THE EFFECT OF COOPERATIVE LEARNING "NUMBERED HEADS TOGETHER" TO STUDENTS' READING COMPREHENSION AT GRADE VIII MTsN 1 MODEL PADANGSIDIMPUAN

A THESIS

Submitted to the State Institute for Islamic Studies Padangsidimpuan as a Partial Fulfillment of the Requirement for the Graduate Degree of Education (S.Pd) in English

Written By:

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ENGLISH EDUCATION DEPARTMENT

TARBIYAH AND TEACHER TRAINING FACULTY
STATE INSTITUTE FOR ISLAMIC STUDIES
PADANGSIDIMPUAN

2017

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Assalamu 'alaikum wr.wb.

After reading, studying and giving advice for necessary revision on the thesis belongs to **Fuji Rahayu Nasution** , entitled **"The Effect of Cooperative Learning Numbered Heads Together to Students Reading Comprehension at Grade VIII MTsN 1 Model Padangsidimpuan ".** We assumed that the thesis has been acceptable to complete the assignments and fulfill the requirements for graduate degree of Education (S.Pd) in English Education Department, Tarbiyah and Teacher Training Faculty in IAIN Padangsidimpuan.

Therefore, we hope that the thesis will soon be examined by the thesis examiner team of English Education Department of Tarbiyah and Teacher Training Faculty IAIN Padangsidimpuan. Thank you.

Wassalam 'alaikum wr.wb.

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Hope, all the kindness will be replied by Allah Swt. I realize that this thesis is still so far from being perfect based on the weakness of the researcher. Therefore, I aspect the constructive criticisms and suggestions from the readers in order to improve this thesis.

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ABSTRACT

This research is focused about the effect of using cooperative learning numbered heads together to students' reading comprehension at grade VIII MTsN 1 Model Padangsidimpuan. The problem of this research are students' vocabulary mastery is still low, different types of students, students' ability in understanding the text is still low, and traditional method that still often used by the teacher. Most of the students still get low grade. Meanwhile, the standard of English competency in this school is 80. The aim of this research is to examine the students' reading comprehension by using NHT (Numbered Heads Together) at Grade VIII MTsN 1 Model Padangsidimpuan.

This research is an experimental research. The population of this research is the students nine classes at grade VIII MTsN 1 Model Padangsidimpuan. Then, the sample is divided into two class. The first class consist of 42 students as the experimental class, while the second class consist of 42 students as the control class. To collect the data, researcher used test for measuring students' reading comprehension. To analyze the data, the researcher used t-test.

Data analysis of the post-test showed that score of the students in the experimental class is significantly higher than score of the students in control class at the level of significance 5% with degree of freedom $(n_1 + n_2 - 2) = 82$. Mean score is get in experimental class is 83.7. While, mean score is get in control class is 70.9. The t_{count} is 5093, while the t_{table} is 2.000. Therefore, the hypotheses is accepted. So, there is the significant effect of using the Cooperative Learning Numbered Heads Together to Students Reading Comprehensin at Grade VIII MTsN 1 Model Padangsidimpuan.

***Key Words**: Cooperative Learning, Numbered Heads Together, Reading Comprehension.*

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CHAPTER I

INTRODUCTION

A. The Background of the Problem

Language is a tool of communication. Language is used by many people to communicate each other. No human can live in the world without language, by using language people can express their thought, feelings, emotions, ideas, information, knowledge, and desires about something. Now days, one of the most important language in the world is English and it is known as international language. In Indonesia, English is used as the second language and one of subjects that is stated in Indonesian education curriculum.

In English learning, there are language skills that should be mastered by students. The language skills are devided into two parts of language functions, namely, receptive skill and productive skill as a means of communication. Receptive skills include listening and reading, productive skills include speaking and writing. Listening is skill to hear the information from other through ear. Reading is transaction between reader and writer. Writing is skill to write information or ideas through writing which will be known information after read it. Speaking is skill to respond what have been heard through mouth soundly.

Reading is one of English skills that the value can not be underestimated. Reading is a developmental process where students progress at their own rate.[1] At all levels of education, reading ability has the scale of priority that must be mastered by students. By reading, students will get much information they have never known before.

Reading is a fluent process of readers combining information from a text and their own background knowledge to build meaning.[2] The goal of reading is comprehension. Reading is an interactive process between the reader and the text. An interactive process happens when the readers try to understand the text. Reading is a way to get information of the text. It means that if we read it, It is known what happened in the world, whether in the past, present or future.

Reading is very important, moreover for students. Some of the important of reading are; the first, reading can enriching our experiences and our intellectual ability. Second, reading can activate our mind about many things in the world. Third, there are many information that can we adopted by reading. The last,we can obtain about anything and anywhere without going there. Knowing the importants of reading, students should do it as the need,

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[1] Doris M.Cook, *A Guide to Curriculum Planning in Reading* (Madison: Wisconsin Department of Public Instruction, 2004) p. 6.

[2] David Nunan, *Practical English Language Teaching* (New York: McGraw-Hill Companies, 2003) p.68.

not as the compulsion. That's why reading should be mastered by the students.

Although reading is one of ways to increase students' knowledge, in the fact, there are still many students of MTsN 1 Model Padangsidimpuan do not understand about English text. It is not easy for them to read and understand English text. There are so many students that have problem with English learning. Meanwhile, the standar of English competence in this school is 80. When the researcher do the observation of English learning in MTsN 1 Model Padangsidimpuan, the researcher found that most of students is very interested in English learning, but in learning process students often felt bored and tired when studying English.[3] This is becaused the students just listen, write, and repeat what teacher said.

The researcher also found when the teacher convey the learning material, English teacher rarely apply learning method that can attrack students interest in English learning. When the researcher try to interview the English teacher why in English learning rarely apply learning method, the teacher said that to apply a learning method like cooperative learning in the class, it is need too much time and not too effective for them.[4] So, there is no combination method in English learning. Learning method that used still

[3]*Observation* in MTsN 1 Model Padangsidimpuan, (Padangsidimpuan: MTsN 1 Model Padangsidimpuan), February 18th 2017.

[4] *Private Interview* with Mrs. Hairani Siregar, English teacher at grade VII MTsN 1 Model Padangsidimpuan, (Padangsidimpuan: MTsN 1 Model Padangsidimpuan), January 30th 2017, 02.00 p.m).

conventional. The teacher need an inovation in learning approach to make learning activity is unconventional. Conventional approach that often used by the teacher now days disposed less successful.

The using appropriate method is an effective approach that can give the result comprehension that optimal. In teaching learning process, the using teaching method is very important to get the success in create a learning that active, effective and efficient. Because of that, needed a teaching method that can develop the situation which comfortable and fun for students in receive the learning material.

When the researcher observed what the based problem of students when they are studying English, the researcher found that there were some problems of the students;[5] Firstly, the students' problem in understanding English reading text influence by students' vocabulary mastery. Vocabulary mastery related to the students' understanding the contain of the text. When the students were lack vocabularies, it become a problem for the students to understand what words mean.

Secondly, in one class, there are different types of students. The smart students can understand the learning material easily. The weak students sometimes fell lose confidence with their ability in English learning. Working

[5]*Observation* in MTsN 1 Model Padangsidimpuan, (Padangsidimpuan: MTsN 1 Model Padangsidimpuan), 15 january-25 February 2017.

in group believed can solve this problem because the students will fell more comfortable when they can work together with their friends.

Thirdly, it is about teaching method. There are so many English teachers who still use traditional method in teaching English. The teacher only gives the material, explain, giving example and giving task for the students.This method is not effective because the teacher did not gave the opportunities to students to improve their self and the students will bored, they will do the other activities in the classroom and make passive teaching learning process.

The last, most of the students did not understand the text that they have read and did not have the strategies in reading, getting stress and tired in reading comprehension. They did not have the trick or strategies to make them easier. So, the students could not comprehend the text well. Finally, most of students were failed in understanding the text.

There are some methods that can used to increase the students achievement in reading comprehension, such as Jigsaw, Problem Solving, CIRC (Cooperative Integrated Reading and Composition), TPS (Think Pare Share), and Cooperative Script, after the researcher did literature review, the researcher found a theory about learning method that believed effective in develop English learning process especially for reading. The method is Numbered Heads Together.

Numbered Heads Together is a cooperative learning method that hold each students in group accountable for learning the material. The entire member has responsibility to know the answer because nobody knows who will be called by the teacher to present the answer.[6] In this method, the students have to work in group and think together to solve the problem with all the member of group.

Russ Franks' method is an excellent way to add individual accountability to a group discussion.[7] Numbered Heads Together is an approach developed by Spencer Kagan in 1993, to involve more students in the review of materials covered in a lesson and to check their understanding of a lesson's content.[8] Numbered Heads Together is kind of cooperative learning that designed to influence students' interaction system and demand students to group working in each group.

Based on the explanation above, the researcher believes that this method can solve the students problem in English learning especially students reading comprehension because this method can enhance the cooperation among students, students are placed in a group to discuss. It can enrich students responsibility, because every students must know what is the answer

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[6] Setya Agustin, et.al. The Effect of Using Numbered Heads Together Technique on the Eighth Grades Students's Reading Comprehension Achievement at SMP N 2 Tanggul Jember Pancaran Journal, Vol.2, No.3, 2013, p. 202. retrieved from *http://jurnal.unej.ac.id/pancaran,* on September 18th 2016 02.06 p.m.

[7] Robert E. Slavin, *Cooperative Learning Theory, Research, and Practice* (USA: Library of Congress Cataloging-in Publication Data, 19950, p.132.

[8] Trianto, *Mendesain Model Pembelajaran Inovativ-Progresif* (Jakarta: Prenada Media Group, 2011), p. 82.

for the question that have given by the teacher and train students to unite their mind, because Numbered Heads Together demands students to unite perception in the group.

B. The Identification of the Problem

Based on the background above, there are some problems in reading activity at Grade VIII MTsN 1 Model Padangsidimpuan, they are : Students' vocabulary mastery is low, different types of students, traditional method that still often used by the teacher and students' ability in understanding the text is still low.

C. The Limitation of the Problem

Based on the identification of the problems above, the researcher is limited the problems on low students' ability in understanding the text and the method that often used by the teacher. Then, the researcher tried to investigate causal-effect relationship the using of NHT (Numbered Heads Together) Method to Students' Reading Comprehension at Grade VIII MTsN 1 Model Padangsidimpuan in 2017/2018 academic year.

D. Formulation of the Problem

From the identification and limitation of the problem above, the formulation of this problem "is there the significant effect of NHT (Numbered Heads Together) to Students' Reading Comprehension at Grade VIII MTsN 1 Model Padangsidimpuan?"

E. The Objective of the Research

From the formulation above, the purpose of this research is to examine the students' reading comprehension by using NHT (Numbered Heads Together) at Grade VIII MTsN 1 Model Padangsidimpuan.

F. The Significances of the Research

The significances of this research are:

1. As an input to English teacher to develop language teaching method and to improve the quality of teaching learning process
2. For the Headmaster as one domain measurement of teaching progress
3. As informative to help the other researcher who will conduct further research in the same topic.

G. The Defenition of Operational Variabel

The terms uses in this research are as follow:

1. Numbered Heads Together

   Numbered Heads Together is a kind of cooperative learning that try to involved the students to be active in the classroom with give the opportunites to the students to learn and discuss the material and solve the the problem that given by the teacher. The phases are: Numbering- Submissing Question- Thinking Together – Providing Answer.

2. Reading Comprehension

   Reading is an interactive process between the reader and the text. An interactive process happen when the readers try to understand the text.

Reading comprehension is an activity to understand a written text and trying to find the information of what we need.

H. Outline of Theses

The systematic of this research are devided into five chapters. Each chapter consist of many chapters with details as follow:

Chapter one discuss about introduction, consist of background of the problem, identification of the problem, limitation of the problem, formulation of the problems, purpose of the research, significances of the research, and defenition of the operational variabels.

Chapter two consists of the theoretical description, which explain about NHT (Numbered Heads Together), review of related findings, conceptual framework and hypothesis.

Chapter three discuss about research methodology which consist of time and place of the research, research design, population and sample, the instrument of collecting data, technique of collecting data and technique of analyzing data.

Chapter four is the result of the research and data analyzing, which consist of description of data, discussion of the research and limitation of the research

Chapter five consists of conclusion and suggestion to students and teacher by the researcher.

CHAPTER II

THEORETICAL DESCRIPTION

A. The Theoretical Description

1. Numbered Heads Together

a. The Concept of Numbered Heads Together

Numbered Heads Together is type of cooperative learning that designed to influence students interaction system and as an alternative of traditional structure class. Numbered Heads Together first time developed by Spencer Kagan in 1993 to involve more students in the review of materials covered in a lesson and to check their understanding of a lesson's content.[1] Numbered Heads Together is a simple method that have structure four phases as syntax, they are:[2]

1) Numbering.
2) Submissing Question.
3) Thinking Together.
4) Answering.

[1] Trianto, *Mendesain Model Pembelajaran Inovatif-Progresif* (Jakarta: Prenada Media Group, 2011) p. 82.
[2] Ibid., p.83.

Russ Frank's method is an excellent way to add individual accountability to a group discussion.[3] Numbered Heads Together is done with the numbering system and after educators pose the issue or question on learners, learners are required to cooperate and discuss directly to obtain the correct answer.[4] Numbered Heads Together is basically a variant of group discussion, the twist is having only one students represent the group but not informing the group in advance whom its representative will be. That twist insures total involvement of all the students.

Numbered Heads Together is a combination to convey the material with using group as a place to united perception/ students mind about questions that given by the teacher and then students will responsible based on the number that asked the teacher from each group. In the group, each students will be given number based on the formation. Numbered Heads Together is part of the cooperative learning model which emphasis on special structures designed to affect the pattern of interaction of students to work each other cooperatively.

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[3] Robert E. Slavin, *Cooperative Learning Theory, Research, and Practice* (USA: Library of Congress Cataloging-in Publication Data, 1995), p. 132.

[4] Luthfiatul Khusna, et.al., The Influence of Cooperative Learning Model of Type Numbered Heads Together (NHT) and Type Think Pair Share (TPS) against Results Study of Chemistry and Cooperation Skills, The 1st International Seminar on Chemical Education, September, 30th 2015, p. 50. retrieved from *http://chemistryeducation.uii.ac.id/wp-content/2015/10/48-53-Luthfiatul-Khusna*, on September 17th 2016 01.15 p.m.

The students have the opportunity to share their ideas and to considering the best answer.

Numbered Heads Together basically is a variation of group discussion with special characterized the teacher just call a student to represent the group. Until this way ensure total involvement all of the students. In applying the cooperative method 'Number Heads Together' (NHT), the teacher was only a facilitator and the students more fully participated in learning.[5] This way is effort to increase students responsibility in group discussion.

Learning with using Numbered Heads Together model started with Numbering. The teacher divided class tobe small groups. Total of group better considering of total concept that learned. If all of the students in one class consist of 40 people, it means the group divided tobe 5 groups based on the total concept that will be learn. So, each group consist of 8 people. Each students in each group given number 1-8.

After grouping the group, the teacher submissing some questions that have to answered by each group. The teacher gives a chance for each group to find the answer. In this chance, each group

[5] Mayong Maman and Andi Aryani Rajab, The Implementation of Cooperative Learning Model 'Numbered Heads Together (NHT)' in Improving the Students' Ability in Reading Comprehension, International Journal of Evaluation and Research in Education (IJERE), Vol. 5, No. 2, Juni 2016, p. 176. retrieved from *http://files.eric.ed.gov/fulltext/EJ1108535.pdf*, on September 17th 2016 01.15 p.m.

unite their heads “Heads Together” discuss thinking the answer of question from the teacher.

The next step is the teacher calls the student that have same number from each group. They have chance to give the answer of question that have given by the teacher. That is doing until all of the students with the same number of each group obtain turn to present the answer of teacher’s question. Based on the answer, the teacher develop the discussion more deep, so the students can find the answer of the question as knowledge that intact.

To use this method in teaching reading, the teacher can follow the steps which are created by Brown It includes three parts: before reading, while reading, after reading, as below:

1) In the beginning of the class, the teacher can spend a few times to introduce the topic that will be discussed before start reading class. It helps the students to activate the schemata before get into the passage so that the students have chances to predict what they will learn and what they must prepare for the lesson.
2) After the introduction, the teacher moves to the next step while reading. In this stage, the teacher needs to let them know their purpose for reading before they start reading, whether it is for getting the general understanding, finding critical information, and so on. The students will simply know what they should do while they are reading the text. Numbered Heads Together technique can be included in this step as well.
3) After the students reading the text, the teacher can ask some questions, consider about vocabulary study, identify the author purpose, and so on. In those steps, the teacher’s role

are as organiser, observer, feedback organizer, and prompter depend on the activity.[6]

Based on the explanation above, it can be concluded that Numbered Heads Together is a cooperative learning method that hold each students in group accountable for learning the material. This method demand the students have to work in group and think together to solve the problem with all the member of group.

b. The Procedures of Numbered Heads Together

Numbered Heads Together have some stages in instructional activities, they are:

1) The students divided in a group, each students in each group get number.
2) The teacher give task and each group do the task.
3) The group discuss the best answer and enactive the member of group can do the task and know the answer.
4) The teacher call one of student number and the students that called the number report the result of group discussing.

[6] Rosi Novitasari and Syukriah Abdullah, The Implementation of Numbered Heads Together" in Teaching Reading Narrative Text to the Tenth Graders, E-Journal UNESA, Vol 01, No. 01, 2013, p. 3. retrieved from *http://ejournal.unesa.ac.id/article/6160/58/article.pdf*, on September 17th 2016 01.15 p.m.

5) Response from other students, and then the teacher call the other number, and forth.

6) Conclusion.[7]

Beside, according to Ibrahim, there are some steps of Numbered Heads Together, they are:

1) Preparation, in this stage the teachers make scenario and the students' worksheet customized with NHT.
2) Formation, the teacher divides the students into groups consist of 3-5 people. Each student in the group is assigned the number and each group was given the different name.
3) Prepare textbooks and guidebooks, this learning tool to facilitate the students to complete the students' worksheet.
4) Discussion of problems, each student receives students' worksheet as a material and they should think together for the answer in the students' work.
5) Call the member's number, in this stage the teacher mention the number and the students from each group immediately prepares answer to the class.
6) Give conclusion, teacher with students conclude the answers of all questions relating to the material already learn.[8]

In addition, according to Trianto, the teacher using structure 4 phase as syntax of Number Heads Together as below:

1) Phase 1: Numbering

In this phase, the teacher divided the students in group 3-5 people and each member of group has number between 1 until 5.

2) Phase 2: Submissing Question

[7] Istarani, *58 Model Pembelajaran Inovatif* (Medan: Media Persada, 2012), p. 13.

[8] Yalvema Miaz, The Implementation of Numbered Heads Together to Improve the Students' Achievement of Social Sciences in Primary School, Research Journal of Social Sciences, Vol. 10, 6 December 2015, p. 41. retrieved from *http://www.aensiweb.net/AENSI.pdf*, on September 18th 2016 02.05 p.m.

The teacher submissing a question to the students. The question have variation. The question can more specific and in form interrogative sentence. For example: "How many tooth of adult?" or in directive form, example: "certain every people know 5 province in Java island."

3) Phase 3: Thinking Together

   The students unite their opinion about answer of the question and convince each member of group know answer's group.

4) Phase 4: Answering

   The teacher call a certain number, then the student that called his/her number raise his/her hand and try to answer the question in front of the class.[9]

Meanwhile, Richards and Rodgers describes the procedure for using the Numbered Head Together technique as follows:

1) Numbering: The teacher divides the students into groups of 4 students and each student gets a number from 1 to 4.
2) Reading: The teacher distributes an article or tells the students what they have to read.
3) Questioning: The teacher distributes a question sheet or puts some questions or tasks on the board for the students to find the answers.
4) Heads Together: The groups are asked to put their heads together to find the answers to the questions and to make sure each member of the group knows the answer to each question.
5) Answering: The teacher calls a number at random. Those with that number raise their hand and the teacher selects one

[9] Trianto, *Mendesain Model*.....p. 82-83.

of them to answer each question starting from the first question to the last one.[10]

Based on the explanation above, the conclusion are : The students divided into some groups, After the group has formed, the teacher submissing some questions, then the student thinking together about answer of the question, and the teacher call the student that have number that same from each group to answer the question in front of the class.

c. The Purposes of Numbered Heads Together

There are some the purposes of Numbered Heads Together in increase students achievement, they are:

1) Increase students' motivation.
2) Increase students' retention.
3) Promote positive competition
4) Promote discussions in both individual and group accountability.
5) Increase students' communicative skill.
6) Increase students' responsibility.
7) Demand the students to be active in the classroom.
8) Give the students the opportunity to share their ideas, opinion or perception.
9) Train students to work in team in group working.[11]

From the explanation the purpose of Numbered Heads Together above. It can be concluded that there are so many the

[10] Rosnani Sahardin, et.al., A Study on Improving Students' Reading Comprehension Using The Numbered Heads Together Technique, Journal Studies in English Language and Education, Vol.2, No. 2, September 2015, p. 140-141. retrieved from *http://www.jurnal.unsyiah.ac.id/2542*, September 18th 2016 02.05 p.m.

[11] Setya Agustin, et.al., The Effect of Using Numbered Head Together Technique on the Eighth Grade Students' Reading Comprehension Achievement at SMPN 2 Tanggul Jember Pancaran Journal, Vol. 2, No.3, 2013, p. 203. retrieved from *http://www.*jurnal.unej.*ac.id/index/533*, on September 18th 2016 02.06 p.m.

purpose of Numbered Heads Together method, such can increase students' motivation in learning, increase students' communicative skill, working together, students responsibility and still many more.

d. Advantages of Numbered Heads Together

There are some advantages of Numbered Heads Together, they are:

1) Can increase group work between students, because in learning process the students placed in a group to discuss.
2) Can increase students responsibility, because each group have a different task to discussed.
3) Train students to unite mind, because Numbered Heads Together ask students to unite perception in a group.
4) Train students to commend another opinion, because from the result of discussion asked response from another group.[12]

It can be concluded that use of Numbered Heads Together give some advantageous to students to increase their skill especially for reading. They can improve their knowledge, attitude, and their skill because they can take exchange some experiences from their peers when they work in their group working.

[12] Istarani, *58 Model Pembelajaran*...p. 13.

2. Conventional Method

Conventional method is the method or the way that used by the teacher to teach the text the student. Conventional method is the method that used by the teacher based on mutual agreement in a school. It use the traditional way in teaching learning process.

The procedures that used by the English teachers at MTsN 1 Model Padangsidimpuan in teaching learning process are:[13]

a. Explain the subject matter
b. Ask the students to read the text one by one
c. Ask the students to translate it
d. Identify the difficult words
e. Answering the question

3. Reading Comprehension

a. Defenition of Reading Comprehension

Reading is a fluent process of readers combining information from a text and their background knowledge to build meaning.[14] Fluent reading is rapid, purposeful, interactive, comprehending, flexible, and gradually developing. Otto states that reading is not just saying words,

[13] *Private Interview* with Mrs. Hairani Siregar, English teacher at grade VII MTsN 1 Model Padangsidimpuan, (Padangsidimpuan: MTsN 1 Model Padangsidimpuan), January 30th 2017, 02.00 p.m.

[14] David Nunan, *Practical English Language Teaching* (New York: McGraw-Hill Companies, 2003) p. 68.

reading must be a meaning getting process.[15] Reading is an interactive process between the reader and the text. An interactive process happens when the readers try to understand the text.

Alderson and Buchman assumed that "the nature of reading separeted in two, those are the process of reading and the result of that process, named product".[16] Thus in other words, their perspective about reading activity are divided into two, the process of reading and the product of reading. So, reading is an activity of meaning getting process. Reading is an interactive between the readers and the text. In reading, the readers must be able to combining information from the text and their own background knowledge to build a meaning.

Reading is a receptive skill. Reading is receptive skill because the readers is recepting the information from the text. The readers also should interpret the text that has been transfered by the writer. The readers read the texts and do the new interpretation based on their background knowledge. Reading is an interactive construction and strategic process. Readers make sense of what they read by integrating text information with their own knowledge, by monitoring their

[15] Wayne Otto, *How to Teach Reading* (USA: Addison-Wesley Publishing Company, 1979), p. 151.

[16] Jo Ann Aebersold and Mary Lee Field, *From Reader to Reading Teacher* (Cambridge University Press, 1997), p. 95.

understanding, and by using procedures for reinterpreting what they read.

Reading is comprehension.[17] In reading, there are messages that the readers want to get. Reading is not only understanding the word means, the sentence structure, or the word pronunciation but reading is a process of getting an information and building understanding. When the readers read the text, the readers should pay attention for some aspect such as how they understand the words, the information from the text and be able to get the conclusion of the text.

