniques with students taught using the *scramble* learning model with *probing prompting* techniques. The research design can be seen in Table 1.1

Table 1.1 Research design

Sample	Pretest	Treatment	Post Test
I	T_1	X_1	T_2
II	T_1	X_2	T_2

Source: Jahil (Soko, 2009)

Description:

X_1 : Learning by applying the *Make A* learning model

Match with *Probing Prompting* technique.

X_2 : Learning by applying *Scramble* learning model
with the *Probing Prompting* technique.

T_1 : Initial Test

T_2 : Final Test
Sample I: Experiment Class

Sample II: Control Class

1.4 RESEARCH PROCEDURE

There are several stages carried out in this research, namely:

1.4.1. Preparation Stage

In the preparation stage the author made research instruments. The research instruments used include making syllabus, Learning Implementation Plan (RPP), teaching materials, LDS, and student questionnaire sheets in the form of student achievement motivation instruments.

1.4.2. Research Implementation Phase

In the implementation stage, researchers gave treatment to the experimental class with the application of the *make a match* learning model with *probing prompting* techniques, and in the control class researchers gave treatment with the application of the *scramble* learning model with *probing prompting* techniques. Researchers provided teaching materials as treatment in both classes. After completing the entire study material, both classes were given a questionnaire question to find out further about the increase in students' physics achievement motivation.

1.4.3. Data Collection Stage

The data collected in this study included filling in the questionnaire sheet for achievement motivation for the experimental and control classes.

1.5 Data Collection Techniques and Research Instruments

1.5.1 Data Collection Technique

The data collected by the researcher is data obtained from the results of filling out the questionnaire sheet given during the treatment, namely during the learning process by applying the *make a match* learning model with *probing prompting* techniques in the experimental class, and in the control class the *scramble* learning model with *probing prompting* techniques is applied.

1.5.2 Research Instruments

The following is a questionnaire lattice of instruments to measure student achievement motivation which can be seen in Table 1.2.

Table 1.2

Lattice of Achievement Motivation Instrument

No.	Indicator	Question No. Inquiry	Total
1	Liked tasks that demanding personal responsibility	1,2*,3*,4,5	5
2	Have a challenging goal	6,7*,8*,9*	4
3	Prefer work that provides feedback	10*,11,12,13	4
4	Happy to work independently	14,15*,16	3
5	Enjoys competing to outperform others	17,18,19,20,21*	5
6	Desire/drive to achieve not because of rewards	22*,23*,24,25	4

*) Negative Statement

The research instrument in this study is a questionnaire sheet for student achievement motivation which is explained in Table 1.3.

Table 1.3 Student Achievement Motivation Instrument

Indicator	Question No. Inquiry
1. Prefers tasks that require personal responsibility	
a. I enjoy tasks that require personal responsibility.	1
b. I used the trust given to me for personal gain.	2
c. I tried to avoid responsibility.	3
d. I like tasks that require personal responsibility.	4
e. I like situations where performance appraisals are a driver for performance improvement.	5
2. Have a challenging goal	
a. I am encouraged to complete more challenging tasks.	6
b. I feel bored with routine tasks.	7
c. I refuse to take on more challenging tasks.	8
d. I feel bored with more challenging tasks.	9
3. Prefer work where feedback is obtained	
a. As a result of the performance appraisal (feedback), my morale has declined.	10
b. I respond appropriately to questions posed by the teacher.	11
c. I try to answer questions that cannot be answered by a friend assigned by the teacher.	12
d. I like situations where performance appraisals are a driver for performance improvement.	13
4. Happy to work independently	
a. I try to be independent in learning	14
b. I cooperate with my friends in doing the daily test.	15
c. I do my own daily test questions	16
5. Enjoys competing to outperform others	
a. I work hard so that my performance is better than my friends.	17
b. I compete with my friends on every success.	18
c. I strive to surpass my friends' achievements.	19
d. I try to engage in competition among friends in pursuit of achievement.	20
e. I would rather give in than compete to outperform my friends.	21
6. Desire/drive to achieve not because of rewards	

a. I am motivated to study physics harder to get a prize from my teacher. b. I like answering questions from the teacher because I want to get a prize. c. I try to respond to questions from the teacher not just to get a prize. d. I don't take prizes as a benchmark for achievement.	22 23 24 25

(Nahak Joelfresia, 2012: 37-42 & Djaali, et al 2007)

Table 1.4
Instrument Answer Parameters

	SL	SR	KK	J	TP
Positive Statement					
Negative Statement					

(*Sugiyono 2008*)

Table 1.5

Instrument Alternative Answer Score

	SL	SR	KK	J	TP
Positive Statement	4	3	2	1	0
Negative Statement	0	1	2	3	4

(*Sugiyono, 2008*) **Description:**

SL : always

SR : often

KK : sometimes

A : rarely

TP : never

Assessment Criteria

0-6 : no motivation

7-12 : lack of motivation

13-18 : moderately motivated

19-25 : highly motivated

1.6 Data Analysis Technique

1.6.1 Descriptive Analysis

To analyze the results of filling out the questionnaire sheet given by researchers on students' physics achievement motivation.

1.6.2 Statistical Analysis

1. Hypothesis Analysis Prerequisite Test

a. **Homogeneity** test

To determine whether the data variance of the two sample classes is homogeneous or not, the Bartlet test is used (Sudjana, 2002: 262). The analysis used is the Bartlet test. The Bartlet formula is:

$H_0 : \sigma_1^2 = \sigma_2^2 = \ldots\ldots\ldots\ldots = \sigma_k^2$

Table 1.7

Homogeneity Test

Sample	Dk	1/dk	S_1^2	Log S_1^2	Dk log S_1^2
1	n_1 - 1	1/ n_1 - 1	S_1^2	Log S_1^2	(n_1 - 1) log S_1^2
2	.	.	.		.
.	.	.	.	. .	.
.	.	.	.	.	.
.	.	.	.		.
K	n_k - 1	1/ n_k - 1	S_k^2	. Log S_k^2	(n_k - 1) log S_k^2
Total	Σn_k 1- 1	$\Sigma(1/ n_k - 1)$	-	-	Σ (n_k - 1) log k_k^2

From this list, the necessary prices are calculated, namely:

1) Variance of each sample

$$S_1^2 = \frac{n\,\Sigma X_1^2 - \Sigma X_1^2}{n\,(n-1)} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.1)$$

