



**THE EFFECT OF NUMBERED HEAD TOGETHER TECHNIQUE
ON STUDENTS' READING COMPREHENSION
AT GRADE XI SMA N 5 PADANGSIDIMPUAN**

A THESIS

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

Written By :

MULIANA SARI
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ENGLISH EDUCATION DEPARTMENT

**TARBIYAH AND TEACHER TRAINING FACULTY
STATE INSTITUTE FOR ISLAMIC STUDIES
PADANGSIDIMPUAN**

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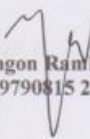
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Padangsidimpuan, August 2018

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Padangsidimpuan

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After reading, studying and giving advice for necessary revision on the thesis belongs to **Ma Sari**, entitled **"THE EFFECT OF NUMBERED HEAD TOGETHER INIQUE ON STUDENTS' READING COMPREHENSION AT GRADE XI SMA N DANGSIDIMPUAN"**. We assumed that the thesis has been acceptable to complete the requirements 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 the Education Department of Tarbiyah and Teacher Training Faculty IAIN Padangsidimpuan. Thank you.

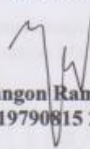
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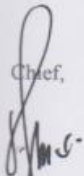
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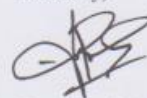
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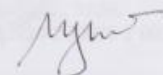
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LEGALIZATION

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I realize that this thesis cannot be considered perfectly without critiques and suggestions from the readers. Therefore, it was a pleasure for her to get critiques and suggestions from the readers to make this thesis better.

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ABSTRACT

This research focuses on the effect of numbered head together technique on students' reading comprehension at grade XI SMA N 5 Padangsidimpuan. The problems of students in reading comprehension were: 1) Most of the students' score still got low. 2) Most of the students just read the text without trying to comprehend the text. 3) Before reading, most of the students have felt boring and stress. They did not interest to comprehend text because there is no variation in teaching learning English. The teacher still used conventional technique in teaching reading. The purpose of this research is to know whether there is the effect of Numbered Head Together technique on students' reading comprehension at grade XI SMA N 5 Padangsidimpuan.

The method that is used in this research is experimental research. Two classes were chosen randomly as the sample. They were XI IPA 2 as experimental class that consisted of 30 students and XI IPA 3 as control class that consisted of 30 students. It was taken after conducting normality and homogeneity test. The data was derived from pre test and post test. To analyze the data, the researcher used t-test formula.

After analyzing the data, the researcher found that the mean score of experimental class after using Numbered Head Together technique was higher than control class. Mean score of experimental class before using Numbered Head Together technique was 61.19 and mean score after using Numbered Head Together technique was 76.1 and it had gain 14.91. The effect of Numbered Head Together technique on students' reading comprehension at Grade XI SMA N 5 Padangsidimpuan was 2.205 with t_{count} was higher than t_{table} ($2.205 > 1.67155$). It meant that H_a was accepted and H_0 was rejected. There was effect of Numbered Head Together technique on students' reading comprehension at grade XI SMA N 5 Padangsidimpuan.

Key Words: Numbered Head Together Technique and Reading Comprehension

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ABSTRAK

Penelitian ini fokus pada Pengaruh Teknik Numbered Head Together Terhadap Pemahaman Membaca Siswa di SMA N 5 Padangsidimpuan kelas XI. Masalah siswa dalam penelitian ini adalah: 1) kebanyakan nilai siswa rendah. 2) kebanyakan siswa hanya membaca teks tanpa mencoba untuk memahami teks. 3) Sebelum membaca, kebanyakan siswa merasa bosan dan stress. Mereka tidak tertarik untuk memahami teks karena tidak ada variasi dalam pengajaran bahasa Inggris. Guru hanya menggunakan teknik umum didalam mengajar reading. Tujuan dari penelitian ini adalah untuk mengetahui apakah ada pengaruh Teknik Numbered Head Together Terhadap Pemahaman Membaca Siswa di SMA N 5 Padangsidimpuan kelas XI.

Metode yang digunakan dalam penelitian ini adalah penelitian eksperimen. Dua kelas dipilih secara acak sebagai sampel. Mereka adalah XI IPA 2 sebagai kelas eksperimen yang terdiri dari 30 siswa dan XI IPA 3 sebagai kelas control yang terdiri dari 30 siswa. Sampel tersebut diperoleh setelah menggunakan tes normalitas dan homogenitas. Data diperoleh dari pre test dan post test. Untuk menganalisis data, peneliti menggunakan tumus t-test.

Setelah menganailis data, peneliti menemukan nilai rata-rata dari kelas eksperimen setelah menggunakan teknik Numbered Head Together lebih tinggi dari kelas control. Nilai rata-rata kelas eksperimen sebelum menggunakan teknik Numbered Head Together adalah 61.19 dan nilai rata-rata setelah menggunakan teknik Numbered Head Together adalah 76.1 dan memperoleh peningkatan sebesar 14.91. Pengaruh Teknik Numbered Head Together Terhadap Pemahaman Membaca Siswa di SMA N 5 Padangsidimpuan kelas XI adalah 2.205 dengan t_{count} lebih tinggi dari t_{tabel} ($2.205 > 1.67155$). Itu memiliki arti bahwa H_a diterima dan H_0 ditolak. Ada pengaruh Teknik Numbered Head Together Terhadap Pemahaman Membaca Siswa di SMA N 5 Padangsidimpuan kelas XI.

Kata kunci: *Teknik Numbered Head Together dan Pemahaman Membaca*

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CHAPTER I

INTRODUCTION

A. The Background of the Problem

There are four skills for English learners. One of them is reading. Reading is a complex cognitive process of decoding symbols in order to construct or derive meaning. Reading is a means of language acquisition, communication, and sharing information and ideas. Reading is a process in getting information from the text.

There are many the important of reading. They are adding knowledge, improving understanding, getting imagination and creativity. These importances of reading will be explained in the following paragraphs.

First, through reading, people can add their knowledge. They know the knowledge not only about their subject but also they know the general knowledge. They know the whole of world just through reading. They can hold the world through reading.

Second, people can improve understanding. The more they read, the more they understand one thing. For example; students confuse about their task, if they read more, they will be more understanding about it.

Third, reading can add the people imagination and creativity. By reading, people can feel enjoy and happy. They must able to understand what they read to

imagine it. For example; students read Cinderella story, students must able to understand it. So they can imagine its story.

Based on the explanation above, reading does not just see the text but must comprehend the idea from the text. Reading is comprehension. It is impossible, if people read the text but they don't understand the meaning of the text. They cannot take the idea from the text. Moreover, they don't know after they read it.

Reading is very important, moreover for students. They must read for success their study. But, students of SMA N 5 Padangsidempuan have problem in reading. The first, they are lack vocabulary and seldom to practice in reading. Then, reading activity is so bored and makes them stress because they can't understand the text. Next, the meaning of the word by word in the text is not appropriate with the whole of the sentence or paragraph. Students' reading comprehension is low. The teacher also never applies the technique in teaching reading comprehension.¹ The problems above will be explained in the following paragraph.

First, the students are lack vocabulary. To know the meaning of word in the text is the key word to understanding the text. Students can understand the text from the word that's including in the text. So, the problem is students doesn't master of vocabulary, they don't know the meaning of word in the text.

¹ Private Interview, FitrianaHarahap, recorded on September 09th 2017, at 11.00 a.m., in SMA N 5 Padangsidempuan

Second, the students feel reading activity is so bored and make them stress. In doing the activity, students must enjoy the activity that makes them achieve to do the goal of activity. The problem is they can't enjoy the reading activity. So, they can't understand the meaning of the text. Before reading, they have felt boring and stress.

Third, the meaning of the word by word in the text is not appropriate with the whole of the sentence or paragraph. Students see the meaning of word in dictionary. They mean the text word by word. So, in understanding the whole of the text is not appropriate with the meaning of word by word.

Next, students' reading comprehension is low. Most of students still get 60.² Based on Minimal of Complete Criteria (KKM), passing grade of senior high school is 75 for English subject. They have not achieved target of the passing grade.

Last, the problem is not only come from the students but also come from the teacher. The teacher never applies the technique in teaching reading. Teacher just command students to read the text and answer the question based on the text. Whereas applying the technique in teaching learning will make the learning is more active and effective. Like that in teaching reading. So, in this research the researcher tries to solve the students' difficulties in understanding the text then make them fun to understand it.

² Private Interview, Abdul Malik S. Pd., recorded on September 11th 2017, at 10.00 a.m., in SMA N 5 Padangsidempuan

From the some problem above, researcher divided two kinds of its problem. They were general problem and specific problem. The general problem was the students feel the reading activity is so bored and make them stress and then the specific problem was they are lack vocabulary, the meaning of the word by word in the text is not appropriate with the whole of the sentence or paragraph, the teacher never applies the technique in teaching reading.

Based on the problem above, there are so many techniques that can be applied in teaching reading comprehension. They are determining main ideas strategy, interactive word wall technique, and numbered head together technique. The researcher will explain its technique in the following paragraph.

First, determining main ideas strategy is the strategy that used to assist in reading and comprehending a foreign language literature. Like usually, students learn the materials from text books which contain a lot of passages. Sometimes this strategy can make students feel bored because they are not enjoy in learning process.

Then, interactive word wall technique is a technique that is used to make the students be more active in finding, writing, and discussing the features of words posted on the wall. But, this technique more support to improve students' vocabulary mastery.

The Last, numbered head together technique is the technique that make the students more active to find and understand the answer of the question. All of member of group is demanded to know and understand the result of discussion.

So, every member of group must participate in their group, not only the leader of the group but also the member.

Based on the technique above, the researcher chose the numbered head together technique to solve the problem at grade XI SMA N 5 Padangsidimpuan as the effective way to increase the students' ability in reading comprehension. Numbered Head Together is one of simple cooperative learning technique. The researcher chose this technique because it is adaptable to most all subject and grade level. It can improve students' collaboration in their group because they must join their perception to another. It can improve students' responsible in the group because every member of group has task. So, not only the leader of group that masters the material but also every member of group can master it. In this technique, the students are divided in a small group, make students easier in solving problem, because in groups the students can enjoy and share for giving idea what they are discussed.

Numbered head together technique was developed by Spencer Kagan in 1992s. This technique gives the chance for students to share and consider the best idea and answer. Also, this technique can increase the students' collaboration spirit.³Numbered Head Together Technique is a technique than can be applied for all of subjects and level of class. It refers to written by EviKasyulita. The independent variable is Numbered Head Together. While dependent variable which is a kind of variable which is influenced by other variable and the

³Isjoni, *Cooperative Learning*, (Bandung: ALFABETA, 2014), p. 78.

dependent variable is English Writing Descriptive Paragraph.⁴ From explanation above, it can be seen that numbered head together technique can be applied for all subjects like writing and all of students' level. So, if numbered head together technique can be applied for all of subjects, it also has effect on students' reading comprehension.

According to Nuruddin, et. al⁵, they state that there are some advantages of numbered head together technique. One of them is students responses can reveal misunderstanding and an opportunity for error connection. As we known in English language learning, many students' misunderstanding to try understanding of its English language. Numbered head together technique can be applied to decrease the students' misunderstanding. They can discuss what they understand to another in their groups, so they can find the better understanding about English language learning.

Based on the explanation above, the researcher was interested to conduct the research to solve the problems about students' reading comprehension with the title **“THE EFFECT OF NUMBERED HEAD TOGETHER TECHNIQUE ON STUDENTS' READING COMPREHENSION AT GRADE XI SMA N 5 PADANGSIDIMPUAN”**.

⁴Evi Kasyulita, The Effect of Numbered Head Together Technique on English Writing Descriptive Paragraph, retrieved from { HYPERLINK "<http://www.iosjournals.org/iosr-jrme/papers/Vol-7%20Issue-2/Version-2/R070202107114.pdf>" } on 14 Oktober 2017 at 02.30 pm.

⁵Nuruddin, et. al., The Effect of Numbered Head Together and Question Answer Relationship Techniques on Students' Reading Comprehension: A Comparative Study, retrieved from { HYPERLINK "<https://media.neliti.com/media/publications/118758-EN-the-effect-of-numbered-head-together-and.pdf>" } on 23 April 2018 at 10.00 p.m.

B. The Identification of the Problem

Based on the background of problems above, there are some problems in students' reading comprehension at Grade XI SMA N 5 Padangsidimpuan:

1. The students are lack vocabulary.
2. The students feel the reading activity is so bored and make them stress.
3. The meaning of the word by word in the text is not appropriate with the whole of the sentence or paragraph.
4. The students' reading comprehension is low.
5. The teacher never applies the technique in teaching reading.

C. The Limitation of the Problem

Based on the identification of problems above, the researcher focused to low ability of the students in reading comprehension. It would be solved by choosing one technique. It was numbered head together technique.

D. The Formulation of the Problem

The formulations of the problem in this research were:

1. What is result of students' reading comprehension before using Numbered Head Together technique at grade XI SMA N 5 Padangsidimpuan?
2. What is the result of students' reading comprehension after using Numbered Head Together technique at grade SMA N 5 Padangsidimpuan?
3. Is there any effect of Numbered Head Together technique on students' reading comprehension at grade SMA N 5 Padangsidimpuan?

E. The Purpose of the Research

From the formulation of the problem above, the purposes of this research were:

1. To know the result of students' reading comprehension before using Numbered Head Together technique on students' reading comprehension at grade SMA N 5 Padangsidempuan.
2. To know the result of students' reading comprehension after using Numbered Head Together technique on students' reading comprehension at grade SMA N 5 Padangsidempuan.
3. To examine whether there is or there is not any effect of using Numbered Head Together technique on students' reading comprehension at grade SMA N 5 Padangsidempuan.

F. The Significances of the Research

The significances of this research were:

1. The result of this research is expected to be useful for the English teachers in SMA N 5 Padangsidempuan as their information or their source in teaching reading comprehension. This research is also expected to be able to become motivation for the teachers to always make an interesting and fun strategy in teaching reading comprehension.
2. The result of this research is expected to be useful for the headmaster as one domain measurement of teaching progress.

3. The result of this research is expected to be the information for the others researchers to make the further research.

G. The Definition of Operational Variables

1. Numbered Head Together Technique

Numbered Head Together technique is a technique that demands the member of group to know and comprehend the result of discussion, by mastering the answer of question that teacher gives for group.

2. Students' Reading Comprehension

Students' reading comprehension is a highly process in which the students try to find the meaning in more complex understanding of the text.

CHAPTER II

THEORETICAL DESCRIPTION

A. Theoretical Description

1. Reading Comprehension

a. Definition of Reading Comprehension

Reading is an active process that requires a great deal of practice and skill.¹ In reading, the readers must have the skill to get the information from the text. Also, reading is not activity that can be done once but it needs the practice to make more effective. Then according to Caroline, Reading is a set of skills that involves making sense and deriving meaning from the printed word.² The printed word is the object to the readers in applying their skill in reading. If their skills are good so they are easier to find the information from the text and if their skills are not good so they are more difficult to find the information from the text. So, from the explanation above can be concluded that reading is the active process that need the skill to derive meaning from the printed word.

Reading comprehension is a complex process which comprises the successful or unsuccessful use of many abilities.³ Reading

¹ Moreillon, Judi, *Collaborative strategies for teaching reading comprehension*, (Chicago: American Library Association, 2007), p. 10.

² Linse, Caroline T., *Practical English Language Teaching: Young Learners*, (New York: McGraw-Hill, 2005), p. 69.

³ Wainwright, Gordon, *How to Read Faster and Recall More*, (Oxford: How To Books, 2007), p. 35.

comprehension is important for the students for become effective reader. The students can use their ability in reading successfully or unsuccessfully. They must apply their abilities to get success in reading and learning.

Reading comprehension is an ability to understand what the readers read where words have context and texts have meaning.⁴ The students give the meaning of written material just not from the text but also from the context. If we can't mean the written material from the text, we can mean from the other side, that is the context.

So, from explanation above the researcher can conclude that reading comprehension is the complex process to find the meaning of the written material by comprehending the text and context. In reading comprehension activity, the readers can get the information, main idea, also conclude the meaning of the text.

b. The Models of Reading

In reading the text, students can apply some models of reading. Each student has the style or model to read the text. There are three models in understanding the process of reading. They are bottom up

⁴Roehl,K.M., *Developing Reading Comprehension Skill in EFL University Level Student*, (Taiwan: St. Jhon's University, 2003), p. 177.

models, top down models, and interactive models.⁵ The models will be explained in the following paragraph.

The first, bottom up models is the model that refers to break a word down into its smallest parts. Start from the letters, letter clusters, words, phrases, sentences, longer text, and finally meaning is the order in achieving comprehension. This models start from the smallest unit to the bigger unit. So, by this model, students comprehend the text from the lower-level to higher-level.

Then, top down models is opposite of the bottom up model. This model focuses to general meaning of the text. The readers understand the text from the bigger unit to smallest unit. They don't care the meaning of the word by word but the meaning of the general idea of the text. So, by this model, students comprehend the text from the higher-level to lower level.

The last, interactive model is the combine of bottom up and top down model. The readers understand the text by the meaning of the word and the general meaning. They understand the text and connect it with their background knowledge then combine their understanding. In this model, the term interactive has three meanings. They are:⁶

⁵Nunan,David, *Practical English Language Teaching*, (New York: McGraw Hill Inc, 2003), p. 70.

⁶O' Malley,J. Michael andLorraine ValdezPierce, *Authentic Assessment for English Language Learners*, (America: Addison-Wesley Publishing Company, 1996), p. 95.

- 1) The interaction between the reader and the text.
- 2) The interplay between lower and higher-level reading processes.
- 3) The relationship between form (text structure) and function (genre) in texts.

So, by this model, students comprehend the text from the middle.

The understanding will come from the text and the general understanding or background knowledge. The researcher argues the interactive model is the best model to comprehend the text, because it can make students easily to understand the text. They can connect their background knowledge with the meaning of the text.

c. The Purpose of Reading

Henry Guntur Tarigan says that the purpose of reading as follows:⁷

- 1) Reading for identifying important information
- 2) Reading for main ideas
- 3) Reading for finding the specific information
- 4) Reading for underlining the important information
- 5) Reading to classify the difficult word
- 6) Reading to evaluate
- 7) Reading to compare or contrast

Besides that, William Grabe states that the purpose of reading comprehension as follows:⁸

- 1) Reading to search for information (scanning and skimming)
- 2) Reading for quick understanding
- 3) Reading to learn
- 4) Reading to integrate information
- 5) Reading to evaluate, critique, and use information

⁷Tarigan, Henry Guntur, *Membaca Sebagai Keterampilan Berbahasa*, (Bandung: Aksara, 1990), p. 9-10.

⁸Grabe, William, *Reading in a Second Language*, (Cambridge: University Press), p. 8.

- 6) Reading for general comprehension (in many cases, reading for interest or reading to entertain)

Before we do reading activities, we must have purpose to read. For example, we read the novel to entertain ours. So, the purpose of reading is depending on our purposes to read.

d. The Levels of Reading Comprehension

Every person certain has the level in comprehending from what he has been read. Whereas the every person's skill is different, because in comprehending the text is not easy. According to Smith in Peter's book suggested that there are four the levels of comprehension. They are:⁹

- 1) Literal level; the basic facts are understood.
- 2) Inferential level; able to go beyond what is written on the page and add meaning.
- 3) Critical level; assesses the good sense of what he or she is reading, its clarity, accuracy, and any apparent exaggeration or bias.
- 4) Creative level; can take information and develop new ideas.

The quotation above means that reading comprehension is divided into four categories, they are:

⁹Westwood, Peter, *Reading and Learning Difficulties: Approach to Teaching and Assessment*, (Australia: National Library of Australia, 2001), p. 21-22.

1) Literal

At the literal level, the reader is getting the information explicitly in comprehending text. The readers understand the text with the meaning word by word.

2) Inferential

At the inferential level, the reader is able to understand the text with word by word also able to add the meaning to improve his or her comprehending.

3) Critical

At the critical level, the reader can assess the good sense of what she or he reads. From her or his reading, she or he can give the criticism about the reading material.

4) Creative

At the creative level the reader can get the information from the reading material will be applied in new context. This applying of course through making manipulation knowledge to the new context or situation.

From explanation above, the levels of comprehension can be seen from the response of the reader toward what he or she has been read. It is about how his or her comprehending the reading material.

e. Reading Assessment

Assessment is a mean to measure the progress of students' ability and comprehension of the material.¹⁰ Routman states in David Nunan's book that in order for reading assessment teachers should consider the following:¹¹

- 1) Be thoroughly familiar with developmental learning processes and curriculum.
- 2) Articulate a philosophy of assessment and evaluation.
- 3) Know about and have experience collecting, recording, interpreting and analyzing multiple sources of data.
- 4) Be flexible and willing to try out multiple assessment procedures.
- 5) Be committed to understanding and implementing an approach to evaluation that informs students and directs instruction.