The goal of reading is comprehension.[18] Comprehension comes from word "comprehend", which add "ion". The meaning of comprehend is the ability to understand. According to Oxford's Dictionary "comprehension is the power of understanding".[19] Richard states that "comprehension is the process by which a person understanding the meaning of written or spoken language clearly".[20] Comprehension is about thinking, understanding, and connecting the meaning of written, oral, or visual text.[21] Comprehension means that

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[17] Doris M.Cook, *A Guide to Curriculum Planning in Reading* (Madison: Wisconsin Department of Public Instruction, 2004) p. 6.

[18] David Nunan, *Practical English Language Teaching*...p. 68.

[19] A.S. Hornby, *Oxford Advance Learner's Dictionary* (New York: Oxford University Press, 2000), p. 42.

[20] Richard A. Renandya, *Language Teaching Methodology*, (Cambridge University Press, 2006), p. 54

[21] Ontario Ministry of Education, *A Guide to Effective Literacy Instruction*, (Queens Printer for Ontario, 2008), p. 25.

readers think not only about what they are reading but what they are understanding. When readers construct meaning, they are building their store of knowledge.

Comprehension is the ability to understand the meaning from written or spoken language. In comprehension, at least needs four skills which should be possessed as a reader; knowledge of word form and their meanings, the ability to understand the sentence in a paragraph, the ability to see the main thought of the writer and get the general ideas of a piece of a reading material. From the explanation above, it can be concluded that comprehension is the ability to understanding the meaning of the text with clearly.

Reading comprehension is a dynamic interactive process of constructing meaning by combining the reader's existing knowledge with the text information within the context of the reading situation.[22] Reading comprehension is not only depend on the characteristics of the reader and the text but also on the context, or reading environment. A students is likely to read differently in a busy classroom than in a quiet place at home. The context for reading also includes the reader's purpose, the task, the expectations of the teacher, and the perceived result or use of reading. In addition, the makeup of the reading group,

[22] Doris M.Cook, *A Guide to Curriculum*...p. 6.

the classroom atmosphere, and the interactions with the teacher are important in setting the context for reading.

According to Gordon, reading comprehension is a complex processes which take part of useful of good and poor ability.[23] Reading comprehension is an interaction between thought and language, bases evaluation of success in compehension on the extent the readers's constructed message agrees with the writer's intended message.

Peter Westwood states that:

> Reading comprehension has been described as 'a complex intellectual process involving a number of abilities'. Readers must use information already acquired to filter, interpret, organise, reflect upon and establish relationships with the new incoming information on the page. In order to understand text, a reader must be able to identify words rapidly, know the meaning of almost all of the words and be able to combine units of meaning into a coherent message. Understanding of text results from an interaction between word identification, prior knowledge and the effective use of cognitive strategies.[24]

Reading without comprehension or understanding is not reading. Many readers can pronounce words fluently but what they have done just read. They are unable to respond and understand, although they have high score in terms reading rate or fluently, but they are not really good readers.

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[23] Gordon Wainwright, *Speed Reading Better Recalling*, (Jakarta: Gramedia, 2007), p. 42.

[24] Peter Westwood, *Reading and Learning Difficulties*, (Australia: The Australian Council for Educational Research, 2001), p. 10.

From the explanation above, it can be concluded that reading comprehension is the activity to understand a text and trying to find the information of what we need based on the text and context.

b. Model of Reading

Researchers has pondered the effects of the model and explained what happens when people read. Past, researches in the reading process have come up separately with three models of reading as below:

1) Bottom-up models typically consist of lower-level reading processes. Students start with the fundamental basics of letter and sound recognition.Which in turn allows for morpheme recognition followed by word recognition, building up to the identification of grammatical structures, sentence, and longer texts. Letters, letter cluster, words, phrases, sentence, longer text, and finally meaning is the order in achieving comprehension.
2) Top-down models, on the other hand, begin with the idea that comprehension resides in the reader. The reader uses background knowledge, makes predictions, and searches the text to confirm or reject the predictions that are made. Within top-down approach to reading the teacher should focus on meaning generating activities rather than on mastery of word recognition.
3) Interactive models are the model that are accepted as the most comprehensive description of the reading process. This third type combines elements of both bottom-up and top-down models assuming that a pattern is synthesized based on information provided simultaneously from several knowledge sources.[25]

[25] David Nunan, *Practical English*.....p. 70-72.

Based on the explanation above, it can be concluded that there are three models of reading, they are: bottom-up model, top-down model and interactive model.

c. Assessment of Reading Comprehension

Assessment is a tool to measure how far the students ability and comprehension the material. In assessing reading comprehension there are some indicators. The indicators are students able to:

1) Identifying topic sentence.
2) Identifying main idea.
3) Identifying important information.
4) Identifying vocabulary.
5) Identifying conclusion.[26]

Based on the explanation above, it can be concluded that there are five stages of kind of question in reading comprehension, they are: identifying topic, main idea, important information, vocabulary and conclusion

d. Reading Evaluation

After the teacher gives the learning material in teaching learning process to the students, it is necessary to know how far their ability and achievement about the material, so must give test to the students because testing is a tool to measure. There are some techniques to test students reading comprehension, such as multiple

[26] J. Michael O'Malley and Lorraine Valdez Pierce, *Authentic Assessment for English Language Learners*, (USA: Addison- Wesley Publishing Company, 1996), 98.

choice question, short answer question, cloze and so on. To measure students' reading comprehension researcher choice multiple choice question.

Weir states that:

> A multiple-choice test item is usually set out in such a way that the candidate is required to select the answer from a number of given options, only one of which correct, the marking process is totally objective because the marker is not permitted to exercise judgement when marking the candidat's answer, agreement has already been reached as to the correct answer to each item. Selecting and setting item are, however subjective process and the decision about which is correct answer is a matter of subjective judgement on the part of the item writer.[27]

In conclusion, multiple choices are a form of evaluation in which respondents are asked to select the best possible answer of the choices from the list.

4. Descriptive Text

a. Defenition of Descriptive Text

Descriptive text is an English text in which the writer describes an object. In this text, the object can be concrete or abstract object. It can be a person, an animal, a tree, a house etc. It can be about anything. Description is a written English text in which the writer describes an object.[28] Meanwhile, Hornby says, "descriptive text is

[27] Cyril J. Weir, *Communicative Language Testing*, (New York: Prentice Hall, 1990), p. 43.
[28] Sanggam Siahaan and Kisno Sinoda, *Generic Structure Text*, (Yogyakarta : Graha Ilmu, 2008), p. 89.

saying what somebody or something is like".[29] The function of the text is to describe a particular person, place or thing. A descriptive text show thing is based on the objective fact of the thing. So, the researcher concludes that descriptive text is a kind of text genre that gives description about things, living thing or non living thing. Descriptive text describes much information about an object, where the information is about the parts, qualities, or characteristic of the object that is described.

There are 2 generic structure of descriptive text, they are:

1) Identification, it is identify phenomenon or thing to be described. Introducing the participant, name, place etc.
2) Description, it is mention the parts, qualities, characteristic of the subject being described.[30]

There are language features in descriptive text, as below:

1) The use of adjective and compound adjectives. Example are:
   a) Andi is *brown* skin.
   b) Tara looks *attractive* and *beautiful*.
2) The use of linking verb/relating verb. Example are:
   a) The temple is so magnificent.
   b) Vira is a miss of Padangsidimpuan.

[29] A.S Hornby, *Oxford Advance*....p. 357.
[30] Pardiyono, *Teaching Genre- Based Writing*, (Yogyakarta: C.V Andi Offset, 2007), 71.

3) The use of simple present tense.
   a) The hotel provides 450 rooms and large swimming pool
   b) The cat is hungry
4) The use of degree of comparison.
   a) The weather in Sibolga is *hotter* than Padangsidimpuan
   b) Bogor has *the same* weather as Sipirok

The following text is the example of descriptive text

My Lovely Cat

Generic Structure	Example
Identification	I have a cat.
Description	It is a female cat. She has a long tail. She likes to lick her tail. My cat's fur is white and brown. So, I call her "si belang" because she has two color. Belang likes to eat fish. At the afternoon, when the sunset, she likes to play outside the house. She will be running, rolling, and then climbing the tree. She is so funny. I love my cat very much.

Based on the explanation above, it can be concluded that descriptive text is a kind of English text which describing a person, a

thing, an animal, a phenomenon etc. There are two generic structure of descriptive text, they are: identification and description.

B. Review of Related Findings

There are some related findings related to this research. The first is Fithiawati, The conclusion that there was the effect of Numbered Heads Together on students reading ability, where the mean of post-test in the experimental class was 83.84. In controlled class, the mean of post test 71.68. The gain score of experimental class was 22.4 and the gain score of controlled class was 10. The gain score of the experimental class was higher than controlled class. From the result, It can be concluded that the students who were taught by Numbered Heads Together is better achievement in teaching reading comprehension.[31]

The second is from Fiki Maulidatun Nikmah. The conclusion from the data, it has shown that the students' post-test scores in reading comprehension of descriptive text are higher that the students' pre-test scores. The mean of post-test was 85.2, while the mean of pre-test is 82.2. It is also supported by the data analysis in chapter IV that the t-score (3.68) is higher than t-table (2.797) at the degree of significance 1% and 2.064 at the degree of significance 5%. From this result, the researcher concludes that there was very

[31] Fithiawati, "The Effectiveness of Numbered Heads Together (NHT) Technique on Students' Reading Ability of Narrative Text at Grade VIII MTs. Nur Asy-Syafi'iyah Rempoa Tangerang Selatan", (Jakarta: UIN Syarif Hidayatullah, 2014), p. 42. retrieved from: *http://digilib.unpkediri.ac.id/2015/11.pdf*, on March 18th 2017 04.20 pm.

significant effect of Numbered Heads Together technique to the seventh grade students' reading comprehension ability of descriptive text at SMPN 8 Kediri in academic year 2014/2015.[32]

The third is Ririn Handayani. The conclusion of the data, it has shown that the score of students reading comprehension that were taught before using (NHT) Numbered Head Together was low. The mean of pre- test of calculating SPSS 58.86 was average. After using Numbered Head Together (NHT) in students reading comprehension the students score can be improved than before using Numbered Head Together (NHT) in students reading comprehension. The mean of post test of calculating SPSS 77.04 was good category. Finally, based on the data it can be seen that the null hypothesis (Ho) was rejected and the alternative hypothesis (Ha) was accepted. From the result, it be concluded there is different students' reading score of the seventh grade of MTs Aswaja Tungganggri before and after being taught using Numbered Head Together.[33]

Related findings can be used as basic theories because the related findings discuss the aspect about students' reading comprehension

[32] Fiki Maulidatun Nikmah "The Effect of Using Numbered Heads Together to the Seventh Grade Student's Reading Comprehension of SMP Negeri 8 Kediri", (Kediri: Universitas Nusantara, 2015), p.12. retrieved from*: http://repo.iain-tulungagung.ac.id/4205/,* on on March 18th 2017 04.20 p.m.

[33] Ririn Handayani "The Effectiveness of using Numbered Head Together (NHT) to Increase Students' Reading Comprehension of Seventh Grade at Mts Aswaja Tunggangri", (Tulungagung: IAIN, 2016), P. 51. retrieved from: *http://fileadmin /arcieve /publication/ ac.id/4205/,* on March 18th 2017 04.20 p.m.

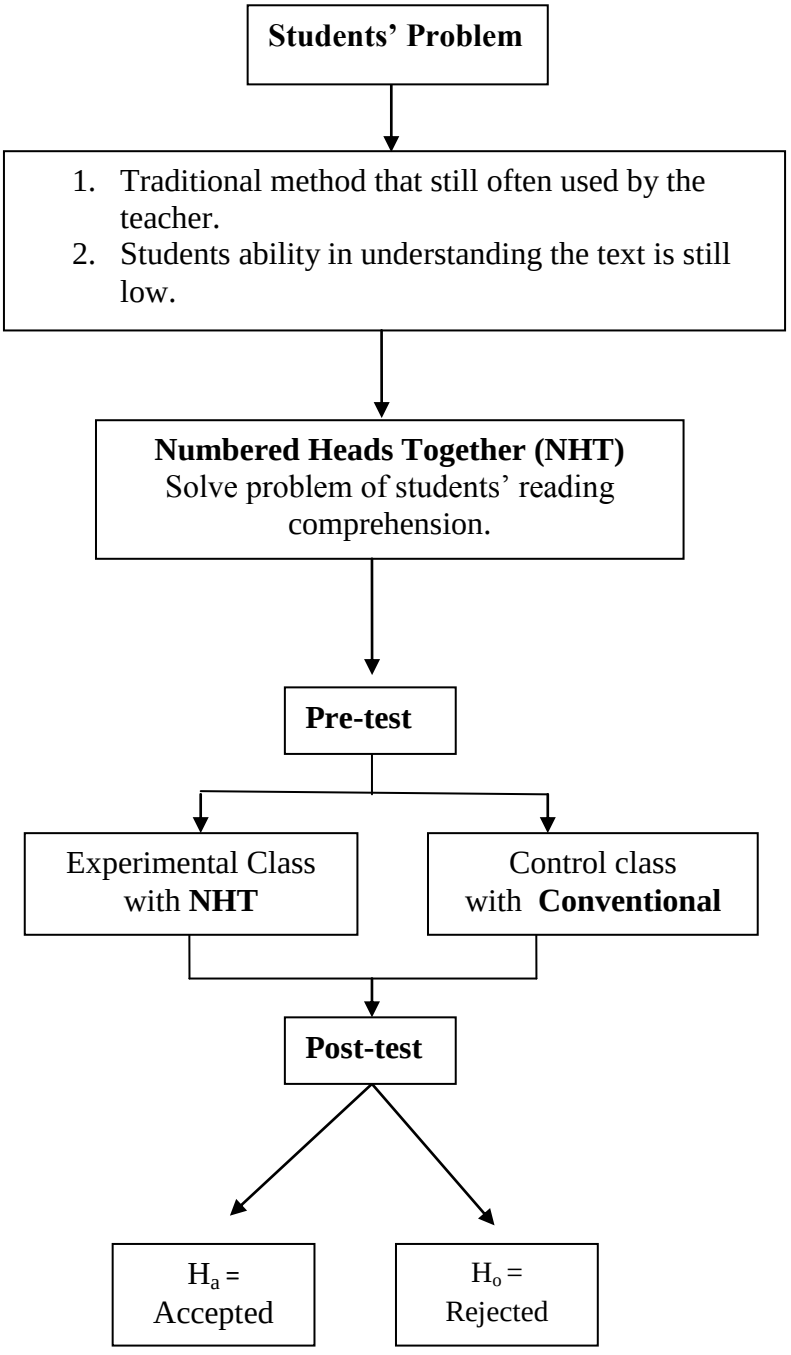
achievement. Actually, the related findings and this research do not have same formulation problem, but this research concern on the effect of method, it is Numbered Heads Together. The researcher believes that there is the effect of Numbered Heads Together on Students' Reading Comprehension and this research complete and contributes previous findings. So, the researcher did the research about "The Effect of Cooperative Learning Model of Type Numbered Heads Together to Students' Reading Comprehension at Grade VIII MTsN 1 Model Padangsidimpuan".

C. Conceptual Framework

Numbered Heads Together is type of cooperative learning. Numbered Heads Together is a combination to convey the material with using group as a place to united perception/ students mind about questions that given by the teacher and then students will responsible based on the number that asked the teacher from each group.

The researcher found the problem that students' ability in understanding the English text was still low and the teacher seldom used methods in teaching learning process. So, researcher is interested to do the research with using Numbered Heads Together method. Before doing Numbered Heads Together, researcher gave pre test to experimental and control class. After that, researcher taught reading (with descriptive text) used Numbered Heads Together method to experimental class, and conventional method to control class. Then, researcher gave post-test to both of classes. The

last, the researcher compared the students' reading comprehension of pre-test and post-test between experimental and control class.



D. Hypotheses of the Research

Hypotheses are determined based on the formulation. Based on formulation of the problem above, the hypotheses of this research was" There was the significant effect of NHT (Numbered Heads Together) to Students' Reading Comprehension at Grade VIII MTsN 1 Model Padangsidimpuan.

CHAPTER III

RESEARCH METHODOLOGY

A. The Place and Time of the Research

The location of this research is at MTsN 1 Model Padangsidimpuan. The school is located on Sutan Soripada Mulia Street, No. 27 Padangsidimpuan of North Sumatera. The process of this research has been done from September 2016 until November 2017.

B. The Research Design

The kind of this research was quantitative research with experimental method. This research purpose to investigates are there the cause-effect with the treatment to experimental class and control class as a comparing. In this research, the researcher used two classes, as an experiment class and as a control class. The experiment class was the class that taught with Numbered Heads Together Method, as a treatment. Meanwhile, the control class was the class that taught with using conventional method or without treatment. Students' reading comprehension will be got before and after the learning process. The first, both of classes gave pretest to know the ability and score of students. It can be seen from the table below:

Table.1
Research Design

Class		Treatment	
Treatment Class	Pre Test	Teaching reading about descriptive text by using Numbered Heads Together method	Post Test
Control Class	Pre Test	Teaching reading about descriptive text by using Conventional method	Post Test

Second, after teaching reading with different implementation, both of the classes gave post-test. It is employed as a basis to calculate whether the different of reading comprehension with and without Numbered Heads Together method is significant or not.

C. The Population and Sample

1. Population

Population is very needed in a research. According to Gay and Airasian, population is the group of interest to the researcher, the group to which she or he would like the result of the study to be generalizable.[1] So, population in this research was the whole of the students at grade VIII of MTsN 1 Model Padangsidimpuan. The population of this research consist of 9 classes and these classes consist of 369 students. It can be seen from the table below

[1] L. R. Gay and Peter Airasian, *Educational Research for Analysis and Application*, (American: Prentice Hal, 1992), p. 122.

Table.2

The population of the grade VIII students of

MTsN 1 Model Padangsidimpuan

No.	Class	Male	Female	Total
1.	VIII-1	11	30	41
2.	VIII-2	20	21	41
3.	VIII-3	18	24	42
4.	VIII-4	20	22	42
5.	VIII-5	20	22	42
6.	VIII-6	19	23	42
7.	VIII-7	19	23	42
8.	VIII-8	17	21	38
9.	VIII-9	19	20	39
Total of Students				369

2. Sample

Sample is represantative whole of population. According to Gay and Airasian, a sample comprises the individuals, items, or events selected from a larger group referred to as a population.[2] The purpose of sampling is to gain and to know information about the population by using sampling. So, sample is the part of population that is chosen as respondents of the research.

In this research, the researcher used random sampling. The researcher chooses two classes. Two classes were selected randomly in

[2] L. R. Gay and Peter Airasian, *Educational Research for*....p. 121

order to be experimental class and control class. In this research, the experimental class was VIII-3 and control class was VIII-4. The researcher chooses VIII-3 consist of 42 students and VIII-4 consist of 42 students. Therefore, total samples were 84 students.

Table.3
Sample of the Research

Experimental Class	Control Class	Total
VIII-3 = 42	VIII-4 = 42	84

D. The Instrument of Data

A research must have a good instrument because good instruments certify the validity of the data. The researcher used instrument of validity and reliability for taking the valid data. In this research, researcher used test as instrument to collect the data of students' reading comprehension achievement.

The type of test is multiple choice. A multiple choice question is test item usually set out in such a a way that the candidate is require to select the answer from a number of given option, only one which is correct. So, in this research used 20 question for pre-test and 20 question for post-test.

Table.4
The Indicators of Reading Comprehension Pre-Test

No.	Indicators	Items	Number of Items	Score	Total of Score
1.	Able to identify topic sentence	3	1,12,16	5	15
2.	Able to identify main idea	4	2,8,13,17	5	20
3.	Able to identify important point	6	3,5,6,10,14,18	5	30
4.	Able to identify vocabulary	4	4,7,9,19	5	20
5	Able to give the conclusion of the text	3	11,15,20	5	15
Total		20		5	100

Table.5
The Indicators of Reading Comprehension Test
Post-Test

No.	Indicators	Items	Number of Items	Score	Total of Score
1.	Able to identify topic sentence	3	1,8,15	5	15
2.	Able to identify main idea	4	4,11,13,17	5	20
3.	Able to identify important point	5	2,3,10,16,19	5	25
4.	Able to identify vocabulary	5	6,7,9,12,18	5	25
5	Able to give the conclusion of the text	3	5,14,20	5	15
Total		20		5	100

E. The Validity and Reliability of Instrument

1. Validity

Validity is the most important quality of a test. It is degree which a test measures what it is supposed to measure and consequently permits appropriate interpretation of test score. Suharsimi Arikunto stated that Validity is a measurement that shows the valid level an instrument.[3] In addition, According to Gay and Airasian, validity is the most important characteristic a test or measuring instrument can possess.[4] So, it can be concluded that validity is measures for determining the good result.

In this research, the researcher used item validity to get the validity of instrumentation. Item validity is a part of the test as a totally to measure the test by items. Where, the test consist of 50 multiple choice test that divided in two groups. They are 25 for pre-test and 25 for post-test.

To know the validity of the each question will be refer to list *r* biserial with r_t *in 5% significant:* 0.349 and 1% significant: 0.449. So, if $r_{account} > r_{table}$ the test is classified valid. So, to get the validity of the test, the formula of *r pointbiserial* can be used as follow:

$$r_{pbi} = \frac{M_p - M_t}{SD_t}$$

[3] Suharsimi Arikunto, *Prosedur Penelitian Suatu*...p. 168.
[4] L. R. Gay and Peter Airasian, *Educational Research for*...p. 161.

Where:

r_{pbi} : Coefficient item validity

M_p : Mean score

M_t : Mean score of the total score

SD_t : Standard Deviation of the total score

p : Presentation of the right answer of the item tested validity

q : Presentation of the wrong answer of the item tested validity.[5]

From the result of the analysis for 50 instrument test, in which 25 for pre-test and 25 for post test. The researcher concluded that only 40 were categorized valid. So, the researcher conducted 20 items for experimental class and 20 items for control class.

2. Reliabillity

An instruments of the research must be reliable. A reliable test is consistent and dependable. It means that reliability is very important to be conducted to know that the data that used is dependable. In this research, the researcher used K-R 20 formula as below:

$$R_{11} = \left(\frac{n}{n-1}\right)\left(\frac{St^2 - \sum pq}{St^2}\right)$$

[5] Anas Sudijono, *Pengantar Statistik Pendidikan*, (Jakarta: Raja Grafindo Persada, 2008), p. 258

Where:

R_{11} = Reliability of the instrument

n = Total of question

S_t = Variants total

$\sum_{pq}$ = Total of the result times p and q

p = Proportion of subject who is right answer

q = Proportion of subject who is wrong answer

The test is reliable if $r_{count} > r_{table.}$ Reliability is good character of the test that refers to the consistency of the measurement.

F. The Procedures of the Research

To get the data from the students, the researcher collected the data by giving test to the students. The kinds of the test is multiple choice. The function of collecting data is to determine the result of the research. In collecting data, The researcher conducted twice of test. The process of testing is explain by the procedure below:

1. Pre-test

Pre-test is a test that given before doing some treatment to the students. Pre-test is conducted to find out the homogeneity of the sample. It is needed to know the students ability in experimental and control class before the researcher gives the treatment to experimental class. In this case, the researcher used some steps. They were:

a. The researcher prepared 20 items of multiple choices test.
b. The researcher distributed the paper of test to students of experimental and control class.
c. The researcher explained what students to do.
d. The researcher gave time.
e. The students answered the questions.
f. The researcher collected their paper test to the researcher.
g. The researcher checked the answer of students and find the mean score the both of class.

2. Treatment

After gave pre-test, the researcher gave treatment to the students. The experimental class taught by using Numbered Heads Together method. The control class taught by using conventional method. The researcher has some procedures in treatment class. They were:

a. The students divided in some group that contains 3-5 students.
b. The researcher determined the number of each students in the group.
c. The teacher gave a task and each group do the task.
d. Every group discussed "heads together" the answer of the task and enactive the member of group can do the task and know the answer.
e. The researcher called one of student number.
f. The students that called the number report the result of group discussing or answer teachers' question.

g. The researcher gave time from another group to give response of the answer.
h. The researcher called another number until all of the number of each group has turn to answer teachers' question.
i. The researcher explains and ask students to get the conclusion of the material.

3. Post-Test

After gave treatment, the researcher conducted a post-test which the different test with the pre-test, has not been conducted in the previous of the research. This post-test is the final test in research, especially measuring the treatment, wether "there is an effect or not". After conducted the post-test, the researcher analyzed the data. The researcher has some procedure. They were:

a. The researcher prepared 20 items of multiple choices test.
b. The researcher distributed the paper of test to students of experimental and control class.
c. The researcher explained what students to do.
d. The researcher gave time.
e. The students answered the questions.
f. The researcher collected their paper test.
g. The researcher checked the answer of students and find the mean score of control and experimental class.