(Sudjana, 1989:94)

2) Pooled variance of all samples

$$S_1^2 = \frac{\Sigma\,(n_1 - 1)S_1^2}{\Sigma\,(n_1 - 1)}$$

3) Unit price B with formula:

B= (log $S_1^2) \Sigma (n_1 - 1)$

4) For the homogeneity test, the following hypothesis test was used:

a) Limitations

H0 : $\sigma_1^2 = \sigma_2^2 = \ldots\ldots\ldots\ldots = \sigma_k^2$

H_1 : at least one equal sign is not applicable

b) The real level is α = 0.05

c) The statistics used are :

$X^2 = (\ln 10) \{B - \Sigma\,(\mathrm{db}) \log S_1^2\}$ ....(3.2)

d) Drawing conclusions

If $X_{count}^2 \geq X_{tabel}^2$, this is obtained from the chi-square distribution list with probability (1- α) and dk = (k-1).

b. **Normality** test

The normality test was carried out to prove that the data from each sample class in this study followed a normal distribution model or not. The statistical equation used (Sudjana, 2002: 273):

$$X^2 = \sum_{i-i}^{k} \frac{(O_2 - E_i)}{E_i}$$ ....(3.3)

Where:

O_1 = real frequency E_1 = expected frequency k = number of interval classes
X^2 = chi-squared

E_1 obtained from the product of the number of data (n) with the probability of the area under the corresponding normal curve. To find the probability (area), the equation is used:

$$Z^1 = \frac{X_{i-}\overline{X}}{S}$$ ....(3.4)

Where:

X_i = lower limit of *i-th* interval class (*i* = 1,2,......,k)

$\overline{X}$ = sample mean

S = standard deviation of the sample

The test criterion is to reject H_0 if $X_{count}^2 < X_{tabel}^2$ with α real level for testing in other cases the hypothesis is accepted.

2. Sample Initial Ability Test

To determine the similarity of students' achievement motivation abilities experienced by students, a two-party test was used where:

$H_0 : \mu_1 = \mu_2$: There is no difference in initial achievement motivation ability

There was a significant difference between students taught using *Make A Match* learning model and *Probing Prompting* technique and *Scramble* learning model and *Probing Prompting* technique.

$H_1 : \mu_1 \neq \mu_2$: There is a difference in the initial achievement motivation of students who

significant between students taught with *Make a Match* learning model and *Probing Prompting* technique and students taught using *Scramble* learning model and *Probing Prompting* technique.

The statistical equation used:

$$t = \frac{\overline{x}_1 - \overline{x}_2}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \quad \text{..(3.5)}$$

$$S^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 - n_2 - 2} \quad \text{..(3.6)}$$

Where,

$$S_1^2 = \frac{n_1 \Sigma X_1^2 - (\Sigma X_1)}{n_1 (n_1 - 1)} \quad , \quad S_2^2 = \frac{n_2 \Sigma X_2^2 - (\Sigma X_2)}{n_2 (n_2 - 1)}$$

Description:

T = Statistical value used to calculate the magnitude of the difference

$\overline{X}_1$ = Mean of sample I

$\overline{X}_2$ = Mean of sample II

S_1 = Standard deviation of sample I

S_2 = Standard deviation of sample II

N_1 = Number of sample members I

S_2 = Number of sample members II

Testing criteria:

Accept the null hypothesis (H_0) if $-t_{1-1/2\alpha} < t < t_{1-1/2\alpha}$ obtained from the *t* distribution list with dk = ($n_1 + n_2 - 2$) and probability (1 $-_{1/2\alpha}$) for other values of *t the* null hypothesis (H_0) is rejected.

3. Research Hypothesis Test

Hypothesis testing will lead to conclusions to accept or reject the hypothesis (Sudjana, 2002: 221).

a. First hypothesis test (two-party test)

The first hypothesis was conducted to determine whether or not there was a difference in the achievement motivation of physics students of *make a match* learning model using probing *prompting* technique with students taught with *scramble* learning model with probing *prompting* technique. The first hypothesis was tested using a two-party test.

$H_0 : \mu_1 = \mu_2$: There is no difference in achievement motivation of students who

taught using *make a match* learning model and *probing prompting* technique with *scramble* learning model and *probing prompting* technique.

$H_1 : \mu_1 \neq \mu_2$: There is a significant difference in student achievement motivation

between those taught with *scramble* learning model and *probing prompting* technique and students taught using *make a match* learning model and *probing prompting* technique.

The statistical equation used is:

$$t = \frac{x_{1} - x_2}{S\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \qquad (3.7)$$

$$S^2 = \frac{(n_1)S_1^2 + (n_2)S_1^2}{n_1 + n_2 - 2} \qquad (3.8)$$

Description: t = Statistical value used for initial ability test

$\overline{X}_1$ = Mean score of experimental class

$\overline{X}_2$ = Mean score of control class

S = Standard deviation of the two samples combined

S^2 = The combined variance of the two samples

S_1^2 = Control class sample variance

n_1 = Number of experimental class students

n_2 = Number of control class students ***Test criteria:***

Accept H_0 if - t_{table} $(-t_{(1-1/2\alpha)})$ < tcount < t_{table} $(-t_{(1-1/2\alpha)})$ with real level $\alpha = 0.05$.

b. Second hypothesis test

The second hypothesis test was conducted to determine whether the achievement motivation of students taught with the *make a match* learning model with *probing prompting* technique was significantly higher than that of students taught using the *scramble* learning model with *probing prompting* technique. The second hypothesis was tested using the right party test. The requirement for the *t-test* is that the research is normally distributed (Sudjana, 2002: 223).

$H_0 : \mu_1 = \mu_2$: Achievement motivation of students taught with

using the *make a match* learning model and *probing prompting* technique is the same as students taught the *scramble* learning model and *probing prompting* technique.

$H_1 : \mu_1 \neq \mu_2$: Achievement motivation of students taught with students taught using the *make a match* learning model and *probing prompting* technique were higher than those taught using the *scramble* learning model and *probing prompting* technique.