There are some indicators in assessing students' reading, the indicators are students able to:¹²

- 1) Identify the main idea of the text
- 2) Identify the specific information of the text
- 3) Identify the detail information of the text
- 4) Understand the vocabulary from the text

There are many techniques that can be applied in testing reading comprehension. Such as: multiple choice, cloze test, gap filling, information transfer, and so on. But, in this research, researcher chooses

¹⁰ O' Malley, J. Michael and Lorraine Valdez Pierce, *Authentic Assessment for English Language Learners*, p. 98.

¹¹ *Ibid.*

¹² Silabus, "Bahasa Inggris-Wajib SMA Kelas XI", Kurikulum 2013, retrieved in { HYPERLINK "http://www.jagoanbahasainggris.com" } on Saturday, November 18, 2017.

the multiple choice technique. Multiple choice questions are a common device for testing students' text comprehension. They allow tester to control the range of possible answers to comprehension questions, and to some extent to control the students' thought processes when responding.¹³ Multiple choice questions are the question that has some options. In the options, there is one the correct answer.

2. Numbered Head Together Technique

a. Definition of Numbered Head Together Technique

Numbered head together technique was developed by Spencer Kagan in 1992s. This technique gives the chance for students to share and consider the best idea and answer. Also, this technique can increase the students' collaboration spirit.¹⁴ Beside it, Setya Agustin and her friends state that numbered head together technique where the entire member has responsibilities to know the answer because nobody knows who will be called by the teacher to present the answer.¹⁵ Then, Istarani said numbered Head Together technique is a variant of group discussion to discuss students' perception toward the teacher's question based on their numbers for every group. Every student must be responsible to

¹³Alderson, J. Charles, *Assessing Reading*, (South Africa: Cambridge University Press, 2001), p. 211.

¹⁴Isjoni, *Cooperative Learning*, (Bandung: ALFABETA, 2014), p. 78.

¹⁵Setya Agustin, et. al., The Effect of Using Numbered Head Together Technique on the Eight Grade Students' Reading Comprehension Achievement at SMPN 2 TanggulJember, retrieved from { HYPERLINK "http://www.ejournal.unesa.ac.id/article/3061/58/article/pdf" [L.](http://www.ejournal.unesa.ac.id/article/3061/58/article/pdf), on 03th November 2017 at 20.00 pm.

their answer.¹⁶ So, Numbered Head Together is one of teaching technique that includes in cooperative learning method. Every member in the group has the number. He or she must participate in their group. Everyone must know the problem and the problem solving in their group. Everyone must master their tasks, is not just the leader but also all of the member of the group.

From the explanation above, the researcher assumes that the students can more active and happy to study by using numbered head together technique.

b. Procedure of Numbered Head Together

The steps for using numbered heads together are:¹⁷

- 1) Teacher divides class into some group (contain of 3-4 students)
- 2) Students number off
- 3) Teacher poses a problem and gives think time

The teacher poses a question or problem to the class.

- 4) Students privately write their answers
- 5) Students stand up and put their heads together, showing answers, discussing, and teaching each other.

¹⁶Istarani, *58 Pembelajaran Inovatif*, (Medan: Media Persada, 2012), p. 12.

¹⁷Kagan Spencer and Miguel Kagan, *Cooperative Learning*, (San Clemente, CA: Kagan Publications, 2009), p. 6.30.

The students put their heads together and think the best answer. Moreover, each member of the group must know and understand the answer.

- 6) Students sit down when everyone knows the answer or has something to share.
- 7) Teacher calls a number

The teacher calls a number (e.g: 1, 2, 3, 4,), all students with that number stand. Then, the student is called to give their group's answer.

- 8) Classmates applaud students who responded

From the procedures above, the students are more active in the classroom. They can share the idea or answer in their group. Then, they can master the learning material by themselves. It will make them more independent and responsible to their groups.

3. Exposition Text

a. Definition of Exposition Text

Exposition text is the text that's containing about hot topic or issue. Exposition text has function to argue that something in the case (analytical exposition) and to argue that something should be or ought to be (hortatory exposition).¹⁸So, in exposition text there are two kinds of

¹⁸Pardiyono, *PastiBisa! Teaching Genre-Based Writing* (Yogyakarta: Penerbit ANDI, 2007), p. 216.

text. They are hortatory and analytical exposition text. Hortatory exposition is the text that contains about suggestion and what should be or ought to be the reader from the content of text. Then, analytical exposition is the text that contain about suggestion and the reader can choose the best argument that he or she agrees.

b. Generic Structure of Exposition Text

The generic structure of the exposition text is:¹⁹

- 1) Thesis: contain the controversial statement that's including the hot topic or issue to refer the position the writer to receive the hot topic.
- 2) Arguments: contain the arguments that are based on reality.
- 3) Reiteration: contain the conclusion or confirmation statement from the thesis before.

c. Language features of Exposition Text

The language features of exposition text are:²⁰

- 1) Using declarative sentences
- 2) Using simple present tense
- 3) Use conjunction cause and effect

d. The Example of Exposition Text

Is Smoking Good for Us ?	
Thesis	Before we are going to smoke, it is better to look at the facts. About 50 thousands people die every year in Britain as direct result of smoking. This is seven times as many as die in road accidents. Nearly a quarter of smokers die because of diseases caused by smoking.
Arguments	Ninety percent of lung cancers are caused

¹⁹ *Ibid.*

²⁰ *Ibid.*

	<p>by smoking. If we smoke five cigarettes a day, we are six times more likely to die of lung cancer than a non smoker. If we smoke twenty cigarettes a day, the risk is nineteen times greater. Ninety five percent of people who suffer of bronchitis are people who are smoking. Smokers are two and half times more likely to die of heart disease than non smokers.</p> <p>Additionally, children of smoker are more likely to develop bronchitis and pneumonia. In one hour in smoky room, non smoker breathes as much as substance causing cancer as if he had smoked fifteen cigarettes.</p>
Reorientation	<p>Smoking is really good for tobacco companies because they do make much money from smoking habit. Smoking, however is not good for health both the smokers themselves and every body else.</p>

B. Review of Related Findings

Many researchers are talking about students’ reading comprehension and there are some researchers that have been used Numbered Head Together technique. Related to this research, some researchers had been done as follow:

First, Thesis by Khoridah, the concluding of her research, there is the effect of STAD on students’ reading comprehension, where the mean score of experimental class is 80.5 and control class is 56.64 with t_{count} higher than

$t_{table}(1.71 > 1.67)$. So, the implication of STAD is better achievement in teaching reading comprehension than conventional strategy.²¹

Second, Thesis by Fithiawati, the concluding of her research that Numbered Head Together (NHT) technique was effective to use in teaching reading ability of narrative text. It can be seen from the gain score of experimental class that was taught by using Numbered Head Together (NHT) technique was higher (22.4) than that of controlled class (10).²²

Third, Thesis by Ratih Kartika Afrilia, the concluding of her research that numbered head together technique gave a significant effect on reading comprehension achievement. It can be seen from the test scores that the statistical value of the t-test was higher than that of the value of t-table with significant level of 5% ($2.78 > 1.99$).²³

Based on the description above, the researcher hopes the Numbered Head Together Technique can increase the students' reading comprehension and can complete the previous research. So, the researcher wants to research about "The

²¹ Khoridah, The Effect of STAD (Student Teams Achievement Division) on Students' Reading Comprehension at Grade VIII SMP Negeri 5 Padangsidempuan, (*Unpublished Thesis*), (Padangsidempuan: IAIN Padangsidempuan, 2015), p. 53.

²² Fithiawati, The Effectiveness of Numbered Head Together (NHT) Technique on Students' Reading Ability of Narrative Text (A Quasi-Experimental Study at the Second Grade Students of MTs. NurAsy-Syafi'iyah Rempoa, South Tangerang), (Jakarta: UIN Syarif Hidayatullah, 2014), p. 41, retrieved in { HYPERLINK "http://repository.uinjkt.ac.id/dspace/bitstream/123456789/25202/1%20/FITHIAWATI-FITK.pdf" } on Monday, September 25, 2017.

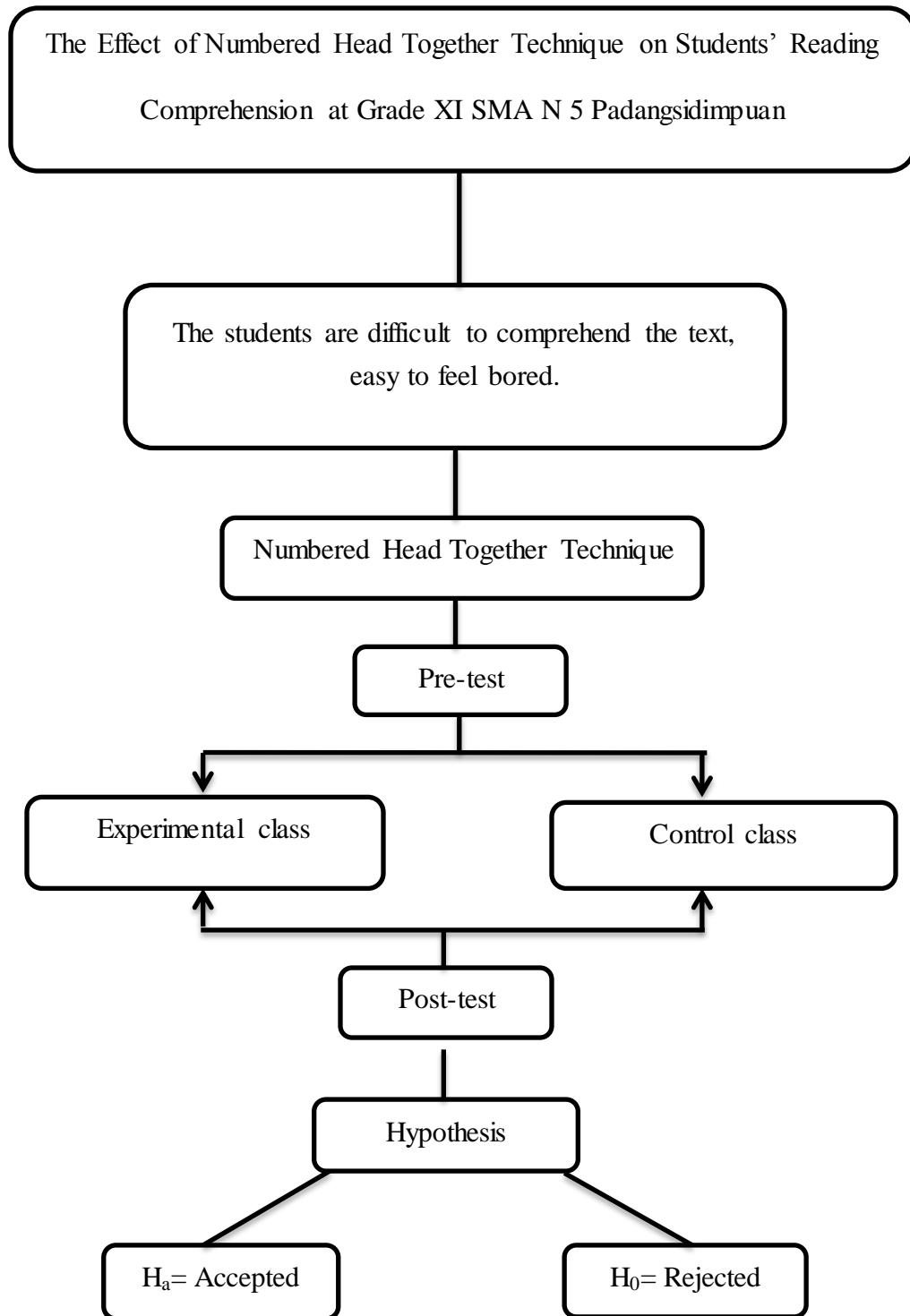
²³ Ratih Kartika Afrilia, The Effect of Numbered Heads Together Technique on Reading Comprehension Achievement of The Eighth Grade Students at SMP Negeri 2 Tamanan Bondowoso in the 2011/2012 Academic Year, (Jember: Jember University, 2012), retrieved in { HYPERLINK "http://repository.unej.ac.id/bitstream/handle/123456789/539/Skripsi_Ratih%20Kartika%20Afrilia_1_14.pdf?sequence=1" } on Friday, July 13, 2018.

Effect of Numbered Head Together Technique on Students' Reading Comprehension at Grade XI SMA N 5 Padangsidempuan”.

C. Conceptual Framework

The various of technique in teaching reading to students is very important. Because if teacher just teaches reading in conventional technique. The students will feel bored and stress in understanding a text. The teacher must know the technique that suitable with her or his students. The teacher must know the technique that can solve the students' problem in learning reading comprehension. The teacher must make students enthusiasm in learning reading comprehension.

Numbered head together is one of the techniques that can be applied in teaching reading comprehension. By using numbered head together technique, students can be easier in understanding the text. They will be divided into some groups. So, they can work together and can share the idea and information to another. Moreover, every member of their groups must know and understand about their talking. Every member must active to solve the problem or task in their groups. Thus, the researcher assumes that with using of good technique, students can understand about text easily and quickly. So, the researcher conducts a research based on the framework bellows:



D. Hypothesis of Research

The hypothesis has purpose to answer a certain specific question. Based on the formulation of the problem above, according to L.R. Gay says, “A hypothesis is a researcher’s tentative prediction result of the research findings.”²⁴ While according to SuharsimiArikunto, hypothesis is a provisional answer of result problem in a research.²⁵ So, it can be said that the hypothesis is provisional answer of prediction result in a research. Thehypothesis of this research were:

- a. There is the effect of Numbered Head Together technique on students’ reading comprehension at grade XI SMA N 5 Padangsidimpuan (H_a).
- b. There is no the effect of Numbered Head Together technique on students’ reading comprehension at grade XI SMA N 5 Padangsidimpuan (H_0).

²⁴Gay,L.R. and Peter A irasian, *Educational Research for Analysis and Application*, (America: Prentice Hall, 1992), p. 71.

²⁵SuharsimiArikunto, *ProsedurPenelitianSuatuPendekatanPraktik*,(Jakarta: PT. RinekaCipta, 2006), p.110.

CHAPTER III

RESEARCH METHODOLOGY

A. The Place and Schedule of the Research

This research was be done at SMA N 5 Padangsidimpuan. The school located at JL. Melati No. 90 Kec. Padangsidimpuan. The process of the research had been done from October 2017 up to July 2018.

B. The Research Design

This research design used experimental research. Experimental research is the only type of research that can test hypotheses to establish cause and effect relationships. In an experimental study, the researcher manipulates at least one independent variable, controls other relevant variables, and observes the effect on one or more dependent variables.¹ So, in this research based on the title, the writer manipulated independent variable, that is numbered head together technique and the dependent variable is reading comprehension.

The research used two classes in this research. One of the class had ben taught with numbered head together technique and called as Experimental class. Meanwhile the other class had not (had been taught with conventional method) and called as Control class. Students' reading comprehension is gotten before and after the learning process. The first, both of classes were be given Pre-test to know the ability and score of students. The second, after teaching reading with

¹ Gay, L.R. and Peter Airasian, *Educational Research: Competencies for Analysis and Application*, (America: Prentice Hall, 2000), p. 367.

different implementation, both of the classes were be given Post-test. It was employed as a basis to calculate whether the difference of reading comprehension with and without numbered head together technique was the significant or not. The research design of this research can be seen in the following table:

Table 1

Table of Research Design

Class	Pre-test	Treatment	Post-test
Experimental Class	√	√	√
Control Class	√	×	√

C. The Population and Sample

1. Population

Gay and Airasian state that population is the group of interest to the researcher, the group to which she or he would like the results of the study to be generalizable.² According to Sugiyono population is the generalization area that consists of object or subject that has specific quantity and characteristic that has been determined by researcher to study and is taken the conclusion.³ So, population is the area generalization that has been determined by researcher to become object or subject the research. The

²Gay, L.R. and Peter Airasian, *Educational Research: Competencies for Analysis and Application*...., p. 122.

³ Sugiyono, *Statistika Untuk Penelitian*, (Bandung: CV Alfabeta, 2006), p. 55.

population of this research was all of the second students of SMA N 5 Padangsidimpuan that consist of six classes. It can be seen in the following table:

Table 2

Population of the Research

No	Class	Students
1	XI IPA 1	30
2	XI IPA 2	30
3	XI IPA 3	30
4	XI IPA 4	30
5	XI IPS 1	26
6	XI IPS 2	29
TOTAL		175

2. Sample

Gay and Airasian also state that sample comprises the individuals, items or events selected from a larger group referred to as a population.⁴ Sample is taken from the population. Sample is the portion of the population. So, sample in this research is the portion of the population as a focus of the research.

In this research, the researcher chose two classes as a sample. They were divided into experimental class and control class. The researcher used random sampling to take the sample. Random sampling is the process of selecting a sample in such a way that all individuals in the defined

⁴ *Ibid.*, p. 121

population have an equal and independent chance of being selected for the sample.⁵ Random sample in which each individual in the population has an equal probability of being selected (a systematic or probabilistic sample).⁶ After that, the researcher used normality and homogeneity test.

Normality test is used to know whether the data of research is normal or not. To know the normality, the researcher used *Chi-Square* formula. The formula is as follow:⁷

$$X^2 = \sum \frac{(f_o - f_e)^2}{f_e}$$

Where:

x^2 = value of chi-square

f_o = observed frequency

f_e = expected frequency

Homogeneity test is used to know whether control class and experimental class have the same variant or not. If both classes are same, it can be called homogenous. To find the homogeneity, the researcher used *Harley test*.

The formula is as follow:⁸

$$F = \frac{\text{Thebiggestvariant}}{\text{Thesmallestvariant}}$$

⁵*Ibid*, p. 123.

⁶ Creswell, John W., *Research Design Second Edition*, (America: Sage Publications, Inc, 2003), p. 156.

⁷*Ibid*., p.188.

⁸ Agus Irianto, *Statistik Konsep Dasar dan Aplikasinya*, (Jakarta: Kencana, 2009), p. 276.

Hypotheses was accepted if { EMBED Equation.3 }

Hypotheses was rejected if { EMBED Equation.3 }

D. The Instrument of Collecting Data

Test is used to collect the data from the participant. A test is a set of stimuli presented to individual in order to elicit responses in the basis of which a numerical score can be assigned.⁹ So, the instrument that's be used in this research was test.

The kind of test was multiple choices that consisted of five options a, b, c, d, and e. From explanation in chapter II the indicator of reading comprehension has four indicators. The indicators are students able to identify the main idea of the text, identify the specific information of the text, identify the detail information of the text, and understand the vocabulary from the text.

⁹Ary, Donald, Et al., *Introduction to Research in Education 8th Edition*, (Canada: Wadsworth, Cengage Learning, 2010), p. 201.

Table 3
The Indicators of Reading Comprehension Test of Pre- Test

NO	Indicators of Reading Assessment	Item	Number of Items	Score	Total Score
1	Identify the main idea of the paragraph	5	1, 6, 9, 12, 17,	5	25
2	Identify the specific information of the text	5	4, 7, 10, 13, 19	5	25
3	Identify the detail information of the text	3	3, 14, 18	5	15
4	Understand the vocabulary from the text	7	2, 5, 8, 11, 15, 16, 20	5	35
Total		20		5	100

Table 4
The Indicators of Reading Comprehension Test of Post-Test

NO	Indicators of Reading Assessment	Item	Number of Items	Score	Total Score
1	Identify the main idea of the paragraph	2	13, 17,	5	10
2	Identify the specific information of the text	6	4, 6, 11, 14, 18, 19	5	30
3	Identify the detail information of the text	7	1, 3, 7, 9, 10, 12, 15	5	35
4	Understand the vocabulary from the text	5	2, 5, 8, 16, 20	5	25
Total		20		5	100

E. The Validity and Reliability Instrument

1. Validity of Instrument

Validity is the most important characteristic a test or measuring instrument can possess. It is concerned with the appropriateness of the interpretations made from test scores. Test for a purpose.¹⁰ In this research, the researcher used the content validity to develop the validity of instrument. They were item and construct validity.¹¹

To get the validity of the test, the formula of *r point biserial* can be used as follow:¹²

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

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.

¹⁰ Gay, L.R. and Peter Airasian, *Educational Research for Analysis and Application*, p. 161

¹¹ *Ibid.*, p. 161.

¹² Anas Sudijono, *Pengantar Statistik Pendidikan*, (Jakarta: Raja Grafindo Persada, 2008), p. 258.

2. Reliability of Instrument

Reliability is the degree of consistency with which it measures whatever it is measuring.¹³ Reliability is the test constancy if it is tested to the same subject.¹⁴ Reliability of an instrument can be found by using K-R 20 formula.