G. The Technique of Data Analysis

In this research, the researcher used the technique of data analysis as follow:

1. Qualification Test of Data Analysis Pre-Test and Post-Test

a. Normality Test

In Normality test, the data can be tested with *Chi-Quadrate* formula, as follow:

$$x^2 = \sum \left(\frac{f_o - f_h}{f_h} \right)$$

Where:

X^2 = Chi-Quadrate

f_o = Frequency is gotten from the sample/result of observation (questioner)

f_h = Frequency is gotten from the sample as image from frequency is hoped from the population

To calculate the result of Chi-Quadrate, it is use significant level 5% (0,05) and degree of freedom as big as total of frequency is lessened 3(dk = k 3). If result $x^2_{count} > x^2_{table}$. So, the data is distributed normal.

b. Homogeneity Test

Homogeneity test is used to know wether control class and experimental class have the same variant or not. If the both of classes

are same, it can be called homogeneous. To test it, the researcher used formula, as follow:

$$F = \frac{The\ biggest\ variant}{The\ smallest\ variant}$$

Where:

n_1 = Total of data that bigger variant

n_2 = Total of data that smallest variant

The hypotheses is accepted if $F_{(count)} \leq F_{table}$ and hyphoteses is rejected if $F_{(count)} \geq F_{table.}$

2. Hypotheses Test

Hypotheses is the answer the result of the research. To analyze the data based on the hypotheses, the researcher used t-test. T-test is one of the statistic examine that used to compare two variables. So, the data will be analyzed by using t-test formula, as follow:

H_a: $\mu_1 \geq \mu_2$

$H_{o:}$ $\mu_1 \leq \mu_2$

If $H_{a:}$ $\mu_1 \geq \mu_2$, it means that the result of students' reading comprehension by using Numbered Heads Together method at grade VII MTsN 1 Model Padangsidimpuan had the significant effect than conventional method. But, if $H_{o:}$ $\mu_1 \leq \mu_2$, it means that the result of students' reading comprehension by using Numbered Heads Together

method at grade VIII MTsN 1 Model Padangsidimpuan had not the significant effect than conventional method.

To test the hyphoteses, the researcher used t-test formula as follow:

$$Tt = \frac{M_1 - M_2}{\sqrt{\left(\frac{\sum x1\,2 + \sum x2\,2}{n_1 + n_2 - 2}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where:

T = The value which the statistical significance

M_1 = The average score of the experimental class

M_2 = The average score of the control class

x_1^2 = Deviation of the experimental class

x_2^2 = Deviation of the control class

n_1 = Number of experimental

n_2 = Number of control

CHAPTER IV

RESULT OF THE RESEARCH

To analyze the data, the researcher has collected data through giving a test in pre- test, and post-test the both of classes. To found out the effect of Numbered Heads Together to Students' Reading Comprehension at Grade VIII MTsN 1 Model Padangsidimpuan, the researcher has calculated the data by using quantitative analysis. The researcher used the formulation of *t-test* to test the hypotheses. Next, the researcher described the data as follow:

A. Description of Data

1. Description of Data Before Using Numbered Heads Together Method

a. The Score of Pre Test in Experimental Class

The researcher gave the test to the students in pre-test before using Numbered Heads Together Method. Based on the students' answer in pre-test, the researcher has calculated the students' score. The total score of pre-test before using Numbered Heads Together Method was 3273 with highest score was 95 and lowest score was 60. The students mean score was 77.9, median was 81.5, modus was 80, range was 35, interval was 6, and standard deviation was 10.2 in appendix 22. Then, the researcher drawn the table sum as follow:

Table.6
The Score of Pre Test in Experimental Class

Total	3273
Highest score	95
Lowest score	60
Mean	77.9
Median	81.5
Modus	80
Range	35
Interval	6
Standard deviation	10.2

The calculation of the frequency distribution of the students' score in pre test before using Numbered Heads Together method can be applied into table frequency distribution as follow:

Table. 7
The Frequency Distribution of Pre-Test in Experimental Class

No	Class Interval	Mid-Point	F	Percentages
1.	60 – 65	62.5	8	19.04%
2.	66 – 71	68.5	3	7.14%
3.	72 – 77	74.5	6	14.28%
4.	78 – 83	**80.5**	**12**	28.5%
5.	84 – 89	86.5	8	19.04%
6.	90 – 95	92.5	5	11.9%
Jumlah			42	100%

From the table above, it can be concluded that the most students are in interval 78–83 (12 students/28.5%). The least of students is 66–71 (3 students/7.14%). Clear description of the data is presented in histogram on the following figure:

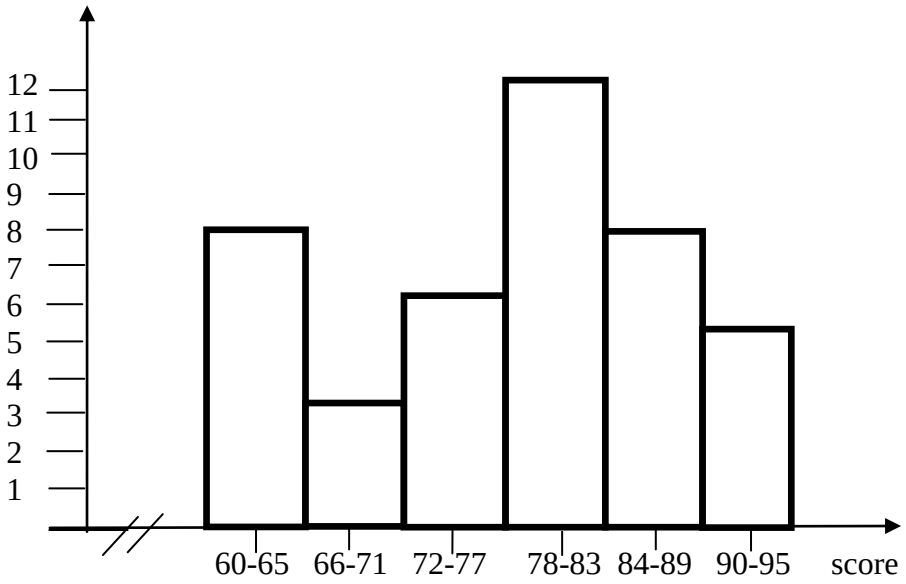


Figure.1 Students' Score of Pre-Test in Experimental Class

Based on the figure above, the frequency of students' score from 60 up to 65 was 8; 66 up to 71 was 3; 72 up to 77 was 6; 78 up to 83 was 12; 84 up to 89 was 8; 90 up to 95 was 5. The histogram shows that the highest interval (78-83) was 12 students, and the lowest interval (66-71) was 3 students.

b. The Score of Pre-test in Control Class

The researcher gave the test to the students in control class is pre-test. Based on the students' answer in pre-test, the researcher has calculated the students' score. The total score of pre-test in control class was 3188 with highest score was 95 and lowest score was 45. The students mean score was 75.9, median was 76.5, modus was 73, range

was 50, interval was 8, and standard deviation was 5.2 in appendix 22. Then, the researcher drawn the table sum in the following:

Table. 8
The Score of Pre-Test in Control Class

Total	3188
Highest score	95
Lowest score	45
Mean	75.9
Median	76.5
Modus	73
Range	50
Interval	8
Standard deviation	5.2

The calculation of the frequency distribution of the students' score in pre test can be applied into table frequency distribution as follow:

Table. 9
The Frequency Distribution of Pre-Test in Control Class

No	Class Interval	Mid-Point	F	Percentages
1.	45 – 52	48.5	9	21.42%
2.	53 – 60	56.5	4	9.52%
3.	61 – 68	64.5	8	19.04%
4.	69 – 76	**72.5**	**11**	26.19%
5.	77 – 84	80.5	6	14.28%
6.	85- 92	90	3	9.52%
7.	93 – 100	96.5	1	0.03%
Jumlah			42	100%

From the table above, it can be concluded that the most students are in interval 85–92 (3 students/9.52%). The least of students is 45–52 (9

students/21.42%). Clear description of the data is presented in histogram on the following figure:

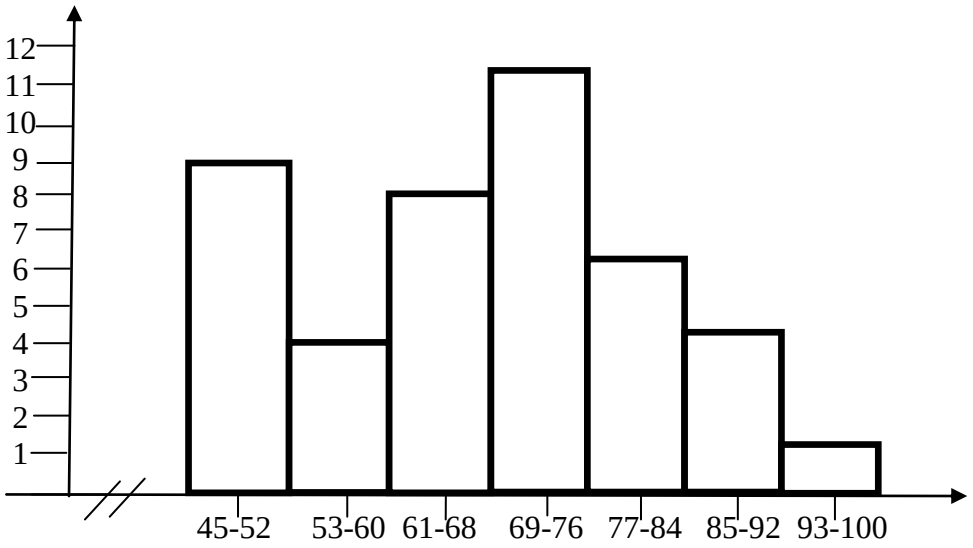


Figure.2 Students' Score of Pre-Test in Control Class

Based on the figure above, the frequency of students' score from 45 up to 52 was 9; 53 up to 60 was 4; 61 up to 68 was 8; 69 up to 76 was 11; 77 up to 84 was 6; 85-92 was 3; 93-100 was 1. The histogram shows that the highest interval (69-76) was 11 students, and the lowest interval (53-60) was 4 students.

2. Description of Data After Using Numbered Heads Together Method

a. The Score of Post-Test in Experimental Class

The researcher gave the post test to the students after using Numbered Heads Together Method. Based on the students' answer in post-test, the researcher has calculated the students' score. The total score of post test after using Numbered Heads Together Method was 3515, with highest score was

100 and lowest score was 65. The students mean score was 83.7, median was 86.25, modus was 85.5, range was 35, interval was 6, and standard deviation was 8.796 in appendix 23. Then, the researcher drawn the table sum in the following:

Table. 10
The Score of Post-Test in Experimental Class

Total	3515
Highest score	100
Lowest score	65
Mean	83.7
Median	86.25
Modus	85.5
Range	35
Interval	6
Standard deviation	8.796

The calculation of the frequency distribution of the students' score in post test after using Numbered Heads Together can be applied into table frequency distribution as follow:

Table.11
The Frequency Distribution of Post-Test in Experimental Class

No	Class Interval	Mid-Point	F	Percentages
1.	65 – 70	67.5	4	9.52%
2.	71 – 76	71.5	2	4.76%
3.	77 – 82	79.5	9	21.4%
4.	83 – 88	**85.5**	**16**	38.%
5.	89 – 94	91.5	9	21.4%
6.	95 – 100	97.5	2	4.76%
Jumlah			42	100%

From the table above, it can be concluded that the most students are in interval 95 – 100 (2 students/4.76%) The least of students is 65-70 (4 students/9.52%). Clear description of the data is presented in histogram on the following figure:

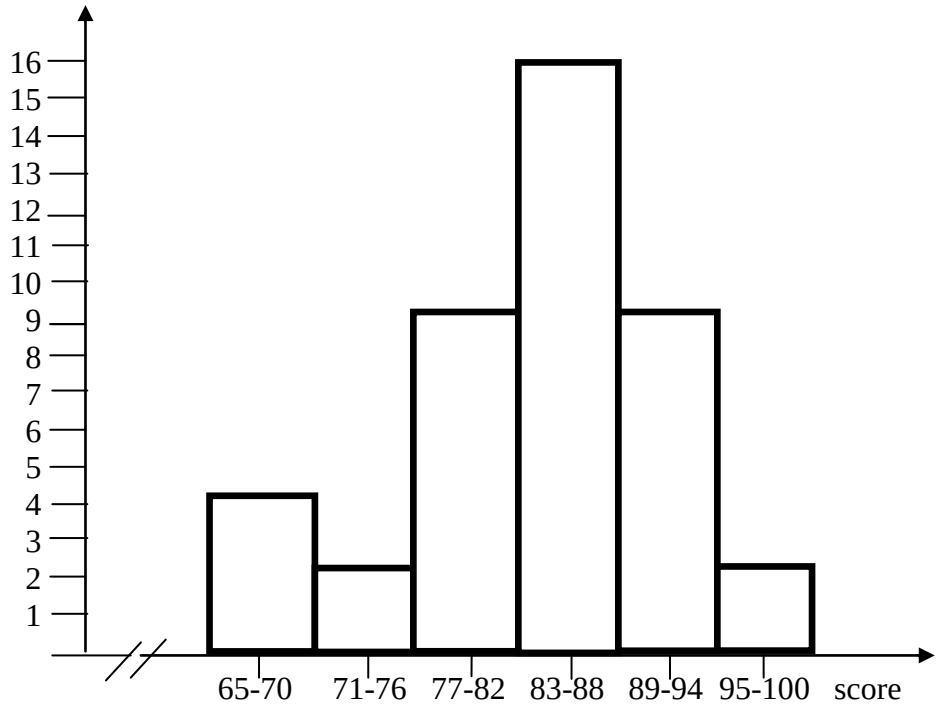


Figure.3 Students' Score of Post Test in Experimental Class

Based on the figure above, the frequency of students' score from 65 up to 70 was 4; 71 up to 76 was 2; 77 up to 82 was 9; 83 up to 88 was 16; 89 up to 94 was 9; 95 up to 100 was 2. The histogram shows that the highest interval (83-88) was 16 students, and the lowest interval (71-76) was 2 students.

b. The Score of Post-test in Control Class

The researcher gave the post test to the students. Based on the students' answer in post-test, the researcher has calculated the students' score. The total score of post test after was 2978 with highest score was 100 and lowest score was 35. The students mean score was 70.9, median was 13.02, modus was 73, range was 65 , interval was 11, and standard deviation was 16.2 in appendix 23. Then, the researcher drawn the table sum in the following:

Table.12
The Score of Post-Test in Control Class

Total	2978
Highest score	100
Lowest score	35
Mean	70.9
Median	13.02
Modus	73
Range	65
Interval	11
Standard deviation	16.2

The calculation of the frequency distribution of the students' score in post test can be applied into table frequency distribution as follow:

Table.13
The Frequency Distribution of Post-Test in Control Class

No	Interval	Mid-Point	F	Percentages
1	35 – 45	40	4	9.52%
2	46 – 56	51	3	7.14%
3	57 – 67	62	8	19.04%
4	68 – 78	**73**	**14**	33.3%
5	79 – 89	84	8	19.04%
	90- 100	95	5	11.90%

Jumlah	42	100%

From the table above, it can be concluded that the most students are in interval 90-100 (5 students/11.90%). The least of students is 35-45 (4 students/9.52%). Clear description of the data is presented in histogram on the following figure:

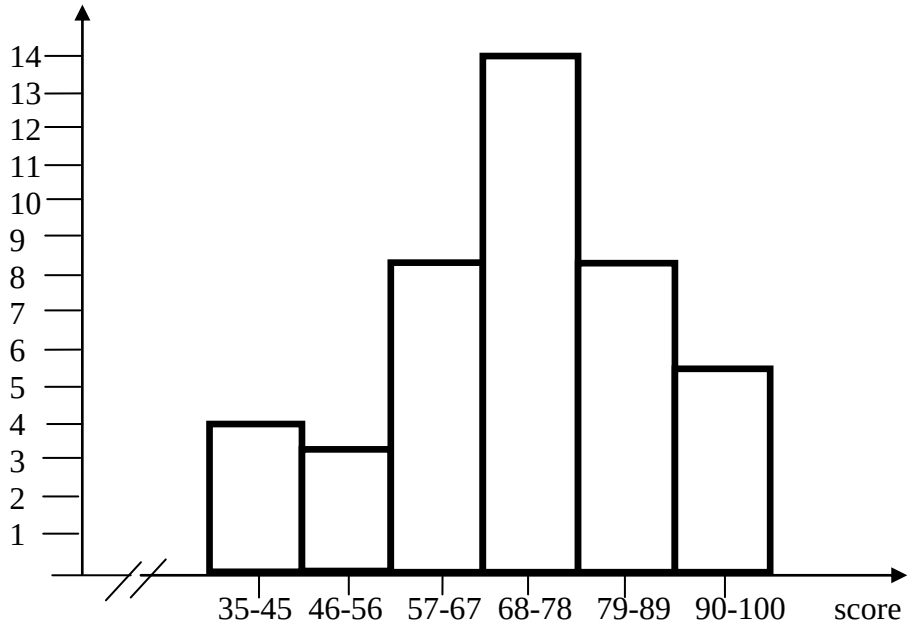


Figure.4 Students' Score of Post-Test in Control Class

Based on the figure above, the frequency of students' score from 35 up to 45 was 4 ; 46 up to 56 was 3; 57 up to 67 was 8; 68 up to 78 was 14; 79 up to 89 was 8; 90 up to 100 was 5. The histogram shows that the highest interval (68-78) was 14 students, and the lowest interval (46-56) was 3 students.

3. Description of Comparison Students' Score of Experimental and Control Class in Pre-Test

a. Comparison Score before Using Numbered Heads Together in Pre-Test

In pre test, the researcher gave a test to both of the classes, by gave test to the students, the researcher knew how the students' reading comprehension before gave a treatment. Based on the students result in pre test, the researcher has calculated the students' score and made a comparison score of students' reading comprehension. The comparison score of students result in pre test can be seen in the table below:

Table. 14
The Comparison Score of Students in Pre-Test

Frequency			
No	**Interval**	**Experimental Class**	**Control Class**
1.	45 – 52	8	9
2.	53 – 60	3	4
3.	61 – 68	6	8
4.	69 – 76	**12**	**11**
5.	77 – 84	8	6
6.	85 – 92	5	3
7.	93 – 100	1	1

In order to get description of the data clearly and completely, the researcher presents it in histogram on the following figure:

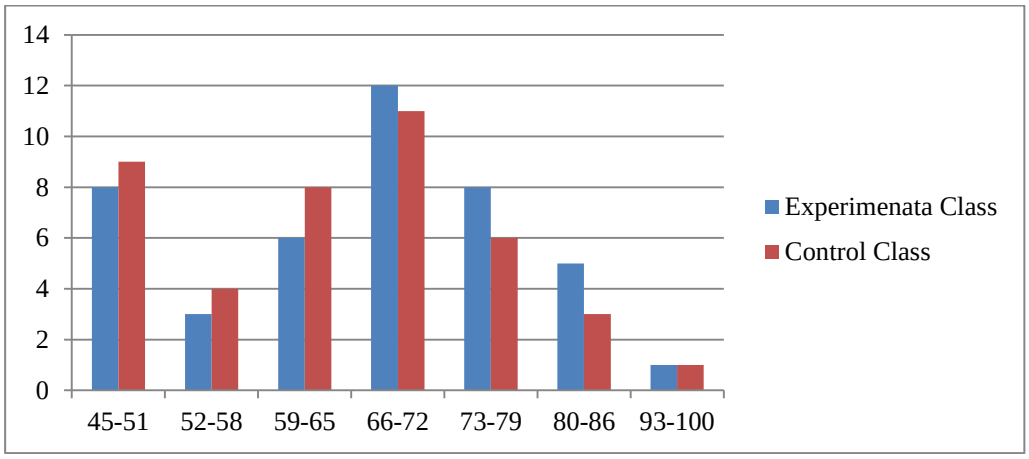


Figure. 5 Comparison Students' Score in Pre-Test

b. Comparison Score after Using Numbered Heads Together in Post-Test

In post test, the researcher applied the treatment only to experimental class. By giving post test to both of the classes, the researcher knew the differences between students' reading comprehension after gave a treatment. Based on the students result in post test, the researcher has calculated the students' score and made a comparison score of students' reading comprehension after giving a treatment. The comparison score of students result in post test can be seen in the table below:

Table.15
The Comparison Score of Students in Post-Test

Frequency			
No	**Interval**	**Experimental Class**	**Control Class**
1.	35 - 45	4	4
2.	46 - 56	2	3
3.	57 - 67	9	8
4.	68 - 78	**16**	**14**
5.	79 - 89	9	8

6.	90 - 100	2	5

In order to get description of the data clearly and completely, the researcher presents it in histogram on the following figure:

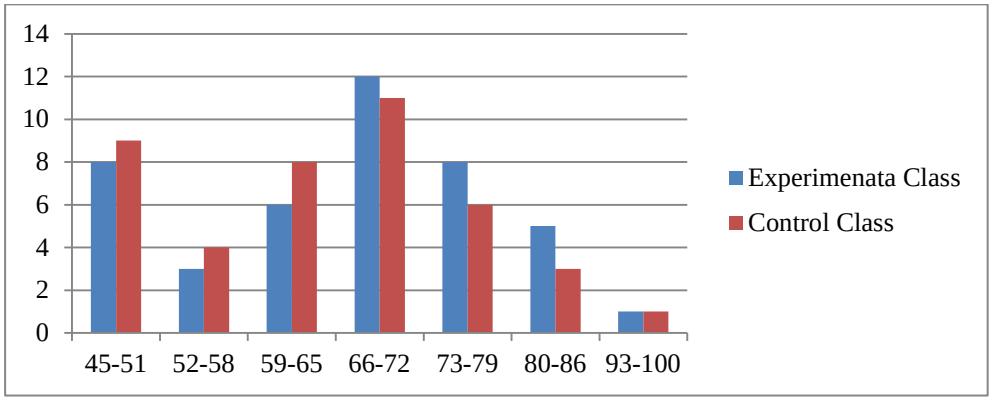


Figure. 6 Comparison Students' Score in Post-Test

B. Testing of Hypotheses

Normality and Homogeneity data of pre-test and post test in experimental and control class can be seen on the following table:

Table.16
Normality and Homogeneity Data X and Data Y in Pre and Post Test

	Class	**Normality Test**		**Homogeneity Test**	
		t_{count}	t_{table}	f_{count}	f_{table}
Pre Test	Experimental Class	8.99	9.488	1.80 < 2.000	
	Control Class	3.68	9.488		
Post Test	Experimental Class	9.53	9.488	4.729 > 2.000	
	Control Class	4.15	9.488		

After calculating the data of pre test and post-test, researcher has found that pre test and post-test result of experimental and control class are normal and

homogenous. The data would be analyzed to prove the hypothesis. It used formula of t-test. The result of t-test was as follow:

Table.17
Result of T-test

Pre-test		**Post-test**	
t_{count}	t_{table}	t_{count}	t_{table}
0.91	2.000	5.093	2.000

The test hypothesis have two criteria. First, if $t_{count}<t_{table}$,H_0 is rejected. Second, $t_{count}>t_{table,}$ H_a is accepted. Based on researcher calculation in pre test, researcher found that t_{count} 0.91 while t_{table} 2.000 with opportunity $(1-\alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 42 + 42 - 2 = 82$. Cause $t_{count}<t_{table}$(0.91<2.000), it means that hypotheses H_a was rejected and H_0 was accepted. So, in pre test, the two classes were same. There is no difference in the both of classes. But, in post test, researcher found that t_{count} 5.093 while t_{table} 2.000 with opportunity $(1-\alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 42 + 42 - 2 = 82$. Cause $t_{count} > t_{table}$ (5.093>2.000), it means that hypotheses; H_a was accepted and H_0 was rejected. So, there was the significant effect between experimental and control class in post test. In this case, the mean score of experimental class after using numbered heads together method in post test was 83.7 and mean score of control class in post test was 70.9

The data would be analyzed to prove the hypotheses. It used formula of t-test. Hypotheses of the research was there was the significant effect of

Numbered Heads Together to Students' Reading Comprehension at Grade VIII MTsN 1 Model Padangsidimpuan. The calculation can be seen on the appendix 13 and 14.

$$Tt = \frac{M_1 - M_2}{\sqrt{\left(\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2}\right)\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

$$Tt = \frac{83.7 - 70.9}{\sqrt{\left(\frac{(42-1)\ 221.3 + (42-1)46.79)}{42+42-2}\right)\left(\frac{1}{42}+\frac{1}{42}\right)}}$$

$$Tt = \frac{12.8}{\sqrt{\left(\frac{41(221.3) + 41\ (46.8)}{82}\right)(0.023+0.023)}}$$

$$Tt = \frac{12.8}{\sqrt{\left(\frac{9073+1918}{82}\right)(0.046)}}$$

$$Tt = \frac{12.8}{\sqrt{\left(\frac{10991}{82}\right)(0.046)}}$$

$$Tt = \frac{12.8}{\sqrt{(137.3)(0.046)}}$$

$$Tt = \frac{12.8}{\sqrt{6.3158}}$$

$$Tt = \frac{12.8}{2.513}$$

$$Tt = 5.093$$

Based on calculation above, it was found that t_{count} = 5.093 with opportunity (1-α) = 1 – 5% = 95% and dk = n_1 + n_2 -2 = 42 + 42 – 2 = 82 , reseacher found that t_{table} = 2.000, cause $t_{count} > t_{table}$ (5.093 > 2.000). It means that H_a was accepted. There was the significant effect average between Experimental by using Numbered Heads Together Method and Control Class by Using Conventional Method. It can be concluded that There was the Significant Effect

of Cooperative Learning "Numbered Heads Together to Students' Reading Comprehension at Grade VIII MTsN 1 Model Padangsidimpuan.