The statistical equation used is (Sudjana, 2002: 239)

$$t=\frac{x_{1}-x_{2}}{S\sqrt{\frac{1}{n_1}+\frac{1}{n_2}}} \qquad (3.9)$$

$$S^2=\frac{(n_1-1)S_1^2+(n_2-1)S_2^2}{n_1+n_2-2} \qquad (3.10)$$

Description: t = Statistical value used for initial ability test

$\overline{X}_1$ = Mean score of experimental class

$\overline{X}_2$ = Mean score of control class

S = Standard deviation of the two samples combined

S^2 = The combined variance of the two samples

S_1^2 = Experimental class sample variance

S_2^2= control class sample variance

n_1 = Number of experimental class students

n_2 = Number of control class students

Testing criteria:

Accept H_1 if $_{tcount>}$ t_{tabel} ($t_{(1-1/2\alpha)}$) with real level α=0.05

II. RESULT AND DISCUSSION

The results obtained are as discussed below

2.1 RESEARCH RESULTS

2.1.1 Data Description

This research was conducted on students of class X SMA Negeri 5 Kota Kupang where the experimental class whose learning used *Make A Match* learning model and *Probing Prompting* technique was class X IPA 1 with 36 students, while the control class whose learning used *Scramble* learning model and *Probing Prompting* technique was class X IPA 2 with 32 students.

The data collected were data on students' initial achievement motivation ability and achievement motivation score data after being treated. Data on students' initial achievement motivation ability was obtained from the results of filling out a physics achievement motivation questionnaire distributed to students with 6 (six) indicators, namely liking tasks that demand personal responsibility, having challenging goals, liking work that gets feedback, enjoying working independently, enjoying competing to outperform others, and the desire / drive to achieve not because of gifts. The questionnaire was distributed to students to assess students' initial physics achievement motivation, while the data on the final ability of physics achievement motivation was obtained from the results of filling out questionnaires by students after being given treatment

2.1.2 Prerequisite Test Analysis

The prerequisite tests for hypothesis analysis required in this study are normality test and homogeneity test. These two types of tests were carried out on the questionnaire test of physics achievement motivation of experimental and control class students to find out whether the population in the study followed a normal distribution model or not and had a homogeneous variance or not.

1. Normality Test

From the normality test of the initial ability of the experimental class obtained ${\chi^2}_{Hitung} = 5{,}1113$ while ${\chi^2}_{Tabel} = 7{,}8147$ (Appendix 13). And from the test normality of the control class initial ability scores obtained ${\chi^2}_{Hitung} = 4{,}9731$ while ${\chi^2}_{Tabel} = 7{,}8147$ (Appendix13). Because the test normality of the initial test scores of the control and experimental classes resulting in ${\chi^2}_{Hitung} < {\chi^2}_{Tabel}$, it can be concluded that the data The initial ability of the experimental and control classes is normally distributed with the following graph:

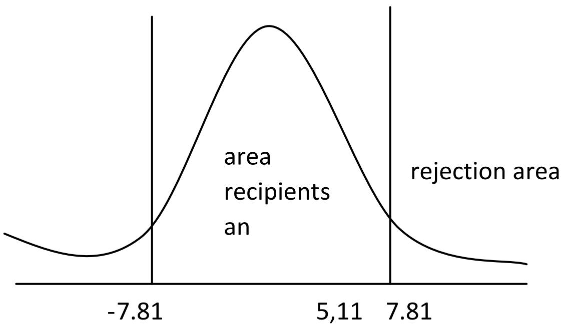

Figure 2.1 Normal Distribution Graph Beginning Experiment Class

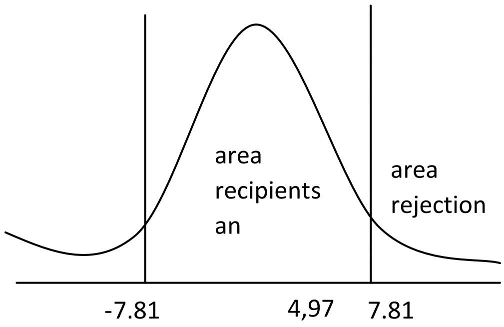

Figure 2.2 Distribution Chart Normal Beginning Control

From the normality test of the final ability of the experimental class obtained ${\chi^2}_{Hitung} = 7{,}073$ while ${\chi^2}_{Tabel} = 7{,}8147$ (Appendix 15). And from the test normality of the final ability score of the control class obtained ${\chi^2}_{Hitung} = 4{,}9188$ while ${\chi^2}_{Tabel} = 7.8147$ (Appendix15). By Because the test normality of the final test scores of the control and experimental classes resulting in ${\chi^2}_{Hitung} < {\chi^2}_{Tabel}$, it can be concluded that the data The final ability of the experimental and control classes is normally distributed with the following graph:

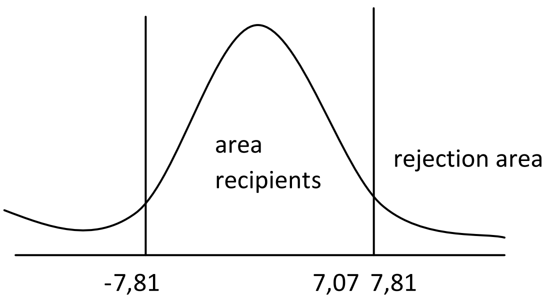

Figure 2.3 Distribution Chart Normal End of Class Experiment

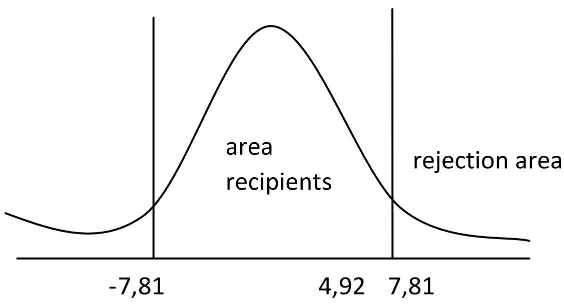

Figure 2.4 Distribution Chart Normal End of Control Class

2. Homogeneity Test

After the homogeneity test is carried out on the initial and final data of students' physics achievement motivation, the initial data of students is obtained. ${\chi^2}_{Hitung} = 0{,}3785$ and ${\chi^2}_{Tabel} = 3{,}841$ (Appendix 13) and from the final learner data obtained ${\chi^2}_{Hitung} = 0{,}6081$ and ${\chi^2}_{Tabel} = 3{,}841$ (appendix15). Because of the initial and final data of students $< {\chi^2}_{Hitung} {\chi^2}_{Tabel}$, with Thus, the null hypothesis (H_0) is accepted. This means that the value of physics achievement motivation of students in the class has A homogeneous variant.