The formula as follow:¹⁵

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

Where:

R_{11} : Reliability of the Instrument

N : Total of Question

S_t^2 : Variants Total

p : Proporsi Subject who is right Answer(1)

q : Proporsi Subject who is Wrong Answer (0)

N

Reliability is good character of the test that refers to the consistency of the measurement. The test is reliable if $r_{count} > r_{table}$ by using formulation K-R. 20.

¹³ Ary, Donald, et. Al., *Introduction to Research in Education 8th Edition*..... , p. 236.

¹⁴ Suharsimi Arikunto, *Dasar-Dasar Evaluasi Pendidikan (Edisi Revisi)*, (Jakarta: Bumi Aksara, 1999), p. 90.

¹⁵*Ibid.*

F. The Technique of Collecting Data

In collecting the data, researcher used test to students, both of the experimental class and the control class. There were two kinds of the test that had been given to students. They were pre-test and post-test. The procedures of them as follow:

1. Pre-test

Pre-test was the test that was given to students before giving the treatment. It was be done to know the students' reading comprehension before researcher gave the treatment in experimental class. Students answered the pre-test in the classroom. The researcher used some steps in giving pre-test. They were:

- 1) The researcher prepared the test. It consists of 20 questions.
- 2) The researcher distributed the test paper to control and experiment class.
- 3) The researcher explained what the students need to do.
- 4) The researcher gave students the time to do the test.
- 5) The researcher collected the test paper.
- 6) The researcher checked and gave the score the students' answer.

2. Post-test

After giving treatment, the researcher gave a post-test to students. It was different test with the pre-test. This post-test was the final test in the research, especially measuring the treatment, whether is an effect or not of Numbered Head Together Technique on students' reading comprehension. The researcher had some procedures. They were:

- 1) The researcher prepared the test. It consists of 20 questions.
- 2) The researcher distributed the paper of the test to students of experimental class and control class.
- 3) The researcher explained what the students need to do.
- 4) The researcher gave students the time to do the test.
- 5) The researcher collected the test paper.
- 6) The researcher checked and gave the score to the students' answer.

G. The Technique of Analyzing Data

The techniques of analyzing data that was be used by the researcher were:

1. Requirement Test

a. Normality test

To know the normality, the researcher used *Chi-Square* formula. The formula was as follow:

$$x^2 = \sum \frac{(f_o - f_e)^2}{f_e}$$

Where:

x^2 = value of chi-square

f_o = observed frequency

f_e = expected frequency

b. Homogeneity Test

To find the homogeneity, the researcher used *Harley test*. The formula was as follow:

$$F = \frac{\text{thebiggestvariant}}{\text{thesmallestvariant}}$$

Hypotheses was accepted if { EMBED Equation.3 }

Hypotheses was rejected if { EMBED Equation.3 }

H. The Hypothesis Test

Hypothesis is the provisional result of the research. So, the researcher must analyze the data that had been divided to experimental class and control class. After the data had been tested based on the normality and homogeneity test. The researcher needed to analyze the hypothesis test of data by using the t-test formula. The formula was:¹⁶

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

Where:

Tt : the value which the statistical significant

X₁ : the average score of the experimental class

X₂ : the average score of the control class

s₁² : deviation of the experimental class

s₂² : deviation of the control class

n₁ : number of experimental

n₂ : number of control class

¹⁶ Sugiyono, *Statistik Untuk Penelitian*....., p. 135.

I. The Outline of the Thesis

The systematic of this research was divided into five chapters. Each chapter consists of many sub chapters with detail as follow:

In chapter one, it consisted of background of the problems, identification of the problems, formulation of the problem, limitation of the problem, purpose of the research, significances of the research, definition of operational variables, and the outline of the thesis.

In chapter two, it consisted of the theoretical descriptions, which the sub chapters consist of the theoretical description of Numbered Head Together Technique and explain about reading comprehension. Then, review of related findings, and conceptual of framework and hypothesis.

In chapter three, it consisted of research methodology which consisted of place and time of the research, research design, population and sample, instruments of collecting data, validity and reliability of instrument, procedures of research and the last is the techniques of analyzing data.

In chapters four, it consisted of the result of the research, talking about the analysis of data. It consists of description of the data, hypothesis testing, discussion and threats of the research.

The last, in chapters five consisted of the conclusion that given conclusion the result of research and suggestions to students and teacher by researcher.

CHAPTER IV

DATA ANALYSIS

To analyze the data, the researcher has collected data through pre test and post test in the both of classes, experimental class and control class. To find out the effect of Numbered Head Together technique on students' reading comprehension, the researcher has calculated the data by using quantitative analysis. The researcher used the formulation of T-test to test the hypothesis. Next, the researcher described the data as follow:

A. The Description of Data

1. The Description of Data before Using Numbered Head Together Technique

a. Score of Pre-test Experimental Class

As the experimental class, the researcher took class XI IPA 2. Based on students' answer in pre test, the researcher has calculated the students' score in appendix 17 and 18. The score of pre-test experimental class can be seen in the following table:

Table 5
The Score of Experimental Class in Pre-test

Total	1835
Highest score	85
Lowest score	35
Mean	61.19
Median	58.8
Modus	56.46
Range	50
Interval	9
Standard deviation	13.29
Variants	171.86

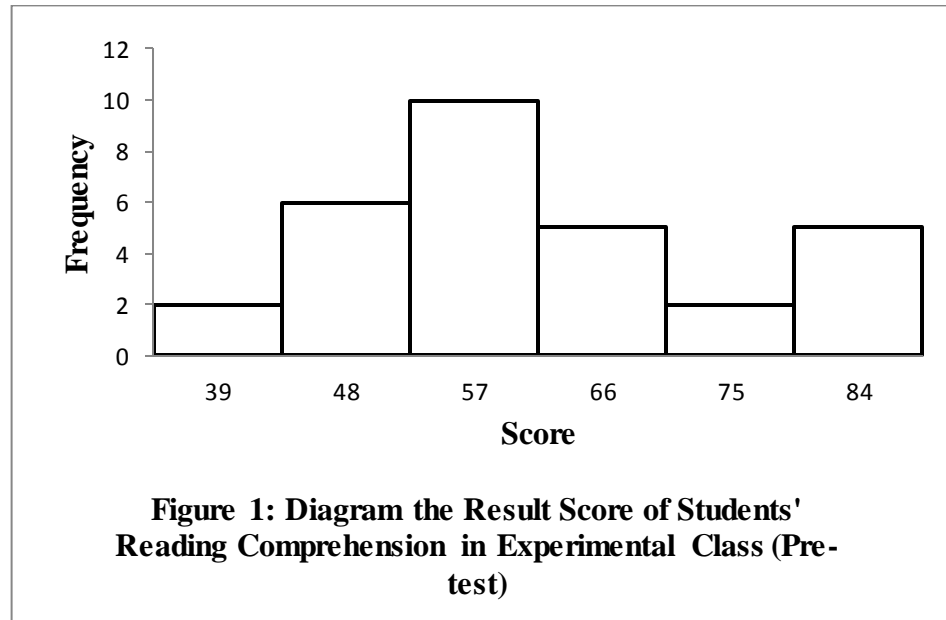
Based on the above table the total score of experimental class in pre-test was 1835, mean was 61.19, standard deviation was 13.29, variants was 171.86, median was 58.5, range was 50, modus was 56.46, interval was 9. The researcher got the highest score was 85 and the lowest score was 35. It can be seen on appendix 17. Then, the calculation of the frequency distribution of the students' score of experiment class can be applied into table frequency distribution as follow:

Table 6
Frequency Distribution of Experimental Class (Pre-test)

No	Interval	Mid-Point	Frequency	Percentages
1	35 – 43	39	2	6.67%
2	44 – 52	48	6	20%
3	53 – 61	57	10	33.33%
4	62 – 70	66	5	16.67%
5	71 – 79	75	2	6.67%
6	80 – 88	84	5	16.67%
<i>i</i> = 9		-	30	100%

From the table above, the students' score in class interval between 35 – 43 was 2 students (6.67%), class interval between 44 – 52 was 6 students (20%), class interval between 53 – 61 was 10 students (33.33%), class interval between 62 – 70 was 5 students (16.67%), class interval between 71 – 79 was 2 students (6.67%), and the last class interval between 80 – 838 was 5 students (16.67%).

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



From the histogram above, the students' score 39 was 2 students, the students' score 48 was 6 students, the students' score 57 was 10 students, the students' score 66 was 5 students, the students' score 75 was 2 students, and the last the students' score 84 was 5 students.

b. Score of Pre-Test Control Class

In pre-test of control class, the researcher calculated the result that had been gotten by the students in answering the question (test). The score of pre-test control class can be seen in the following table:

Table 7
The Score of Control Class in Pre-test

Total	1705
Highest score	85
Lowest score	30
Mean	59.9
Median	60.9
Modus	64.5
Range	55
Interval	10
Standard deviation	17.08
Variants	292.21

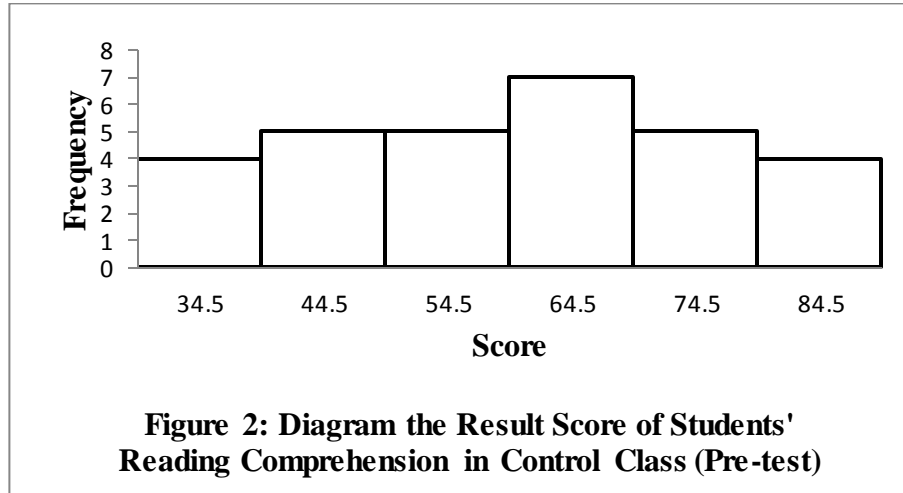
Based on the above table the total score of control class in pre-test was 1705, mean was 59.9, standard deviation was 17.08, variants was 292.21, median was 60.9, range was 55, modus was 64.5, interval was 10. The researcher got the highest score was 85 and the lowest score was 30. It can be seen on appendix 7. Then, the calculation of the frequency distribution of the students' score of control class can be applied into table frequency distribution as follow:

Table 8
Frequency Distribution of Students' Score

No	Interval	Mid-Point	Frequency	Percentages
1	30 – 39	35.5	4	13.33%
2	40 – 49	44.5	5	16.67%
3	50 – 59	54.5	5	16.67%
4	60 – 69	64.5	7	23.33%
5	70 – 79	74.5	5	16.67%
6	80 – 89	84.5	4	13.33%
$i = 10$		-	30	100%

From the table above, the students' score in class interval between 30–39 was 4 students (13.33%), class interval between 40 – 49 was 5 students (16.67%), class interval between 50 – 59 was 5 students (16.67%), class interval between 60 – 69 was 7 students (23.33%), class interval between 70 – 79 was 5 students (16.67%), and the last class interval between 80 – 89 was 4 students (13.33%).

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



From the histogram above, the students' score 34.5 was 4 students, the students' score 44.5 was 5 students, the students' score 54.5 was 5 students, the students' score 64.5 was 7 students, the students' score 74.5 was 5 students, and the last the students' score 84.5 was 4 students.

2. The Description of Data After Using Numbered Head Together Technique

a. Score of Post-Test Experimental Class

The calculation of the result that had been gotten by the students in answering the question (test) after the researcher did the treatment by using Numbered Head Together Technique can be seen in the following table:

Table 9
The Score of Experimental Class in Post-test

Total	2275
Highest score	90
Lowest score	55
Mean	76.1
Median	78.5
Modus	81.92
Range	35
Interval	6
Standard deviation	9.3
Variants	91.52

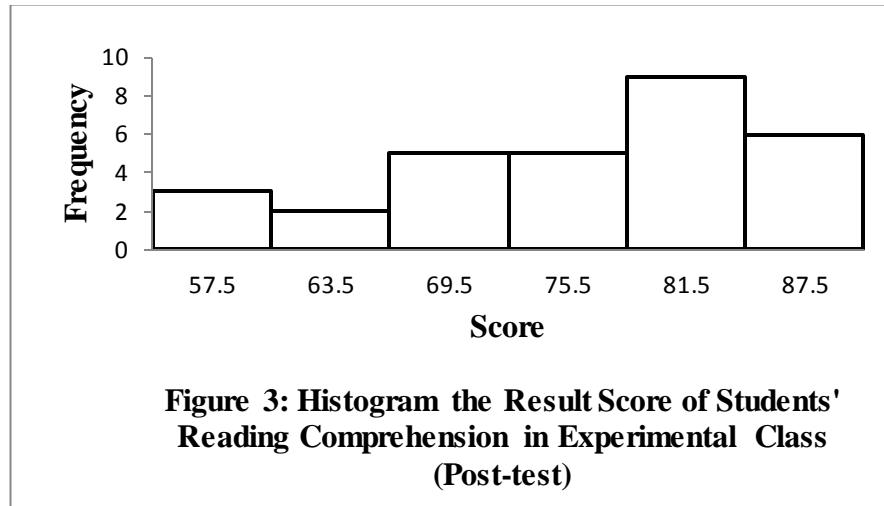
Based on the above table the total score of experiment class in post-test was 2275, mean was 76.1 standard deviation was 9.3, variants was 91.52, median was 78.5, range was 35, modus was 81.92, interval was 6. The researcher got the highest score was 90 and the lowest score was 55. It can be seen on appendix 20. Then, the calculation of the frequency distribution of the students' score of experimental class can be applied into table frequency distribution as follow:

Table 10
Frequency Distribution of Students' Score

No	Interval	Mid-Point	Frequency	Percentages
1	55 – 60	57.5	3	10%
2	61 – 66	63.5	2	6.67%
3	67 – 72	69.5	5	16.67%
4	73 – 78	75.5	5	16.67%
5	79 – 84	81.5	9	30%
6	85 – 90	87.5	6	20%
$i = 6$		-	30	100%

From the table above, the students' score in class interval between 55 – 60 was 3 students (10%), class interval between 61 – 66 was 2 students (6.67%), class interval between 67 – 72 was 5 students (16.67%), class interval between 73 – 78 was 5 students (16.67%), class interval between 79 – 84 was 9 students (30%), and the last class interval between 85 – 90 was 6 students (20%).

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



From the histogram above, the students' score 57.5 was 3 students, the students' score 63.5 was 2 students, the students' score 69.5 was 5 students, the students' score 75.5 was 5 students, the students' score 81.5 was 9 students, and the last the students' score 87.5 was 6 students.

b. Score of Post-Test Control Class

As the control class, the researcher took class XI IPA 3. The result that had been gotten by the students in answering the question (test) after the researcher taught the reading comprehension by using conventional technique can be seen in the following table:

Table 11
The Score of Control class in Post-test

Total	2190
Highest score	90
Lowest score	50
Mean	72.81
Median	74.7
Modus	71.48
Range	40
Interval	7
Standard deviation	10.36
Variants	102.75

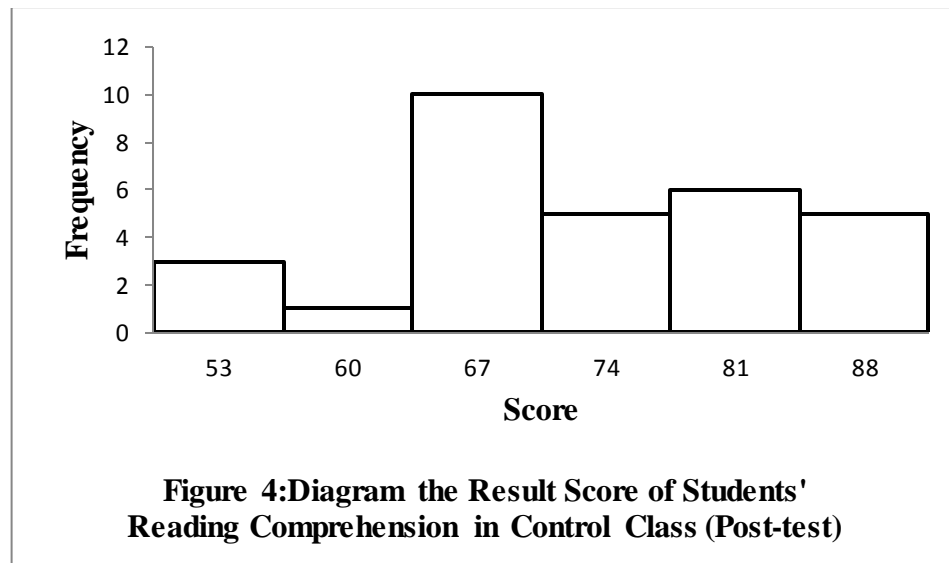
Based on the above table the total score of control class in post-test was 2190, mean was 72.81 standard deviation was 10.36, variants was 102.75, median was 74.7, range was 40, modus was 71.48, interval was 7. The researcher got the highest score was 90 and the lowest score was 50. It can be seen on appendix 20. Then, the calculation of the frequency distribution of the students' score of control class can be applied into table frequency distribution as follow:

Table 12
Frequency Distribution of Students' Score

No	Interval	Mid-Point	Frequency	Percentages
1	50 – 56	53	3	10%
2	57 – 63	60	1	3.33%
3	64 – 70	67	10	33.33%
4	71 – 77	74	5	16.67%
5	78 – 84	81	6	20%
6	85 – 91	88	5	16.67%
<i>i</i> = 7		-	30	100%

From the table above, the students' score in class interval between 50 – 56 was 3 students (10%), class interval between 57 – 63 was 1 students (3.33%), class interval between 64 – 70 was 10 students (33.33%), class interval between 71 – 77 was 5 students (16.67%), class interval between 78 – 84 was 6 students (20%), and the last class interval between 85 – 91 was 5 students (16.67%).

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



From the histogram above, the students' score 53 was 3 students, the students' score 60 was 1 student, the students' score 67 was 10 students, the students' score 74 was 5 students, the students' score 81 was 6 students, and the last the students' score 88 was 5 students.

3. Description of the Comparison Data between Pre-Test and Post-Test of Experimental and Control Class

a. The Comparison Data between Pre-Test and Post-Test by Using Numbered Head Together Technique

The comparison score between pre-test and post-test of experimental class can be seen in the following table:

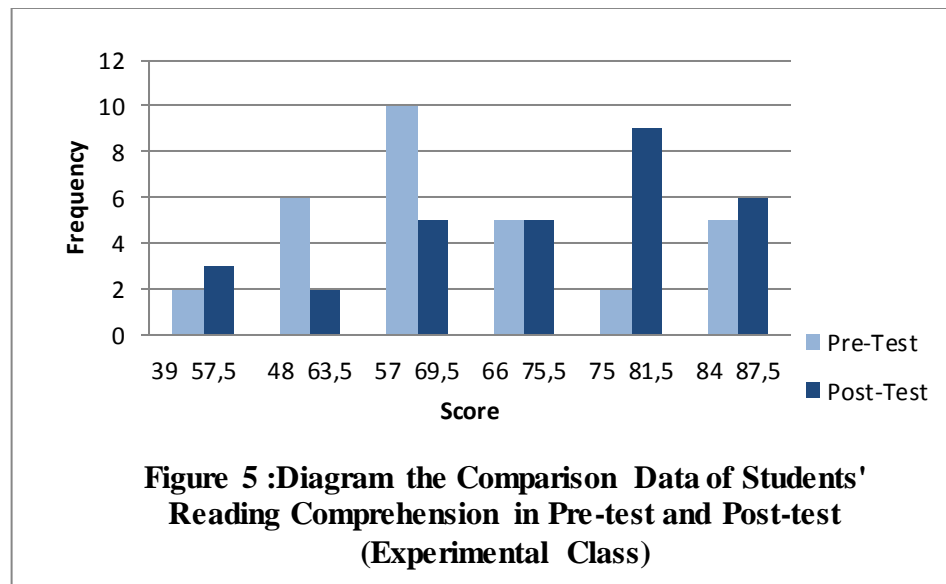
Table 13
The Comparison Data of Experimental Class in Pre-test and Post-Test

Description	Pre-Test	Post-Test
Total	1835	2277
Highest score	85	90
Lowest score	35	55
Mean	61.19	76.1
Median	58.8	78.5
Modus	56.46	81.92
Range	50	35
Interval	9	6
Standard deviation	13.29	9.3
Variants	171.86	91.52

Based on the above table the total score of experimental class in pre-test was 1835; post-test was 2275, pre-test mean score was 61.19; post-test was 76.1, pre-test standard deviation was 13.29; post-test was 9.3, pre-test variants was 171.86; post-test was 91.52, pre-test median was 58.8; post-test was 78.5, pre-test range was 50; post-test was 35, pre-test modus was 56.46; post-test was 81.92, pre-test interval was 9;

post-test was 6. The researcher got the highest score of pre-test was 85 and the lowest score was 35; meanwhile the highest score of post-test was 90 and the lowest score was 55.