C. Discussion

Based on the related findings, the researcher discussed the result of this research and compared with the related findings. First, The research by Fithiawati about The Effectiveness of Numbered Heads Together (NHT) Technique on Students Reading Ability of Narrative Text at Grade VIII MTs. Nur Asy-Syafi'iyah Rempoa, Tangerang Selatan, it was found that the mean score of pre-test was 61,44.[1] Second, the research by Fiki Maulidatun Nikmah with the about The Effect of Using Numbered Heads Together to the Seventh Grade Students'Reading Comprehension of SMP Negeri 8 Kediri, it was found that the mean score of pre-test was 82.2.[2] Third, the research by Ririn Handayani about The Effectiveness of Using Numbered Heads Together (NHT) to Increase Students' Reading Comprehension of Seventh Grade at MTs Aswaja Tunggangiri, it was found that the mean score of pre-test was 58.86.[3] Meanwhile,

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[1] Fithiawati, "The Effectiveness of Numbered Heads Together (NHT) Technique on Students' Reading Ability of Narrative Text at Grade VIII MTs. Nur Asy-Syafi'iyah Rempoa Tangerang Selatan", (Jakarta: UIN Syarif Hidayatullah, 2014), p. 42. retrieved from: *http://digilib.unpkediri.ac.id/2015/11.pdf*, on March 18th 2017 04.20 p.m.

[2] Fiki Maulidatun Nikmah "The Effect of Using Numbered Heads Together to the Seventh Grade Student's Reading Comprehension of SMP Negeri 8 Kediri", (Kediri: Universitas Nusantara, 2015), p.12. retrieved from*: http://repo.iain-tulungagung.ac.id/4205/*, on on March 18th 2017 04.20 p.m.

[3] Ririn Handayani "The Effectiveness of using Numbered Head Together (NHT) to Increase Students' Reading Comprehension of Seventh Grade at Mts Aswaja Tunggangri", (Tulungagung: IAIN, 2016), P. 51. retrieved from*: http://fileadmin /publication/ ac.id/*, on March 18th 2017 04.20 p.m.

the mean score of pre-test that the researcher found about The Effect of Cooperative Learning Numbered Heads Together to Students' Reading Comprehension at Grade VIII MTsN 1 Model Padangsidimpuan was 77.9.

On the contrary, the mean score of post-test the research by Fithiawati about The Effectiveness of Numbered Heads Together (NHT) Technique on Students Reading Ability of Narrative Text at Grade VIII MTs. Nur Asy-Syafi'iyah Rempoa, Tangerang Selatan was 83.84. Second, the mean score of post-test the research by Fiki Maulidatun Nikmah with the about The Effect of Using Numbered Heads Together to the Seventh Grade Students'Reading Comprehension of SMP Negeri 8 Kediri was 85.2. Third, the mean score of post test the research by Ririn Handayani about The Effectiveness of Using Numbered Heads Together (NHT) to Increase Students' Reading Comprehension of Seventh Grade at MTs Aswaja Tunggangiri was 77.04. Meanwhile, the mean score of post-test that the researcher found about The Effect of Cooperative Learning Numbered Heads Together to Students' Reading Comprehension at Grade VIII MTsN 1 Model Padangsidimpuan was 83.7

Additionally, the score of t-test by Fithiawati was (12.42 > 2.01). The score of t-test by Fiki Maulidatun Nikmah was (3.68 > 2.797). The score of t-test by Ririn Handayani was 77.04 > 7.286. Meanwhile the research by using Numbered Heads Together to Students' Reading Comprehension at Grade VIII MTsN 1 Model Padangsidimpuan was (5.093 > 2.000).

Based on the analysis above, the theory which has been discussed by the researcher was prove. Russ Frank's method is an excellent way to add individual accountability to a group discussion.[4] It means that by using this method it will help studens to increase their reading comprehension because this method give opportunity to the students to share their ideas, head together, thinking to compared what is the best answer by group working. By using this method, the students help each other to comprehend the text as well as answer the questions of the text. Numbered Heads Together is a good method to be used in teaching reading descriptive text, since it helps the students to overcome their difficulties in reading, creates a positive atmosphere in the class, and builds a good interaction for teacher and students. It can be concluded that Numbered Heads Together method has the effect to students' reading comprehension.

D. Threats of the Research

The researcher found the threat of this research as follow:

1. The students needed more time for answering the test
2. There are some students that lack of serious to answer the test in pre-test and post-test. It can be the threat of the research. So, th researcher can not reach the validity of trustworthiness data.
3. The students are noisy and lack of seriuous while teaching and learning process. So, it can disturb the concentration of others.

[4] Robert E. Slavin, *Cooperative Learning Theory, Research, and Practice* (USA: Library of Congress Cataloging-in Publication Data, 1995), p. 132.

BAB V

CONCLUSION AND SUGGESTION

A. Conclusion

Based on the result of the research and calculation of the data, the researcher got the conclusion that using Numbered Heads Together method had the effect to students' reading comprehension at grade VIII MTsN 1 Model Padangsidimpuan. Hypotheses was accepted. It can be seen from the mean score of pre-test and post-test in experimental class (77.9 < 88.7) and calculation of $t_{count} > t_{table}$ (5.093 > 2.000). So, using Numbered Heads Together method had the significant effect to students' reading comprehension at grade VIII MTsN 1 Model Padangsidimpuan.

B. Suggestion

The result of this research showed that the used of Numbered Heads Together method had the significant effect to students' reading comprehension. Therefore, the following suggestion are offered:

1. The Principal of MTsN 1 Model Padangsidimpuan to motivate the teacher, especially English teacher to teach as well as possible by maximazing the using of Numbered Heads Together method in teaching, because Numbered Heads Together method can be used as an alternative way of teaching reading.

2. For the teacher, it is very wish to use Nembered Heads Together method in teaching reading because this method can stimulate students to have motivation especially in reading.
3. Other researcher, the findings of this research were subject matters which can be developed largely and deeply by adding other variables or enlarge the samples.

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APPENDIX I

Experimental Class

RENCANA PELAKSANAAN EMBELAJARAN

(RPP)

Nama Sekolah	: MTsN 1 Model Padangsidimpuan
Mata Pelajaran	: Bahasa Inggris
Kelas/Semester	: VII/I
Alokasi Waktu	: 4 x 45 Menit

Standar Kompetensi	:Memahami makna dalam teks fungsional dan essai pendek sederhana berbentuk descriptive yang berkaitan dengan lingkungan sekitar.
Kompetensi Dasar	: Memahami makna teks tulis fungsional pendek sederhana secara akurat, lancar, dan berterima yang berkaitan dengan lingkungan sekitar dalam teks descriptive.
Jenis Teks	: Descriptive Text
Aspek/ Skill	: Reading

Indikator:

1. Membaca dan memahami teks deskriptive.
2. Mengidentifikasi topik dalam teks descriptive.
3. Mengidentifikasi ide pokok dalam teks descriptive.
4. Mengidentifikasi informasi penting dalam teks deskriptive.
5. Memahami kosakata yang ada dalam teks descriptive.
6. Mengidentifikasi kesimpulan dari teks descriptive.

Tujuan Pembelajaran:

1. Siswa mampu membaca dan memahami teks descriptive.
2. Siswa mampu mengidentifikasi topik dalam teks descriptive.
3. Siswa mampu mengidentifikasi ide pokok dalam teks descriptive.
4. Siswa mampu mengidentifikasi informasi penting dalam teks deskriptive.
5. Siswa mampu memahami kosakata yang ada dalam teks descriptive.
6. Siswa mampu mengidentifikasi kesimpulan dari teks descriptive.

Materi Pembelajaran : Descriptive teks

Metode Pembelajaran : NHT (Numbered Heads Together) Method

Langkah-Langkah Pembelajaran

A. Pendahuluan

1. Guru memberi salam dan masuk ke kelas langsung menyapa dengan menggunakan bahasa Inggris agar English environment dapat langsung tercipta di lingkungan kelas, Guru dapat menggunakan ungkapan "Good morning students".
2. Guru memulai pembelajaran dengan membaca doa terlebih dahulu.
3. Guru memeriksa kehadiran siswa.
4. Guru memberi motivasi singkat tentang belajar siswa secara kontekstual.
5. Guru menjelaskan tentang tujuan atau kompetensi dasar yang akan di capai.

B. Kegiatan Inti

1. Guru menuntun siswa untuk membentuk kelompok diskusi yang terdiri dari 3-5 orang.
2. Guru menentukan nomor setiap orang dari tiap kelompok.
3. Guru menyajikan sebuah teks berbentuk descriptive.
4. Guru menyuruh siswa untuk membaca teks tersebut dan menemukan topik, ide pokok, informasi penting, kosakata dan kesimpulan dari teks tersebut.
5. Setelah siswa membaca teks tersebut, guru mengajukan beberapa pertanyaan kepada siswa dalam tiap kelompok tersebut.
6. Siswa berpikir bersama "heads together" untuk menemukan jawaban dari pertanyaan guru tersebut dan memastikan setiap anggota dari kelompok tersebut mengetahui jawaban dari pertanyaan tersebut.

7. Guru memanggil beberapa nomor tertentu untuk menjawab pertanyaan dari guru tersebut.
8. Siswa menjawab pertanyaan-pertanyaan yang diajukan guru tersebut hingga semua nomor dari tiap kelompok mendapat giliran yang sama.

C. Penutup

1. Guru dan siswa mendiskusikan jawaban dari pertanyaan-pertanyaan tersebut.
2. Guru bersama siswa mengambil kesimpulan tentang materi yang dipelajari dan mencatat informasi penting dan melakukan refleksi terhadap kegiatan pembelajaran.
3. Guru dan peserta didik mengucapkan salam penutup

D. Alat/ Sumber Belajar

1. Buku yang relevan
2. Kamus
3. Papan tulis
4. Penghapus

E. Penilaian

No.	Indikator Pencapaian Kompetensi	Tekhnik Penilaian	Bentuk Instrument	Instrument Soal
1 2. 3. 4. 5.	Mengidentifikasi topik yang terdapat dalam teks. Mengidentifikasi ide pokok yang terdapat dalam teks. Mengidentifikasi informasi penting. Memahami kosakata yang terdapat dalam teks. Mengidentifikasi kesimpulan dari teks tersebut.	Teks Tertulis	Pilihan Ganda	Read the text carefully and then choose the correct answer based on the text by crossing a,b, c, d.

1. Pedoman Penilaian
   a. Jumlah skor maksimal keseluruhan adalah 100
   b. Setiap jawaban yang benar diberi skor 5. Jumlah skor keseluruhan 5 x 20 = 100. (Test tertulis)
   c. Nilai maksimal = $\frac{\text{Jumlah jawaban yang benar}}{\text{Jumlah soal}}$
2. Instrument : Answer the question based on the text
3. Rubrik penilaian

Uraian	Skor
Jawaban benar	5
Jawaban salah	0

Padangsidimpuan, November 2017

Guru Bidang Studi

Yusniati, S.Pd
NIP. 150 385 691

Peneliti

Fuji Rahayu Nasution
NIM. 13 340 0012

Kepala Sekolah

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APPENDIX II

Control Class

RENCANA PELAKSANAAN EMBELAJARAN

(RPP)

Nama Sekolah	: MTsN 1 Model Padangsidimpuan
Mata Pelajaran	: Bahasa Inggris
Kelas/Semester	: VII/I
Alokasi Waktu	: 4 x 45 Menit

Standar Kompetensi	: Memahami makna dalam teks fungsional dan essai pendek sederhana berbentuk descriptive yang berkaitan dengan lingkungan sekitar.
Kompetensi Dasar	: Memahami makna teks tulis fungsional pendek sederhana secara akurat, lancar, dan berterima yang berkaitan dengan lingkungan sekitar dalam teks descriptive.
Jenis Teks	: Descriptive Text
Aspek/ Skill	: Reading

Indikator:

1. Membaca dan memahami teks deskriptive.
2. Mengidentifikasi topik dalam teks descriptive.
3. Mengidentifikasi ide pokok dalam teks descriptive.
4. Mengidentifikasi informasi penting dalam teks deskriptive.
5. Memahami kosakata yang ada dalam teks descriptive.
6. Mengidentifikasi kesimpulan dari teks descriptive.

Tujuan Pembelajaran:

1. Siswa mampu membaca dan memahami teks descriptive.
2. Siswa mampu mengidentifikasi topik dalam teks descriptive.
3. Siswa mampu mengidentifikasi ide pokok dalam teks descriptive.
4. Siswa mampu mengidentifikasi informasi penting dalam teks deskriptive.
5. Siswa mampu memahami kosakata yang ada dalam teks descriptive.
6. Siswa mampu mengidentifikasi kesimpulan dari teks descriptive.

Materi Pembelajaran : Descriptive teks

Metode Pembelajaran : Conventional Method

Langkah-Langkah Pembelajaran

A. Pendahuluan

1. Guru memberi salam dan masuk ke kelas langsung menyapa dengan menggunakan bahasa Inggris agar English environment dapat langsung tercipta di lingkungan kelas, Guru dapat menggunakan ungkapan "Good morning students".
2. Guru memulai pembelajaran dengan membaca doa terlebih dahulu.
3. Guru memeriksa kehadiran siswa.
4. Guru memberi motivasi singkat tentang belajar siswa secara kontekstual.
5. Guru menjelaskan tentang tujuan atau kompetensi dasar yang akan di capai.

B. Kegiatan Inti

1. Guru menyajikan sebuah teks descriptive.
2. Guru meminta siswa membaca dan memahami teks tersebut.
3. Guru meminta siswa untuk menemukan topik, ide pokok, informasi penting, kosakata dan kesimpulan dari teks tersebut.
4. Guru meminta siswa untuk menjawab pertanyaan-pertanyaan tersebut.

C. Penutup

1. Guru dan siswa mendiskusikan jawaban dari pertanyaan-pertanyaan tersebut.
2. Guru bersama siswa mengambil kesimpulan tentang materi yang dipelajari dan mencatat informasi penting dan melakukan refleksi terhadap kegiatan pembelajaran.
3. Guru dan peserta didik mengucapkan salam penutup.

Alat/ Sumber Belajar

1. Buku yang relevan
2. Kamus
3. Papan tulis
4. Penghapus

Penilaian

No.	Indikator Pencapaian Kompetensi	Tekhnik Penilaian	Bentuk Instrument	Instrument Soal
1 2. 3. 4. 5.	Mengidentifikasi topik yang terdapat dalam teks. Mengidentifikasi ide pokok yang terdapat dalam teks. Mengidentifikasi informasi penting. Memahami kosakata yang terdapat dalam teks. Mengidentifikasi kesimpulan dari teks tersebut.	Teks Tertulis	Pilihan Ganda	Read the text carefully and then choose the correct answer based on the text by crossing a,b, c, d.

1. Pedoman Penilaian
   a. Jumlah skor maksimal keseluruhan adalah 100
   b. Setiap jawaban yang benar diberi skor 5. Jumlah skor keseluruhan 5 x 20 = 100. (Test tertulis)
   c. Nilai maksimal = $\frac{\text{Jumlah jawaban yang benar}}{\text{Jumlah soal}}$

2. Instrument : Answer the question based on the text !
3. Rubrik penilaian

Uraian	Skor
Jawaban benar	5
Jawaban salah	0

Padangsidimpuan, November 2017

Guru Bidang Studi

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APPENDIX III

Instrument for Pre-Test

Read the text carefully

Text 1

MY BEST FRIENDS

I believe that a friend is an angel who lift us of our feet when our wings have trouble remembering how to fly. It means that our friends are people who always be there for us anytime we need them. I'm so lucky because I have three best friends. They are Ana, Alfi and Adam. We have known each other since we were four years old. We met in the kindergarden. We do everything together. Our motto is "United we stand, devided we fall". Now let me introduce my friends one by one.

First, the youngest among us because she was born in December. We call her "the sweety Ana. Her father is French. She is tall and slim. She is about 171 cm. She has long hair. Ana is cheerful, confident, and determined girl. However, she is a little bit careless and stubborn. She has many cats in her house. There are about four cats. She loves all them.

Second, Alfian. Alfian's nickname is Alfi. Most of girls in our school love and adore him. There's no doubt about his good looking. We call him "the charming Alfi". His height is 176 cm. Ana has straight hair and perfect face. Next, Adam. He is plump. He is about 168 cm. His weight is 80 kg. He has a round face with brown eyes.

I'm Hana. I'm the shortest one among of them. I'm about 160 cm. I love painting. I spend much time in my small studio just painting. That's all abut me and my friend, Eventhough we are quite different, we love each other and will keep this relationship for good.

Answer the questions for number 1-11 based on the text above with choose the correct answer by crossing a, b, c or d!

1. What is the topic of the text?
   a. My best friends
   b. My best friend angel
   c. My friend forever
   d. My life and best friend
2. What is the main idea of the first paragraph?
   a. I believe that friend is angel
   b. I believe that friend is interest
   c. I believe that friend is beautiful
   d. I believe that friend is Amazing
3. Who is the youngest between them?
   a. Adam
   b. Alfi
   c. Ana
   d. Hana
4. The meaning of word “born” in the second paragraph same with?
   a. Birth
   b. Grow
   c. Big
   d. Small
5. What is Hana’s hobby?
   a. Painting
   b. Watching
   c. Playing
   d. Shopping

6. Where are they met?
   a. In the school
   b. In he house
   c. In the Kindergarden
   d. In the Library
7. The word “cherfull” similar with?
   a. Sadness
   b. Happy
   c. Angry
   d. Lazy
8. The main idea of the last paragraph is?
   a. I’m the shortest one among them
   b. I’m the older among them
   c. I’m Hana
   d. I’m the first
9. He is “funny”. The synonim of the word is?
   a. Humorist
   b. Bad
   c. Crazy
   d. Clever
10. What their motto from the text above?
   a. United we fall, devided we stand
   b. United we stand, devided we fall
   c. United we stand, devided we sad
   d. United we stand, devided we happy
11. The conclusion of the text is?
   a. A friend is an angel
   b. We love each othe and will keep this relationship for good
   c. Dreams of becoming a famous
   d. A friend is enemy

Read the text carefully

Text 2

Mr. Ardi's House

Mr. Ardi is a rich man. He is my uncle. He has a big house. It is two-stairs. Mr. Ardi's house has a large garden. In the down stair, there are two living rooms, three bedrooms, a dining room, a kitchen, two bathrooms, two toilets and a garage. There is also a small swimming pool at the back of the house. While in the up stair, there are a living room four bedrooms, a bathroom and a toilet.

Mr. Ardi's servant and gardener are Mirah, Inem and Sarjito. Mirah and Inem work indoor, while Sarjito works outdoor. They are diligent workers.In the house, there are three television-set, two are down stair and one is up stair. They are in the living room. There are wo telephones in these rooms. There is a big electric fan on the ceiling.

Answer the questions for number 12-15 based on the text above with choose the correct answer by crossing a, b, c or d!

12. What is the topic of the text above?
    a. Mr. Ardi's house
    b. Mr. Ardi is a rich man
    c. Mr. Ardi has a big house
    d. Mr. Ardi has a large garden
13. What is the main idea of the first paragraph?
    a. Mr. Ardi's house
    b. Mr. Ardi is a rich man

c. Mr. Ardi has a big house

d. Mr. Ardi has a large garden

14. Where is the swimming pool of Mr. Ardi's house?

a. At the back of the house

b. In front of the house

c. In the garden

d. Beside of the garage

15. What is the conclusion of the text?

a. Mr. Ardi is a rich man

b. Mr. Ardi is my uncle

c. Mr. Ardi has a big house

d. Mr. Ardi has a large garden

Read the text carefully

Text 3

Putri Ayu

Putri Ayu is a model from Medan, Sumatera Utara. Now, she is a student of state Senior High School 1 Medan. Ayu is the first daugther of Mr. Andi and Mrs. Ana. Ayu became a famous model when she wons the competition of teenage model 2015. Ayu is white skin. She is tall and slender. She is 17 years old. She has black hair pointed nose. Her face is oval. Ayu is cheerful and friendly girl. Everybody likes her becausee she is humorous and creative girl. Her hobbies are cooking, shopping, reading and singing. Ayu has a beautiful voice and her favorite singer is Rossa.

Answer the questions for number 16-20 based on the text above with choose the correct answer by crossing a, b, c or d!

16. What is the topic from the text above?

a. Putri Ayu

b. The famous model

c. Students of Senior High School 1 Medan

d. The famous singer

17. What is the main idea of the text above?

a. Putri Ayu is a model from Medan, Sumatera Utara

b. Putri Ayu is a famous singer

c. Putri Ayu is a friendly girl

d. Putri Ayu has a beautiful voice

18. Where is Putri Ayu school?

a. Senior High School 11 Yogyakarta

b. Senior High School 5 Malang

c. Junior High School 4 Tangerang Selatan

d. Senior High School 1 Medan

19. Putri Ayu is cheerful and <u>friendly</u> girl. What is the meaning of the underlined word?

a. Ramah

b. Pemarah

c. Sabar

d. Kekanak-kanakan

20. What is the conclusion of the text above?

a. Putri Ayu is a model from Medan, Sumatera Utara

b. Putri Ayu is a famous singer

c. Putri Ayu is a friendly girl

d. Putri Ayu has a beautiful voice

APPENDIX IV

Instrument for Post-Test

Read the text carefully

Text 1

WAKATOBI

Wakatobi is the name of an archipelago and regency in Sulawesi Tenggara, Indonesia. The name of Wakatobi is derived from the names of the main islands in the archipelago; Wangiwangi, Kaledupa, Tomea, and Binangko. It is the best diving sites ever.

There are many reasons why Wakatobi call as the best diving sites ever. First, the reefs in Wakatobi diving are unlike others in the region because of the dry climate and uplifted limestone. This means Wakatobi is an exceptionally clean environment due to the lack of soll erosion. Second, being a national park, fishing is strictly limited and the reefs of Wakatobi are protected. These superb reefs are supported and protected by the local fishing communities who obtain a fair share of the income generated by Wakatobi dive tourism in exchange for adopting more sustainable practices, such as leaving large stretches of reef completely ontouched. Third, Wakatobi is located at the world's coral reef triangle centre with its 924 fish species and 750 coral reefs species from total of 850 world's collection comparing to the two world's famous diving centre of the Carribean Sea that owes only 50 species and other 300 species in red sea. Wakatobi is the beautiful island that must be save as the blessing of God for people in the world.

Answer the questions for number 1-7 based on the text above with choose the correct answer by crossing a, b, c or d!

1. What is the topic of the text above?
   a. Archipelago
   b. Sulawesi Tenggara
   c. Wakatobi
   d. Kaledupa
2. Where is the location of Wakatobi island?
   a. Sulawesi Tenggara
   b. Papua
   c. Kalimantan
   d. Sumatera
3. Below is the names of island in Wakatobi, except?
   a. Komodo
   b. Kaledupa
   c. Tomea
   d. Binangka
4. What is the main idea of the second paragraph?
   a. Wakatobi is the beautiful island
   b. Wakatobi is the largest island in the world
   c. Wakatobi is the best diving sites
   d. Wakatobi has 924 fish species and 750 coral reef species
5. What is the conclusion of the text above?
   a. Wakatobi is located at the world's coral reef triangle centre
   b. Wakatobi is the beautiful island that must be save as the blessing of God
   c. Wakatobi is the name of an archipelago and regency in Sulawesi Tenggara
   d. Wakatobi is the largest island

6. What is the meaning of “National Park” ?

a. Laut Merah

b. Perikanan

c. Perkebunan

d. Taman Nasional

7. Wakatobi are protected.The underlined word means?

a. Dilindungi

b. Diabaikan

c. Penghijauan

d. Dibersihkan

Read the text carefully

Text 2

TOBA LAKE

Toba lake is one of the most popular destination in Indonesia, especially in Medan, North Sumatera. Toba lake is the largest volcanic lake in Indonesia, even in the Southeast Asia. Which make it more special is taken from the Samosir Island, an island that settled in the middle of the lake.

Toba lake is an area of 1,707 km^2, we can say that this is 1,000 km^2 bigger than Singapore. It formed by a gigantic volcanic eruption some 70,000 years ago, it is probably the largest resurgent caldera on Earth. Samosir island, is the Island in the middle, was joined to the caldera wall by a narrow isthmus, which was cut through to enable boats to pass a road bridge crosses the cuting. Samosir island is the cultural centre of the Batak tribe, the indigenous from North Sumatera.