2.1.3 Ability Test of Students' Initial Physics Achievement Motivation

The data collected in this study consisted of data on the initial score of students' physics achievement motivation from the experimental class with 36 students and the control class with 32 students. From the results of the experimental class initial ability test, the average value was $\overline{X_1} = 59{,}52778$ with a standard deviation of ${S_1}^2 = 64{,}02778$ (Appendix 12). While the initial ability for the control class obtained an average value of $\overline{X_2} = 58{,}25$ with a standard deviation of (Appendix 12). ${S_2}^2 = 66{,}12903$(Appendix 12). Based on the analysis results, it was found that $t_{hitung} = 0{,}657999 < t_{tabel} 1{,}9964$ (Appendix 13). The results of the analysis were calculated using equation (3.8) with testing criteria H_0 is accepted if $t_{hitung} < t_{tabel}$. So it is concluded that H_o is accepted or H_a is rejected. This means that there is no difference in the ability of physics achievement motivation of experimental class students taught through the application of *Make A Match* learning model and *Probing Prompting* technique with control class students taught through the application of *Scramble* learning model and *Probing Prompting* technique.

2.1.4 Improvement of *Students'* Physics Achievement Motivation

2.1.4.1.Improvement of Achievement Motivation in Physics of Students Taught with Using *Make A Match* Learning Model and *Probing Prompting* Technique (Experiment Class*)*

Data on the increase in students' physics achievement motivation was analyzed from the score of students' physics achievement motivation obtained at the initial and final meetings. Based on the data obtained, it can be seen the comparison of frequency distribution between the beginning and the end with the highest score in the initial class was 7175 as many as 4 students with the percentage obtained was 11.1111% and the lowest score in the initial class was 46-50 as many as 6 students with a percentage of 16.6667%. Whereas in the final class there were 6 students who achieved the highest score ranging from 88-93 with a percentage of 16.6667% frequency and the lowest score was 58-63 as many as 4 students with a frequency of 11.1111% (Appendix 15). Based on the frequency distribution table, the following diagram can be drawn*:*

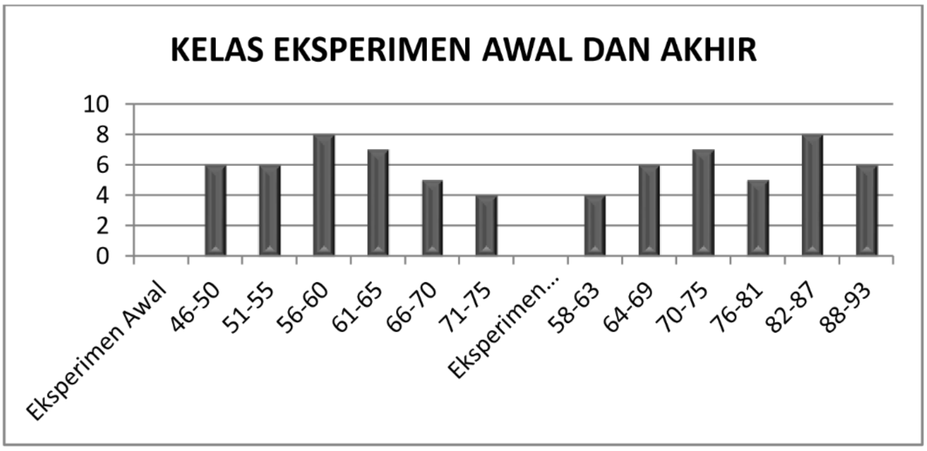

Figure 2.5 Frequency Distribution of Initial and Final Achievement Motivation In the Experimental Class

4.1.4.2.Improvement of Achievement Motivation in Physics of Students Taught with Using *Scramble* Learning Model and *Probing Prompting* Technique (Control Class*)*

Data on the increase in students' physics achievement motivation was analyzed from the score of students' physics achievement motivation obtained at the initial and final meetings. Based on the data obtained, it can be seen that the frequency distribution comparison between the beginning and the end with the highest score in the initial control class is 70-74 as many as 3 students with a percentage obtained is 9.38% and the lowest score in the initial class is 45-49 as many as 6 students with a perc.entage.

18,75%. While in the final control class there were 4 students who achieved the highest score which ranged from 84-89 with a frequency percentage of 12.5% and the lowest score which ranged from 54-59 as many as 5 students with a frequency of 15.63% (Appendix 15). Based on the frequency distribution table, the following diagram can be drawn:

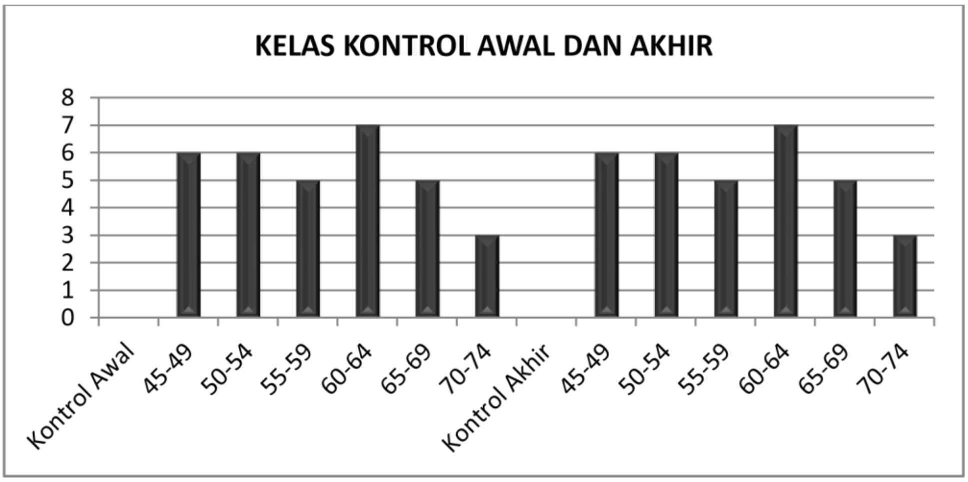

Figure 2.6 Frequency Distribution of Initial and Final Motivation Control Class Achievement

From the data in Diagram 4.1 and 4.2 above, a classification table of achievement motivation tendencies is then made. To determine the level of student achievement motivation, researchers classify the level of achievement motivation based on the classification level formula with the following rules (Sari, 2013: 92):

a. Upper Group (High)

All learners who score as much as the mean score plus one Standard Deviation and above (> M + 1SD)

b. Medium Group

All learners who score between -1SD and +1SD (between M - 1SD to M + 1SD).

c. Group Less (Low)

All learners who score -1SD and below (< M - 1SD). From the results of these calculations (Appendix 17), a classification level table can then be made.