In order to get the pre-test and post-test data description of experimental class clearly and completely, the researcher presents the histogram on the following figure:



From the histogram above, the students' scores of experimental class in pre-test was higher than post test.

b. The Comparison Data between Pre-Test and Post-Test by Using Conventional Technique

The comparison score between pre-test and post-test of control class can be seen in the following table:

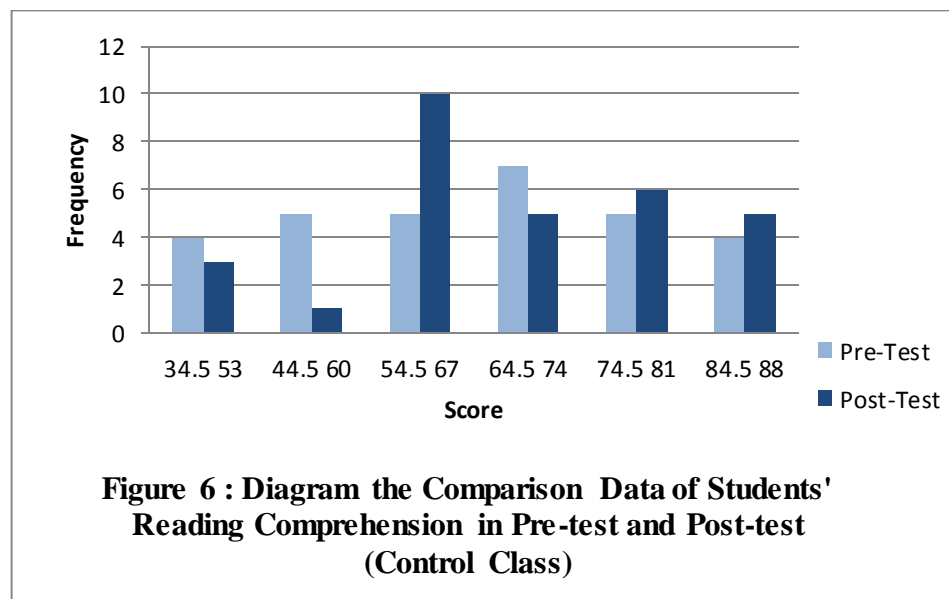
Table 14
The Comparison Data of Control Class
in Pre-test and Post-test

Description	Pre-test	Post-test
Total	1705	2190
Highest score	85	90
Lowest score	30	50
Mean	59.9	72.81
Median	60.9	74.7
Modus	64.5	71.48
Range	55	40
Interval	10	7
Standard deviation	17.08	10.36
Variants	292.21	102.75

Based on the above table the total score of control class in pre-test was 1705; post-test was 2190, pre-test mean score was 59.9; post-test was 72.81, pre-test standard deviation was 17.08; post-test was 10.36, pre-test variants was 292.21; post-test was 102.75, pre-test median was 60.9; post-test was 74.4, pre-test range was 55; post-test was 40, pre-test modus was 64.5; post-test was 71.48, pre-test interval was 10; post-test was 7. The researcher got the highest score of pre-test was 85 and the lowest score

was 30; mean while the highest score of post-test was 90 and the lowest score was 50.

In order to get the pre-test and post-test data description of control class clearly and completely, the researcher presents the histogram on the following figure:

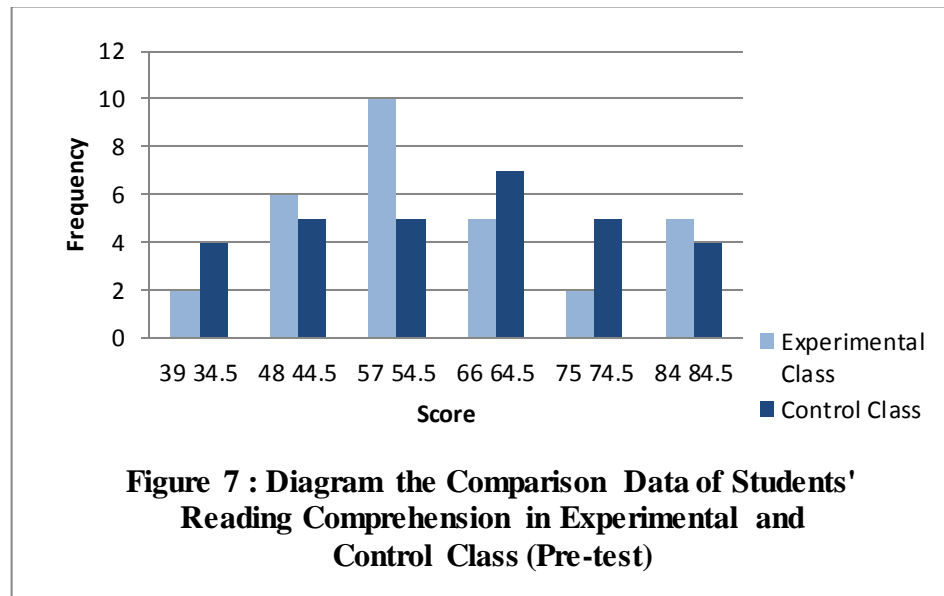


From the histogram above, the students' scores of control class in post-test was higher than pre test.

c. The Comparison Data between Using Numbered Head Together Technique and Conventional Technique in Pre Test

Before the researcher gave treatment to the class, researcher gave pre test to both of class (XI IPA 2 as experimental and XI IPA 3 as control class). In pre test, the researcher did not apply treatment to experimental and control class. The researcher got the comparison data

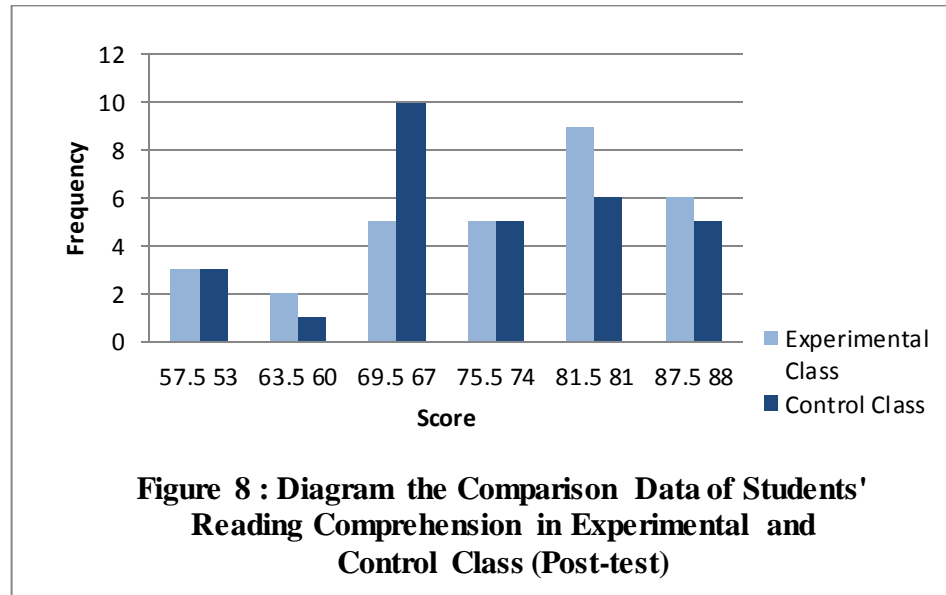
between pre test score in experimental and control class before gave a treatment. The comparison data can be seen in the following histogram:



From the description of comparison data above, it can be concluded that the students' score of experimental class was higher than the students' score of control class in answering the pre test.

d. The Comparison Data between Using Numbered Head Together Technique and Conventional Technique in Post Test

After the researcher gave a treatment to one of class as experimental class by using Numbered Head Together Technique and other class was not gave a treatment as control class. The researcher got the comparison data between post-test score an experimental and control class after gave a treatment. The comparison data can be seen in the following histogram:



From the description of comparison data above, it can be concluded that the students' score of experimental class by using Numbered Head Together technique was higher than the students' score of control class by using Conventional technique.

B. The Technique of Data Analysis

1. Requirement Test

a. Normality and Homogeneity of Experimental and Control Class in Pre-Test

Table 15
Normality and Homogeneity in Pre-Test

Class	Normality Test		Homogeneity Test	
	X_{count}	X_{table}	f_{count}	f_{table}
Experiment Class	-2.71	11.070	1.70 < 4.18	
Control Class	-2.63	11.070		

Based on the above table researcher calculation, the score of experimental class $Lo = -2.71 < Lt = 11.070$ with $n = 30$ and control class $Lo = -2.63 < Lt = 11.070$ with $n = 30$, and real level $\{ EMBED Equation.3 \} 0.05$. Cause $Lo < Lt$ in the both class. So, H_a was accepted. It means that experimental class and control class were distributed normal. It can be seen in appendix 17.

The coefficient of $F_{count} = 1.70$ was compared with F_{table} . Where F_{table} was determined at real $\alpha 0.05$, and the different numerator $dk = n-1 = 30-1 = 29$ and denominator $dk n-1 = 30-1 = 29$. So, by using the list of critical value at F distribution is got $F_{0.05} = 4.18$. It showed that $F_{count} 1.70 < F_{table} 4.18$. So, it shows that both of experimental and

control class were homogeneous. The calculation can be seen on the appendix 18.

b. Normality and Homogeneity of Experimental and Control Class in Post-Test

Table 16
Normality and Homogeneity in Post-Test

Class	Normality Test		Homogeneity Test	
	X_{count}	X_{table}	f_{count}	f_{table}
Experimental Class	8.92	11.070	1.12 < 4.18	
Control Class	6.71	11.070		

Based on the table above researcher calculation, the score of experiment class $Lo = 8.92 < Lt = 11.070$ with $n = 30$ and control class $Lo = 6.71 < Lt = 11.070$ with $n = 30$, and real level $\{ \text{EMBED Equation.3} \} 0.05$. Cause $Lo < Lt$ in the both class. So, H_a was accepted. It means that experimental class and control class were distributed normal. It can be seen in appendix 20.

The coefficient of $F_{count} = 1.12$ was compared with F_{table} . Where F_{table} was determined at real $\alpha 0.05$, and the different numerator $dk = n-1 = 30-1 = 29$ and denominator $dk n-1 = 30-1 = 29$. So, by using the list of critical value at F distribution is got $F_{0.05} = 4.18$. It showed that $F_{count} 1.12 < F_{table} 4.18$. So, it shows that both of experimental and

control class were homogeneous. The calculation can be seen on the appendix 21.

2. Hypothesis Test

After calculating the data of post-test, researcher found that post-test result of experimental class and control class is normal and homogenous. Based on the result, researcher used parametric test by using T-test to analyze the hypothesis. Hypothesis alternative (H_a) of the research was “Numbered Head Together technique has effect on students’ reading comprehension at grade XI SMA N 5 Padangsidempuan”. The calculation can be seen on the appendix 22 and 23. The result of t-test was as follow:

Table 17

Result of T-test from the Both Averages

Pre-test		Post-test	
t_{count}	t_{table}	t_{count}	t_{table}
0.329	1.67155	2.205	1.67155

The test hypothesis have two criteria. First, if $t_{count} < t_{table}$, H_0 is accepted. Second, $t_{count} > t_{table}$, H_a is accepted. Based on researcher calculation in pre test, researcher found t_{count} 0.329 while t_{table} 1.67155 with opportunity $(1 - \{ \text{EMBED Equation.3} \}) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 30 + 30 - 2 = 58$. Cause $t_{count} < t_{table}$ ($0.329 < 1.67155$), it meant that hypothesis H_a was rejected and H_0 was accepted. So, in pre test, two classes were same. There is no difference in the both classes. But, in post test, researcher found that t_{count}

2.205 while $t_{table} = 1.67155$ with opportunity $(1 - \alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 30 + 30 - 2 = 58$. Cause $t_{count} > t_{table}$ (2.205 > 1.67155), it meant that hypothesis H_a was accepted and H_0 was rejected. The calculation can be seen on the appendix 23. In this case, the mean score of experimental class by using Numbered head Together technique was 76.1 and mean score of control class was 72.81 that was taught by using conventional technique. Thus, the students' KKM score in their learning is 75 that become their category in achievement. So, there was the effect of Numbered Head Together technique on students' reading comprehension at grade XI SMA N 5 Padangsidimpuan.

C. The Discussion

Based on the result of the data analysis, the researcher got the mean score of experimental in pre-test was 61.19 and in post-test was 76.1. The improving was 14.91. Then, the mean score of control class in pre-test was 59.9 and in post-test was 72.81. The improving was 12.91. So, based on its comparing can be concluded that the improvement of experimental class was higher than control class. Automatically, numbered head together technique had the effect on students' reading comprehension.

Based on above result, the researcher compared the researcher's result with the related finding. It also discussed with the theory that has been stated by researcher. Related to the theory from Caroline, Reading is a set of skills that

involves making sense and deriving meaning from the printed word.¹ Then, Isjoni states that numbered head together technique gives the chance for students to share and consider the best idea and answer. Also, this technique can increase the students' collaboration spirit.² Beside it, Istarani said numbered Head Together technique is a variant of group discussion to discuss students' perception toward the teacher's question based on their numbers for every group. Every student must be responsible to their answer.³ So, it has proven that numbered head together technique was suitable to teach reading comprehension.

Based on the related findings, Thesis by Fithiawati said that Numbered Head Together technique was effective to use in teaching reading. It can be seen from the gain score of experimental class that was taught by using Numbered Head Together technique was higher (22.4) that that of control class (10).⁴ So, the implication of Numbered Head Together technique was suitable to teach students' reading comprehension and give a positive effect on students' reading comprehension.

Next, Ratih Kartika Afrilia said that numbered head together technique gave a significant effect on reading comprehension achievement. It can be seen

¹Linse, Caroline T., *Practical English Language Teaching: Young Learners*, (New York: McGraw-Hill, 2005), p. 69.

² Isjoni, *Cooperative Learning*, (Bandung: ALFABETA, 2014), p. 78

³ Istarani, *58 Pembelajaran Inovatif*, (Medan: Media Persada, 2012), p. 12

⁴ Fithiawati, The Effectiveness of Numbered Head Together (NHT) Technique on Students' Reading Ability of Narrative Text (A Quasi-Experimental Study at the Second Grade Students of MTs. Nur Asy-Syafi'iyah Rempoa, South Tangerang), (Jakarta: UIN Syarif Hidayatullah, 2014), p. 41, retrieved in { HYPERLINK "http://repository.uinjkt.ac.id/dspace/bitstream/123456789/25202/1%20/FITHIAWATI-FITK.pdf" } on Monday, September 25, 2017.

from the test scores that the statistical value of the t-test was higher than that of the value of t-table with significant level of 5% ($2.78 > 1.99$).⁵ it meant that the Numbered Head Together technique suitable to teach students' reading comprehension.

Then, Nuruddin and his friends said that Numbered Head Together technique suitable to teach English Language Learning like Reading Comprehension. There are some advantages of Numbered Head Together technique. One of them is students' responses can reveal misunderstanding and an opportunity for connection.⁶ So, Numbered Head Together technique can be applied to decrease the students' misunderstanding .they can discuss what they understand to another in their groups, so they can find the better understanding about their reading comprehension.

This proofs show that Numbered Head Together technique is suitable in teaching reading comprehension. So, Numbered Head Together technique has given the effect to the research that has been done by the researcher or the other researcher who mentioned in related findings.

⁵ Ratih Kartika Afrilia, The Effect of Numbered Heads Together Technique on Reading Comprehension Achievement of The Eighth Grade Students at SMP Negeri 2 Tamanan Bondowoso in the 2011/2012 Academic Year, (Jember: Jember University, 2012), retrieved in { HYPERLINK "http://repository.unej.ac.id/bitstream/handle/123456789/539/Skripsi_Ratih%20Kartika%20Afrilia_1_14.pdf?sequence=1" } on Friday, July 13, 2018.

⁶ Nuruddin, et. al., The Effect of Numbered Head Together and Question Answer Relationship Techniques on Students' Reading Comprehension: A Comparative Study, retrieved from { HYPERLINK "<https://media.neliti.com/media/publications/118758-EN-the-effect-of-numbered-head-together-and.pdf>" } on 23 April 2018 at 10.00 p.m.

D. The Threats of the Research

The researcher found the threats of the research as follows:

1. The researcher was not sure whether all of students in the experimental and control class did the test honestly. There was a possibility that some of them answered the test by copying or imitating their friends' answer.
2. The students were noisy while the learning process. They were not concentrating in following the learning process. Some of them talked to their friends and some of them did something outside the teacher's rule. Clearly, it made them can't get the teacher's explanation well and gave the impact to the post-test answer.
3. The students also possibility that the score of pre-test and post-test would not influence to their score in the school. So, they were not too serious in answering it.

CHAPTER V

CONCLUSION AND SUGGESTION

A. Conclusion

Based on the result of the research, the conclusions of this research are:

1. Before using Numbered Head Together technique, students' reading comprehension was unsatisfied. The mean score of pre-test for the experimental class that used Numbered Head Together technique was 61.19.
2. After using Numbered Head Together technique, the mean score of experimental class was higher than before using Numbered Head Together technique. The mean score of post-test for the experimental class was 76.1.
3. The researcher found the research result of t-test where t_{count} was higher than t_t , t_{count} was 2.205 and t_t was 1.67155 ($2.205 > 1.67155$). It meant that there was effect of Numbered Head Together technique on students' reading comprehension at grade XI SMA N 5 Padangsidimpuan where H_a was accepted and H_0 was rejected.

B. Suggestion

After finishing the research, the researcher got many informations in English teaching and learning. Therefore, from the experience, the researcher saw some things need to be improved. It makes the researcher give some suggestions, as follow:

1. From the research result it can be seen that the students' score were unsatisfied. The researcher hopes to the English teacher of SMA N 5

Padangsidimpuan to apply various innovative technique in teaching English. It also can be supported by choosing right media and good class management.

2. From the second conclusion, it can be seen that the experimental class which was taught by Numbered Head Together technique got the improvement on mean score from 61.19 to 76.1, meanwhile the control class which was taught by got the improvement of mean score from 59.9 to 72.81. So, the researcher suggests to the English teacher of SMA N 5 Padangsidimpuan to use these strategies in teaching reading, because the students' will be more active and seriously in learning English reading.
3. From the last conclusion, it can be seen that score of experimental class was higher than control class. The researcher suggests to use Numbered Head Together technique to another classes, or in different grade, even in another schools, because of the improvement that has been made by using this technique. So, it is hoped that Numbered Head Together technique can increase students' reading comprehension in larger area.

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22 Mei 2018

Hal : Izin Penelitian
Penyelesaian Skripsi.

SURAT KETERANGAN
Nomor : 014 / In.14 / E.4c / TL.00 / 05 / 2018

Yth. Kepala SMA N 5 Padangsidempuan
Kota Padangsidempuan

Dengan hormat, Dekan Fakultas Tarbiyah dan Ilmu Keguruan Institut Agama Islam Negeri Padangsidempuan menerangkan bahwa :

Nama : Muliana Sari
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Alamat : Jln. Sutan Maujalo Kel. Sidangkal

adalah benar Mahasiswa IAIN Padangsidempuan yang sedang menyelesaikan Skripsi dengan Judul "*The Effect of Numbered Head Together Technique on Students' Reading Comprehension at Grade XI SMA N 5 Padangsidempuan*". Sehubungan dengan itu, kami mohon bantuan Bapak/Ibu untuk memberikan data dan informasi sesuai dengan maksud judul diatas.

Demikian disampaikan, atas kerja sama yang baik diucapkan terimakasih.



Dekan
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PEMERINTAH PROVINSI SUMATERA UTARA
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Nomor : 423.4 / 145 / SMA.5 / MH-2018

Sehubungan dengan surat Dekan Fakultas Tarbiyah dan Ilmu Keguruan Institut Agama Islam Negeri Padangsidimpuan dengan No. B-814/In.14/E.4c/TL.00/05/2018, tanggal 22 Mei 2018, tentang Izin Penelitian Penyelesaian Skripsi, bersama ini kami sampaikan bahwa :

Nama : MULIANA SARI
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Yang benar telah melaksanakan penelitian di SMA Negeri 5 Padangsidimpuan dalam menyelesaikan skripsi yang berjudul :

"THE EFFECT OF NUMBERED HEAD TOGETHER TECHNIQUE ON STUDENTS' READING COMPREHENSION AT GRADE XI SMA N 5 PADANGSIDIMPUAN"

Demikian surat keterangan ini dibuat dengan sebenarnya untuk dapat dipergunakan sebagaimana mestinya.