By the eruption of a super volcano (Mount Toba) was estimated to have caused mass death and extinction of several species of living creatures. The eruption of Mount

Toba has led to changes in the earth's weather and start into the ice age that affects the world civilization.

Toba lake is actually more like a sea that a like considering its size. Therefore, the lake placed as the largest in the world after Victoria lake in Africa. Toba lake is also includes the deepest lake in the world, which is approximately 450 meter. Therefore, Toba lake is one of the interesting places in Indonesia.

Answer the questions for number 8-14 based on the text above with choose the correct answer by crossing a, b, c or d!

8. What is the topic of the text above?
   a. Toba lake
   b. My city
   c. Samosir island
   d. Asia Tenggara
9. What is the meaning of word "lake"?
   a. Pulau
   b Laut
   c. Samudera
   d. Danau
10. What is the name of an Island in Toba lake?
   a. Java island
   b. Raja Ampat island
   c. Samosir island
   d. Toba lake
11. What is the main idea of the first paragraph?
   a. Toba lake is very beautiful
   b. Samosir island is an island in Toba lake
   c. Toba lake is the deepest lake in the world
   d. Toba lake is one of the most popular destination in Indonesia

12. Toba lake is one of the most popular destination. What is the synonim of the word that underlined?
    a. Nice
    b. Kind
    c. Beautiful
    d. Famous
13. What is the main idea of the second paragraph?
    a. Samosir island is the cultural centre of the Batak tribe
    b. Toba lake is the bigger than Singapore
    c. Samosir is the beautiful place
    d. Toba lake is an area 1.707 km^2
14. What is conclusion of the text ?
    a. Toba lake is one of the interesting places in Indonesia
    b. Toba lake is an area of 1,707 km^2, we can say that this is 1,000 km^2 bigger than Singapore
    c. Samosir island is the cultural centre of the Batak tribe
    d. Toba lake is the largest volcanic lake in Indonesia, even in the Southeast Asia.

Read the text carefully

Text 3

Rafflesia Arnoldi

Rafflesia Arnoldi is one of the rare plants in Indonesia. It can be found only in Bengkulu, one of Indonesia's provinces. It is an almost extinct plant that should be conserved.

Rafflesia Arnoldi is tremendous and high. It can be four meters height. This plant grows up in the wild area such as in the jungle. It can not be planted by human since it grows naturally. It has a wide and large leaves. The leaves can be three meters lenght. It usually has five big size leaves. The leaves re usually patterned and colourful. The most color is maroon and it contains white spots to make it interesting to look at.

The mid part is the trunk. This part is the highest part. It can be two or three meters height. This part soars up to the sky since this plant grows up following the suns light. Actually, it can not be called as “trunk” since it is the leaf that has a form like a trunk. It is harder than the other leaves and it is only one without branches. When we approach it, it has a bad smell. The smell is carrion-like. It spread up to ten meters surroud. The bad smell function to protect itself from any disturbance such as animals, insects, etc.

Answer the questions for number 15-20 based on the text above with choose the correct answer by crossing a, b, c or d!

15. What is the topic of the text?
    a. Rafflesia Arnoldi
    b. Rare plant
    c. Indonesia’s plants
    d. Bengkulu
16. Where can we find Rafflesia Arnoldi?
    a. Bengkulu
    b. Sulawesi
    c. Kalimantan
    d. Papua
17. What is the main idea of the first paragraph?
    a. Rafflesia can be found in Bengkulu
    b. Rafflesia is extinct plant
    c. Rafflesia grows up in the wild area
    d. Rafflesia is one of the rare plant in Indonesia
18. It is an almost extinct plant that should be <u>concerved.</u> What is the meaning of the underlined word?
    a. Dimusnahkan
    b. Ditanam

c. Dilindungi

d. Dirawat

19. What is the function bad smell of Rafflesia Arnoldi?

a. To make it interest

b. To protect itself from any disturbance

c. To make it beautiful

d. To make it patterned and colourful

20. What is the conclusion of the text above?

a. Rafflesia Arnoldi is one of the rare plant in Indonesi

b. Rafflesia Arnoldi is extinct plant that should be concerved

c. Rafflesia Arnoldi can be found only in Bengkulu

d. Rafflesia Arnoldi can grows up in the wild

APPENDIX V

KEY WORDS

PRE-TEST	POST-TEST
1. A	1. C
2. A	2. A
3. C	3. A
4. A	4. C
5. A	5. B
6. C	6. D
7. B	7. A
8. C	8. A
9. A	9. D
10. B	10 C
11. B	11. D
12. A	12. D
13. B	13. D
14. A	14. A
15. A	15. A
16. A	16. A
17. A	17. D
18. D	18. C
19. A	19. B
20. A	20. A

APPENDIX VI

Validity of Pre Test

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1
3	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1
4	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1	1	1	1	1
5	1	1	0	1	0	0	0	1	0	1	0	0	0	1	0	0	1	0	0
6	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1
7	0	1	1	0	0	0	1	0	1	1	0	1	1	1	0	1	1	0	1
8	1	1	1	0	1	0	1	1	0	0	0	0	1	1	1	0	0	1	0
9	0	1	0	0	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1
10	1	1	1	0	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1
11	1	1	1	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	1
12	1	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	1	1
14	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	1	1	0
15	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
16	1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1	1
17	1	0	1	1	1	1	1	0	1	0	0	1	1	1	0	1	1	0	0
18	1	1	1	1	1	0	1	0	1	0	0	1	0	1	1	1	0	0	1
19	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1
20	0	0	1	1	0	0	1	0	1	1	0	1	1	1	0	1	0	1	1
21	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1
22	0	0	1	1	0	1	1	0	1	0	1	1	1	0	1	1	1	1	1
23	1	1	1	0	1	0	1	0	0	1	1	1	1	1	1	0	1	1	0
24	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0
25	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	0
26	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0
27	0	0	1	1	1	0	0	0	1	0	1	0	0	1	0	0	1	1	1
28	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0
29	1	1	1	0	1	0	1	1	1	1	0	0	1	0	1	1	1	1	1
30	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0
N=30	23	22	24	21	20	13	25	21	23	19	14	21	25	22	18	22	24	22	19
P	0.7	0.7	0.8	0.7	0.6	0.4	0.8	0.7	0.7	0.6	0.4	0.7	0.8	0.7	0.6	0.7	0.8	0.7	0.6
Q	0.2	0.3	0.2	0.3	0.4	0.6	0.2	0.3	0.2	0.4	0.6	0.3	0.2	0.3	0.4	0.3	0.2	0.3	0.4

APPENDIX VII

Reliability of Pre Test

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1
3	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1
4	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1	1	1	1	1
5	1	1	0	1	0	0	0	1	0	1	0	0	0	1	0	0	1	0	0
6	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1
7	0	1	1	0	0	0	1	0	1	1	0	1	1	1	0	1	1	0	1
8	1	1	1	0	1	0	1	1	0	0	0	0	1	1	1	0	0	1	0
9	0	1	0	0	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1
10	1	1	1	0	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1
11	1	1	1	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	1
12	1	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1
13	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	1	1
14	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	1	1	0
15	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0
16	1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1	1
17	1	0	1	1	1	1	1	0	1	0	0	1	1	1	0	1	1	0	0
18	1	1	1	1	1	0	1	0	1	0	0	1	0	1	1	1	0	0	1
19	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1
20	0	0	1	1	0	0	1	0	1	1	0	1	1	1	0	1	0	1	1
21	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1
22	0	0	1	1	0	1	1	0	1	0	1	1	1	0	1	1	1	1	1
23	1	1	1	0	1	0	1	0	0	1	1	1	1	1	1	0	1	1	0
24	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0
25	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	0
26	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0
27	0	0	1	1	1	0	0	0	1	0	1	0	0	1	0	0	1	1	1
28	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0
29	1	1	1	0	1	0	1	1	1	1	0	0	1	0	1	1	1	1	1
30	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0
N=30	23	22	24	21	20	13	25	21	23	19	14	21	25	22	18	22	24	22	19
p	0.7	0.7	0.8	0.7	0.6	0.4	0.8	0.7	0.7	0.6	0.4	0.7	0.8	0.7	0.6	0.7	0.8	0.7	0.6
q	0.2	0.3	0.2	0.3	0.4	0.6	0.2	0.3	0.2	0.4	0.6	0.3	0.2	0.3	0.4	0.3	0.2	0.3	0.4
pq	0.14	0.21	0.16	0.21	0.24	0.24	0.16	0.21	0.14	0.24	0.24	0.21	0.16	0.21	0.24	0.21	0.16	0.21	0.24

APPENDIX VIII

Validity of Post Test

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	∑Xt	$\sum X t^2$
1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	22	484
2	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	0	19	361
3	1	1	1	1	0	0	1	0	0	1	1	0	0	0	0	0	1	1	1	1	0	0	0	1	0	12	144
4	0	1	1	1	1	0	0	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	20	400
5	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	22	484
6	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	21	441
7	0	1	0	1	1	0	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	19	361
8	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	20	400
9	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	21	441
10	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	22	484
11	0	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	19	361
12	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	20	400
13	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	1	0	0	1	0	1	0	1	17	289
14	1	0	1	1	0	0	1	1	0	0	1	0	1	1	0	0	1	1	1	0	1	0	1	0	1	14	1

																											96
15	0	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	20	400
16	1	1	1	0	1	0	1	1	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	1	1	14	196
17	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	22	484
18	1	1	0	0	1	0	1	1	0	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	17	289
19	0	0	0	0	0	1	1	0	1	0	1	1	0	1	0	1	0	0	1	1	1	1	1	1	1	14	196
20	1	1	1	0	1	1	1	1	0	1	1	1	1	1	0	0	0	1	0	1	1	1	1	1	1	19	361
21	1	1	1	1	1	0	1	1	0	1	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1	20	400
22	1	1	1	0	1	1	0	1	0	1	1	0	0	0	0	0	0	1	0	1	1	1	0	0	1	13	169
23	1	0	0	0	0	0	1	1	0	1	1	1	1	0	0	0	1	0	1	0	1	1	1	1	1	14	196
24	0	1	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	13	169
25	1	0	1	0	0	0	1	1	0	1	1	1	1	0	0	0	1	0	1	0	1	1	1	1	1	15	225
26	1	0	0	0	1	0	0	1	0	1	1	1	1	1	0	0	1	0	1	1	0	1	0	1	1	14	196
27	0	1	1	0	0	1	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	19	361
28	1	0	1	0	0	1	1	1	0	1	0	1	1	1	0	0	1	1	0	0	1	0	1	1	1	15	225
29	1	1	1	0	0	1	0	1	1	0	0	1	1	0	0	0	0	0	1	0	1	1	0	0	1	12	144

30	0	0	0	0	1	1	1	0	1	0	0	0	0	1	0	1	0	1	0	1	0	1	1	1	1	11	121
N = 30	22	22	24	17	21	10	25	26	5	24	25	25	22	22	6	5	23	23	23	24	27	24	24	25	26	520	9378
p	0.7	0.7	0.8	0.5	0.7	0.3	0.8	0.8	0.1	0.8	0.8	0.8	0.7	0.7	0.2	0.1	0.7	0.7	0.7	0.8	0.9	0.8	0.8	0.8	0.8	**∑Xt**	**∑ $X t^2$**
q	0.2	0.2	0.2	0.4	0.3	0.6	0.1	0.1	0.8	0.2	0.1	0.1	0.2	0.2	0.8	0.8	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1		

APPENDIX IX

Reliability of Post Test

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	$\sum Xt$	$\sum Xt^2$
1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	22	484
2	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	0	19	361
3	1	1	1	1	0	0	1	0	0	1	1	0	0	0	0	0	1	1	1	1	0	0	0	1	0	12	144
4	0	1	1	1	1	0	0	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	20	400
5	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	22	484
6	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	21	441
7	0	1	0	1	1	0	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	19	361
8	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	0	1	1	1	20	400
9	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	21	441
10	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	22	484
11	0	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	19	361
12	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	20	400
13	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	1	0	0	1	0	1	0	1	17	289
14	1	0	1	1	0	0	1	1	0	0	1	0	1	1	0	0	1	1	1	0	1	0	1	0	1	14	196
15	0	1	1	1	1	0	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	20	400
16	1	1	1	0	1	0	1	1	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	1	1	14	196
17	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	22	484
18	1	1	0	0	1	0	1	1	0	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	17	289
19	0	0	0	0	0	1	1	0	1	0	1	1	0	1	0	1	0	0	1	1	1	1	1	1	1	14	196
2	1	1	1	0	1	1	1	1	0	1	1	1	1	1	0	0	0	1	0	1	1	1	1	1	1	1	3

0																										9	61
21	1	1	1	1	1	0	1	1	0	1	1	1	0	1	0	0	1	1	1	1	1	1	1	1	1	20	400
22	1	1	1	0	1	1	0	1	0	1	1	0	0	0	0	0	0	1	0	1	1	1	0	0	1	13	169
23	1	0	0	0	0	0	1	1	0	1	1	1	1	0	0	0	1	0	1	0	1	1	1	1	1	14	196
24	0	1	1	0	0	1	0	0	1	0	1	0	0	0	0	0	0	1	1	1	1	1	1	1	1	13	169
25	1	0	1	0	0	0	1	1	0	1	1	1	1	0	0	0	1	0	1	0	1	1	1	1	1	15	225
26	1	0	0	0	1	0	0	1	0	1	1	1	1	1	0	0	1	0	1	1	0	1	0	1	1	14	196
27	0	1	1	0	0	1	1	1	0	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	19	361
28	1	0	1	0	0	1	1	1	0	1	0	1	1	1	0	0	1	1	0	0	1	0	1	1	1	15	225
29	1	1	1	0	0	1	0	1	1	0	0	1	1	0	0	0	0	0	1	0	1	1	0	0	1	12	144
30	0	0	0	0	1	1	1	0	1	0	0	0	0	1	0	1	0	1	0	1	0	1	1	1	1	11	121
N = 30	22	22	24	17	21	10	25	26	5	24	25	25	22	22	6	5	23	23	23	24	27	24	24	25	26	520	9378
p	0.7	0.7	0.8	0.5	0.7	0.3	0.8	0.8	0.1	0.8	0.8	0.8	0.7	0.7	0.2	0.1	0.7	0.7	0.7	0.8	0.9	0.8	0.8	0.8	0.8	**$\sum Xt$**	**$\sum Xt^2$**
q	0.2	0.2	0.2	0.4	0.3	0.6	0.1	0.1	0.8	0.2	0.1	0.1	0.2	0.2	0.8	0.8	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.1		
pq	0.14	0.14	0.16	0.20	0.21	0.18	0.8	0.8	0.8	0.16	0.8	0.8	0.14	0.14	0.16	0.8	0.14	0.14	0.14	0.14	0.9	0.16	0.16	0.8	0.8		

APPENDIX X

Calculation of $r_{pbi} = \frac{M_p - M_t}{SD_t}\sqrt{\frac{p}{q}}$

A. Calculation of Pre-test

1. Mean score from score total (M_t)

$$M_t = \frac{\sum X_t}{N}$$

$$M_t = \frac{506}{30} = 16.86$$

2. Standard Deviation (SD_t)

$$SD_t = \sqrt{\frac{\sum X_{t^2}}{N} - \left(\frac{\sum X_t}{N}\right)^2}$$

$$SD_t = \sqrt{\frac{9280}{30} - \left(\frac{506}{30}\right)^2}$$

$$SD_t = \sqrt{309.3 - 16.86^2}$$

$$SD_t = \sqrt{309.3 - 284.2}$$

$$SD_t = \sqrt{25.1} = 5.00$$

3. Mean Score (M_p)

Item 1

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n1}$$

$$M_{pl} = \frac{22+20+21+19+7+21+12+15+10+22+16+19+22+17+14+22+20+19+21+21+18+19}{23}$$

$$M_{pl} = \frac{418}{23} = 18.17$$

Item 2

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n2}$$

$$M_{pl} = \frac{22+21+19+7+21+15+12+18+15+10+16+19+22+21+14+22+20+19+21+21+18+19}{22}$$

$$M_{pl} = \frac{392}{22} = 17.81$$

Item 3

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n3}$$

$$M_{pl} = \frac{22+21+19+21+15+18+10+22+16+19+22+21+17+14+22+17+20+17+20+17+19+21+5+18+19}{24}$$

$$M_{pl} = \frac{415}{24} = 17.29$$

Item 4

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n4}$$

$$M_{pl} = \frac{22+20+21+!9+7+21+22+16+19+22+21+17+14+22+17+20+17+21+12+21+19}{21}$$

$$M_{pl} = \frac{390}{21} = 18.57$$

Item 5

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n5}$$

$$M_{pl} = \frac{22+20+19+12+18+15+22+16+19+22+17+14+22+20+19+21+12+21+18+19}{20}$$

$$M_{pl} = \frac{368}{20} = 18.40$$

Item 6

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n6}$$

$$M_{pl} = \frac{21+21+15+22+16+22+21+17+22+20+17+21+19}{13}$$

$$M_{pl} = \frac{254}{13} = 19.53$$

Item 7

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n7}$$

$$M_{pl} = \frac{22+20+21+19+15+12+18+10+22+16+22+21+17+14+22+17+20+17+19+4+21+12+21+18+19}{25}$$

$$M_{pl} = \frac{448}{25} = 17.92$$

Item 8

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n8}$$

$$M_{pl} = \frac{22+20+21+19+7+21+12+18+22+16+19+22+21+22+20+17+21+5+21+18+19}{21}$$

$$M_{pl} = \frac{390}{21} = 18.57$$

Item 9

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n9}$$

$$M_{pl} = \frac{22+20+21+21+15+18+15+10+16+19+22+21+17+14+22+17+20+17}{23}$$

$$M_{pl} = \frac{418}{23} = 18.17$$

Item 10

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n10}$$

$$M_{pl} = \frac{22+20+21+7+21+15+18+15+22+16+19+22+17+20+19+21+21+18+19}{19}$$

$$M_{pl} = \frac{389}{19} = 20.47$$

Item 11

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n11}$$

$$M_{pl} = \frac{22+20+15+10+22+19+22+21+22+17+19+21+12+18}{14}$$

$$M_{pl} = \frac{263}{14} = 18.78$$

Item 12

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n12}$$

$$M_{pl} = \frac{22+20+21+19+21+15+18+15+22+16+19+22+17+14+22+17+20+17+19+5+21}{21}$$

$$M_{pl} = \frac{382}{21} = 18.19$$

Item 13

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n13}$$

$$M_{pl} = \frac{22+20+21+19+21+15+12+15+10+22+16+19+22+21+17+22+17+20+17+19+21+5+21+18+19}{25}$$

$$M_{pl} = \frac{451}{25} = 18.04$$

Item 14

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n14}$$

$$M_{pl} = \frac{22+20+21+19+7+21+15+12+18+15+22+19+22+21+17+14+22+17+19+12+21+19}{22}$$

$$M_{pl} = \frac{395}{22} = 17.95$$

Item 15

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n15}$$

$$M_{pl} = \frac{22+21+19+21+12+18+15+22+22+21+14+22+20+17+19+21+18+19}{18}$$

$$M_{pl} = \frac{343}{18} = 19.05$$

Item 16

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n16}$$

$$M_{pl} = \frac{22+20+21+19+21+15+18+15+22+19+22+21+17+14+17+20+17+4+21+21+18+19}{22}$$

$$M_{pl} = \frac{403}{22} = 18.31$$

Item 17

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n17}$$

$$M_{pl} = \frac{22+20+21+19+7+21+15+18+15+22+19+22+21+17+22+20+17+19+4+21+12+21+18+19}{24}$$

$$M_{pl} = \frac{432}{24} = 18.00$$

Item 18

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n18}$$

$$M_{pl} = \frac{22+20+21+19+21+12+18+22+16+19+22+21+22+17+20+17+19+21+12+21+18+19}{22}$$

$$M_{pl} = \frac{419}{22} = 19.045$$

Item 19

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n11}$$

$$M_{pl} = \frac{22+20+21+19+21+15+18+15+10+22+16+21+14+22+17+20+17+12+18}{19}$$

$$M_{pl} = \frac{357}{19} = 18.78$$

Item 20

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n20}$$

$$M_{pl} = \frac{22+20+21+19+21+15+12+18+16+22+21+17+14+22+17+20+17+19+21+12+21+18+19}{23}$$

$$M_{pl} = \frac{424}{23} = 18.43$$

Item 21

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n21}$$

$$M_{pl} = \frac{20+21+7+22+19+21+17+22+17+19+4+21+5+12}{14}$$

$$M_{pl} = \frac{270}{14} = 19.28$$

Item 22

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n22}$$

$$M_{pl} = \frac{22+21+17+17+19+21+18}{7}$$

$$M_{pl} = \frac{135}{7} = 19.28$$

Item 23

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n23}$$

$$M_{pl} = \frac{22+20+19+21+15+18+15+10+22+19+22+17+22+17+19+21+21+18+19}{19}$$

$$M_{pl} = \frac{357}{19} = 18.78$$

Item 24

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n24}$$

$$M_{pl} = \frac{22+20+21+19+21+15+12+18+10+22+19+22+21+17+22+17+20+17+19+21+21+18+19}{23}$$

$$M_{pl} = \frac{433}{23} = 18.82$$

Item 25

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n25}$$

$$M_{pl} = \frac{22+20+21+19+21+12+18+22+16+19+22+21+17+14+22+17+20+17+19+21+12+21+18}{23}$$

$$M_{pl} = \frac{431}{23} = 18.73$$

4. Calculation of the formulation $r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

Item 1

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.17-16.86}{5.00}\sqrt{\frac{0.7}{0.2}}$$

$$r_{pbi} = \frac{1.31}{5.00}\sqrt{3.5}$$

r_{pbi} = 0.262 x 1.8 = 0.471

Item 2

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{17.81-16.86}{5.00}\sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{0.95}{5.00}\sqrt{2.33}$$

r_{pbi} = 0.19 x 1.5 = 0.288

Item 3

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{17.29-16.86}{5.00}\sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{0.43}{5.00}\sqrt{4}$$

r_{pbi} = 0.086 x 2 = 0.172

Item 4

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.57-16.86}{5.00}\sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{1.71}{5.00}\sqrt{2.33}$$

r_{pbi} = 0.342 x 1.52 = 0.519

Item 5

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.40 - 16.86}{5.00}\sqrt{\frac{0.6}{0.4}}$$

$$r_{pbi} = \frac{1.54}{5.00}\sqrt{1.5}$$

r_{pbi} = 0.308 x 1.22 = 0.375

Item 6

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{19.53 - 16.86}{5.00}\sqrt{\frac{0.4}{0.6}}$$

$$r_{pbi} = \frac{2.67}{5.00}\sqrt{0.66}$$

r_{pbi} = 0.534 x 0.812 = 0.433

Item 7

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{17.92 - 16.86}{5.00}\sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{1.06}{5.00}\sqrt{4}$$

r_{pbi} = 0.212 x2 = 0.424

Item 8

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.57-16.86}{5.00}\sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{1.71}{5.00}\sqrt{2.33}$$

r_{pbi} = 0.342 x 1.52 = 0.519

Item 9

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.17 - 16.86}{5.00}\sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{1.31}{5.00}\sqrt{2.33}$$

r_{pbi} = 0.262 x 1.52 = 0.398

Item 10

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{20.47 - 16.86}{5.00}\sqrt{\frac{0.6}{0.4}}$$

$$r_{pbi} = \frac{3.61}{5.00}\sqrt{1.5}$$

r_{pbi} = 0.722 x 1.22 = 0.880

Item 11

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.78 - 16.86}{5.00}\sqrt{\frac{0.4}{0.6}}$$

$$r_{pbi} = \frac{1.92}{5.00}\sqrt{0.66}$$

r_{pbi} = 0.384 x 0.81 = 0.311

Item 12

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.19 - 16.86}{5.00}\sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{1.33}{5.00}\sqrt{4}$$

r_{pbi} = 0.266 x 2 = 0.532

Item 13

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.04 - 16.86}{5.00}\sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{1.18}{5.00}\sqrt{4}$$

r_{pbi} = 0.236 x 2 = 0.472

Item 14

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{17.95 - 16.86}{5.00}\sqrt{\frac{0.7}{0.3}}$$

$r_{pbi} = \frac{1.09}{5.00}\sqrt{2.33}$

r_{pbi} = 0.218 x 1.52 = 0.331

Item 15

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{19.05-16.86}{5.00}\sqrt{\frac{0.6}{0.4}}$

$r_{pbi} = \frac{2.19}{5.00}\sqrt{1.5}$

r_{pbi} = 0.438 x 1.22 = 0.534

Item 16

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{18.31-16.86}{5.00}\sqrt{\frac{0.7}{0.3}}$

$r_{pbi} = \frac{1.45}{5.00}\sqrt{2.33}$

r_{pbi} = 0.29 x 1.52 = 0.440

Item 17

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{18.00-16.86}{5.00}\sqrt{\frac{0.8}{0.2}}$