Table 2.1
Category Classification of Achievement Motivation of Classroom Students Experiment

No.	Class interval		Frequency				Category
			Initial		End		
	Initial	End	f	%	f	%	
1	> 65,33	> 81,33	8	22,22	14	38,89	High
2	55,67- 65,33	69,67-81,33	16	44,44	12	33,33	Medium
3	< 55,67	< 69,67	12	33,33	10	27,78	Low

Source: Data Analysis of research results in 2018

Based on table 2.1 above, it can be seen that the initial test in the experimental class there were 8 students who had high motivation tendencies, 16 students who had moderate motivation tendencies and 12 students who had low motivation tendencies. Meanwhile, in the final test of the experimental class there were 14 students who had high motivation tendencies, 12 students who had moderate motivation tendencies and 10 students who had low motivation tendencies.
The tendency of students' initial achievement motivation can be seen in the pie chart as follows:

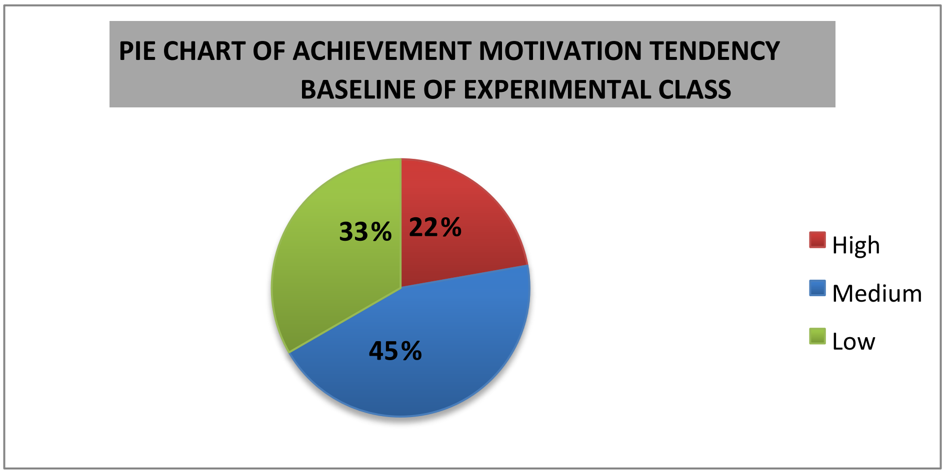

Figure 2.7 Frequency trend distribution diagram of experimental class initial achievement motivation variables

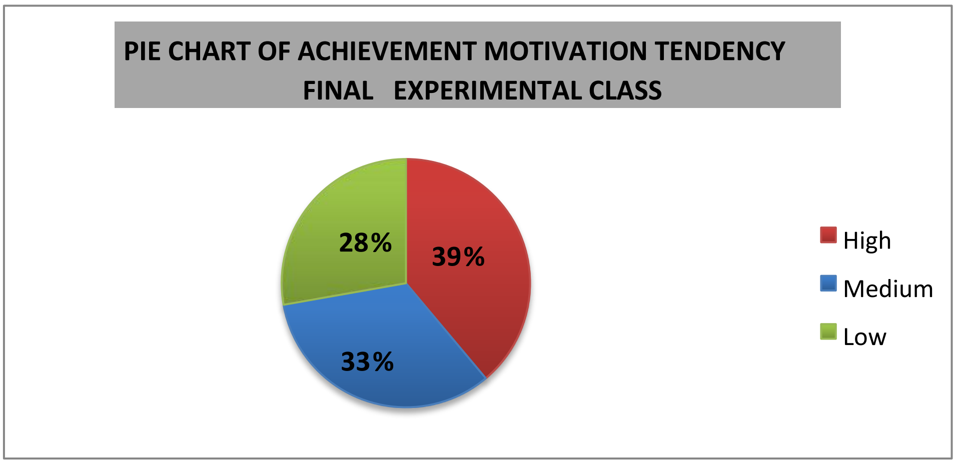

Figure 2.8 Frequency trend distribution diagram of experimental class final achievement motivation variables

Table 2.2
Category Classification of Achievement Motivation of Control **Class Students**

No.	Class interval		Frequency				Category
			Initial		End		
	Initial	End	F	%	f	%	
1	> 64,33	> 77,33	8	25	9	28,13	High
2	54,67-64,33	65,67-77,33	12	37,5	13	40,63	Medium
3	< 54,67	< 65,67	12	37,5	10	31,25	Low

Source: Data Analysis of research results in 2018

Based on table 2.2 above, it can be seen that the initial test in the control class there were 8 students who had a tendency to high motivation, 12 students who had a tendency to moderate motivation and 12 students who had a tendency to low motivation. From the final test in the control class, there were 9 students who had a high motivational tendency, 13 students who had a moderate motivational tendency and 10 students who had a low motivational tendency. The tendency of students' initial achievement motivation can be seen in the pie chart as follows:

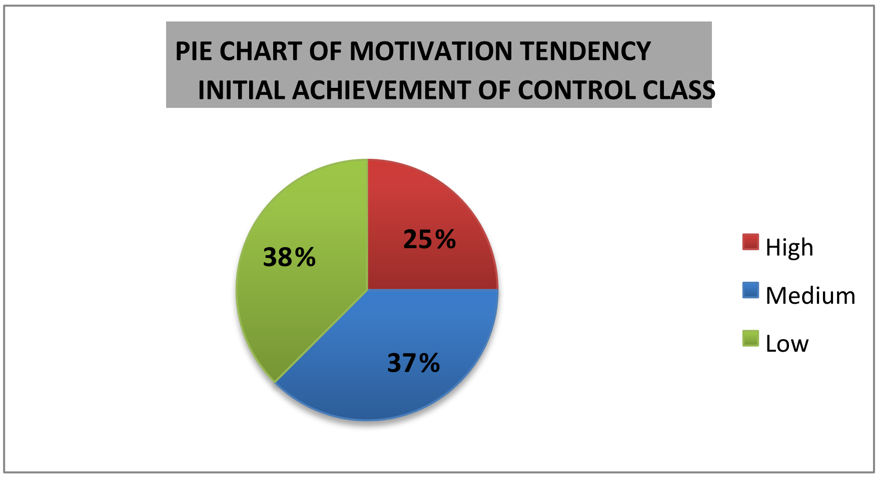

Figure 2.9 Frequency Trend Distribution Diagram of Initial Achievement Motivation Variable of Control Class