Padangsidimpuan, 04 Juni 2018

Kepala Sekolah,



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Pengesahan Judul dan Pembimbing Skripsi

Kepada Yth. Bapak/Ibu

1. **Eka Sustris Harida, M. Pd** (Pembimbing I)
2. **Sojuangon Rambe, S. S., M. Pd** (Pembimbing II)

Di -
 Padangsidempuan

Assalamu'alaikum Wr.Wb.

Dengan hormat, sehubungan dengan hasil sidang bersama tim pengkajian judul skripsi Jurusan Tadris Bahasa Inggris (TBI) Fakultas Tarbiyah dan Ilmu Keguruan IAIN Padangsidempuan, maka dengan ini kami mohon kepada Bapak/Ibu agar dapat menjadi Pembimbing Skripsi dan melakukan penyempurnaan judul bilamana perlu untuk mahasiswa dibawah ini dengan data sebagai berikut:

Nama/NIM : Muliana Sari/ 14 203 00087
 Jurusan : Tadris Bahasa Inggris
 Judul Skripsi : **THE EFFECT OF NUMBERED HEAD TOGETHER TECHNIQUE ON STUDENTS' READING COMPREHENSION AT GRADE XI SMA N 5 PADANGSIDIMPUAN**

Demikian surat ini disampaikan, atas perhatian dan kesediaan Bapak/Ibu kami ucapkan terimakasih.

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Appendix 1

Experimental Class

Rencana Pelaksanaan Pembelajaran (RPP)

Nama Sekolah : SMA N 5 Padangsidempuan
Mata Pelajaran : Bahasa Inggris
Kelas/Semester : XI/ II(Genap)
Alokasi Waktu : 4× 45Menit (2JP)

Standar Kompetensi :Memahami makna dalam esai pendek sederhana berbentuk teks eksposisi.

Kompetensi Dasar :Menangkap makna dalam teks eksposisi analisis tentang topik yang hangat dibicarakan umum.

JenisTeks : Exposition Text

AspekSkill : Membaca

1. Indicator :

- Mengidentifikasi gagasan utama dalam teks eksposisi
- Memahami informasi rinci dalam teks eksposisi
- Memahami informasi tertentu dalam teks eksposisi
- Memahami makna kalimat atau kata dalam teks eksposisi

2. Tujuan Pembelajaran:

Pada akhir pembelajaran diharapkan:

- Siswa mampu mengidentifikasi gagasan utama dalam teks eksposisi
- Siswa mampu memahami informasi rinci dalam teks eksposisi
- Siswa mampu memahami informasi tertentu dalam teks eksposisi
- Siswa mampu memahami makna kalimat atau kata dalam tesk eksposisi

3. MateriPelajaran:

- Teks monolog berbentukekseksposisi

4. Strategi Pembelajaran:

- Numbered Head Together Technique

5. Langkah- Langkah Kegiatan

a. Pendahuluan

1. Salam dan tegur sapa
2. Berdo'a sebelum memulai pembelajaran
3. Mengabsen siswa
4. Memberi motivasi siswa terkait pentingnya kompetensi pelajaran yang akan dikuasai
5. Memberikan gambaran mengenai materi pelajaran yang akan dipelajari dan teknik yang digunakan

b. Kegiatan Inti

Dalam kegiatan inti:

1. Guru membagi kelas menjadi beberapa kelompok.
2. Setiap siswa didalam kelompok tersebut memperoleh nomor sebagai identitas didalam kelompoknya.
3. Guru mengajukan pertanyaan atau masalah kesetiap kelompok dan memberikan waktu untuk memikirkannya.
4. Siswa menulis jawaban mereka secara individu.
5. Siswa berdiri dan mendekatkan kepala mereka bersama-sama, saling memperlihatkan jawaban, mendiskusikannya, dan saling mengajarkan satu sama lain.
6. Siswa dipersilahkan untuk duduk ketika setiap orang mengetahui jawaban atau memiliki sesuatu yang hendak dibagikan.
7. Guru memanggil sebuah nomor. Siswa dengan nomor yang dipanggil menjawab dengan menuliskannya dipapan tulis.
8. Teman sekelas memberikan tepuk tangan kepada siswa yang member respon.

c. Penutup

Dalam kegiatan penutup:

1. Guru menanyakan kesulitan siswa selama kegiatan pembelajaran
2. Guru mengkonfirmasi jawaban/ hasil kerja siswa dan memberikan kesimpulan tentang materi yang telah diajarkan

3. Guru memberikan test kepada siswa

d. Alat/Sumber Belajar :

- Buku yang relevan, Kamus, Papantulis, Spidol dan Penghapus

e. Penilaian:

Indicator Pencapaian Kompetensi	Teknik Penilaian	Bentuk Instru-ment	Instrument Soal
1. Mengidentifikasi gagasan utama dalam teks eksposisi			Read the text carefully
2. Memahami informasi rinci dalam teks eksposisi	Tes	Pilihan	and then choose the correct
3. Memahami informasi tertentu dalam teks eksposisi	Tulisan	Ganda	answer based on the
4. Memahami kalimat atau kata dalam tesk eksposisi			text by crossing a, b, c, d, or e!

1) Pedoman penilaian

- Jumlah skor maksimal keseluruhan adalah 100.
- Setiap jawaban yang benar di beriskor 5. Jumlah skor keseluruhan $5 \times 20 = 100$. (Tes Tertulis)
- 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

Padangsidempuan,

2018

Mengetahui

Validator

Researcher

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Appendix 2

ControlClass

RencanaPelaksanaanPembelajaran (RPP)

Nama Sekolah : SMA N 5 Padangsidempuan

Mata Pelajaran : BahasaInggris

Kelas/Semester : XI/ II(Genap)

AlokasiWaktu : 4× 45Menit (2JP)

Standar Kompetensi :Memahami makna dalam esai pendek sederhana berbentuk teks eksposisi.

Kompetensi Dasar :Menangkap makna dalam teks eksposisi analisis tentang topik yang hangat dibicarakan umum.

JenisTeks : Exposition Text

AspekSkill : Membaca

1. Indicator :

- Mengidentifikasi gagasan utama dalam teks eksposisi
- Memahami informasi rinci dalam teks eksposisi
- Memahami informasi tertentu dalam teks eksposisi
- Memahami makna kalimat atau kata dalam teks eksposisi

2. Tujuan Pembelajaran:

Pada akhir pembelajaran diharapkan:

- Siswa mampu mengidentifikasi gagasan utama dalam teks eksposisi

- Siswa mampu memahami informasi rinci dalam teks eksposisi
- Siswa mampu memahami informasi tertentu dalam teks eksposisi
- Siswa mampu memahami makna kalimat atau kata dalam teks eksposisi

3. Materi Pelajaran:

- Teks monolog berbentuk teks eksposisi

4. Strategi Pembelajaran:

Conventional Technique

5. Langkah– Langkah Kegiatan

a. Pendahuluan

1. Salam dan tegur sapa
2. Berdo'a sebelum memulai pembelajaran
3. Mengabsen siswa
4. Memberi motivasi siswa terkait pentingnya kompetensi pelajaran yang akan dikuasai
5. Memberikan gambaran mengenai materi pelajaran yang akan dipelajari.

f. Kegiatan Inti

Dalam kegiatan inti:

1. Guru memberikan teks berbentuk teks eksposisi kepada siswa.
2. Guru menyuruh siswa untuk membaca teks berbentuk teks eksposisi tersebut.
3. Guru menyampaikan penjelasan mengenai pengertian expositon teks, generic structures, language features dan purpose dari exposition teks.
4. Guru menyuruh siswa untuk menerjemahkan teks eksposisi tersebut kedalam bahasa Indonesia.
5. Guru memberikan beberapa soal kepada siswa berupa latihan untuk mengidentifikasi topik, main ideas, informasi yang dibutuhkan/ spesifik informasi, memahami kosakata dari sebuah teks berbentuk teks eksposisi.

g. Penutup

Dalam kegiatan penutup:

1. Guru memberikan kesimpulan mengenai pembelajaran
2. Guru memberikan test kepada siswa

3. Alat/Sumber Belajar :

- Buku yang relevan, Kamus, Papan tulis, Spidol dan Penghapus

4. Penilaian:

Indicator Pencapaian Kompetensi	Teknik Penilaian	Bentuk Instrumen	Instrument Soal
5. Mengidentifikasi gagasan utama dalam teks eksposisi			Read the text carefully
6. Memahami informasi rinci dalam teks eksposisi	Tes	Pilihan	and then choose the correct answer
7. Memahami informasi tertentu dalam teks eksposisi	Tulisan	Ganda	based on the text by crossing a, b, c, d, or e!
8. Memahami kalimat atau kata dalam tes eksposisi			

4) Pedoman penilaian

- Jumlah skor maksimal keseluruhan adalah 100.
- Setiap jawaban yang benar di beriskor 5. Jumlah skor keseluruhan $5 \times 20 = 100$. (Tes Tertulis)
- Nilai maksimal = $\frac{\text{Jumlah jawaban yang benar}}{\text{Jumlah soal}}$

5) Instrument: Answer the question based on the text!

6) Rubrik penilaian

Uraian	Skor
Jawaban Benar	5
Jawaban Salah	0

Padangsidempuan,

2018

Mengetahui

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Appendix 3

LEARNING MATERIAL FOR EXPERIMENTAL CLASS

Text 1

Television plays very important role in our lives, and it is also main source of entertainment. On the other hand, television also as a way to convince us for getting knowledge. We watch TV whenever we are free, or sometimes while working, and learn many things from it. As the TV is used in our daily life, it broadcasts many live events and news which educate us in many ways. But, sometimes children watch those programs on TV which should not meant to be viewed by child's age group and have many negative impacts on their lives.

The American Academy of Pediatrics (AAP) recommends that kids under 2 years old not watch any TV and that those older than 2 watch no more than 1 to 2 hours a day. The first 2 years of life are considered a critical time for brain development. TV and other electronic media can get in the way of exploring, playing, and interacting with parents and others, which encourages learning and healthy physical and social development. As kids get older, too much screen time can interfere with activities such as being physically active, reading, doing homework, playing with friends, and spending time with family.

I believe that many children who watch TV for long hours, have many negative impacts on their health such as they may weak their eye-sight at young age. In fact, these children should spend most of their time playing and studying, which would give them better result later and keep them healthy as well. If these children keep wasting their precious time watching TV for long hours instead studying, it may affect their school result.

Many children tend to follow their favorite actors or actress and imitate them by wearing same cloths, following same attitude and try to speak same languages. This becomes worse when they watch any action movies and perform same actions at home, which might injure them or change their behavior toward other people.

Television indeed can be a media to entertain and to teach children something. However, programs in TV are not designed for children only; they also include some programs for adult. Watching TV too much could make children following some clothes, attitudes, and language which may be bad for them. Too much watching TV also will weaken children eyes. Thus, watching TV too much is bad for children.

The Questions

1. What is the main idea of the first paragraph?

Answer: television plays very important role in our lives

2. What is the main idea of the third paragraph?

Answer: children who watch TV for long hours have many negative impact on their health

3. What is the negative impact on children health if they watch TV for long hours?

Answer: they weak their eye-sight at young age

4. What is the effect if the children watch TV too much?

Answer: the children will follow some clothes, attitudes, and language which may be bad for them

5. What does the writer think about TV for children based on the text?

Answer: watching TV too much is bad for children

6. What is the similar meaning with the word of 'convince' in the second paragraph?

Answer: encourages

Text 2

Being too fat is commonly known as overweight or obesity. It is simply defined as too much body fat inside. Overweight potentially leads high risk of health problem.

Being too fat is recognized as a major factor for heart disease. Due to the overweight, the heart will work harder. It can lead to the heart attack. Furthermore, obesity potentially rises blood cholesterol and blood pressure. In addition, being too fat can change the amount of sugar in the blood. This will cause diabetes and other serious disease.

Beside all of that, being too fat is often avoided by many young women. They said that becoming too fat will bother their physical beauty appearance and disturb their self-confidence.

More serious studies are necessary to see the effect of obesity. However it is clear enough that overweight is not good enough for healthy life.

The Questions

7. What is obesity?

Answer: obesity is simply defined as too much body fat inside

8. What is the main idea of the first paragraph?

Answer: being too fat potential leads high risk of healthy problem

9. What does the writer think about being too fat?

Answer: being too fat is not good enough for healthy life

10. What is a major factor that is recognized by being too fat?

Answer: heart disease

11. Why do the young women often avoid being too fat?

Answer: because they afraid that being too fat will bother their physical beauty appearance

12. What is the similar meaning with the word of 'bother' in the third paragraph?

Answer: disturb

Padangsididmpuan,

2018

Validator

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Appendix 4

LERANING MATERIAL FOR CONTROL CLASS

Text 1

Most of teenagers need to go to school and there are a lot of schools over there. Nowadays, schools grow to offer plenty of choice; private and state ones. However it is a hard choice since there are many factors which need to be considered before making the selection. Some will be influenced by friends; because some friend got to certain school than we go to there too. Some prefer to choose certain school because of the closer distance. In fact, the primary decisive matter for selecting school is whether the school has been accredited or not.

Why is important to choose an accredited school? Well, accredited schools have an edge over the unaccredited schools. This label of Accredited School has an impact in employment opportunities. As result, if there are two or more students with similar qualifications, the student who comes from the accredited school will have an edge over the other candidate. Student from an accredited school has more open door than student with an unaccredited one.

Many students select certain school depending on some factors like friend influence and short distance from home. It is not bad since commuting actually needs much cost. Choosing school which is closer to home will save time, energy and money. However if that school is not accredited, the time and money spent along studying seems to be waste in the long term because it could become a limiting factor in gaining future opportunities.

Accredited school is not the only factor which will drive student's success. Personality and characterization are very important too. However a student with good personality who comes from an accredited school is better than the others that allow them for getting the opportunities.

The Questions

1. What is the main idea of the third paragraph?

Answer: many students select certain school depending more on short term factors

2. What is the main idea of the last paragraph?

Answer: the importance of accredited for students

3. What does the students' reason to select the certain school?

Answer: friend influence and short distance from home

4. What does the students' reason to choose the school that is closer to their home?

Answer: choosing school which is closer to their home will save time, energy and money

5. What are the other factors from accredited school other than to drive student's success?

Answer: personality and characterization

6. What is the similar meaning with the word of 'gaining' in the third paragraph?

Answer: getting

Text 2

Recently most people own mobile phone. Why does mobile phone user increase dramatically in recent years? First, the feature and functions has increased. Mobile phone is not used just for calling, but sending text, taking pictures, recording videos, accessing internet, playing games and much more. Second, mobile phone has also become a lot cheaper. Now this communication device does not only fill the pocket of adult but also teenager and student. Even a lot phones are intentionally designed to teenaged market. However should they be allowed to bring them to school?

Many schools do not allow students to bring cell phones to school. It is very reasonable because bringing phone to school potentially disrupts the learning process. Most students use cell phones irresponsibly. They use cell phones to talk to their friend during class time. They also use the calculator and camera features in the class as well. Those potentially annoy concentration in the time of learning and teaching process.

Students go to school to learn and behave fair way. Mobile phones provide a large temptation to cheat in tests. They can communicate to anyone and almost anywhere in the world. Because of the small size of the cell phone, students can send a text quietly and discreetly. The text can go unnoticed anywhere to get help on answering tests, homework, and other class assignment. Learning in school is to behave fair not cheating.

Therefore, schools should ban students from bringing their cell phones. However it should be done fairly. In case of an emergency some student need a call for help, providing easy access to phone is better.

The Question

7. What does the writer think of mobile phone for students?

Answer: mobile phone should not be brought to school

8. Why do not schools allow students to bring mobile phone to school?

Answer: because mobile phone can annoy concentration in the time of learning and teaching process

9. What is the place which students can't bring the mobile phone?

Answer: the school

10. What are the usages of mobile phone other than for calling?

Answer: sending text, taking pictures, recording videos, accessing internet, playing games

11. What do the students do by cell phone that annoys students' concentration in the classroom?

Answer: students use cell phone to talk to friend during class room, use calculator, and use camera features in the class

12. What is the similar meaning with the word of 'disrupt' in the third paragraph?

Answer: annoy

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Appendix 5

INSTRUMENT FOR PRE-TEST

Choose the best answer based on the text!

Reading passage 1 for number 1-2

Do you want to buy mobile phone? Don't be hasty. There are many things to consider. Be reasonable before making the decision.

First, you can start by asking yourself the usefulness of the equipment. The question might be, "Do I want it for prestige or usefulness?"

Then, you should make a choice on the type of the mobile phone. There are various choices in the market, so you should decide the one that meets your needs and whether you can afford it or not.

The consequence of using a mobile phone is its high operational costs. You have to pay more for a mobile phone compared to a fixed telephone. Therefore, you should only use the mobile phone only for important talks.

1. What is the main idea of the third paragraph?
 - a. You should make a choice on the type of the mobile phone
 - b. The consequences of using a mobile phone is its high operational costs
 - c. You must use a mobile phone effectively
 - d. Mobile phone has some disadvantages
 - e. Mobile phone has some procedures

2. “The question might be, “Do I want it for prestige or usefulness?” (Paragraph 2)

What is the similar meaning of the underlined word?

- a. Fame
- b. Difference
- c. Position
- d. Reputation
- e. Devotion

Reading passage 2 for number 3-5

Cars Should Be Banned In the City

Cars should be banned in the city. As we all know, cars create pollution, and cause a lot of road deaths and other accidents.

Firstly cars, as we all know, contribute to all most of the population in the world.

Cars emit deadly gas that causes illness such as bronchitis, lung cancer and ‘triggers’ of asthma. Some of these illnesses are so bad that people can die from them.

Secondly, the city is very busy. Pedestrians wander everywhere and cars commonly hit pedestrians in the city, which causes them to die. Cars today are our roads biggest killers.

Thirdly, cars are noisy. If you live in the city, you may find it hard to sleep at night or concentrate on your homework, and especially talk to someone.

In conclusion, cars should be banned in the city for the reasons listed.

3. What does the writer think of cars?
- a. They have good and bad effect
 - b. We cannot avoid them
 - c. They are the road biggest killer
 - d. They can make us comfortable
 - e. They help pedestrians
4. What is the effect of the noise from the car?
- a. We can be sick
 - b. We have difficulties talking to someone
 - c. We may be hit
 - d. We can sleep well

- e. We can concentrate in our homework
5. “Pedestrians wander everywhere and.....” (Paragraph 4).
- The underlined word means
- a. Ramble
 - b. look after
 - c. fill the place
 - d. jog slowly
 - e. Surprise

Reading passage 3 for number 6-8

School Uniform, Another Good Lesson

School uniform is special clothes worn by all students of a particular school. The uniform of a school may differ from others. Why should schools use uniforms? Below are some reasons.

First of all, Notre Dame’s Department of Sociology produced a study in 1998 concerning school uniforms. Their findings using 10th grade students showed that uniforms have no direct effect on “substance abuse, behavioral problems or attendance.” It also claimed a negative effect on student achievements for those students considered ‘pro-school’.

Secondly, uniform helps to create a strong sense school ethos and a sense of belonging to a particular community. As such it promotes discipline and helps to drive up academic standards, which is why a uniform is often adopted by schools which are being reopened with a fresh start after being classified as failing.

Finally, uniform acts as a social leveler, under which all students are equal in the eyes of the school and of each other. In institutions without uniform students are often competitive and worry endlessly about their appearance and the clothes they should wear. Pupils without expensive designer clothes and trainers may be singled out as social outcasts, or stigmatized as being from poor backgrounds.

For these reasons many parents prefer uniforms as they save them money on buying clothes for school wear. Considering the findings, schools should implement the uniform as their identity. The government should also publish some kind of rule which makes uniform compulsory for schools.

6. What is the main idea of the first paragraph?

- a. School uniform can help to drive up the academic students
 - b. School uniform can show the students' school identity
 - c. To wear the school uniform is very sad
 - d. School uniform helps to create a strong sense school ethos and a sense of belonging to particular community
 - e. The school uniform can promote discipline
7. A uniform is often adapted by school because it.....
- a. Promotes discipline and helps to drive up the academic standards
 - b. Can make students happier
 - c. Adds the cost of students' parent
 - d. Is a request from the students
 - e. Can add students' knowledge
8. "As such it promotes discipline and helps to drive up academic standards"
(Paragraph 3).

What does the underlined word refer?