$r_{pbi} = \frac{1.14}{5.00}\sqrt{4}$

r_{pbi} = 0.228 x 2 = 0.456

Item 18

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{19.04-16.86}{5.00}\sqrt{\frac{0.7}{0.3}}$

$r_{pbi} = \frac{2.18}{5.00}2.33$

r_{pbi} = 0.436 x 1.52 = 0.662

Item 19

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.78 - 16.86}{5.00}\sqrt{\frac{0.6}{0.4}}$$

$$r_{pbi} = \frac{1.92}{5.00}\sqrt{1.5}$$

r_{pbi} = 0.384 x 1.22 = 0.468

Item 20

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.43-16.86}{5.00}\sqrt{\frac{0.7}{0.2}}$$

$$r_{pbi} = \frac{1.57}{5.00}\sqrt{3.5}$$

r_{pbi} = 0.314 x 1.87 = 0.587

Item 21

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{19.28-16.86}{5.00}\sqrt{\frac{0.4}{0.6}}$$

$$r_{pbi} = \frac{2.42}{5.00}\sqrt{0.66}$$

r_{pbi} = 0.484 x 0.812 = 0.393

Item 22

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{19.28-16.86}{5.00}\sqrt{\frac{0.2}{0.8}}$$

$$r_{pbi} = \frac{2.42}{5.00}\sqrt{0.25}$$

r_{pbi} = 0.484 x 0.5 = 0.242

Item 23

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{1.92-16.86}{5.00}\sqrt{\frac{0.6}{0.4}}$$

$$r_{pbi} = \frac{1.92}{5.00}\sqrt{1}.5$$

r_{pbi} = 0.384 x 1.22 = 0.468

Item 24

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.82-16.86}{5.00}\sqrt{\frac{0.7}{0.2}}$$

$$r_{pbi} = \frac{1.96}{5.00}\sqrt{3.5}$$

r_{pbi} = 0.392 x 1.87 = 0.7333

Item 25

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.73-16.86}{5.00}\sqrt{\frac{0.7}{0.2}}$$

$$r_{pbi} = \frac{1.87}{5.00}\sqrt{3.5}$$

r_{pbi} = 0.374 x 1.87 = 0.699

APPENDIX XI

Calculation of $r_{pbi} = \frac{M_p - M_t}{SD_t}\sqrt{\frac{p}{q}}$

B. Calculation of Post-test

5. Mean score from score total (M_t)

$$M_t = \frac{\sum X_t}{N}$$

$$M_t = \frac{520}{30} = 17.33$$

6. Standard Deviation (SD_t)

$$SD_t = \sqrt{\frac{\sum X_{t^2}}{N} - \left(\frac{\sum X_t}{N}\right)^2}$$

$$SD_t = \sqrt{\frac{9378}{30} - \left(\frac{520}{30}\right)^2}$$

$$SD_t = \sqrt{312.6 - 17.33^2}$$

$$SD_t = \sqrt{312.6 - 300.32}$$

$$SD_t = \sqrt{12.28} = 3.50$$

7. Mean Score (M_p)

Item 1

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n1}$$

$$M_{pl} = \frac{22+19+12+22+21+20+21+22+20+17+14+14+22+17+19+20+13+14+15+14+15+12}{22}$$

$$M_{pl} = \frac{385}{23} = 17.5$$

Item 2

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n2}$$

$$M_{pl} = \frac{22+19+12+20+22+21+19+20+21+22+19+20+17+20+14+17+19+20+14+13+19+12}{22}$$

$$M_{pl} = \frac{402}{22} = 18.27$$

Item 3

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n3}$$

$$M_{pl} = \frac{22+19+12+20+22+21+20+21+22+19+20+17+14+20+14+22+19+20+13+13+15+19+15+12}{24}$$

$$M_{pl} = \frac{431}{24} = 17.95$$

Item 4

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n4}$$

$$M_{pl} = \frac{22+19+12+20+22+21+19+20+21+19+20+17+14+20+22+20}{17}$$

$$M_{pl} = \frac{330}{17} = 19.41$$

Item 5

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n5}$$

$$M_{pl} = \frac{22+19+20+22+21+19+20+21+22+19+20+17+20+14+22+17+19+20+13+14+11}{21}$$

$$M_{pl} = \frac{392}{21} = 18.66$$

Item 6

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n6}$$

$$M_{pl} = \frac{22+22+14+19+13+13+19+15+12+11}{10}$$

$$M_{pl} = \frac{160}{10} = 16$$

Item 7

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n7}$$

$$M_{pl} = \frac{22+19+12+22+21+19+20+21+22+19+20+17+14+20+14+22+17+14+19+20+14+15+19+15+11}{25}$$

$$M_{pl} = \frac{448}{25} = 17.92$$

Item 8

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n8}$$

$$M_{pl} = \frac{22+19+20+22+21+19+20+21+22+19+20+17+14+20+14+22+17+19+20+13+14+15+14+19+15+12}{26}$$

$$M_{pl} = \frac{470}{26} = 18.07$$

Item 9

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n9}$$

$$M_{pl} = \frac{22+14+13+11+12}{5}$$

$$M_{pl} = \frac{72}{5} = 14.4$$

Item 10

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n10}$$

$$M_{pl} = \frac{22+19+12+20+22+21+19+20+21+22+19+20+17+20+14+22+19+20+13+14+15+14+19+15}{24}$$

$$M_{pl} = \frac{439}{24} = 18.29$$

Item 11

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n11}$$

$$M_{pl} = \frac{22+19+12+20+22+21+19+20+21+22+19+20+17+14+20+22+14+19+20+13+14+13+15+14+19}{25}$$

$$M_{pl} = \frac{451}{25} = 18.04$$

Item 12

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n12}$$

$$M_{pl} = \frac{22+19+20+22+21+19+20+21+22+19+20+17+20+14+22+17+14+19+20+14+15+14+19+15+12}{25}$$

$$M_{pl} = \frac{457}{25} = 18.28$$

Item 13

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n13}$$

$$M_{pl} = \frac{22+19+20+22+21+19+20+21+22+19+20+17+14+20+22+19+14+15+14+19+15+12}{22}$$

$$M_{pl} = \frac{406}{22} = 18.45$$

Item 14

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n14}$$

$$M_{pl} = \frac{22+19+21+19+20+21+22+19+20+17+14+20+14+22+17+14+19+20+14+19+15+11}{22}$$

$$M_{pl} = \frac{399}{22} = 18.13$$

Item 15

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n15}$$

$$M_{pl} = \frac{22+20+22+21+19+22}{6}$$

$$M_{pl} = \frac{126}{6} = 21$$

Item 16

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n16}$$

$$M_{pl} = \frac{19+20+17+14+11}{5}$$

$$M_{pl} = \frac{81}{5} = 16.2$$

Item 17

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n17}$$

$$M_{pl} = \frac{22+12+20+22+21+19+20+21+22+19+20+17+14+20+14+22+17+20+14+15+14+19+15}{23}$$

$$M_{pl} = \frac{419}{23} = 18.21$$

Item 18

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n18}$$

$$M_{pl} = \frac{22+19+12+20+22+21+19+20+21+22+20+17+14+20+22+17+19+20+13+13+19+15+11}{23}$$

$$M_{pl} = \frac{418}{23} = 18.17$$

Item 19

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n11}$$

$$M_{pl} = \frac{22+12+20+22+21+19+20+21+22+19+20+14+20+22+17+14+20+14+13+15+14+19+12}{23}$$

$$M_{pl} = \frac{427}{23} = 18.56$$

Item 20

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n20}$$

$$M_{pl} = \frac{22+19+12+20+22+21+19+20+21+22+19+20+20+14+22+17+14+19+20+13+13+14+19+11}{24}$$

$$M_{pl} = \frac{433}{24} = 18.04$$

Item 21

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n21}$$

$$M_{pl} = \frac{22+19+20+22+21+19+20+21+22+19+20+17+14+20+14+22+17+14+19+20+13+14+13+15+19+15+12}{27}$$

$$M_{pl} = \frac{483}{27} = 17.88$$

Item 22

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n22}$$

$$M_{pl} = \frac{22+19+20+22+21+19+21+22+19+20+20+22+17+14+19+20+13+14+13+15+14+19+12+11}{24}$$

$$M_{pl} = \frac{439}{24} = 18.29$$

Item 23

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n23}$$

$$M_{pl} = \frac{22+19+20+22+21+19+20+21+22+19+20+17+14+20+22+17+14+19+20+14+13+15+19+15}{24}$$

$$M_{pl} = \frac{444}{24} = 18.8$$

Item 24

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n24}$$

$$M_{pl} = \frac{22+19+12+20+22+19+20+21+22+19+20+20+20+14+22+17+14+19+20+14+13+15+14+19+12+11}{25}$$

$$M_{pl} = \frac{451}{25} = 18.04$$

Item 25

$$M_{pl} = \frac{\text{total score of students' score that true item answer}}{n25}$$

$M_{pl=}$ $\frac{22+20+22+21+20+21+22+19+17+14+20+14+22+17+14+19+20+13+14+13+15+14+19+15+12+11}{26}$

$M_{pl} = \frac{470}{26} = 18.07$

8. Calculation of the formulation $r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

Item 1

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{17.5-17.33}{3.50}\sqrt{\frac{0.7}{0.2}}$

$r_{pbi} = \frac{0.17}{3.50}\sqrt{3.5}$

r_{pbi}= 0.048 x 1.87 = 0.089

Item 2

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{18.27-17.33}{3.50}\sqrt{\frac{0.7}{0.2}}$

$r_{pbi} = \frac{0.94}{3.50}\sqrt{3.5}$

r_{pbi}= 0.268 x 1.87 = 0.501

Item 3

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{17.95-17.33}{3.50}\sqrt{\frac{0.8}{0.2}}$

$r_{pbi} = \frac{0.62}{3.50}\sqrt{4}$

r_{pbi}= 0.177 x 2 = 0.354

Item 4

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{19.41-17.33}{3.50}\sqrt{\frac{0.5}{0.4}}$

$r_{pbi} = \frac{2.08}{3.50}\sqrt{1.25}$

r_{pbi}= 0.59 x 1.11 = 0.654

Item 5

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{18.66-17.33}{3.50}\sqrt{\frac{0.7}{0.3}}$

$r_{pbi} = \frac{1.33}{3.50}\sqrt{2.3}$

r_{pbi}= 0.38 x 1.51 = 0.573

Item 6

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{16-17.33}{3.50}\sqrt{\frac{0.3}{0.6}}$

$r_{pbi} = \frac{-1.33}{3.50}\sqrt{0.5}$

r_{pbi}= -0.38 x 0.70 = -0.266

Item 7

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{17.92-17.33}{3.50}\sqrt{\frac{0.8}{0.1}}$

$r_{pbi} = \frac{0.59}{3.50}\sqrt{8}$

r_{pbi}= 0.168 x 2.8 = 0.470

Item 8

$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$

$r_{pbi} = \frac{18.07-17.33}{3.50}\sqrt{\frac{0.8}{0.1}}$

$r_{pbi} = \frac{0.74}{3.50}\sqrt{8}$

r_{pbi}= 0.211 x 2.8 = 0.590

Item 9

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{14.4-17.33}{3.50}\sqrt{\frac{0.1}{0.8}}$$

$$r_{pbi} = \frac{2.93}{3.50}\sqrt{0.125}$$

r_{pbi}= -0.83 x 0.35 = -0.290

Item 10

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.29-17.33}{3.50}\sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{0.96}{3.50}\sqrt{4}$$

r_{pbi}= 0.274 x 2 = 0.548

Item 11

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.04-17.33}{3.50}\sqrt{\frac{0.8}{0.1}}$$

$$r_{pbi} = \frac{0.71}{3.50}\sqrt{8}$$

r_{pbi}= 0.202 x 2.8 = 0.565

Item 12

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.28-17.33}{3.50}\sqrt{\frac{0.8}{0.1}}$$

$$r_{pbi} = \frac{0.95}{3.50}\sqrt{8}$$

r_{pbi}= 0.271 x 2.8 = 0.758

Item 13

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.45-17.33}{3.50}\sqrt{\frac{0.7}{0.2}}$$

$$r_{pbi} = \frac{1.12}{3.50}\sqrt{3.5}$$

r_{pbi}= 0.32 x 1.87 = 0.598

Item 14

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.13-17.33}{3.50}\sqrt{\frac{0.7}{0.2}}$$

$$r_{pbi} = \frac{0.8}{3.50}\sqrt{3.5}$$

r_{pbi}= 0.228 x 1.87 = 0.426

Item 15

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{21-17.33}{3.50}\sqrt{\frac{0.2}{0.8}}$$

$$r_{pbi} = \frac{3.67}{3.50}\sqrt{0.25}$$

r_{pbi}= 1.048 x 0.5 = 0.524

Item 16

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{16.2-17.33}{3.50}\sqrt{\frac{0.1}{0.8}}$$

$$r_{pbi} = \frac{-1.13}{3.50}\sqrt{0.125}$$

r_{pbi}= -3.22 x 0.35 = -1.127

Item 17

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.21-17.33}{3.50}\sqrt{\frac{0.7}{0.2}}$$

$$r_{pbi} = \frac{1.050}{3.50}\sqrt{3.5}$$

r_{pbi}= 0.3 x 1.87 = 0.561

Item 18

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.17 - 17.33}{3.50}\sqrt{\frac{0.7}{0.2}}$$

$$r_{pbi} = \frac{0.84}{3.50}\sqrt{3.5}$$

r_{pbi}= 0.24 x 1.87 = 0.448

Item 19

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.56 - 17.33}{3.50}\sqrt{\frac{0.7}{0.2}}$$

$$r_{pbi} = \frac{1.23}{3.50}\sqrt{3.5}$$

r_{pbi}= 0.351 x 1.87 = 0.656

Item 20

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.04 - 17.33}{3.50}\sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{0.71}{3.50}\sqrt{4}$$

r_{pbi}= 0.202 x 2 = 0.404

Item 21

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{17.88 - 17.33}{3.50}\sqrt{\frac{0.9}{0.1}}$$

$$r_{pbi} = \frac{0.55}{3.50}\sqrt{9}$$

r_{pbi}= 0.157 x 3 = 0.471

Item 22

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.29 - 17.33}{3.50}\sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{0.96}{3.50}\sqrt{4}$$

r_{pbi}= 0.274 x 2 = 0.548

Item 23

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.8 - 17.33}{3.50}\sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{1.17}{3.50}\sqrt{4}$$

r_{pbi}= 0.334 x 2 = 0.668

Item 24

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.04 - 17.33}{3.50}\sqrt{\frac{0.8}{0.1}}$$

$$r_{pbi} = \frac{0.71}{3.50}\sqrt{8}$$

r_{pbi}= 0.202 x 2.8 = 0.565

Item 25

$$r_{pbi} = \frac{M_{p-M_t}}{SD_t}\sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{18.07-17.33}{3.50}\sqrt{\frac{0.8}{0.1}}$$

$$r_{pbi} = \frac{0.74}{3.50}\sqrt{8}$$

r_{pbi}= 0.211 x 2.8 = 0.590

APPENDIX XII

Table Validity of Pre Test

No	Mp	Mt	SDt	p	q	$r_{\text{pbi}} = \frac{M_p - M_t}{SD_t}\sqrt{\frac{p}{q}}$	Rt on 5% significant	Interpretation
1	18.17	16.86	5.00	0.7	0.2	0.471	0.361	Valid
2	17.81	16.86	5.00	0.7	0.3	0.288	0.361	Invalid
3	17.29	16.86	5.00	0.8	0.2	0.172	0.361	Invalid
4	18.57	16.86	5.00	0.7	0.3	0.519	0.361	Valid
5	18.40	16.86	5.00	0.6	0.4	0.375	0.361	Valid
6	19.53	16.86	5.00	0.4	0.6	0.433	0.361	Valid
7	17.92	16.86	5.00	0.8	0.2	0.424	0.361	Valid
8	17.00	16.86	5.00	0.7	0.3	0.519	0.361	Valid
9	18.17	16.86	5.00	0.7	0.2	0.398	0.361	Valid
10	20.47	16.86	5.00	0.6	0.4	0.880	0.361	Valid
11	18.78	16.86	5.00	0.4	0.6	0.311	0.361	Invalid
12	18.19	16.86	5.00	0.7	0.3	0.532	0.361	Valid
13	18.04	16.86	5.00	0.8	0.2	0.472	0.361	Valid
14	17.95	16.86	5.00	0.7	0.3	0.331	0.361	Invalid
15	19.05	16.86	5.00	0.6	0.4	0.534	0.361	Valid
16	18.31	16.86	5.00	0.7	0.3	0.440	0.361	Valid
17	18.00	16.86	5.00	0.8	0.2	0.456	0.361	Valid
18	19.04	16.86	5.00	0.7	0.3	0.662	0.361	Valid
19	18.78	16.86	5.00	0.6	0.4	0.468	0.361	Valid
20	18.43	16.86	5.00	0.7	0.2	0.587	0.361	Valid
21	19.28	16.86	5.00	0.4	0.6	0.393	0.361	Valid
22	19.28	16.86	5.00	0.2	0.8	0.242	0.361	Invalid
23	18.78	16.86	5.00	0.6	0.4	0.468	0.361	Valid
24	18.82	16.86	5.00	0.7	0.2	0.733	0.361	Valid
25	18.73	16.86	5.00	0.7	0.2	0.699	0.361	Valid

APPENDIX XIV

Table Validity of Post Test

No	Mp	Mt	SDt	p	q	$r_{\text{pbi}} = \frac{M_p - M_t}{SD_t}\sqrt{\frac{p}{q}}$	Rt on 5% significant	Interpretation
1	17.50	17.33	3.50	0.7	0.2	0.089	0.361	Invalid
2	18.27	17.33	3.50	0.7	0.2	0.501	0.361	Valid
3	17.95	17.33	3.50	0.8	0.2	0.354	0.361	Invalid
4	19.41	17.33	3.50	0.5	0.4	0.654	0.361	Valid
5	18.66	17.33	3.50	0.7	0.3	0.573	0.361	Valid
6	16.00	17.33	3.50	0.3	0.6	-0.266	0.361	Invalid
7	17.92	17.33	3.50	0.8	0.1	0.470	0.361	Valid
8	18.07	17.33	3.50	0.8	0.1	0.590	0.361	Valid
9	14.40	17.33	3.50	0.1	0.8	-0.290	0.361	Invalid
10	18.29	17.33	3.50	0.8	0.2	0.548	0.361	Valid
11	18.04	17.33	3.50	0.8	0.1	0.565	0.361	Valid
12	18.28	17.33	3.50	0.8	0.1	0.758	0.361	Valid
13	18.45	17.33	3.50	0.7	0.2	0.598	0.361	Valid
14	18.13	17.33	3.50	0.7	0.2	0.426	0.361	Valid
15	21.00	17.33	3.50	0.2	0.8	0.524	0.361	Valid
16	16.20	17.33	3.50	0.1	0.8	-1.127	0.361	Invalid
17	18.21	17.33	3.50	0.7	0.2	0.561	0.361	Valid
18	18.17	17.33	3.50	0.7	0.2	0.448	0.361	Valid
19	18.56	17.33	3.50	0.7	0.2	0.656	0.361	Valid
20	18.04	17.33	3.50	0.8	0.2	0.404	0.361	Valid
21	17.88	17.33	3.50	0.9	0.1	0.471	0.361	Valid
22	18.29	17.33	3.50	0.8	0.2	0.548	0.361	Valid
23	18.80	17.33	3.50	0.8	0.2	0.668	0.361	Valid
24	18.04	17.33	3.50	0.8	0.1	0.565	0.361	Valid
25	18.07	17.33	3.50	0.8	0.1	0.590	0.361	Valid

APPENDIX XIII

Reliability Pre Test

To get reliability of the test, the researcher uses formula KR-20:

$$R_{11} = \left(\frac{n}{n-1}\right)\left(\frac{S_{t^2} - \sum pq}{S_{t^2}}\right)$$

N= 30

$\sum Xt = 506$

$\sum Xt^2 = 9280$

$\sum pq = 4.07$

$$S_t^2 = \sum Xt^2 - \left(\frac{\sum xt}{N}\right)^2$$

$$= 9280 - \left(\frac{506}{25}\right)^2 = 9280 - 16.86^2 = 9280 - 284.26 = 8995.74$$

$$S_t^2 = \frac{\sum Xt2}{N} = \frac{8995.74}{30}$$

$S_t^2 = 299.858$

$$R_{11} = \left(\frac{n}{n-1}\right)\left(\frac{S_{t^2} - \sum pq}{S_{t^2}}\right)$$

$$R_{11} = \left(\frac{30}{30-1}\right)\left(\frac{299.858 - 4.07}{299.858}\right) = \left(\frac{30}{29}\right)\left(\frac{65.83}{75.66}\right)$$

= (1.03) (0.98)

= 1.01 (r_{11}> 0.70 = reliable)

Test is reliable if $r_{count} > r_{tabel}$. Based on calculation above, the test have high reliability.

APPENDIX XV

Reliability Post Test

To get reliability of the test, the researcher uses formula KR-20:

$$R_{11} = \left(\frac{n}{n-1}\right)\left(\frac{S_t^2 - \sum pq}{S_t^2}\right)$$

N= 30

$\sum Xt = 520$

$\sum Xt^2 = 9378$

$\sum pq = 9.83$

$$S_t^2 = \sum Xt^2 - \left(\frac{\sum xt}{N}\right)^2$$

$$= 9378 - \left(\frac{520}{30}\right)^2 = 9378 - 17.33^2 = 9378 - 300.32 = 9077.68$$

$$S_t^2 = \frac{\sum Xt2}{N} = \frac{9077.68}{30}$$

$$S_t^2 = 302.589$$

$$R_{11} = \left(\frac{n}{n-1}\right)\left(\frac{S_t^2 - \sum pq}{S_t^2}\right)$$

$$R_{11} = \left(\frac{30}{30-1}\right)\left(\frac{302.589 - 9.83}{302.589}\right) = \left(\frac{30}{29}\right)\left(\frac{292.759}{302.589}\right)$$

= (1.03) (0.96)

= 0.99 (r_{11}> 0.70 = reliable)

Test is reliable if $r_{count} > r_{tabel}$. Based on calculation above, the test have high reliability.

APPENDIX XVI

THE SCORE OF EXPERIMENTAL CLASS

VIII-3 CLASS

NO	NAMA	NILAI	
		PRE TEST	POST TEST
1	ARS	60	65
2	AK	65	70
3	AM	65	70
4	AS	65	70
5	AHH	65	75
6	AS	65	75
7	AP	65	80
8	AH	65	80
9	AF	70	80
10	AS	70	80
11	AEP	70	80
12	AS	75	80
13	BA	75	80
14	BEM	75	80
15	EH	75	80
16	EK	75	85
17	FA	75	85
18	FB	80	85
19	FA	80	85
20	HS	80	85
21	IF	80	85
22	IM	80	85
23	IMR	80	85
24	JE	80	85
25	KS	80	85
26	LM	80	85
27	MAF	80	85

28	MNR	80	85
29	MAA	80	85
30	NAF	85	85
31	NAL	85	85
32	RS	85	90
33	RA	85	90
34	SP	85	90
35	SH	85	90
36	SP	85	90
37	SR	85	90
38	TOB	90	90
39	WSL	90	90
40	WH	90	90
41	YAH	90	95
42	TMH	95	100
	TOTAL	3270	3510

APPENDIX XVII

THE SCORE OF CONTROL CLASS

VIII-4 CLASS

NO	NAMA	NILAI	
		PRE TEST	POST TEST
1	AM	45	35
2	AS	50	40
3	AS	50	40
4	AF	50	45
5	ARA	50	50
6	AR	50	55
7	AM	50	55
8	JRS	50	60
9	DU	50	60
10	EK	55	60
11	ED	55	60
12	FRS	60	65
13	FA	60	65
14	FS	65	65
15	HE	65	65
16	IDF	65	70
17	IM	65	70
18	IZ	65	70
19	JM	65	70
20	K	65	70
21	MA	65	70
22	MAP	70	70
23	MH	70	75
24	NH	70	75
25	NM	70	75
26	PR	70	75
27	PH	70	75
28	PS	75	75
29	PM	75	75
30	PP	75	80
31	PA	75	80
32	QS	75	80
33	RA	80	80

34	RGR	80	80
35	RPT	80	85
36	RAP	80	85
37	SS	80	85
38	TY	80	90
39	VA	85	90
40	VP	85	95
41	ZS	85	95
42	ZAA	95	100
	TOTAL	2820	2960

APPENDIX XIX

NORMALITY TEST FOR POST TEST

A. Result of The Normality Test of VIII-3 in Post-Test Experimental

No	Class Interval	F	X	x'	fx'	x'^2	fx'^2
1.	65 – 70	4	67.5	+3	12	9	36
2.	71 – 76	2	71.5	+2	4	4	8
3.	77 – 82	9	79.5	+ 1	9	1	9
4.	83 – 88	**16**	**85.5**	0	0	0	0
5.	89 – 94	9	91.5	-2	-18	4	36
6.	95 – 100	2	97.5	-1	-2	1	2
Total		42			5		91

$$SD_t = i\sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n}\right)^2}$$

$$= 6\sqrt{\frac{91}{42} - \left(\frac{5}{42}\right)^2}$$

$$= 6\sqrt{2.166 - (0.119)^2}$$

$$= 6\sqrt{2.166 - 0.014}$$

$$= 6\sqrt{2.152}$$

= 6 x 1.466

= 8.796

Table of Normality Data Test with Chi Kuadrad Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f_h	f_0	$\frac{(f_0-f_h)^2}{f_h}$
95 – 100	100.5	1.90	0.4713				
				0.082	3.44	2	0.60
89 – 94	94.5	1.22	0.3888				
				0.183	7.5	9	0.3
83 – 88	88.5	0.54	0.2054				
				0.242	9.1	16	5.2
77 – 82	82.5	- 0.13	0.44828				
				0.239	10	9	0.1
71 – 76	76.5	- 0.81	0.20897				
				0.142	5.96	2	1.42
65 – 70	70.5	- 1.50	0.06681				
				0.052	2.18	4	1.51
	64.5	- 2.18	0.01463				
						X^2	9.53

Based on the table above,the reseracher found that $x^2_{count} = 9.13$ while $x^2_{table} = 9.488$. Because $x^2_{count} < x^2_{table}$ (9.53 < 9.488) with degree of freedom (dk) = 5 – 1 = 4 and significant level α = 5%, distribution of data experimental class after using number head together is normal.