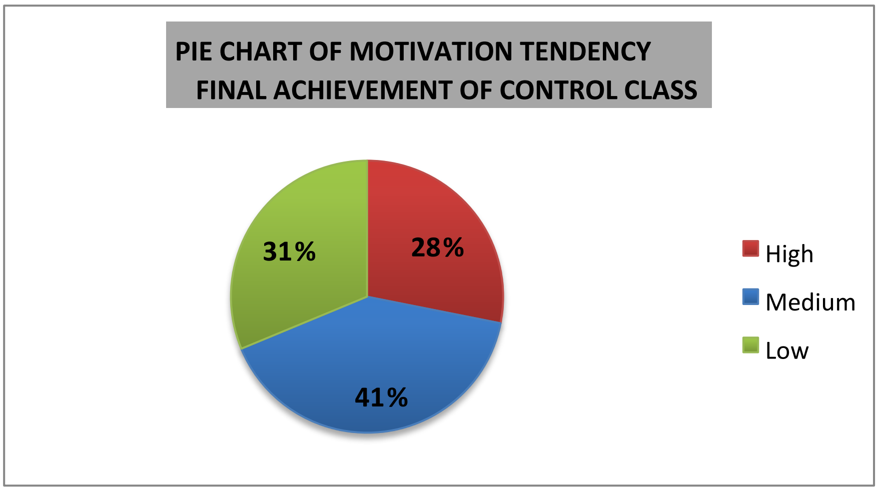

Figure 2.10 Frequency Tendency Distribution Diagram of Final Achievement Motivation Variable of Control Class

Based on the data obtained, each indicator in the achievement motivation questionnaire has a different average score. The scores obtained by each indicator can be seen in the following diagram:

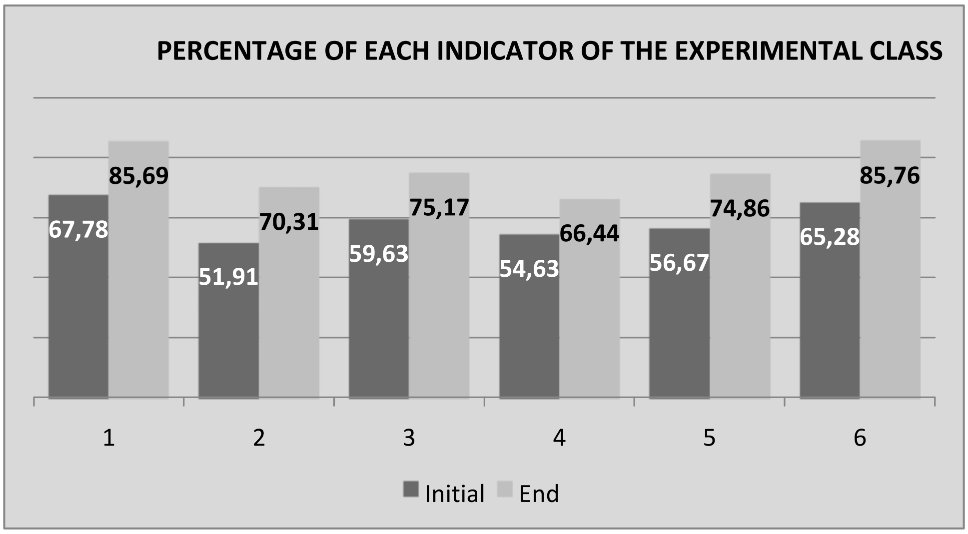

Figure 2.11 Diagram of Percentage Increase in Student Achievement Motivation Each Indicator in the Experimental *Class*

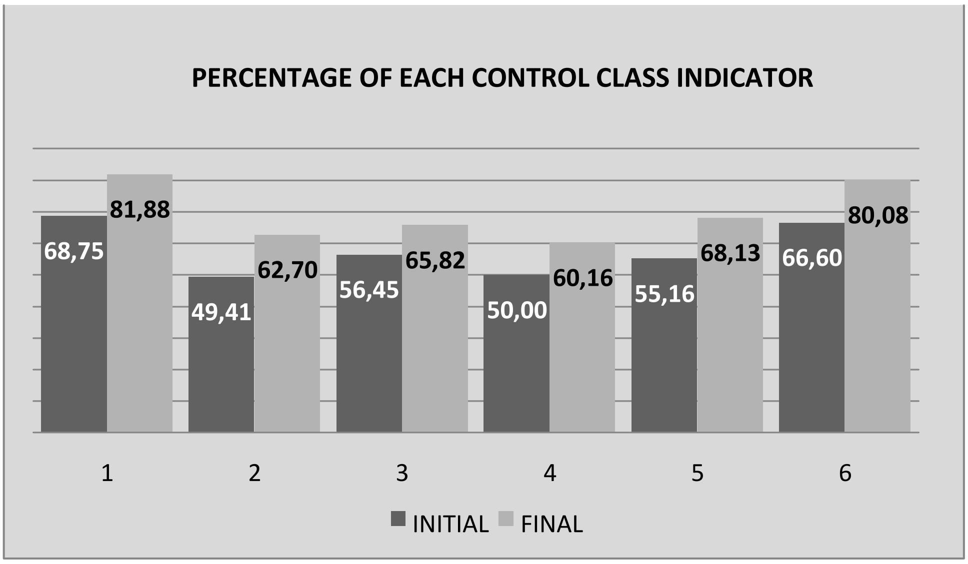

Figure 4.12 Diagram of Percentage Increase in Student Achievement Motivation Each Indicator in the Control Class

2.1.5 Research Hypothesis Test

The hypothesis in this study was tested using the *t-test*. In this case, the tests carried out are the equality test (two-party test) and the equality test of two means (right party test).

1. First Hypothesis Test

The statistical equation used to test the first hypothesis is the *student t* test, which is a two-party test. From the calculation results obtained $t_{hitung} = 2{,}29594 > t_{tabel} = 1{,}9964$ so H_0 is rejected, meaning that there is a difference in motivation physics learning achievement of students taught through the application of *Make A Match* learning model and *Probing Prompting* technique with students taught through the application of *Scramble* learning model and *Probing Prompting* technique.