- a. Community
- b. School ethos
- c. Research finding
- d. A study
- e. Uniform

Reading passage 4 for number 9-11

Everybody should change their way of life to reduce global warming. There are several things that we can do. One of them is by buying and consuming fresh local groceries as much as possible. It of course includes local vegetables, fruits, bread, etc.

Local groceries don't need much transportation to get it into the market. It of course means, the amount of carbon dioxide produced is less than the groceries from other region. Therefore, by buying local groceries we are helping reduce the amount of carbon dioxide produced.

Consuming fresh groceries instead of frozen ones are healthier for us. Furthermore, fresh food or groceries means no requirements for it to be freeze up. It means that no electricity is needed and saving energy means reducing carbon dioxide and money.

So, from now on we should consume fresh local groceries to reduce global warming.

9. What is the main idea of the first paragraph?

- a. Everybody should change their way of life to reduce global warming
- a. There are ways to increase global warming
- b. There are some effects of global warming
- c. There is the important of consuming local groceries
- d. There is the important of knowing global warming

10. To reduce the global warming we should ...

- a. buy import product
- b. buy expensive clothes
- c. consume frozen foods
- d. consume fresh foods
- e. not use electricity efficiently

11. We are helping reduce the amount of global warming” Paragraph 2

The underlined word can be replaced by ...

- a. increase
- b. decrease
- c. improve
- d. add
- e. maximize

Reading passage 5 for number 12-16

Even though many people think that national activities are usually concentrated in big cities, village people can still receive information, education and entertainment through television. Take the national and the world news for example. These programs generally give its viewers the latest information on national and international events. By watching news programs, village people can keep abreast of what’s happening on the other side of the world. Other programs featuring the animal kingdom, farm life, cultural events, and health issues educate the

villagers on various aspects of life. These programs can certainly broaden their horizons and hopefully give them fresh ideas on how to improve their standard of living.

Programs such as music, film series, quizzes, and dance shows with their entertaining nature provide visual enjoyment. Relaxing at home while enjoying free entertainment is something villagers usually look forward to after a day of hard work. So, television really offers a lot of benefits to villagers. It gives them access to information, education, and entertainment, thus widening their horizons.

12. What is the main idea of the second paragraph?
 - a. Television has a bad sense for villagers
 - b. Television just make villagers feeling happy
 - c. Watching television is interesting for villagers
 - d. Television's programs concentrated in big cities
 - e. Television programs have some benefits for villagers
13. Which ones are included to educational programs of television for villagers?
 - a. animal kingdom, farm life and culture event
 - b. national and world news of events
 - c. film series, quizzes and dance shows
 - d. national news of event and dance shows
 - e. film series and world news of events
14. Television really provides many advantages to the villagers because.....
 - a. it can broaden people's knowledge and horizons in big cities
 - b. it gives visual enjoyment through its educational programs
 - c. it can give them information, education and entertainment
 - d. it gives fresh ideas of how to improve standard of life through its quizzes
 - e. it gives only free entertainment for villagers after a day of hard work
15. "village people can still receive information, education and entertainment through television."

The underlined word is closely in meaning with

 - a. acquire
 - b. change

- c. produce
- d. publish
- e. deny

16. "These programs can certainly broaden their horizons and hopefully give them fresh ideas on how to improve their standard of living."

The antonym of the underlined word is...

- a. expand
- b. widen
- c. narrow
- d. small
- e. add

Reading passage 6 for number 17-20

Integrated Pest Management

There is no best way to deal with pests in agriculture. Pesticides which are commonly used may cause many problems. I think combining different management operations is the most effective way to control pests.

Firstly, the chemicals in the pesticides may build up as residues in the environment and in the soil which absorbs the chemicals. This reduces the quality of farm product.

Secondly, pests can gradually become resistant to pesticides. This means that newer and stronger ones have to be developed.

Lastly, some pesticides affect non target plants and animals such as fish and bees. This affects the ecology and environment as well.

So, understanding of ecology of an area helps a lot in pest control. Pesticides should be chosen and applied carefully so that they don't affect the ecological balance and environment. Therefore, integrated pest management is a safe and more effective option to fight pest in agriculture and livestock.

17. What is the main idea of the first paragraph?

- a. combining different management operations is the most effective way to control pests
- b. pesticides should be chosen carefully
- c. The pesticides are used may cause many problems

- d. Pests have some best ways
 - e. People must understanding about ecology
18. What can you say about paragraph two and four?
- a. The fourth paragraph supports the idea stated in paragraph two
 - b. Both paragraphs tell about the disadvantages of using pesticides
 - c. Both paragraphs tell about how pesticides affect the quality of farm products
 - d. The statement in paragraph is contrary to the statement in paragraph four
 - e. The second paragraph tells about the effects of using pesticides on animals mentioned in paragraph four
19. One of the disadvantages of using chemical pesticides is ...
- a. killing fish and bees
 - b. increasing crops productivity
 - c. creating balanced ecosystem
 - d. causing the pests to become inactive
 - e. helping reduce pollutants in the environment
20. Secondly, pests can gradually become resistant to pesticides. (paragraph 3)
- The word resistant in the sentence above means ...
- a. Weak
 - b. Fragile
 - c. Damage
 - d. Unaffected
 - e. Unbalanced

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Appendix 6

INSTRUMENT FOR POST-TEST

Choose the best answer based on the text!

Reading passage 1 for number 1-2

I personally think that reading is a very important activity in our life. Why do I say so? Firstly, by reading we can get a lot of knowledge about many things in the world such as Science, technology, sports, arts, culture, etc written in either books, magazine, newspaper, etc.

Secondly, by reading we can get a lot of news and information about something happening in any parts of the world which can we see directly.

Another reason, reading can give us pleasure too. When we are tired, we read books, newspaper or magazine on the entertainment column such as comedy, short story, quiz, etc. To make us relaxed.

The last, reading can also take us to other parts of the world. By reading a book about Irian Jaya we may feel we're really sitting in the jungles not at home in our rooms.

From the facts above, it's obvious that everyone needs to read to get knowledge, information and also entertainment. Or in summary we can say reading is truly important in our life.

1. If we want to get knowledge, what should we do?
 - a. buy a lot of books
 - b. borrow a lot of books
 - c. look for newspaper and magazine
 - d. sell and buy many expensive books

- e. Read a lot of books and other printed materials
2. “Another reason, reading can give us pleasure too”.

The underlined word is same the meaning with...

- a. Happiness
- b. Pride
- c. Likeness
- d. Sadness
- e. Knowledge

Reading passage 2 for number 3-5

Learning English

Learning English through music and songs can be very enjoyable. You can mix pleasure with learning when you listen to a song and exploit the song as a means to your English progress. Some underlying reason can be drawn to support the idea why we use songs in language learning.

Firstly, “the song stuck in my head” Phenomenon (the echoing in our minds of the last song we heard after leaving a restaurant, shopping malls, etc) can be both enjoyable and sometimes unnerving. This phenomenon also seems to reinforce the idea that songs work on our short-and-long term memory.

Secondly, songs in general also use simple conversational language, with a lot of repetition, which is just what many learners look for sample text. The fact that they are effective makes them many times more motivating than other text. Although usually simple, some songs can be quite complex syntactically, lexically and poetically, and can be analyzed in the same way as any other literary sample.

Furthermore, song can be appropriated by listener for their own purpose. Most pop songs and probably many other types don't have precise people, place or time reference. In addition, songs are relaxing. They provide variety and fun, and encourage harmony within oneself and within one group. Little wonder they are important tools in sustaining culture, religion, patriotism and yeas, even revolution.

Last but not least, there are many learning activities we can do with songs such as studying grammar, practicing selective listening comprehension, translating songs, learning vocabulary, spelling and culture.

From the elaboration above, it can be concluded that learning through music and songs, learning English can be enjoyable and fun.

3. What is the communicative purpose of the text?
 - a. To tell the reader about the songs
 - b. To entertain the reader with the songs
 - c. To show the reader the use of songs
 - d. To explain above the songs
 - e. To persuade the reader to use songs in learning language
4. Based on the text, there are reason for using songs in learning language
 - a. 6
 - b. 4
 - c. 5
 - d. 3
 - e. 2
5. "They provide variety and fun, and encourage harmony within oneself and within one group."
The underlined word refers to
 - a. Groups
 - b. Learners
 - c. People
 - d. Songs
 - e. Activities

Reading passage 3 for number 6-10

Smoking in Restaurant

Smoking in restaurants is just not on. It must not be allowed because it is rude, harmful to others and dangerous for the smokers.

Firstly, smoking in a restaurant is impolite. The smell of the smoke affects all people and can turn them off their food. People pay to taste good food and not to be put off by foul smelling smoke.

Another reason smoking should not be allowed in restaurant is the harm it can do to others. Passive smoking that is breathing in smoke made by a smoker can lead to asthma attacks and even cancer.

Finally, smoking is dangerous and a health risk to the smokers. Cigarettes cause heart and lung disease and people should not smoke anywhere, not just in restaurants.

Therefore, smoking in restaurants is impolite, harmful to others and a health risk to the smokers and should not be allowed in any restaurants.

6. Smoking in the restaurants must be avoided because.....
 - a. It is harmful to other
 - b. It is impolite
 - c. It's dangerous to the smokers
 - d. It can cause heart and lung disease
 - e. All answers are correct
7. We have many reasons to say that smoking must be avoided. The word reasons mean.....
 - a. conclusion
 - b. point of view
 - c. argument
 - d. reinforcement
 - e. statement
8. The synonym of the word dangerous in the text is.....
 - a. rude
 - b. impolite
 - c. health risk
 - d. harmful
 - e. disease
9. Smoking in restaurants is just not on. It must not be allowed because it is rude, harmful to others and dangerous for the smokers.
The sentence above characterize as..... of the text.
 - a. thesis
 - b. arguments
 - c. reiteration

- d. topic sentence
 - e. supporting details
10. Smoking in restaurant should not be allowed. It means that.....
- a. people should do smoking in restaurant
 - b. people should not do smoking in restaurant
 - c. people must not smoking in restaurant
 - d. people must not smoke in restaurant
 - e. people should smoke in restaurant

Reading passage 4 for number 11-12

Dust Bin

To improve comfort and cleanliness at our school, a number of dust bins should be increased.

When we look at classrooms, school corridors and school yard, there are paper mineral water cups, straws, and napkins here and there. The condition of uncleanliness and discomfort really hinders learning and teaching environment. Litters thrown carelessly cause disease, especially empty plastic cup or glasses. They can be filled out with water coming from the rain. This can be placed for dengue mosquitoes to spread out. Besides, these rubbish can deteriorate the scene. Well painted wall and green school yard do not mean anything litters are scattered everywhere.

Anyway I notice that most of the students in our school have responsibilities for the school environment. They put their litters on the proper places. But some are not diligent enough to find the dust bins. The numbers of dust binds in our schools are not enough. Ore dust bins should be put beside each of steps, outside of the classrooms, and some more also the corridors. Probably one dust bin should be in every ten meters. So when students want to throw away their litters, they can find the dust bins easily.

When school is equipped with sufficient dust bins, we do not have problems of freak and discomfort any more. Our school will be very clean and become a nice place to study.

11. According to the writer, more dust bins..... in every ten meters.
- a. should be decorated
 - b. should be painted

- c. should be placed
 - d. are unnecessary
 - e. are not required
12. What is the writer's suggestion?
- a. To buy more dustbins
 - b. To hire more gardeners
 - c. To use dustbins efficiently
 - d. To ask parents to give more dustbins
 - e. To ask students to clean the school yard

Reading passage 5 for number 13-16

Laptop as students' friend

Conventionally, students need book, pen, eraser, drawing book, ruler and such other stuff. Additionally, in this multimedia era, students need more to reach their progressive development. Students need mobile keyboards to record every presented subject easily. Of course it will need more cost but it will deserve for its function.

First, modern schools tend to apply fast transferring knowledge because the school needs to catch the target of curriculum. Every subject will tend to be given in demonstrative method. Consequently students need extra media cover the subject. Since there is a laptop on every students' desk, this method will help student to get better understanding.

Secondly, finding an appropriate laptop is not difficult as it was. Recently there is an online shop which provides comprehensive information. The best is that the shop has service of online shopping. The students just need to brows that online shop, decide which computer or laptop they need, then complete the transaction. After that the laptop will be delivered to the students' houses. That is really easy and save time and money.

From all of that, having mobile computer is absolutely useful for students who want to catch the best result for their study. Buying laptop online is advisable because it will cut the price. This online way is recommended since online shop also provide several { HYPERLINK

"http://rumuslengkap.com/category/web-techno-news/" \t "_blank" }. Students just need to decide which type they really need.

13. What is the main idea of the last paragraph?
- Laptop can catch the target curriculum
 - Having mobile computer is useful for students on their study
 - Buying laptop online has some advantages
 - Laptop is very difficult to used
 - Laptop is not good for students
14. The reason of modern schools tend to apply fast transferring knowledge is...
- To get the target of studying
 - To catch the target of curriculum
 - The catch the learning achievement
 - To achieve the target
 - To fail the goal of curriculum
15. From the arguments in the text above, we know that...
- Laptop is difficult as it was
 - Buying laptop online is inadvisable
 - Students don't need extra media cover the subject
 - Students need extra media cover the subject
 - Buying laptop online is happy
16. "After that the laptop will be delivered to the students' houses"
- The antonym of the underlined word is ...
- Be brought
 - Be leached
 - Be left
 - Be ordered
 - Be token

Reading passage 6 for number 17-20

Drug users are actually ill people who need help. Rehabilitation is one of the main things they should get. Instead of punishing drug users in prisons, the government should provide rehabilitation for them.

Most users are actually victims of persuasive peddlers and they suffer from consuming the drugs. Therefore, by rehabilitating them, we are actually helping them out from traps, which they might accidentally step on.

If we only arrest drug users and send them to jail, this doesn't solve the problem as drug users will still be addicted unless proper rehabilitation is imposed to them.

Providing rehabilitation programs for drug users and forcing them to participate in the programs are better than only arresting them and doing nothing to their illness. Only drug dealers, traffickers, and wholesalers should be imprisoned.

17. What is the main idea of the first paragraph?

- a. the government should provide rehabilitation for drug users
- b. The drug users are dangerous
- c. The drug users should be killed
- d. The rehabilitation program for drug users should be seen
- e. Drug and drug users have some disadvantages

18. Most drug users get drugs from...

- a. Jails
- b. Peddlers
- c. Traffickers
- d. Wholesalers
- e. Rehabilitation center

19. Sending the drug users to prison is not a good solution because...

- a. They can't consume harmful drugs
- b. They are treated normally
- c. They may still be infected with harmful drugs
- d. They can be freed as soon as possible
- e. They are given the whole recover program

20. "...drug users will still be addicted unless proper rehabilitation is imposed to the." (paragraph 3) the underlined word is closest in meaning to...

- a. Influenced
- b. Treated
- c. Forced
- d. Burdened
- e. Implemented

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Appendix 7

Key Answer of Pre-Test

- | |
|-------|
| 1. A |
| 2. D |
| 3. C |
| 4. B |
| 5. A |
| 6. D |
| 7. A |
| 8. E |
| 9. A |
| 10. D |

- | |
|-------|
| 11. A |
| 12. E |
| 13. A |
| 14. C |
| 15. A |
| 16. C |
| 17. A |
| 18. B |
| 19. D |
| 20. C |

Key Answer of Post-Test

1. E
2. A
3. E
4. B
5. D
6. E
7. C
8. D
9. A
10. B

11. C
12. C
13. B
14. B
15. E
16. E
17. A
18. B
19. C
20. C

Appendix 8

Validity of Pre 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	ΣXt	
1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	22	
2	1	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	20	
3	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1	21	
4	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1	1	1	1	1	1	0	0	1	1	1	19	
5	1	1	0	1	0	0	0	1	0	1	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	7	
6	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	21
7	0	1	1	0	0	0	1	0	1	1	0	1	1	1	0	1	1	0	1	1	0	0	1	1	0	15	
8	1	1	1	0	1	0	1	1	0	0	0	0	1	1	1	0	0	1	0	1	0	0	0	0	1	1	12
9	0	1	0	0	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1	1	0	0	1	1	1	18	
10	1	1	1	0	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	0	0	15
11	1	1	1	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	1	0	0	0	1	1	0	10
12	1	0	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	22
13	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	1	1	1	0	0	0	0	0	1	16
14	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	1	1	1	1	0	0	1	0	1	1	1	19
15	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	22
16	1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	21
17	1	0	1	1	1	1	1	0	1	0	0	1	1	1	0	1	1	0	0	1	1	1	1	1	1	1	17
18	1	1	1	1	1	0	1	0	1	0	0	1	0	1	1	1	0	0	1	1	0	0	0	0	0	1	14
19	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	22
20	0	0	1	1	0	0	1	0	1	1	0	1	1	1	0	1	0	1	1	1	1	1	1	1	1	1	17
21	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	0	0	0	1	1	20
22	0	0	1	1	0	1	1	0	1	0	1	1	1	0	1	1	1	1	1	1	1	0	0	0	1	1	17
23	1	1	1	0	1	0	1	0	0	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	19
24	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	4
25	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	0	1	1	1	1	1	1	1	21
26	0	0	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	5
27	0	0	1	1	1	0	0	0	1	0	1	0	0	1	0	0	1	1	1	1	1	0	0	0	0	1	12
28	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	1	21

29	1	1	1	0	1	0	1	1	1	1	0	0	1	0	1	1	1	1	1	1	0	1	1	1	1	18	
30	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	0	1	0	0	1	1	0	19	
N=30	23	22	24	21	20	13	25	21	23	19	14	21	25	22	18	22	24	22	19	23	14	7	19	23	23	506	9
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	0.7	0.4	0.2	0.6	0.7	0.7	Σx_t	
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	0.2	0.6	0.8	0.4	0.2	0.2		

Appendix 9

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

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

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

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

Item 2

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

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

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

Item 3

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

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

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

Item 4

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

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

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

Item 5

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

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

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

Item 6

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

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

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

Item 7

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

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

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

Item 8

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

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

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

Item 9

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

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

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

Item 10

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

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

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

Item 11

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

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

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

Item 12

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

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

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

Item 13

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

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

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

Item 14

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

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

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

Item 15

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

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

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

Item 16

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

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

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

Item 17

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

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

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

Item 18

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

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

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

Item 19

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

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

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

Item 20

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

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

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

Item 21

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

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

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

Item 22

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

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

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

Item 23

$$M_{pl} = \frac{\text{total score of student s' score that true item answer}}{n_{23}}$$

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

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

Item 24

$$M_{pl} = \frac{\text{total score of student s' score that true item answer}}{n_{24}}$$

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

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

Item 25

$$M_{pl} = \frac{\text{total score of student s' score that true item answer}}{n_{25}}$$

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

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

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

Item 1

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

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

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

$$r_{pbi} = 0.262 \times 1.8 = 0.471$$

Item 2

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

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

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

$$r_{pbi} = 0.19 \times 1.5 = 0.288$$

Item 3

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

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

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

$$r_{pbi} = 0.086 \times 2 = 0.172$$

Item 4

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

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

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

$$r_{pbi} = 0.342 \times 1.52 = 0.519$$

Item 5

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

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

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

$$r_{pbi} = 0.308 \times 1.22 = 0.375$$

Item 6

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

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

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

$$r_{pbi} = 0.534 \times 0.812 = 0.433$$

Item 7

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

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

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

$$r_{pbi} = 0.212 \times 2 = 0.424$$

Item 8

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

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

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

$$r_{pbi} = 0.342 \times 1.52 = 0.519$$

Item 9

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

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

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

$$r_{pbi} = 0.262 \times 1.52 = 0.398$$

Item 10

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

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

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

$$r_{pbi} = 0.722 \times 1.22 = 0.880$$

Item 11

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

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

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

$$r_{pbi} = 0.384 \times 0.81 = 0.311$$

Item 12

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

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

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

$$r_{pbi} = 0.266 \times 2 = 0.532$$

Item 13

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

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

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

$$r_{pbi} = 0.236 \times 2 = 0.472$$

Item 14

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

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

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

$$r_{pbi} = 0.218 \times 1.52 = 0.331$$

Item 15

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

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

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

$$r_{pbi} = 0.438 \times 1.22 = 0.534$$

Item 16

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

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

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

$$r_{pbi} = 0.29 \times 1.52 = 0.440$$

Item 17

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

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

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

$$r_{pbi} = 0.228 \times 2 = 0.456$$

Item 18

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

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

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

$$r_{pbi} = 0.436 \times 1.52 = 0.662$$

Item 19

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

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

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

$$r_{pbi} = 0.384 \times 1.22 = 0.468$$

Item 20

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

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

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

$$r_{pbi} = 0.314 \times 1.87 = 0.587$$

Item 21

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

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

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

$$r_{pbi} = 0.484 \times 0.812 = 0.393$$

Item 22

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

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

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

$$r_{pbi} = 0.484 \times 0.5 = 0.242$$

Item 23

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

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

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

$$r_{pbi} = 0.384 \times 1.22 = 0.468$$

Item 24

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

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

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

$$r_{pbi} = 0.392 \times 1.87 = 0.7333$$

Item 25

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

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

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

$$r_{pbi} = 0.374 \times 1.87 = 0.699$$

Appendix 10

Table Validity of Pre Test

No	Mp	Mt	SDt	p	q	$r_{pbi} = \frac{M_p - M_t}{SD_t} \sqrt{\frac{p}{q}}$	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 11