B. Result of The Normality Test of VIII-4 in Post Test Control Class

No	Class Interval	F	X	x'	fx'	x'^2	fx'^2
1.	35 – 45	4	40	+3	12	9	36
2.	46 – 56	3	51	+2	6	4	12
3.	57 – 67	8	62	+ 1	8	1	8
4.	68 – 78	**14**	**73**	0	0	0	0
5.	79 – 89	8	84	-2	-16	4	32
6.	90- 100	5	95	-1	-5	1	5
Total		42			5		93

$$SD_t = i\sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n}\right)^2}$$

$$= 11\sqrt{\frac{93}{42} - \left(\frac{5}{42}\right)^2}$$

$$= 11\sqrt{2.190 - (0.119)^2}$$

$$= 11\sqrt{2.190 - 0.014}$$

$$= 11\sqrt{2.176}$$

$$= 11 \text{ x } 1.475$$

$$= 16.2$$

Table of Normality Data Test with Chi Kuadrad Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f_h	f_0	$\frac{(f_0-f_h)^2}{f_h}$
90 – 100	100.5	1.82	0.4656	0.0927	3.89	5	0.31
79 – 89	89.5	1.14	0.3729	0.1921	8.06	8	0.04
68 – 78	78.5	0.47	0.1808	0.239	10	14	0.19
57 – 67	67.5	-0.20	0.42074	0.231	9.70	8	0.29
46 – 56	56.5	-0.88	0.18943	0.130	5.46	3	1.10
35 – 45	45.5	-1.56	0.05938	0.046	1.93	4	2.22
	34.5	-2.24	0.01255				
						X^2	4.15

Based on the table above,the reseracher found that $x^2_{count} = 4.15$ while $x^2_{table} = 9.488$. Because $x^2_{count} < x^2_{table}$ $(4.15 < 9.488)$ with degree of freedom (dk) = 6 – 1 = 5 and significant level α = 5%, distribution of data control class in post test is normal.

APPENDIX XVII

THE SCORE OF CONTROL CLASS

VIII-4 CLASS

NO	NAMA	NILAI	
		PRE TEST	POST TEST
1	AM	45	35
2	AS	50	40
3	AS	50	40
4	AF	50	45
5	ARA	50	50
6	AR	50	55
7	AM	50	55
8	JRS	50	60
9	DU	50	60
10	EK	55	60
11	ED	55	60
12	FRS	60	65
13	FA	60	65
14	FS	65	65
15	HE	65	65
16	IDF	65	70
17	IM	65	70
18	IZ	65	70
19	JM	65	70
20	K	65	70
21	MA	65	70
22	MAP	70	70
23	MH	70	75
24	NH	70	75
25	NM	70	75
26	PR	70	75
27	PH	70	75
28	PS	75	75
29	PM	75	75
30	PP	75	80
31	PA	75	80
32	QS	75	80
33	RA	80	80

34	RGR	80	80
35	RPT	80	85
36	RAP	80	85
37	SS	80	85
38	TY	80	90
39	VA	85	90
40	VP	85	95
41	ZS	85	95
42	ZAA	95	100
	TOTAL	2820	2960

APPENDIX XVIII

NORMALITY TEST FOR PRE TEST

C. Result of The Normality Test of VIII-3 in Pre-Test Experimental

No	Class Interval	F	X	x'	fx'	x'^2	fx'^2
1.	60 – 65	8	62.5	+3	24	9	72
2.	66 – 71	3	68.5	+2	6	4	12
3.	72 – 77	6	74.5	+ 1	6	1	6
4.	78 – 83	**12**	**80.5**	0	0	0	0
5.	84 – 89	8	86.5	-2	-16	4	32
6.	90 – 95	5	92.5	-1	-5	1	5
Total		42			15		127

$$SD_t = i\sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n}\right)^2}$$

$$= 6\sqrt{\frac{127}{42} - \left(\frac{15}{42}\right)^2}$$

$$= 6\sqrt{3.023 - (0.357)^2}$$

$$= 6\sqrt{3.023 - 0.127}$$

$$= 6\sqrt{2.896}$$

$$= 6 \times 1.70$$

$$= 10.2$$

Table of Normality Data Test with Chi Kuadrad Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f_h	f_0	$\frac{(f_0-f_h)^2}{f_h}$
90 – 95	95.5	1.72	0.4573				
				0.086	3.61	5	0.5
84 – 89	89.5	1.13	0.3708				
				0.165	6.93	8	0.16
78 – 83	83.5	0.54	0.2054				
				0.282	10	12	0.4
72 – 77	77.5	- 0.03	0.48803				
				0.220	9.24	6	1.13
66 – 71	71.5	- 0.62	0.26763				
				0.154	6.4	3	1.80
60 – 65	65.5	- 1.21	0.11314				
				0.077	3.23	8	5.0
	59.5	- 1.80	0.03593				
						X^2	8.99

Based on the table above,the reseracher found that x^2_{count} = 8.99 while x^2_{table} = 9.488. Because $x^2_{count} < x^2_{table}$ (8.99 < 9.488) with degree of freedom (dk) = 6 – 1 = 5 and significant level α = 5%, distribution of data experimental class before using number head together is normal.

D. Result of The Normality Test of VIII-4 in Pre Test Control Class

No	Class Interval	F	X	x'	fx'	x'^2	fx'^2
1.	45 – 52	9	48.5	+3	27	9	81
2.	53 – 60	4	56.5	+2	8	4	16
3.	61 – 68	8	64.5	+ 1	8	1	8
4.	69 – 76	**11**	**72.5**	0	0	0	0
5.	77 – 84	6	80.5	-2	-12	4	24
6.	85- 95	4	90	-1	-4	1	4
Total		42			27		133

$$SD_t = i\sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n}\right)^2}$$

$$= 8\sqrt{\frac{133}{42} - \left(\frac{27}{42}\right)^2}$$

$$= 8\sqrt{3.167 - (0.642)^2}$$

$$= 8\sqrt{3.167 - 0.412}$$

$$= 8\sqrt{2.755}$$

$$= 8 \text{ x } 1.65$$

$$= 5.2$$

Table of Normality Data Test with Chi Kuadrad Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f_h	f_0	$\frac{(f_0-f_h)^2}{f_h}$
85 – 95	95.5	3.46	0.4997				
				0.001	4.2	4	0.09
77 – 84	84.5	3.34	0.4996				
				0.035	1.47	6	1.09
69 – 76	76.5	1.80	0.4641				
				0.361	15.1	11	1.11
61 – 68	68.5	0.26	0.1026				
				0.012	6.5	8	0.34
53 – 60	60.5	-1.26	0.10383				
				0.101	4.2	4	0.09
45 – 52	52.5	-2.8	0.00256				
				0.012	6.5	9	0.96
	44.5	-3.0	0.00135				
						X^2	3.68

Based on the table above,the reseracher found that $x^2_{count} = 3.68$ while $x^2_{table} = 9.488$. Because $x^2_{count} < x^2_{table}$ $(3.68 < 9.488)$ with degree of freedom (dk) = 6 – 1 = 5 and significant level α = 5%, distribution of data control class in pre test is normal.

APPENDIX XIX

NORMALITY TEST FOR POST TEST

E. Result of The Normality Test of VIII-3 in Post-Test Experimental

No	Class Interval	F	X	x'	fx'	x'^2	fx'^2
1.	65 – 70	4	67.5	+3	12	9	36
2.	71 – 76	2	71.5	+2	4	4	8
3.	77 – 82	9	79.5	+ 1	9	1	9
4.	83 – 88	**16**	**85.5**	0	0	0	0
5.	89 – 94	9	91.5	-2	-18	4	36
6.	95 – 100	2	97.5	-1	-2	1	2
Total		42			5		91

$$SD_t = i\sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n}\right)^2}$$

$$= 6\sqrt{\frac{91}{42} - \left(\frac{5}{42}\right)^2}$$

$$= 6\sqrt{2.166 - (0.119)^2}$$

$$= 6\sqrt{2.166 - 0.014}$$

$$= 6\sqrt{2.152}$$

$$= 6 \times 1.466$$

$$= 8.796$$

Table of Normality Data Test with Chi Kuadrad Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f_h	f_0	$\frac{(f_0-f_h)^2}{f_h}$
95 – 100	100.5	1.90	0.4713				
				0.082	3.44	2	0.60
89 – 94	94.5	1.22	0.3888				
				0.183	7.5	9	0.3
83 – 88	88.5	0.54	0.2054				
				0.242	9.1	16	5.2
77 – 82	82.5	- 0.13	0.44828				
				0.239	10	9	0.1
71 – 76	76.5	- 0.81	0.20897				
				0.142	5.96	2	1.42
65 – 70	70.5	- 1.50	0.06681				
				0.052	2.18	4	1.51
	64.5	- 2.18	0.01463				
						X^2	9.53

Based on the table above,the reseracher found that x^2_{count} = 9.13 while x^2_{table} = 9.488. Because $x^2_{count} < x^2_{table}$ (9.53 < 9.488) with degree of freedom (dk) = 5 – 1 = 4 and significant level α = 5%, distribution of data experimental class after using number head together is normal.

F. Result of The Normality Test of VIII-4 in Post Test Control Class

No	Class Interval	F	X	x'	fx'	x'^2	fx'^2
1.	35 – 45	4	40	+3	12	9	36
2.	46 – 56	3	51	+2	6	4	12
3.	57 – 67	8	62	+ 1	8	1	8
4.	68 – 78	**14**	**73**	0	0	0	0
5.	79 – 89	8	84	-2	-16	4	32
6.	90- 100	5	95	-1	-5	1	5
Total		42			5		93

$$SD_t = i\sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n}\right)^2}$$

$$= 11\sqrt{\frac{93}{42} - \left(\frac{5}{42}\right)^2}$$

$$= 11\sqrt{2.190 - (0.119)^2}$$

$$= 11\sqrt{2.190 - 0.014}$$

$$= 11\sqrt{2.176}$$

$$= 11 \text{ x } 1.475$$

$$= 16.2$$

Table of Normality Data Test with Chi Kuadrad Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f_h	f_0	$\frac{(f_0-f_h)^2}{f_h}$
90 – 100	100.5	1.82	0.4656	0.0927	3.89	5	0.31
79 – 89	89.5	1.14	0.3729	0.1921	8.06	8	0.04
68 – 78	78.5	0.47	0.1808	0.239	10	14	0.19
57 – 67	67.5	-0.20	0.42074	0.231	9.70	8	0.29
46 – 56	56.5	-0.88	0.18943	0.130	5.46	3	1.10
35 – 45	45.5	-1.56	0.05938	0.046	1.93	4	2.22
	34.5	-2.24	0.01255				
						X^2	4.15

Based on the table above,the reseracher found that $x^2_{count} = 4.15$ while $x^2_{table} = 9.488$. Because $x^2_{count} < x^2_{table}$ $(4.15 < 9.488)$ with degree of freedom (dk) = 6 – 1 = 5 and significant level α = 5%, distribution of data control class in post test is normal.

APPENDIX XX

HOMOGENEITY TEST FOR PRE TEST

A. Variant Data of Experimental Class before Using Number Head Together

No	Yi	Yi^2
1	60	3600
2	65	4225
3	65	4225
4	65	4225
5	65	4225
6	65	4225
7	65	4225
8	65	4225
9	70	4900
10	70	4900
11	70	4900
12	75	5625
13	75	5625
14	75	5625
15	75	5625
16	75	5625
17	75	5625
18	80	6400
19	80	6400
20	80	6400
21	80	6400
22	80	6400
23	80	6400
24	80	6400
25	80	6400
26	80	6400
27	80	6400
28	80	6400
29	80	6400
30	85	7225
31	85	7225
32	85	7225
33	85	7225
34	85	7225
35	85	7225
36	85	7225
37	85	7225

38	90	8100
39	90	8100
40	90	8100
41	90	8100
42	95	9025
Total	3270	257650

$$S2^2 = \frac{n\sum Xi^2 - (\sum xi^2)}{n(n-1)}$$

$$S2^2 = \frac{42\ x\ 257650 - 10692900}{42(42-1)}$$

$$S2^2 = \frac{12840}{1763}$$

$$S2^2 = 72.83$$

B. **Variant Data of Control Class in Pre Test**

No	Xi	Xi^2
1	45	2025
2	50	2500
3	50	2500
4	50	2500
5	50	2500
6	50	2500
7	50	2500
8	50	2500
9	50	2500
10	55	3025
11	55	3025
12	60	3600
13	60	3600
14	65	4225
15	65	4225
16	65	4225
17	65	4225
18	65	4225
19	65	4225
20	65	4225
21	65	4225
22	70	4900
23	70	4900

24	70	4900
25	70	4900
26	70	4900
27	70	4900
28	75	5625
29	75	5625
30	75	5625
31	75	5625
32	75	5625
33	80	6400
34	80	6400
35	80	6400
36	80	6400
37	80	6400
38	80	6400
39	85	7225
40	85	7225
41	85	7225
42	95	9025
Total	2820	195700

$$S1^2 = \frac{n\sum X2^2 - (\sum x2^2)}{n(n-1)}$$

$$S1^2 = \frac{42\ x\ 195700 - 7952400}{42(42-1)}$$

$$S1^2 = \frac{267000}{1763}$$

$$S1^2 = 131.4$$

The formula was used to test hypothesis was:

$$F = \frac{The\ Biggest\ Variant}{The\ Smallest\ Variant}$$

So:

$$F = \frac{131.4}{72.83}$$

$$= 1.80$$

After doing the calculation, researcher found that F_{count} = 1.80 with α 5% and dk =84 from the ditribution list F, researcher found that F_{table} = 1.80 because $F_{count} < F_{table}$ (1.80< 2.000). It means that the variant is homogenous.

APPENDIX XXI

HOMOGENEITY TEST FOR POST TEST

A. Variant Data of Experimental Class after Using Number Head Together

No	Yi	Yi^2
1	65	4225
2	70	4900
3	70	4900
4	70	4900
5	75	5625
6	75	5625
7	80	6400
8	80	6400
9	80	6400
10	80	6400
11	80	6400
12	80	6400
13	80	6400
14	80	6400
15	80	6400
16	85	7225
17	85	7225
18	85	7225
19	85	7225
20	85	7225
21	85	7225
22	85	7225
23	85	7225
24	85	7225
25	85	7225
26	85	7225
27	85	7225
28	85	7225
29	85	7225
30	85	7225
31	85	7225
32	90	8100
33	90	8100
34	90	8100
35	90	8100
36	90	8100
37	90	8100

38	90	8100
39	90	8100
40	90	8100
41	95	9025
42	100	10000
Total	3510	295300

$$S2^2 = \frac{n\sum Xi^2 - (\sum xi^2)}{n(n-1)}$$

$$S2^2 = \frac{42\ x\ 295300 - 12320100}{42(42-1)}$$

$$S2^2 = \frac{82500}{1763}$$

$$S2^2 = 46.79$$

B. **Variant Data of Control Class in Post Test**

No	Xi	Xi^2
1	35	1225
2	40	1600
3	40	1600
4	45	2025
5	50	2500
6	55	3025
7	55	3025
8	60	3600
9	60	3600
10	60	3600
11	60	3600
12	65	4225
13	65	4225
14	65	4225
15	65	4225
16	70	4900
17	70	4900
18	70	4900
19	70	4900
20	70	4900
21	70	4900
22	70	4900
23	75	5625

24	75	5625
25	75	5625
26	75	5625
27	75	5625
28	75	5625
29	75	5625
30	80	6400
31	80	6400
32	80	6400
33	80	6400
34	80	6400
35	85	7225
36	85	7225
37	85	7225
38	90	8100
39	90	8100
40	95	9025
41	95	9025
42	100	10000
Total	2960	217900

$$S1^2 = \frac{n\sum X2^2 - (\sum x2^2)}{n(n-1)}$$

$$S1^2 = \frac{42\ x\ 217900 - 8761600}{42(42-1)}$$

$$S1^2 = \frac{390200}{1763}$$

$$S1^2 = 221.3$$

The formula was used to test hypothesis was:

$$F = \frac{The\ Biggest\ Variant}{The\ Smallest\ Variant}$$

So:

$$F = \frac{221.3}{46.79}$$

$$= 4.729$$

After doing the calculation, researcher found that $F_{count} = 4.729$ with α 5% and dk =84 from the ditribution list F, researcher found that $F_{table} = 4.729$ cause $F_{count} < F_{table}$ (4.729 > 2.000). .It means that the variant is homogenous**.**

APPENDIX XXII

EXPERIMENTAL CLASS IN PRE TEST

1. Maximal and minimum core were gotten by setting the variable score from low score to high score.

60	65	65	65	65	65	65	65	70	70
70	75	75	75	75	75	76	80	80	80
80	80	80	80	80	80	80	80	80	85
85	85	85	85	85	85	85	90	90	90
90	95								

2. High Score = 95
   Low Score = 60

3. Range = High – Low
   = 95 – 60
   = 35

4. Total of classes = 1 + 3,3 log (n)
   = 1 + 3,3 log (42)
   = 1 + 3,3 (1.6)
   = 1 + 5.28
   = 6.28
   =

5. Length of classes (i) = $\frac{range}{total\ of class} = \frac{35}{6}$ = 5.8= 6

6. Mean

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	60 – 65	8	62.5	500	42= N	8
2.	66 – 71	3	68.5	205.5	34	11
3.	72 – 77	6	74.5	447	31	17
4.	78 – 83	**12**	**80.5**	966	25	29
5.	84 – 89	8	86.5	692	13	37
6.	90 – 95	5	92.5	462.5	5	42=N
Total		42		3273		

Mean (X)

$X = \frac{\sum FX}{F}$

$= \frac{3273}{42}$

= 77.9

7. Median

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	60 – 65	8	62.5	500	42= N	8
2.	66 – 71	3	68.5	205.5	34	11
3.	72 – 77	6	74.5	447	31	17
4.	78 – 83	**12**	**80.5**	966	25	29
5.	84 – 89	8	86.5	692	13	37
6.	90 – 95	5	92.5	462.5	5	42=N
Total		42		3273		

$Me = \ell + \left(\frac{\frac{1}{2}n - fkb}{fi}\right) x\ i$

ℓ = 77.5 i = 6

fi = 12 F_{kb} = 13

½ n = 21

$Me = \ell + \left(\frac{\frac{1}{2}n - fkb}{fi}\right) x\ i$

$Me = 77.5 + \left(\frac{21-13}{12}\right) x\ 6$

$= 77.5 + \left(\frac{8}{12}\right) x\ 6$

= 77.5 + 4

= 81.5

8. Modus

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	60 – 65	8	62.5	500	42= N	8
2.	66 – 71	3	68.5	205.5	34	11
3.	72 – 77	6	74.5	447	31	17
4.	78 – 83	**12**	**80.5**	966	25	29
5.	84 – 89	8	86.5	692	13	37
6.	90 – 95	5	92.5	462.5	5	42=N
Total		42		3273		

$$Mo = \ell + \left(\frac{fa}{fa+fb}\right) x\ i$$

l = 77.5 i = 6

fa = 6 fb = 8

$$Mo = \ell + \left(\frac{fa}{fa+fb}\right) x\ i$$

$$= 77.5 + \left(\frac{6}{6+8}\right) X\ 6$$

= 77.5 + 2.57
= 80

9. Standard Deviation

No	Class Interval	F	X	x’	fx’	x'^2	fx'^2
1.	60 – 65	8	62.5	+3	24	9	72
2.	66 – 71	3	68.5	+2	6	4	12
3.	72 – 77	6	74.5	+ 1	6	1	6
4.	78 – 83	**12**	**80.5**	0	0	0	0
5.	84 – 89	8	86.5	-2	-16	4	32
6.	90 – 95	5	92.5	-1	-5	1	5
Total		42			15		127

$$SD_t = i\sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n}\right)^2}$$

$$= 6\sqrt{\frac{127}{42} - \left(\frac{15}{42}\right)^2}$$

$$= 6\sqrt{3.023 - (0.357)^2}$$

$$= 6\sqrt{3.023 - 0.127}$$

$$= 6\sqrt{2.896}$$

= 6 x 1.70
= 10.2

THE CONTROL CLASS IN PRE TEST

1. Maximal and minimum core were gotten by setting the variable score from low score to high score.

45	50	50	50	50	50	50	50	50	55
55	60	60	65	65	65	65	65	65	65
65	70	70	70	70	70	70	75	75	75
75	75	80	80	80	80	80	80	85	85
85	95								

2. High Score = 95
   Low Score = 45

3. Range = High – Low
   = 95 - 45
   = 50

4. Total of Classes = 1 + 3,3 log (n)
   = 1 + 3,3 log (42)
   = 1 + 3,3 (1.6)
   = 1 + 5.28
   = 6.28
   = 7

5. Length of Classes $=\frac{range}{totalofclass}$ $=\frac{50}{6}$ = 8.3= 8

6. Mean

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	45 – 52	9	48.5	436.5	42= N	9
2.	53 – 60	4	56.5	226	33	13
3.	61 – 68	8	64.5	516	29	21
4.	69 – 76	**11**	**72.5**	797.5	21	32
5.	77 – 84	6	80.5	483	10	38
6.	85 – 92	3	90	360	4	41
7.	93 – 100	1	96.5	96.5	1	42=N
Total		42		3188		

Mean (X)

$X = \frac{\sum FX}{F}$

$= \frac{3188}{42}$

= 75.9

7. Median

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	45 – 52	9	48.5	436.5	42= N	9
2.	53 – 60	4	56.5	226	33	13
3.	61 – 68	8	64.5	516	29	21
4.	69 – 76	**11**	**72.5**	797.5	21	32
5.	77 – 84	6	80.5	483	10	38
6.	85- 92	3	90	360	4	41
7.	93–100	1	96.5	96.5	1	42=N
Total		42		3188		

$Me = \ell + \left(\frac{\frac{1}{2}n - fkb}{fi}\right) x\ i$

ℓ = 68.5 i = 8

fi = 11 F_{kb} = 10

½ n = 21

$Me = \ell + \left(\frac{\frac{1}{2}n - fkb}{fi}\right) x\ i$

$Me = 68.5 + \left(\frac{21-10}{11}\right) x\ 8$

$= 68.5 + \left(\frac{11}{11}\right) x\ 8$

= 68.5 + 8

= 76.5

8. Modus

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	45 – 52	9	48.5	436.5	42= N	9
2.	53 – 60	4	56.5	226	33	13
3.	61 – 68	8	64.5	516	29	21
4.	69 – 76	**11**	**72.5**	797.5	21	32
5.	77 – 84	6	80.5	483	10	38
6.	85- 92	3	90	360	3	41
7.	93–100	1	96.5	96.5	1	42=N
Total		42		3188		

$$Mo = \ell + \left(\frac{fa}{fa+fb}\right) x\ i$$

l = 68.5 i = 8

fa = 8 fb = 6

$$Mo = \ell + \left(\frac{fa}{fa+fb}\right) x\ i$$

$$= 68.5 + \left(\frac{8}{8+6}\right) X\ 8$$

= 68.5 + 4.56
= 73

9. Standar Deviation

No	Class Interval	F	X	x’	fx’	x'^2	fx'^2
1.	45 – 52	9	48.5	+3	27	9	81
2.	53 – 60	4	56.5	+2	8	4	16
3.	61 – 68	8	64.5	+ 1	8	1	8
4.	69 – 76	**11**	**72.5**	0	0	0	0
5.	77 – 84	6	80.5	-3	-18	9	54
6.	85 – 92	3	90	-2	-6	4	12
7.	93 –100	1	96.5	-1	-1	1	1
Total		42			27		133

$$SD_t = i\sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n}\right)^2}$$

$$= 8\sqrt{\frac{133}{42} - \left(\frac{27}{42}\right)^2}$$

$= 8\sqrt{3.167 - (0.642)^2}$

$= 8\sqrt{3.167 - 0.412}$

$= 8\sqrt{2.755}$

$= 8 \text{ x } 1.65$

$= 5.2$

APPENDIX XXIII

THE EXPERIMENTAL CLASS IN POST TEST

10. Maximal and minimum core were gotten by setting the variable score from low score to high score.

65	70	70	70	75	75	80	80	80	80
80	80	80	80	80	85	85	85	85	85
85	85	85	85	85	85	85	85	85	85
85	90	90	90	90	90	90	90	90	90
95	100								