2. Second Hypothesis Test

The statistical equation used to test the second hypothesis is the *t-student* test, namely the right party test. From the calculation results obtained $t_{hitung} = 2{,}29594 > t_{tabel} = 1{,}6686$ so H_o is rejected or H_a is accepted. This means that the achievement motivation to learn physics of students taught through the application of *Make A Match* learning model and *Probing Prompting* technique is higher than that of students taught through the application of *Scramble* learning model and *Probing Prompting* technique.

4.2 Discussion of Research Results

This research was conducted at SMAN 5 Kota Kupang for 3 weeks with the selection of the experimental class X IPA 1 class with 36 students and X IPA 2 class as the control class with 32 students. In this study, *Make A Match* learning model and *Probing Prompting* technique were applied to the experimental class and *Scramble* learning model and *Probing Prompting* technique to the control class. To measure students' physics achievement motivation, researchers used an observation sheet in the form of a questionnaire consisting of 6 indicators of achievement motivation, namely (1) like tasks that demand personal responsibility, (2) have challenging goals, (3) like work that gets feedback, (4) like to work independently, (5) like to compete to outperform others, and (6) the desire / drive to achieve not because of gifts.

High achievement motivation is reflected in the efforts made to achieve goals. Students who have high achievement motivation will be able to carry out learning activities well, efficiently and precisely when compared to students who do not have achievement motivation in learning activities. Students will also devote all their abilities to achieve the desired achievement. Conversely, students who have low achievement motivation will be indifferent to learning activities, so they do not have the ability to succeed.

In the implementation of the study, before the respondents or students were given treatment, the initial ability test of the sample was carried out in both classes, namely the experimental class and the control class. Where the data used in conducting the initial ability test of this sample is obtained from the results of filling out the achievement motivation questionnaire by students. The results of the prerequisite test data analysis of the initial achievement motivation test data, both in the experimental class and also in the control class showed that the two samples came from a normally distributed population and had homogeneous data variance. Both classes selected as samples also have the same initial ability. This data can be seen from the results of the analysis of the similarity test of the initial achievement motivation of the sample shows $t_{hitung} = 0.{,}657999 < t_{tabel} = 1{,}9964$. This means that there is no difference in the achievement motivation ability of physics students taught through the application of *Make A Match* learning model and *Probing Prompting* technique with students taught through the application of *Scramble* learning model and *Probing Prompting* technique.

The role of achievement motivation can create a relationship or relationship with learning activities, which in turn is an effort to achieve optimal learning achievement. Based on the frequency trend distribution pie chart of achievement motivation variables, the initial experimental class showed that students who had high achievement motivation were 8 students (22%), moderate achievement motivation were 16 students (45%) and low achievement motivation were 12 students (33%). In the final experimental class there was an increase, namely students who had high achievement motivation as many as 14 students (39%), moderate achievement motivation as many as 12 students (33%) and low achievement motivation as many as 10 students (28%). While in the initial control class there were 8 students (25%) who had high achievement motivation, 12 students (37%) who had moderate achievement motivation and 12 students (38%) also had low achievement motivation. In the final control class there were 9 students (28%) who had high achievement motivation, 13 students (41%) who had moderate achievement motivation and 10 students (31%) who had low achievement motivation. The results of the trend of achievement motivation variables show a high category, but there are still some students who are in the medium and low categories, which when summed up, the score is greater than the high category. This means that achievement motivation in class X IPA SMA N 5 Kupang is still not optimal, although there is an increase in student achievement motivation.

In learning activities, each indicator in the experimental and control classes has increased by looking at the explanation of each indicator below.

1. Likes tasks that require personal responsibility

In Indicator I, namely liking tasks that demand personal responsibility in the experimental class has increased by a difference of 17.92. Meanwhile, the control class experienced an increase with a difference of 13.33. The experimental class experienced a greater increase because the *make a match* learning model applied in the experimental class required students to play a role in finding pairs of question cards and answer cards obtained. Each student who holds a question or answer card has a personal responsibility to find and get a partner. Those who hold the question card must find the answer card, and vice versa, students who hold the answer card must find a partner who holds the question card. All play an active role, so that there is interaction in the classroom for each student. So, all students have personal responsibility. Whereas in the control class with the *scramble* learning model, students are more likely to depend on the group, where there are group members who do not play an active role in solving the problems and answers obtained. So that students tend not to have responsibility in completing work in groups.

2. Have a challenging goal

In Indicator II, namely having challenging goals, the experimental class experienced an increase with a difference of 18.40. Meanwhile, the control class experienced an increase with a difference of 13.28. A fun learning atmosphere while playing motivates students to be interested in what they are learning. There is a difference in improvement in the experimental and control classes, where the experimental class that applies the *make a match* learning model has a greater improvement than the control class that applies the *scramble* learning model. In the *make a match* learning model, students look for pairs of cards that they hold with answer cards that are not listed and they must find that way with their partner. This is a challenge that students must go through. So that students in the experimental class feel challenged to be able to find pairs of cards they hold. Whereas in the *scramble* learning model in the control class, students are formed in groups by matching the answer cards that are randomized with the question cards obtained in the group.

Class control have challenges in solving problems and matching the randomized answers with the existing problems. However, the challenges in the control class tended to apply to only a few students who played an active role in the group. Students who do not play an active role in the group tend not to have challenges in themselves.

3. Prefer work that provides feedback

In Indicator III, namely liking work that gets feedback, the experimental class experienced an increase with a difference of 15.54. Meanwhile, the control class experienced an increase with a difference of 9.38. The experimental class experienced a greater increase because the *make a match* learning model had feedback received by students. In the application of this model to the questions thrown by researchers to explore the knowledge abilities of students. When the pair gets their turn to present in front of the class, students who are in place provide additional explanations if there is still something missing in the presentation, and respond to the answers and workmanship is wrong or not. Whereas in the control class that applied *scramble* learning, students did not really give feedback because when after the group that had their turn to present presented the results of their discussion in front of the class, and when the researcher confirmed with other students about the correctness of the work, students tended not to be so interested or less attention because they tended to focus on their respective answers.