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	$\sum X_t$	$\sum X_t^2$	
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	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	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	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	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	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	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	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	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	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	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	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	1	17	289
14	1	0	1	1	0	0	1	1	0	0	1	0	1	1	0	0	1	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	1	0	1	0	1	0	1	0	1	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	$\sum X$ t	$\sum X$ t²
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 12

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

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

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

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

Item 2

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

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

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

Item 3

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

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

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

Item 4

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

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

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

Item 5

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

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

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

Item 6

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

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

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

Item 7

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

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

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

Item 8

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

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

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

Item 9

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

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

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

Item 10

$$M_{pl} = \frac{\text{total score of student s' score that true item answer}}{n_{10}}$$

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

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

Item 11

$$M_{pl} = \frac{\text{total score of student s' score that true item answer}}{n_{11}}$$

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

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

Item 12

$$M_{pl} = \frac{\text{total score of student s' score that true item answer}}{n_{12}}$$

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

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

Item 13

$$M_{pl} = \frac{\text{total score of student s' score that true item answer}}{n_{13}}$$

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

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

Item 14

$$M_{pl} = \frac{\text{total score of student s' score that true item answer}}{n_{14}}$$

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

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

Item 15

$$M_{pl} = \frac{\text{total score of student s' score that true item answer}}{n_{15}}$$

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

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

Item 16

$$M_{pl} = \frac{\text{total score of student s' score that true item answer}}{n_{16}}$$

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

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

Item 17

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

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

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

Item 18

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

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

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

Item 19

$$M_{pl} = \frac{\text{total score of student s' score that true item answer}}{n19}$$

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

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

Item 20

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

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

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

Item 21

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

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

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

Item 22

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

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

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

Item 23

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

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

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

Item 24

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

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

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

Item 25

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

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

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

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

Item 1

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

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

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

$$r_{pbi} = 0.048 \times 1.87 = 0.089$$

Item 2

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

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

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

$$r_{pbi} = 0.268 \times 1.87 = 0.501$$

Item 3

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

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

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

$$r_{pbi} = 0.177 \times 2 = 0.354$$

Item 4

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

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

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

$$r_{pbi} = 0.59 \times 1.11 = 0.654$$

Item 5

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

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

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

$$r_{pbi} = 0.38 \times 1.51 = 0.573$$

Item 6

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

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

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

$$r_{pbi} = -0.38 \times 0.70 = -0.266$$

Item 7

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

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

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

$$r_{pbi} = 0.168 \times 2.8 = 0.470$$

Item 8

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

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

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

$$r_{pbi} = 0.211 \times 2.8 = 0.590$$

Item 9

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

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

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

$$r_{pbi} = -0.83 \times 0.35 = -0.290$$

Item 10

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

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

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

$$r_{pbi} = 0.274 \times 2 = 0.548$$

Item 11

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

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

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

$$r_{pbi} = 0.202 \times 2.8 = 0.565$$

Item 12

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

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

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

$$r_{pbi} = 0.271 \times 2.8 = 0.758$$

Item 13

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

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

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

$$r_{pbi} = 0.32 \times 1.87 = 0.598$$

Item 14

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

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

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

$$r_{pbi} = 0.228 \times 1.87 = 0.426$$

Item 15

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

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

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

$$r_{pbi} = 1.048 \times 0.5 = 0.524$$

Item 16

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

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

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

$$r_{pbi} = -3.22 \times 0.35 = -1.127$$

Item 17

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

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

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

$$r_{pbi} = 0.3 \times 1.87 = 0.561$$

Item 18

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

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

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

$$r_{pbi} = 0.24 \times 1.87 = 0.448$$

Item 19

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

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

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

$$r_{pbi} = 0.351 \times 1.87 = 0.656$$

Item 20

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

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

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

$$r_{pbi} = 0.202 \times 2 = 0.404$$

Item 21

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

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

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

$$r_{pbi} = 0.157 \times 3 = 0.471$$

Item 22

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

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

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

$$r_{pbi} = 0.274 \times 2 = 0.548$$

Item 23

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

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

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

$$r_{pbi} = 0.334 \times 2 = 0.668$$

Item 24

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

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

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

$$r_{pbi} = 0.202 \times 2.8 = 0.565$$

Item 25

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

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

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

$$r_{pbi} = 0.211 \times 2.8 = 0.590$$

Appendix 13

Table Validity of Post Test

No	Mp	Mt	SDt	p	q	$r_{pbi} = \frac{M_p - M_t}{SD_t} \sqrt{\frac{p}{q}}$	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 14

Reliability Pre Test

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

$$R_{11} = \left(\left\{ \text{EMBED Equation 3} \right\} \right) \left(\frac{S_t^2 - \sum pq}{S_t^2} \right)$$

$$N = 30$$

$$\sum X_t = 506$$

$$\sum X_t^2 = 9280$$

$$\sum pq = 4.07$$

$$\begin{aligned} S_t^2 &= \sum X_t^2 - \left(\frac{\sum X_t}{N} \right)^2 \\ &= 9280 - \left(\frac{506}{25} \right)^2 = 9280 - 16.86^2 = 9280 - 284.26 = 8995.74 \end{aligned}$$

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

$$S_t^2 = 299.858$$

$$R_{11} = \left(\left\{ \text{EMBED Equation 3} \right\} \right) \left(\frac{S_t^2 - \sum pq}{S_t^2} \right)$$

$$\begin{aligned} R_{11} &= \left(\frac{30}{30-1} \right) \left(\frac{299.858 - 4.07}{299.858} \right) = \left(\frac{30}{29} \right) \left(\frac{65.83}{75.66} \right) \\ &= (1.03) (0.98) \\ &= 1.01 \quad (r_{11} > 0.70 = \text{reliable}) \end{aligned}$$

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

Appendix 15

Reliability Post Test

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

$$R_{11} = \left(\text{\{ EMBED Equation 3 \}} \right) \left(\frac{S_t^2 - \sum pq}{S_t^2} \right)$$

$$N = 30$$

$$\sum X_t = 520$$

$$\sum X_t^2 = 9378$$

$$\sum pq = 9.83$$

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

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

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

$$S_t^2 = 302.589$$

$$R_{11} = \left(\text{\{ EMBED Equation 3 \}} \right) \left(\frac{S_t^2 - \sum pq}{S_t^2} \right)$$

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

$$= (1.03) (0.96)$$

$$= 0.99 \text{ (} r_{11} > 0.70 = \text{reliable)}$$

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

Appendix 16

Score of Experimental Class and Control Class on Pre Test

1. PRE TEST

a. Pre Test Score of Experimental Class

No	The Name of Students	Score of Pre Test
1	Afrianda Maris Tanjung	50
2	Al Fauzi	65
3	Ameliani Nasution	70
4	Andrini Rosa Putri Siregar	45
5	Arinal Rahman	60
6	Bulan Sitompul	55
7	Dinda Rizky Natasya Lubis	70
8	Doni Ivanda	35
9	Efrilda Yanti Tanjung	75
10	Eis Nurhalimah	50
11	Frendy Setiawan	75
12	Jesika Rahmadani	80
13	Kelvin Yusril Adaha Nasution	50
14	Mariatul Kibitiah Harahap	80
15	Muhammad Kadapi	80
16	Muhammad Rio Muttaqin Siregar	55
17	Muhammad Rizki Piliang	55
18	Nada Rona Atika	60
19	Nazlah Afifah Marpaung	65
20	Nurlela Nasution	55
21	Okky Harwinsyah Batubara	70
22	Oloan Makruf Siregar	60
23	Rinda Rahayu Harahap	45
24	Rizka Fauziah Widodo	80
25	Rizki Sriwahyuni	55
26	Risky Abdilah	60
27	Sella Pebriana HSB	60
28	Selli Pebriana HSB	40
29	Siti Kholiza Simbolon	50
30	Yuli Andriani	85
Total		1835

b. Pre Test Score of Control Class

No	The Name of Students	Score of Pre Test
1	Adella Puspita	70
2	Agung Adiansyah	60
3	Alisah Sanira	40
4	Anggi Fitria Lubis	80
5	Aulia Rahman Siregar	70
6	Baina	55
7	Desi Romadani	75
8	Dinda Hmidi Lubis	40
9	Doni Indra Wijaya Harahap	60
10	Fatima Sari Harahap	85
11	Fauzi Nasution	55
12	Fitriana Harahap	35
13	Indra Sulaiman	75
14	Irsyad Hamdi	60
15	Jamaluddin Siregar	65
16	Khoirul Sehat Siregar	66
17	Khoirun Nisa	45
18	Lasmaita	55
19	Madia	30
20	M. Zakwan johari Siregar	55
21	Nanda Yuspita	80
22	Nurhikmah	35
23	Nofrya Rahayu Shinta	40
24	Osama Siregar	45
25	Putri Diana	80
26	Putrid Nopriani Lubis	40
27	Rika Sasmita	35
28	Riski Maimunah Lubis	55
29	Ryan Fadli	70
30	Widia Safitri Nasution	60
Total		1705

Appendix 17

RESULT OF NORMALITY TEST IN PRE TEST

A. RESULT OF THE NORMALITY TEST OF XI IPA-2 IN PRE-TEST

1. The score of XI IPA-2 class in pre test from low score to high score:

35	40	45	45	50	50	50	50	55	55
55	55	55	60	60	60	60	60	65	65
70	70	70	75	75	80	80	80	80	85

2. High = 85

Low = 35

Range = High – Low

$$= 85 - 35$$

$$= 50$$

3. Total of Classes = $1 + 3,3 \log (n)$

$$= 1 + 3,3 \log (30)$$

$$= 1 + 3,3 (1.47)$$

$$= 1 + 4.85$$

$$= 5.85$$

$$= 6$$

4. Length of Classes = $\frac{\text{range}}{\text{totalofclass}} = \frac{50}{6} = 8.33 = 9$

5. Mean

Interval Class	F	X	x'	fx'	x' ²	fx' ²
80 – 88	5	84	+3	15	9	45
71 – 79	2	75	+2	4	4	8
62 – 70	5	66	+1	5	1	5
53 – 61	10	57	0	0	0	0
44 – 52	6	48	-1	-6	1	6
35 – 43	2	39	-2	-4	4	8
i = 9	30	-	-	14	-	72

{ EMBED Equation.3 }

$$= 57 + 9 \left(\frac{14}{30} \right)$$

$$= 57 + 9 (0.466)$$

$$= 57 + 4.194$$

$$= 61.19$$

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

$$= 9 \sqrt{\frac{72}{30} - \left(\frac{14}{30}\right)^2}$$

$$= 9 \sqrt{2.4 - (0.466)^2}$$

$$= 9 \sqrt{2.4 - 0.217}$$

$$= 9 \sqrt{2.183}$$

$$= 9 \times 1.477 = 13.29$$

Table of Normality Data Test with Chi Kuadrat Formula

Interval of Score	Real Upper Limit	Z - Score	Limit of Large of the Area	Large of area	f _h	f _o	$\frac{(f_o - f_h)}{f_h}$
80 - 88	88.5	2.05	0.4798	0.06	1.8	5	3.132
71 - 79	79.5	1.38	0.4162	0.16	4.8	2	-0.336
62 - 70	70.5	0.70	0.2580	0.25	7.8	5	-0.108
53 - 61	61.5	0.02	0.0080	-0.25	-7.5	10	-5.428
44 - 52	52.5	-0.65	0.25765	0.17	5.1	6	0.028
35 - 43	43.5	-1.33	0.09176	0.07	2.1	2	0.001
	34.5	-2.00	0.02275				
						X ²	-2.711

Based on the table above, the reseracher found that $x^2_{count} = -2.711$ while $x^2_{table} = 11.070$, cause $x^2_{count} < x^2_{table}$ ($-2.711 < 11.070$) with degree of freedom (dk) = 6-1 = 5 and significant level { EMBED Equation.3 } = 5%. So distribution of XI IPA-2 class (pre-test) is normal.

6. Median

No	Interval	F	Fk
1	35 – 43	2	2
2	44 – 52	6	8
3	53 – 61	10	18
4	62 – 70	5	23
5	71 – 79	2	25
6	80 – 88	5	30

Position of Me in the interval of classes is number 3, that:

$$Bb = 52.5$$

$$F = 8$$

$$fm = 10$$

$$i = 9$$

$$n = 30$$

$$1/2n = 15$$

So :

$$Me = Bb + i$$

{ EMBED Equation.3 }

$$= 52.5 + 9 \left(\frac{15-8}{10} \right)$$

$$= 52.5 + 9 (0.7)$$

$$= 52.5 + 6.3$$

$$= 58.5$$

7. Modus

No	Interval	F	Fk
1	35 – 43	2	2
2	44 – 52	6	8
3	53 – 61	10	18
4	62 – 70	5	23
5	71 – 79	2	25
6	80 – 88	5	30

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 52.5$$

$$d_1 = 4$$

$$d_2 = 5$$

$$i = 9$$

So,

$$\begin{aligned} M_o &= 52.5 + \frac{4}{4+5} \cdot 9 \\ &= 52.5 + 0.44 \cdot 9 \\ &= 52.5 + 3.96 \\ &= 56.46 \end{aligned}$$

B. RESULT OF THE NORMALITY TEST OF XI IPA-3 IN PRE-TEST

1. The score of XI IPA-3 class in pre test from low score to high score:

30	35	35	35	40	40	40	45	45	55
55	55	55	55	60	60	60	60	60	65
65	70	70	70	75	75	80	80	80	85

2. High = 85

Low = 30

Range = High - Low

$$= 85 - 30$$

$$= 55$$

3. Total of Classes = $1 + 3,3 \log (n)$

$$= 1 + 3,3 \log (30)$$

$$= 1 + 3,3 (1.47)$$

$$= 1 + 4.85$$

$$= 5.85$$

$$= 6$$

4. Length of Classes = $\frac{\text{range}}{\text{total of class}} = \frac{55}{6} = 9.17 = 10$

5. Mean

Interval Class	F	X	x	fx	x ²	fx ²
80 - 89	4	84.5	+2	8	4	16
70 - 79	5	74.5	+1	5	1	5
60 - 69	7	64.5	0	0	0	0
50 - 59	5	54.5	-1	-5	1	5
40 - 49	5	44.5	-2	-10	4	20
30 - 39	4	34.5	-3	-12	9	36

$i = 10$	30	-	-	-14	-	82
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{ EMBED Equation.3 }

$$\begin{aligned}
 &= 64.5 + 10 \left(\frac{-14}{30} \right) \\
 &= 64.5 + 10 (-0.46) \\
 &= 64.5 + (-4.6) \\
 &= 59.9
 \end{aligned}$$

$$\begin{aligned}
 SD_t &= i \sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n} \right)^2} \\
 &= 10 \sqrt{\frac{82}{30} - \left(\frac{-14}{30} \right)^2} \\
 &= 10 \sqrt{2.7 - (-0.466)^2} \\
 &= 10 \sqrt{2.7 - (-0.217)} \\
 &= 10 \sqrt{2.917} \\
 &= 10 \times 1.708 \\
 &= 17.08
 \end{aligned}$$

Table of Normality Data Test with Chi Kuadrat Formula

Interval of Score	Real Upper Limit	Z - Score	Limit of Large of the Area	Large of area	f_h	f_0	$\frac{(f_0 - f_h)}{f_h}$
80 - 89	89.5	1.73	0.4582	0.08	2.4	4	0.435
70 - 70	79.5	1.15	0.3749	0.16	4.8	5	0.002
60 - 69	69.5	0.56	0.2123	-0.28	-8.4	7	-3.459
50 - 59	59.5	-0.02	0.49202	0.22	6.6	5	-0.057
40 - 49	49.5	-0.61	0.27093	0.15	4.5	5	0.012
30 - 39	39.5	-1.19	0.11702	0.08	2.4	4	0.435
	29.5						
						X^2	-2.632

Based on the table above, the reseracher found that $x^2_{\text{count}} = -2.632$ while $x^2_{\text{table}} = 11.070$, cause $x^2_{\text{count}} < x^2_{\text{table}}$ ($-2.632 < 11.070$) with degree of freedom (dk) = $6-1 = 5$ and significant level { EMBED Equation.3 } = 5%. So distribution of XI IPA-3 class (pre-test) is normal.

6. Median

No	Interval	F	Fk
1	30 – 39	4	4
2	40 – 49	5	9
3	50 – 59	5	14
4	60 – 69	7	21
5	70 – 79	5	26
6	80 – 89	4	30

Position of Me in the interval of classes is number 4, that:

$$Bb = 59.5$$

$$F = 14$$

$$fm = 7$$

$$i = 10$$

$$n = 30$$

$$1/2n = 15$$

So :

$$Me = Bb + i$$

$$\{ \text{EMBED Equation.3} \}$$

$$= 59.5 + 10 \left(\frac{15-14}{7} \right)$$

$$= 59.5 + 10 (0.14)$$

$$= 59.5 + 1.4$$

$$= 60.9$$

7. Modus

No	Interval	F	Fk
1	30 – 39	4	4
2	40 – 49	5	9

3	50 – 59	5	14
4	60 – 69	7	21
5	70 – 79	5	26
6	80 – 89	4	30

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 59.5$$

$$d_1 = 2$$

$$d_2 = 2$$

$$i = 10$$

So,

$$\begin{aligned} M_o &= 59.5 + \frac{2}{2+2} 10 \\ &= 59.5 + 0.5 (10) \\ &= 59.5 + 5 \\ &= 64.5 \end{aligned}$$

C. RESULT OF THE NORMALITY TEST OF XI IPA-4 IN PRE-TEST

1. The score of XI IIS-2 class in pre test from low score to high score:

30	30	35	35	40	40	45	45	50	50
50	50	55	55	55	60	60	60	60	65
65	70	70	70	75	75	75	75	80	80

$$2. \text{ High} = 80$$

$$\text{Low} = 30$$

$$\text{Range} = \text{High} - \text{Low}$$

$$= 80 - 30$$

$$= 50$$

$$3. \text{ Total of Classes} = 1 + 3,3 \log (n)$$

$$= 1 + 3,3 \log (30)$$

$$= 1 + 3,3 (1.477)$$

$$= 1 + 4.874$$

$$= 5.85$$

$$= 6$$

$$4. \text{ Length of Classes} = \frac{\text{range}}{\text{total of class}} = \frac{50}{6} = 8.3 = 9$$

5. Mean

Interval Class	F	X	x	fx	x ²	fx ²
75 – 83	6	79	+3	18	9	54
66 – 74	3	70	+2	6	4	12
57 – 65	6	61	+1	6	1	6
48 – 56	7	52	0	0	0	0
39 – 47	4	43	-1	-4	1	4
30 – 38	4	34	-2	-8	4	16
i = 9	{ =SU M(A BO VE) }	-	-	18	-	92

{ EMBED Equation.3 }

$$\begin{aligned}
 &= 52 + 9 \left(\frac{18}{30} \right) \\
 &= 52 + 9 (0.6) \\
 &= 52 + 5.4 \\
 &= 57.4
 \end{aligned}$$

$$\begin{aligned}
 SD_t &= i \sqrt{\frac{\sum fx_i^2}{n} - \left(\frac{\sum fx_i}{n} \right)^2} \\
 &= 9 \sqrt{\frac{92}{30} - \left(\frac{18}{30} \right)^2} \\
 &= 9 \sqrt{3.06 - (0.6)^2} \\
 &= 9 \sqrt{3.06 - 0.36} \\
 &= 9 \sqrt{2.7} \\
 &= 9 \times 1.64 \\
 &= 14.76
 \end{aligned}$$

Table of Normality Data Test with Chi Kuadrat Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f _h	f ₀	$\frac{(f_0 - f_h)}{f_h}$
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75 – 83	83.5	1.76	0.4608	0.08	2.4	6	2.24
66 – 74	74.5	1.15	0.3749	0.16	4.8	3	0.14
57 – 65	65.5	0.54	0.2054	-0.27	-8.1	6	3.02
48 – 56	56.5	-0.06	0.47608	0.22	6.6	7	0.003
39 – 47	47.5	-0.67	0.25143	0.15	4.5	4	0.01
30 – 38	38.5	-1.28	0.10027	0.07	2.1	4	0.81
	29.5	-1.89	0.02938				
						X^2	6.223

Based on the table above, the reseracher found that $x^2_{\text{count}} = 6.223$ while $x^2_{\text{table}} = 11.070$, cause $x^2_{\text{count}} > x^2_{\text{table}}$ ($6.223 > 11.070$) with degree of freedom (dk) = $6-1 = 5$ and significant level { EMBED Equation.3 } = 5%. So distribution of XI IPA-4 class (pre-test) is normal.