11. High Score = 100
    Low Score = 65

12. Range = High – Low
    = 100 – 65
    =35

13. Total of classes = 1 + 3,3 log (n)
    = 1 + 3,3 log (42)
    = 1 + 3,3 (1.6)
    = 1 + 5.28
    = 6.28
    = 6

14. Length of classes (i) = $\frac{range}{total\ of class} = \frac{35}{6}$ = 5.8= 6

15. Mean

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	65 – 70	4	67.5	270	42= N	4
2.	71 – 76	2	71.5	143	38	6
3.	77 – 82	9	79.5	715.5	36	15
4.	83 – 88	**16**	**85.5**	1368	27	31
5.	89 – 94	9	91.5	823.5	11	40
6.	95 – 100	2	97.5	195	2	42=N
Total		42		3515		

Mean (X)

$X = \frac{\sum FX}{F}$

$= \frac{3515}{42}$

= 83.7

16. Median

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	65 – 70	4	67.5	270	42= N	4
2.	71 – 76	2	71.5	143	38	6
3.	77 – 82	9	79.5	715.5	36	15
4.	83 – 88	**16**	**85.5**	1368	27	31
5.	89 – 94	9	91.5	823.5	11	40
6.	95 – 100	2	97.5	195	2	42=N
Total		42		3515		

$Me = \ell + \left(\frac{\frac{1}{2}n - fkb}{fi}\right) x\ i$

ℓ = 82.5 i = 6

fi = 16 F_{kb} = 11

½ n = 21

$Me = \ell + \left(\frac{\frac{1}{2}n - fkb}{fi}\right) x\ i$

$Me = 82.5 + \left(\frac{21-11}{16}\right) x\ 6$

$= 82.5 + \left(\frac{10}{16}\right) x\ 6$

= 82.5 + 3.75

= 86.25

17. Modus

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	65 – 70	4	67.5	270	42= N	4
2.	71 – 76	2	71.5	143	38	6
3.	77 – 82	9	79.5	715.5	36	15
4.	83 – 88	**16**	**85.5**	1368	27	31
5.	89 – 94	9	91.5	823.5	11	40
6.	95 – 100	2	97.5	195	2	42=N
Total		42		3515		

$$Mo = \ell + \left(\frac{fa}{fa+fb}\right) x\ i$$

l = 82.5 i = 6

fa = 9 fb = 9

$$Mo = \ell + \left(\frac{fa}{fa+fb}\right) x\ i$$

$$= 82.5 + \left(\frac{9}{9+9}\right) X\ 6$$

$$= 82.5 + 3$$
$$= 85.5$$

18. Standard Deviation

No	Class Interval	F	X	x’	fx’	x'^2	fx'^2
1.	65 – 70	4	67.5	+3	12	9	36
2.	71 – 76	2	71.5	+2	4	4	8
3.	77 – 82	9	79.5	+ 1	9	1	9
4.	83 – 88	**16**	**85.5**	0	0	0	0
5.	89 – 94	9	91.5	-2	-18	4	36
6.	95 – 100	2	97.5	-1	-2	1	2
Total		42			5		91

$$SD_t = i\sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n}\right)^2}$$

$$= 6\sqrt{\frac{91}{42} - \left(\frac{5}{42}\right)^2}$$

$$= 6\sqrt{2.166 - (0.119)^2}$$

$$= 6\sqrt{2.166 - 0.014}$$

$$= 6\sqrt{2.152}$$

= 6 x 1.466
= 8.796

THE CONTROL CLASS IN POST TEST

10. Maximal and minimum core were gotten by setting the variable score from low score to high score.

35	40	40	45	50	55	55	60	60	60
60	65	65	65	65	70	70	70	70	70
70	70	75	75	75	75	75	75	75	80
80	80	80	80	85	85	85	90	90	95
95	100								

11. High Score = 100
    Low Score = 35

12. Range = High – Low
    = 100- 35
    = 65

13. Total of Classes = 1 + 3,3 log (n)
    = 1 + 3,3 log (42)
    = 1 + 3,3 (1.6)
    = 1 + 5.28
    = 6.28
    = 6

14. Length of Classes $= \frac{range}{totalofclass}$ $= \frac{65}{6}$ = 10,8= 11

15. Mean

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	35 – 45	4	40	160	42= N	4
2.	46 – 56	3	51	153	38	7
3.	57 – 67	8	62	496	35	15
4.	68 – 78	**14**	**73**	1022	27	29
5.	79 – 89	8	84	672	13	37
6.	90- 100	5	95	475	5	42=N
Total		42		2978		

Mean (X)

$X = \frac{\sum FX}{F}$

$= \frac{2978}{42}$

= 70.9

16. Median

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	35 – 45	4	40	160	42= N	4
2.	46 – 56	3	51	153	38	7
3.	57 – 67	8	62	496	35	15
4.	68 – 78	**14**	**73**	1022	27	29
5.	79 – 89	8	84	672	13	37
6.	90- 100	5	95	475	5	42=N
Total		42		2978		

$Me = \ell + \left(\frac{\frac{1}{2}n - fkb}{fi}\right) x\ i$

ℓ = 67.5 i = 11

fi = 14 F_{kb} = 13

½ n = 21

$Me = \ell + \left(\frac{\frac{1}{2}n - fkb}{fi}\right) x\ i$

$Me = 67.5 + \left(\frac{21-13}{14}\right) x\ 11$

$= 67.5 + \left(\frac{8}{14}\right) x\ 11$

= 6.75 + 6.27

= 13.02

17. Modus

No	Class Interval	F	X	FX	F_{kb}	F_{ka}
1.	35 – 45	4	40	160	42= N	4
2.	46 – 56	3	51	153	38	7
3.	57 – 67	8	62	496	35	15
4.	68 – 78	**14**	**73**	1022	27	29
5.	79 – 89	8	84	672	13	37
6.	90- 100	5	95	475	5	42=N
Total		42		2978		

$$Mo = \ell + \left(\frac{fa}{fa+fb}\right) x\ i$$

l = 67.5 i = 11

fa = 8 fb = 8

$$Mo = \ell + \left(\frac{fa}{fa+fb}\right) x\ i$$

$$= 67.5 + \left(\frac{8}{8+8}\right) X\ 11$$

= 67.5 + 5.5
= 73

18. Standar Deviation

No	Class Interval	F	X	x’	fx’	x'^2	fx'^2
1.	35 – 45	4	40	+3	12	9	36
2.	46 – 56	3	51	+2	6	4	12
3.	57 – 67	8	62	+ 1	8	1	8
4.	68 – 78	**14**	**73**	0	0	0	0
5.	79 – 89	8	84	-2	-16	4	32
6.	90- 100	5	95	-1	-5	1	5
Total		42			5		93

$$SD_t = i\sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n}\right)^2}$$

$$= 11\sqrt{\frac{93}{42} - \left(\frac{5}{42}\right)^2}$$

$$= 11\sqrt{2.190 - (0.119)^2}$$

$$= 11\sqrt{2.190 - 0.014}$$

$$= 11\sqrt{2.176}$$

= 11 x 1.475
= 16.2

APPENDIX XXIV

T_{test} OF THE BOTH AVERAGES EXPERIMENTAL AND CONTROL CLASS BEFORE USING NUMBER HEAD TOGETHER IN PRE TEST

The formula was used to analyse homogeneity test of the both averages in post test was t-test, before testing hypothesis, first look for F count as below :

M_1=*77.9*

$M_2 = 75.9$

$S1^2 = 131.4$

$S2^2 = 72.83$

$F_{count} = 1.80 < F_{Table} = 2.000$

$$Tt = \frac{M_1 - M_2}{\sqrt{\left(\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2}\right)\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

$$Tt = \frac{77.9 - 75.9}{\sqrt{\left(\frac{(42-1)\ 131.4 + (42-1)72.83)}{42+42-2}\right)\left(\frac{1}{42}+\frac{1}{42}\right)}}$$

$$Tt = \frac{2}{\sqrt{\left(\frac{41(131.4) + 41\ (72.83)}{82}\right)(0.023+0.023)}}$$

$$Tt = \frac{2}{\sqrt{\left(\frac{5387.4 + 2986.3}{82}\right)(0.046)}}$$

$$Tt = \frac{2}{\sqrt{\left(\frac{8373.7}{82}\right)(0.046)}}$$

$$Tt = \frac{2}{\sqrt{(104.6)(0.046)}}$$

$$Tt = \frac{2}{\sqrt{4.811}}$$

$$Tt = \frac{2}{2.193}$$

$Tt = 0.91$

Based on researcher calculation result of the homogeneity test of the both averages, researcher found that t_{count}= 0.91 with opportunity (1-α) = 1 – 5% = 95% and dk = n_1 + n_2 -2 = 42 + 42 – 2 = 82 , researcher found that t_{table} = 2.000, because t_{count} < t_{table}(0.91 <2.000). So, H_a was rejected, it means that there is no the significant effect between experimental class and control class before using number head together in pre test.

APPENDIX XXV

T_{test} OF THE BOTH AVERAGES EXPERIMENTAL AND CONTROL CLASS AFTER USING NUMBER HEAD TOGETHER IN POST TEST

The formula was used to analyse homogeneity test of the both averages in post test was t-test, before testing hypothesis, first look for F count as below :

M_1=*83.7*

$M_2 = 70.9$

$S1^2 = 221.3$

$S2^2 = 46.79$

$F_{count} = 4.729 < F_{Table} = 2.000$

$$Tt = \frac{M_1 - M_2}{\sqrt{\left(\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2}\right)\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

$$Tt = \frac{83.7 - 70.9}{\sqrt{\left(\frac{(42-1)\ 221.3 + (42-1)46.79)}{42+42-2}\right)\left(\frac{1}{42}+\frac{1}{42}\right)}}$$

$$Tt = \frac{12.8}{\sqrt{\left(\frac{41(221.3) + 41\ (46.8)}{82}\right)(0.023+0.023)}}$$

$$Tt = \frac{12.8}{\sqrt{\left(\frac{9073+1918}{82}\right)(0.046)}}$$

$$Tt = \frac{12.8}{\sqrt{\left(\frac{10991}{82}\right)(0.046)}}$$

$$Tt = \frac{12.8}{\sqrt{(137.3)(0.046)}}$$

$$Tt = \frac{12.8}{\sqrt{6.3158}}$$

$$Tt = \frac{12.8}{2.513}$$

$Tt = 5.093$

Based on researcher calculation result of the homogeneity test of the both averages, researcher found that t_{count}= 0.818 with opportunity (1-α) = 1 – 5% = 95% and dk = n_1 + n_2 -2 = 42 + 42 – 2 = 82 , researcher found that t_{table} = 2.000, because t_{count} > t_{table}(5.093 >2.000). So, H_a was accepted, it means that there is the significant effect between experimental class and control class after using number head together in post test.

APPENDIX XXVI

Chi-Square Table

dk	Significant level					
	50%	30%	20%	10%	5%	1%
1	0,455	1,074	1,642	2,706	3,841	6,635
2	1,386	2,408	3,219	4,605	5,991	9,210
3	2,366	3,665	4,642	6,251	7,815	11,341
4	3,357	4,878	5,989	7,779	9,488	13,277
5	4,351	6,064	7,289	9,236	11,070	15,086
6	5,348	7,231	8,558	10,645	12,592	16,812
7	6,346	8,383	9,803	12,017	14,067	18,475
8	7,344	9,524	11,030	13,362	15,507	20,090
9	8,343	10,656	12,242	14,684	16,919	21,666
10	9,342	11,781	13,442	15,987	18,307	23,209
11	10,341	12,899	14,631	17,275	19,675	24,725
12	11,340	14,011	15,812	18,549	21,026	26,217
13	12,340	15,119	16,985	19,812	22,362	27,688
14	13,339	16,222	18,151	21,064	23,685	29,141
15	14,339	17,222	19,311	22,307	24,996	30,578
16	15,338	18,418	20,465	23,542	26,296	32,000
17	16,338	19,511	21,615	24,769	27,587	33,409
18	17,338	20,601	22,760	25,989	28,869	34,805
19	18,338	21,689	23,900	27,204	30,144	36,191
20	19,337	22,775	25,038	28,412	31,410	37,566
21	20,337	23,858	26,171	29,615	32,671	38,932
22	21,337	24,939	27,301	30,813	33,924	40,289
23	22,337	26.018	28,429	32,007	35,172	41,638
24	23,337	27,096	29,553	33,196	35,415	42,980
25	24,337	28,172	30,675	34,382	37,652	44,314
26	25,336	29,246	31,795	35,563	38,885	45,642
27	26,336	30,319	32,912	36,741	40,113	46,963
28	27,336	31,391	34,027	37,916	41,337	48,278
29	28,336	32,461	35,139	39,087	42,557	49,588
30	29,336	33,530	36,250	40,256	43,773	50,892

APPENDIX XXVII

Z-Table

Z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
-3.9	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003
-3.8	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005
-3.7	0.00011	0.00010	0.00010	0.00010	0.00009	0.00009	0.00008	0.00008	0.00008	0.00008
-3.6	0.00016	0.00015	0.00015	0.00014	0.00014	0.00013	0.00013	0.00012	0.00012	0.00011
-3.5	0.00023	0.00022	0.00022	0.00021	0.00020	0.00019	0.00019	0.00018	0.00017	0.00017
-3.4	0.00034	0.00032	0.00031	0.00030	0.00029	0.00028	0.00027	0.00026	0.00025	0.00024
-3.3	0.00048	0.00047	0.00045	0.00043	0.00042	0.00040	0.00039	0.00038	0.00036	0.00035
-3.	0.00069	0.00066	0.00064	0.00062	0.00060	0.00058	0.00056	0.00054	0.00052	0.00050

2										
-3.1	0.00097	0.00094	0.00090	0.00087	0.00084	0.00082	0.00079	0.00076	0.00074	0.00071
-3.0	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00104	0.00100
-2.9	0.00187	0.00181	0.00175	0.00169	0.00164	0.00159	0.00154	0.00149	0.00144	0.00139
-2.8	0.00256	0.00248	0.00240	0.00233	0.00226	0.00219	0.00212	0.00205	0.00199	0.00193
-2.7	0.00347	0.00336	0.00326	0.00317	0.00307	0.00298	0.00289	0.00280	0.00272	0.00264
-2.6	0.00466	0.00453	0.00440	0.00427	0.00415	0.00402	0.00391	0.00379	0.03680	0.00357
-2.5	0.00621	0.00604	0.00587	0.00570	0.00554	0.00539	0.00523	0.00508	0.00494	0.00480
-2.4	0.00820	0.00798	0.00776	0.00755	0.00734	0.00714	0.00695	0.00676	0.00657	0.00639
-	0.0107	0.0104	0.0101	0.0099	0.0096	0.0093	0.0091	0.0088	0.0086	0.0084

2.3	2	4	7	0	4	9	4	9	6	2
-2.2	0.01390	0.01355	0.01321	0.01287	0.01255	0.01222	0.01191	0.01160	0.01130	0.01101
-2.1	0.01786	0.01743	0.01700	0.01659	0.01618	0.01578	0.01539	0.01500	0.01463	0.01426
-2.0	0.02275	0.02222	0.02169	0.02118	0.02068	0.02018	0.01970	0.01923	0.01876	0.01831
-1.9	0.02872	0.02807	0.02743	0.02680	0.02619	0.02559	0.02500	0.02442	0.02385	0.02330
-1.8	0.03593	0.03515	0.03438	0.03362	0.03288	0.03216	0.03144	0.03074	0.03005	0.02938
-1.7	0.04457	0.04363	0.04272	0.04182	0.04093	0.04006	0.03920	0.03836	0.03754	0.03673
-1.6	0.05480	0.05370	0.05262	0.05155	0.05050	0.04947	0.04846	0.04746	0.04648	0.04551
-1.5	0.06681	0.06552	0.06426	0.06301	0.06178	0.06057	0.05938	0.05821	0.05705	0.05592

-1.4	0.08076	0.07927	0.07780	0.07636	0.07493	0.07353	0.07215	0.07078	0.06944	0.06811
-1.3	0.09680	0.09510	0.09342	0.09176	0.09012	0.08851	0.08691	0.08534	0.08379	0.08226
-1.2	0.11507	0.11314	0.11123	0.10935	0.10749	0.10565	0.10383	0.10204	0.10027	0.09853
-1.1	0.13567	0.13350	0.13136	0.12924	0.12714	0.12507	0.12302	0.12100	0.11900	0.11702
-1.0	0.15866	0.15625	0.15386	0.15151	0.14917	0.14686	0.14457	0.14231	0.14007	0.13786
-0.9	0.18406	0.18141	0.17879	0.17619	0.17361	0.17106	0.16853	0.16602	0.16354	0.16109
-0.8	0.21186	0.20897	0.20611	0.20327	0.20045	0.19766	0.19489	0.19215	0.18943	0.18673
-0.7	0.24196	0.23885	0.23576	0.23270	0.22965	0.22663	0.22363	0.22065	0.21770	0.21476
-0.	0.27425	0.27093	0.26763	0.26435	0.26109	0.25785	0.25463	0.25143	0.24825	0.24510

6										
-0.5	0.30854	0.30503	0.30153	0.29806	0.29460	0.29116	0.28774	0.28434	0.28096	0.27760
-0.4	0.34458	0.34090	0.33724	0.33360	0.32997	0.32636	0.32276	0.31918	0.31561	0.31207
-0.3	0.38209	0.37828	0.37448	0.37070	0.36693	0.36317	0.35942	0.35569	0.35197	0.34827
-0.2	0.42074	0.41683	0.41294	0.40905	0.40517	0.40129	0.39743	0.39358	0.38974	0.38591
-0.1	0.46017	0.45620	0.45224	0.44828	0.44433	0.44038	0.43644	0.43251	0.42858	0.42465
-0.0	0.50000	0.49601	0.49202	0.48803	0.48405	0.48006	0.47608	0.47210	0.46812	0.46414

Z-Table

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964

2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3,1	0,4990	0,4991	0,4991	0.4991	0,4992	0,4992	0,4992	0,4992	0,4993	0,4993
3,2	0,4993	0,4993	0,4994	0,4994	0,4994	0,4994	0,4994	0,4995	0,4995	0,4995
3,3	0,4995	0,4995	0,4995	0,4996	0,4996	0,4996	0,4996	0,4996	0,4997	0,4997
3,4	0,4997	0,4997	0,4997	0,4997	0,4997	0,4997	0,4997	0,4997	0,4997	0,4998
3,5	0,4998	0,4998	0,4998	0,4998	0,4998	0,4998	0,4998	0,4998	0,4998	0,4998
3,6	0,4998	0,4998	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999
3,7	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999
3,8	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999	0,4999
3,9	0,5000	0,5000	0,5000	0,5000	0,5000	0,5000	0,5000	0,5000	0,5000	0,5000

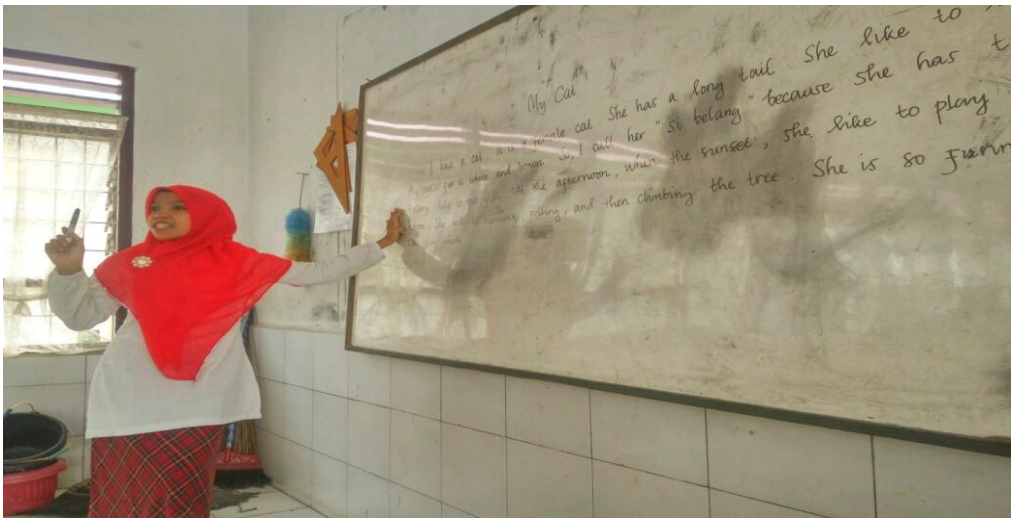
APPENDIX XXVIII

Percentage Points of the t Distribution

Two Tail Test						
	0,50	**0,20**	**0,10**	**0,05**	**0,02**	**0,01**
One Tail Test						
Dk	**0,25**	**0,10**	**0, 005**	**0,025**	**0,01**	**0,05**
1	1,000	3,078	6,314	12,706	31,821	63,657
2	0,816	1,886	2,920	4,303	6,965	9,925
3	0,765	1,638	2,353	3,182	4,541	5,841
4	0,741	1,533	2,132	2,776	3,747	4,604
5	0,721	1,486	2,015	2,571	3,365	4,032
6	0,718	1,440	1,943	2,447	3,143	3,707
7	0,711	1,415	1,895	2,365	2,998	3,499
8	0,706	1,397	1,860	2,306	2,896	3,355
9	0,703	1,383	1,833	2,262	2,821	3,250
10	0,700	1,372	1,812	2,228	2,764	3,165
11	0,697	1,363	1,796	2,201	2,718	3,106
12	0,695	1,356	1,782	2,178	2,681	3.055
13	0,692	1,350	1,771	2,160	2,650	3.012
14	0,691	1,345	1,761	2,145	2,624	2,977
15	0,690	1,341	1,753	2,132	2,623	2,947
16	0,689	1,337	1,746	2,120	2,583	2,921
17	0,688	1,333	1,743	2,110	2,567	2,898
18	0,688	1,330	1,740	2,101	2,552	2,878
19	0,687	1,328	1,729	2,093	2,539	2,861
20	0,687	1,325	1,725	2,086	2,528	2,845
21	0,686	1,323	1,721	2,080	2,518	2,831
22	0,686	1,321	1,717	2,074	2,508	2,819
23	0,685	1,319	1,714	2,069	2,500	2,807
24	0,685	1,318	1,711	2,064	2,492	2,797
25	0,684	1,316	1,708	2,060	2,485	2,787
26	0,684	1,315	1,706	2,056	2,479	2,779
27	0,684	1,314	1,703	2,052	2,473	2,771
28	0,683	1,313	1,701	2,048	2,467	2,763
29	0,683	1,311	1,699	2,045	2,462	2,756
30	0,683	1,310	1,697	2,042	2,457	2,750
40	0,681	1,303	1,684	2,021	2,423	2,704
60	0,679	1,296	1,671	2,000	2,390	2,660
120	0,677	1,289	1,658	1,980	2,358	2,617
∞	0,674	1,282	1,645	1,960	2,326	2,576

APPENDIX XXIX

RESEARCH DOCUMENTATION



My Cat
I have a cat. It is a female cat. She has a long tail. She like to lick her tail.
My cat's fur is white and brown. So, I call her Si Belang because she has two colors.
Besides, she like to eat fish. At the afternoon, when the sunset, she like to play outside
the house. She will be running, jumping, and then climbing the tree. She is so
funny. I love my cat very much.

CURRICULUM VITAE

A. Identity

Name	: FUJI RAHAYU NASUTION
NIM	: 13 340 0012
Place and Birthday	: Padangsidimpuan, Jan 08th 1995
Sex	: Female
Religion	: Moslem
Address	: Jln Pengulu, No.08 Padangsidimpuan Utara

B. Parent

1. Father's name : Muhammad Yunus Nasution
2. Mother's name : Sumarniati Siregar

C. Educational Background

1. Kindergarden	: Kartika I-49	(2001)
2. Elementary School	: SD 200104	(2007)
3. Junior High School	: MTsN 1 Model Padangsidimpuan	(2010)
4. Senior High School	: MAN 1 Padangsidimpuan	(2013)
5. College	: IAIN Padangsidimpuan	(2017)