4. Happy to work independently

In Indicator IV, namely happy to work independently, the experimental class experienced an increase with a difference of 11.81. Meanwhile, the control class experienced an increase with a difference of 10.16. The experimental class experienced a greater increase because the *make a match* model applied in the experimental class tended to demand student independence in finding pairs of question cards or answer cards held. When each student has received a question card or answer card, students are required to be independent in finding pairs of cards held, and in working on questions to match with answers / questions with partners to be accounted for in front of the class, namely in front of the teacher and other student friends. Whereas in the *scramble* model in the control class, there were also some students who tended to depend on the group. During the process, there were students who did not play an active role in the process of matching answers with questions, and also a lack of curiosity to want to understand from working on questions that were considered difficult.

5. Love to compete to outperform others

In Indicator V, which is happy to compete to outperform others, the experimental class experienced an increase with a difference of 18.19. Meanwhile, the control class experienced an increase with a difference of 12.97. From these data it can be seen that the experimental class has a greater increase than the control class. This is because in experimental classes that apply the *make a match* model, students are required to find their partners quickly compared to other student friends. So it can be seen that students want to excel in learning and in class. In the process of working on matching answers and partner questions, students really play an active role in completing the work. Students are also required to learn independently in understanding the learning material, because the distribution of answer cards does not indicate the process of working on the answers. Whereas in the *scramble* model in the control class, students tend to be indifferent to understanding the existing material. Because this model in its learning steps, students are formed in several heterogeneous groups, so it is possible that there are some students in the group who do not play an active role in matching the scrambled answers with the questions, and only expect fellow students to group.

6. Desire/drive to achieve not because of rewards

In Indicator VI, namely the desire / encouragement to achieve not because of gifts, the experimental class experienced an increase with a difference of 20.49. Meanwhile, the control class experienced an increase with a difference of 13.48. In the experimental class with the application of the *make a match* learning model, the increase was higher than the control class with the application of the *scramble* learning model. This is seen in the learning process and based on research data conducted by researchers. Where this depends on the desire / encouragement of each individual to be able to excel. There are students who really want to achieve for free without getting a prize, but not a few students also want to achieve their achievements if they are baited with prizes. Interest in achievement depends on the type of gift or the number of gifts given by the teacher. It can be seen at the level of this indicator in the control class that the difference in improvement is not as large or not close to the amount of difference as the experimental class.

From the results of the study, it is shown that there is a difference in the ability of physics achievement motivation of students taught through the application of *make a match* learning model and *probing prompting* technique with students taught through the application of *scramble* learning model and *probing prompting* technique. This happens because both learning models have different steps or stages, so the results shown are different. The thing that distinguishes the application of the *make a match* learning model and probing *prompting* technique from the application of the *scramble* learning model and *probing prompting* technique is the involvement and activeness of students in the learning process.

Based on the results of the data analyzed in the first hypothesis test, it can be seen that there are differences in achievement motivation of students taught through the application of the *make a match* learning model and *probing prompting* technique with students taught through the application of the *scramble* learning model and *probing prompting* technique, with the results obtained, namely $t_{hitung} = 2{,}29594 > t_{tabel} = 1{,}9964$. Furthermore, the second hypothesis test was carried out using the right party *t-test* with the results of the analysis obtained, namely $t_{hitung} = 2{,}29594 > t_{tabel} = 1{,}6686$Therefore, it can be concluded that the achievement motivation of students taught through the application of *make a match* learning model and *probing prompting* technique is higher than that of students taught through the application of *scramble* learning model and *probing prompting* technique.

When viewed in the first hypothesis test, there is a significant difference, where there is a difference in treatment in the experimental class taught by applying the *make a match* learning model and *probing prompting* technique with the control class taught by applying the *scramble* learning model and *probing prompting* technique. In the experimental class with the steps outlined, namely (1) after the teacher presents the material, students are directed and guided by questions posed to provide direction in the student's thinking process, (2) students are formed into two large groups, namely the question group and the answer group, (3) students think and look for pairs of cards they get, (3) students who have got a pair match their cards by working on the solution together to make sure the pair of cards is correct, (4) students who have got the pair are given the opportunity to present in front of the class, (5) the teacher together with students confirms the correctness and compatibility of the questions and answers of the presenting pair, (6) the teacher asks final questions to different students to further emphasize that the indicator has been truly understood, and (7) the teacher together with students concludes the learning that has been done.

Meanwhile, in the control class, the *Scramble* learning model and *Probing Prompting* technique were applied, with the steps outlined, namely (1) after the teacher delivered the material, students were directed and guided in the form of questions posed to provide direction in the students' thinking process, (2) students were formed into several groups, each group consisting of heterogeneous students, (3) each group was given a question card and answer card, where the answer card given was in random form, (4) the group was given the opportunity to work on the problem and find the appropriate answer, (5) representatives of each group presented the results of their discussion in turn.

Furthermore, seen in the results of the second hypothesis test which states that achievement motivation in the experimental class is higher than achievement motivation in the control class. This is because during the learning process, there are interactions that occur during *make a match* learning and *probing prompting* techniques that spur on the emergence of motivation in students and new understanding in students. The more students interact with other students, the motivation, especially achievement motivation, increases to learn and achieve.

III. CONCLUSION

3.1 Conclusion

Based on the results of the analysis and discussion of the research, it can be concluded that:

1. There is a significant difference in the achievement motivation of students learning physics between those taught using the *make a match* learning model with *probing prompting* techniques and students taught using the *scramble* learning model with *probing prompting* techniques at a significant level (α = 0.05), dk = 66 with $t_{hitung} = 2{,}29594 > t_{tabel} = 1{,}9964$.
2. Achievement motivation to learn physics of students taught using *make a match* learning model with *probing prompting* technique is higher with students taught using *scramble* learning model with *probing prompting* technique at significant level (α = 0.05), dk = 48. With $t_{hitung} = 2{,}29594 > t_{tabel} = 1{,}6686$.

3.2 Suggestion

Based on the results of the discussion and conclusions, the researcher provides the following suggestions:

1. We recommend that in classroom learning, the *make a match* learning model and *probing prompting* technique be applied as an alternative in improving the quality of teaching, for better student achievement.
2. In connection with the application of the *make a match* learning model and *probing prompting* technique, *it* is expected to use other subjects and pay more attention to the allocation of lesson time so that learning

can run well. In addition, future researchers can develop a combination of the *make a match* learning model with other media, methods or techniques.

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