6. Median

No	Interval	F	Fk
1	30 – 38	4	6
2	39 – 47	4	9
3	48 – 56	7	15
4	57 – 65	6	22
5	66 – 74	3	26
6	75 – 83	6	30

Position of Me in the interval of classes is number 3, that:

$$Bb = 47.5$$

$$F = 9$$

$$fm = 7$$

$$i = 9$$

$$n = 30$$

$$1/2n = 15$$

So :

$$Me = Bb + i$$

{ EMBED Equation.3 }

$$= 47.5 + 9\left(\frac{15-9}{7}\right)$$

$$= 47.5 + 9 (0.857)$$

$$= 47.5 + 7.71$$

$$= 55.21$$

7. Modus

No	Interval	F	Fk
1	30 – 38	4	6
2	39 – 47	4	9
3	48 – 56	7	15
4	57 – 65	6	22
5	66 – 74	3	26
6	75 – 83	6	30

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 47.5$$

$$d_1 = 3$$

$$d_2 = 1$$

$$i = 9$$

So,

$$M_o = 47.5 + \frac{3}{3+1} 9$$

$$= 47.5 + 0.75 (9)$$

$$= 47.5 + 6.75$$

$$= 54.25$$

Appendix 18

HOMOGENEITY TEST (PRE-TEST)

Calculation of parameter to get variant of the first class as experimental class sample and variant of the second class as control class sample are used homogeneity test by using formula:

$$S^2 = \{ \text{EMBED Equation.3} \}$$

Hypotheses:

$$H_0 : \{ \text{EMBED Equation.3} \}$$

$$H_1 : \{ \text{EMBED Equation.3} \}$$

A. Variant of the XI IPA 2 class is:

NO	X_i	X_i^2
1.	35	1225
2.	40	1600
3.	45	2025
4.	45	2025
5.	50	2500
6.	50	2500
7.	50	2500
8.	50	2500
9.	55	3025
10.	55	3025
11.	55	3025
12.	55	3025
13.	55	3025
14.	60	3600
15.	60	3600
16.	60	3600
17.	60	3600
18.	60	3600
19.	65	4225
20.	65	4225
21.	70	4900
22.	70	4900
23.	70	4900
24.	75	5625

25.	75	5625
26.	80	6400
27.	80	6400
28.	80	6400
29.	80	6400
30.	85	7225
Total	1835	117225

$$n = 30$$

$$\sum xi = 1835$$

$$\sum xi^2 = 117225$$

So:

$$\begin{aligned}
S^2 &= \{ \text{EMBED Equation.3} \} \\
&= \frac{30(117225) - (1835)^2}{30(30-1)} \\
&= \frac{3516750 - 3367225}{30(29)} \\
&= \frac{149529}{870} \\
&= 171.86
\end{aligned}$$

B. Variant of the XI IPA 3 class is:

NO	Xi	Xi ²
1.	30	900
2.	35	1225
3.	35	1225
4.	35	1225
5.	40	1600
6.	40	1600
7.	40	1600
8.	45	2025
9.	45	2025
10.	55	3025
11.	55	3025
12.	55	3025
13.	55	3025
14.	55	3025
15.	60	3600
16.	60	3600
17.	60	3600
18.	60	3600
19.	60	3600
20.	65	4225

21.	65	4225
22.	70	4900
23.	70	4900
24.	70	4900
25.	75	5625
26.	75	5625
27.	80	6400
28.	80	6400
29.	80	6400
30.	85	7225
Total	1705	105375

$$N = 30$$

$$\sum xi = 1705$$

$$\sum xi^2 = 105375$$

So:

$$S^2 =$$

$$\{ \text{EMBED Equation.3} \}$$

$$= \frac{30(105375) - (1705)^2}{30(30-1)}$$

$$= \frac{3161250 - 2907025}{30(29)} \{ \text{EMBED Equation.3} \}$$

$$= \frac{254225}{870}$$

$$= \frac{254225}{870}$$

$$= 292.21$$

C. Variant of the XI IPA 4 class is:

NO	Xi	Xi ²
1.	30	900
2.	30	900
3.	35	1225
4.	35	1225
5.	40	1600
6.	40	1600
7.	45	2025
8.	45	2025
9.	50	2500
10.	50	2500
11.	50	2500
12.	50	2500
13.	55	3025
14.	55	3025
15.	55	3025
16.	60	3600
17.	60	3600

18.	60	3600
19.	60	3600
20.	65	4225
21.	65	4225
22.	70	4900
23.	70	4900
24.	70	4900
25.	75	5625
26.	75	5625
27.	75	5625
28.	75	5625
29.	80	6400
30.	80	6400
Total	1705	103425

$$N = 30$$

$$\sum xi = 1705$$

$$\sum xi^2 = 103425$$

So:

$$S^2 =$$

$$\begin{aligned}
& \{ \text{EMBED Equation.3} \} \\
& = \frac{30(103425) - (1705)^2}{30(30-1)} \{ \text{EMBED Equation.3} \} \\
& = \frac{312750 - 2907025}{30(29)} \\
& = \frac{195725}{870} \\
& = 224.97
\end{aligned}$$

The Formula was used to test the hypothesis was:

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

1. XI IPA 2 and XI IPA 3 :

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

So:

$$F = \frac{292.21}{171.86}$$

$$= 1.70$$

After doing the calculation, researcher found that $F_{\text{count}} = 1.70$. It had been compared to F_{table} with { EMBED Equation.3 }5% and dk numerator and denominator were same (n_1 and $n_2 = 30$; $dk = 30-1 = 29$). From the distribution list F, researcher found that $F_{\text{table}} = 4.18$, so $F_{\text{count}} < F_{\text{table}}$ ($1.70 < 4.18$). It could be concluded that there is no difference variant between the XI IPA 2 class and XI IPA 3 class. It means that the variant is homogenous.

2. XI IPA 2 and XI IPA 4 :

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

So:

$$F = \frac{224.97}{171.86} = 1.30$$

After doing the calculation, researcher found that $F_{\text{count}} = 1.30$. It had been compared to F_{table} with { EMBED Equation.3 }5% and dk numerator ($n_1-1 = 30-1 = 29$ and denominator $n_2-1 = 30-1 = 29$). From the distribution list F, researcher found that $F_{\text{table}} = 4.18$, so $F_{\text{count}} < F_{\text{table}}$ ($1.30 < 4.18$). It could be concluded that there is no difference variant between the XI IPA 2 class and XI IPA 4 class. It means that the variant is homogenous.

3. XI IPA 3 and XI IPA 4 :

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

So:

$$F = \frac{292.21}{224.97} = 1.29$$

After doing the calculation, researcher found that $F_{\text{count}} = 1.29$. It had been compared to F_{table} with { EMBED Equation.3 }5% and dk numerator ($n_1-1 = 30-1 = 29$ and denominator $n_2-1 = 30-1 = 29$). From the distribution list F, researcher found that $F_{\text{table}} = 4.18$, so $F_{\text{count}} < F_{\text{table}}$

$F_{table} (1.29 < 4.18)$. It could be concluded that there is no difference variant between the XI IPA 3 class and XI IPA 4 class. It means that the variant is homogenous.

Appendix 19

Score of Experimental Class and Control Class on Post Test

1. Score of Experimental Class Post Test Using Numbered Head Together Technique

No	The Name of Students	Score of Post Test
1	Afrianda Maris Tanjung	55
2	Al Fauzi	70
3	Ameliani Nasution	70
4	Andrini Rosa Putri Siregar	55
5	Arinal Rahman	70
6	Bulan Sitompul	65
7	Dinda Rizky Natasya Lubis	80
8	Doni Ivanda	60
9	Efrilda Yanti Tanjung	80
10	Eis Nurhalimah	65
11	Frendy Setiawan	80
12	Jesika Rahmadani	80
13	Kelvin Yusril Adaha Nasution	75
14	Mariatul Kibitiah Harahap	90
15	Muhammad Kadapi	85
16	Muhammad Rio Muttaqin Siregar	70
17	Muhammad Rizki Piliang	75
18	Nada Rona Atika	80
19	Nazlah Afifah Marpaung	75
20	Nurlela Nasution	70
21	Oky Harwinsyah Batubara	80
22	Oloan Makruf Siregar	85
23	Rinda Rahayu Harahap	75
24	Rizka Fauziah Widodo	80
25	Rizki Sriwahyuni	75
26	Risky Abdilah	80
27	Sella Pebriana HSB	90
28	Selli Pebriana HSB	90
29	Siti Kholiza Simbolon	80
30	Yuli Andriani	90
Total		2275

2. Score of Control Class Post Test Using Conventional Technique

No	The Name of Students	Score of Pre Test
1	Adella Puspita	70
2	Agung Adiansyah	65
3	Alisah Sanira	55
4	Anggi Fitria Lubis	90
5	Aulia Rahman Siregar	80
6	Baina	60
7	Desi Romadani	85
8	Dinda Hmidi Lubis	50
9	Doni Indra Wijaya Harahap	70
10	Fatima Sari Harahap	85
11	Fauzi Nasution	70
12	Fitriana Harahap	55
13	Indra Sulaiman	80
14	Irsyad Hamdi	65
15	Jamaluddin Siregar	65
16	Khoirul Sehat Siregar	80
17	Khoirun Nisa	70
18	Lasmaita	70
19	Madia	75
20	M. Zakwan johari Siregar	75
21	Nanda Yuspita	90
22	Nurhikmah	70
23	Nofrya Rahayu Shinta	75
24	Osama Siregar	75
25	Putri Diana	85
26	Putrid Nopriani Lubis	80
27	Rika Sasmita	75
28	Riski Maimunah Lubis	80
29	Ryan Fadli	80
30	Widia Safitri Nasution	65
Total		2190

Appendix 20

RESULT OF NORMALITY TEST IN POST TEST

A. RESULT OF THE NORMALITY TEST OF XI IPA-2 IN POST-TEST

1. The score of XI MIA-2 class in post test from low score to high score:

55	55	60	65	65	70	70	70	70	70
75	75	75	75	75	80	80	80	80	80
80	80	80	80	85	85	90	90	90	90

2. High = 95

Low = 55

Range = High - Low

= 90 - 55

= 35

3. Total of Classes = $1 + 3,3 \log (n)$

= $1 + 3,3 \log (30)$

= $1 + 3,3 (1.47)$

= $1 + 4.85$

= 5.85

= 6

4. Length of Classes = $\frac{range}{totalofclass} = \frac{35}{6} = 5.83 = 6$

5. Mean

Interval Class	F	X	x	fx	x ²	fx ²
85 - 90	6	87.5	+1	6	1	6
79 - 84	9	81.5	0	0	0	0
73 - 78	5	75.5	-1	-5	1	5
67 - 72	5	69.5	-2	-10	4	20
61 - 66	2	63.5	-3	-6	9	18
55 - 60	3	57.5	-4	-12	16	48
$i = 6$	30	-	-	-27	-	97

{ EMBED Equation.3 }

= $81.5 + 6 \left(\frac{-27}{30}\right)$

= $81.5 + 6 (-0.9)$

= $81.5 + (-5.4)$

$$= 76.1$$

$$\begin{aligned}
 SD_t &= i \sqrt{\frac{\sum f x_i^2}{n} - \left(\frac{\sum f x_i}{n}\right)^2} \\
 &= 6 \sqrt{\frac{97}{30} - \left(\frac{-27}{30}\right)^2} \\
 &= 6 \sqrt{3.23 - (-0.9)^2} \\
 &= 6 \sqrt{2.52 - 0.81} \\
 &= 6 \sqrt{1.71} \\
 &= 6 \times 1.31 = 7.86
 \end{aligned}$$

Table of Normality Data Test with Chi Square Formula

Interval of Score	Real Upper Limit	Z - Score	Limit of Large of the Area	Large of area	f _h	f ₀	$\frac{(f_0 - f_h)}{f_h}$	
	90.5	1.54	0.4382					
	84.5	0.90	0.3159	0.12	3.6	6	0.435	
	78.5	0.25	0.0987	0.21	6.3	9	0.176	
	72.5	-0.38	0.35197	-0.25	-7.5	5	2.755	
	66.5	-1.03	0.15151	0.20	6	5	0.025	
	60.5	-1.67	0.04746	0.10	3	2	0.108	
	54.5	-2.32	0.01017	0.03	0.9	3	5.428	
							X ²	8.927

Based on the table above, the reseracher found that $x^2_{count} = 8.927$ while $x^2_{table} = 11.070$, cause $x^2_{count} < x^2_{table}$ ($8.927 < 11.070$) with degree of freedom (dk) = $6-1 = 5$ and significant level { EMBED Equation.3 } = 5%. So distribution of XI IPA-2 class (post-test) is normal.

6. Median

No	Interval	F	Fk
----	----------	---	----

1	55 – 60	3	3
2	61 – 66	2	5
3	67 – 72	5	10
4	73 – 78	5	15
5	79 – 84	9	24
6	85 – 90	6	30

Position of Me in the interval of classes is number 5, that:

$$Bb = 78.5$$

$$F = 15$$

$$fm = 9$$

$$i = 6$$

$$n = 30$$

$$1/2n = 15$$

So :

$$Me = Bb + i$$

{ EMBED Equation.3 }

$$= 78.5 + 6 \left(\frac{15-15}{9} \right)$$

$$= 78.5 + 6 (0)$$

$$= 78.5 + 0$$

$$= 78.5$$

7. Modus

No	Interval	F	Fk
1	55 – 60	3	3
2	61 – 66	2	5
3	67 – 72	5	10
4	73 – 78	5	15
5	79 – 84	9	24
6	85 – 90	6	30

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 78.5$$

$$d_1 = 4$$

$$d_2 = 3$$

$$i = 6$$

So,

$$\begin{aligned} M_0 &= 78.5 + \frac{4}{4+3} 6 \\ &= 78.5 + 0.57 (6) \\ &= 78.5 + 3.42 \\ &= 81.92 \end{aligned}$$

RESULT OF NORMALITY TEST IN POST TEST

B. RESULT OF THE NORMALITY TEST OF XI IPA-3 IN POST-TEST

1. The score of XI MIA-3 class in pre test from low score to high score:

50	55	55	60	65	65	65	65	70	70
70	70	70	70	75	75	75	75	75	80
80	80	80	80	80	85	85	85	90	90

2. High = 90

Low = 50

Range = High – Low

= 90 - 50

= 40

3. Total of Classes = $1 + 3,3 \log (n)$

= $1 + 3,3 \log (30)$

= $1 + 3,3 (1.47)$

= $1 + 4.85$

= 5.85

= 6

4. Length of Classes = $\frac{range}{totalofclass} = \frac{40}{6} = 6.66 = 7$

5. Mean

Interval Class	F	X	x	fx	x ²	fx ²
85 – 91	5	88	+3	15	9	45
78 – 84	6	81	+2	12	4	24
71 – 77	5	74	+1	5	1	5
64 – 70	10	67	0	0	0	0
57 – 63	1	60	-1	-1	1	1
50 – 56	3	53	-2	-6	4	12
<i>i</i> = 7	30	-	-	25	-	87

{ EMBED Equation.3 }

= $67 + 7 \left(\frac{25}{30}\right)$

= $67 + 7 (0.83)$

= $67 + 5.81$

$$= 72.81$$

$$\begin{aligned}
 SD_t &= i \sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n}\right)^2} \\
 &= 7 \sqrt{\frac{87}{30} - \left(\frac{25}{30}\right)^2} \\
 &= 7 \sqrt{2.9 - (0.14)^2} \\
 &= 7 \sqrt{2.9 - 0.019} \\
 &= 7 \sqrt{2.22} \\
 &= 7 \times 1.48 = 10.36
 \end{aligned}$$

Table of Normality Data Test with Chi Kuadrat Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f _h	f ₀	$\frac{(f_0 - f_h)}{f_h}$	
	91.5	1.80	0.4641					
	84.5	1.12	0.3686	0.09	2.7	5	0.722	
	77.5	0.45	0.1736	0.19	5.7	6	0.002	
	70.5	-0.22	0.41294	-0.23	-6.9	5	2.958	
	63.5	-0.89	0.18673	0.22	6.6	10	0.260	
	56.5	-1.57	0.05821	0.12	3.6	1	0.518	
	49.5	-2.25	0.0122	0.04	1.2	3	2.250	
							X ²	6.710

Based on the table above, the reseracher found that $x^2_{count} = 6.710$ while $x^2_{table} = 11.070$, cause $x^2_{count} < x^2_{table}$ ($6.710 < 11.070$) with degree of freedom (dk) = $6 - 1 = 5$ and significant level { EMBED Equation.3 } = 5%. So distribution of XI IPA-3 class (post-test) is normal.

6. Median

No	Interval	F	Fk
----	----------	---	----

1	50 – 56	3	3
2	57 – 63	1	4
3	64 – 70	10	14
4	71 – 77	5	19
5	78 – 84	6	25
6	85 – 91	5	30

Position of Me in the interval of classes is number 3, that:

$$Bb = 67$$

$$F = 4$$

$$fm = 10$$

$$i = 7$$

$$n = 30$$

$$1/2n = 15$$

So :

$$Me = Bb + i$$

{ EMBED Equation.3 }

$$= 67 + 7\left(\frac{15-4}{10}\right)$$

$$= 67 + 7(1.1)$$

$$= 67 + 7.7$$

$$= 74.7$$

7. Modus

No	Interval	F	Fk
1	50 – 56	3	3
2	57 – 63	1	4
3	64 – 70	10	14
4	71 – 77	5	19
5	78 – 84	6	25
6	85 – 91	5	30

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 67$$

$$d_1 = 9$$

$$d_2 = 5$$

$$i = 7$$

So,

$$\begin{aligned}M_o &= 67 + \frac{9}{9+5}7 \\ &= 67 + 0.64(7) \\ &= 67 + 4.48 \\ &= 71.48\end{aligned}$$

HOMOGENEITY TEST (POST-TEST)

Calculation of parameter to get variant of the first class as experimental class sample and variant of the second class as control class sample are used homogeneity test by using formula:

$$S^2 = \{ \text{EMBED Equation.3} \}$$

Hypotheses:

$$H_0 : \{ \text{EMBED Equation.3} \}$$

$$H_1 : \{ \text{EMBED Equation.3} \}$$

D. Variant of the XI IPA 2 class is:

NO	X_i	X_i^2
31.	55	3025
32.	55	3025
33.	60	3600
34.	65	4225
35.	65	4225
36.	70	4900
37.	70	4900
38.	70	4900
39.	70	4900
40.	70	4900
41.	75	5625
42.	75	5625
43.	75	5625
44.	75	5625
45.	75	5625
46.	80	6400
47.	80	6400
48.	80	6400
49.	80	6400
50.	80	6400
51.	80	6400
52.	80	6400
53.	80	6400
54.	80	6400
55.	85	7225
56.	85	7225
57.	90	8100

58.	90	8100
59.	90	8100
60.	90	8100
Total	2275	175175

$$n = 30$$

$$\sum xi = 2275$$

$$\sum_{xi}^2 = 175175$$

So:

$$\begin{aligned}
 S^2 &= \\
 &\quad \{ \text{EMBED Equation.3} \} \\
 &= \frac{30(175175) - (2275)^2}{30(30-1)} \\
 &= \frac{5255250 - 5175625}{30(29)} \\
 &= \frac{79625}{870} \\
 &= 91.52
 \end{aligned}$$

E. Variant of the XI IPA 3 class is:

NO	Xi	Xi ²
31.	50	2500
32.	55	3025
33.	55	3025
34.	60	3600
35.	65	4225
36.	65	4225
37.	65	4225
38.	65	4225
39.	70	4900
40.	70	4900
41.	70	4900
42.	70	4900
43.	70	4900
44.	70	4900
45.	75	5625
46.	75	5625
47.	75	5625
48.	75	5625
49.	75	5625
50.	80	6400
51.	80	6400
52.	80	6400
53.	80	6400

54.	80	6400
55.	80	6400
56.	85	7225
57.	85	7225
58.	85	7225
59.	90	8100
60.	90	8100
Total	2190	162850

$$N = 30$$

$$\sum xi = 2190$$

$$\sum_{xi}^2 = 162850$$

So:

$$S^2 =$$

$$\{ \text{EMBED Equation.3} \}$$

$$= \frac{30(162850) - (2190)^2}{30(30-1)} \{ \text{EMBED Equation.3} \}$$

$$= \frac{4885500 - 4796100}{30(29)}$$

$$= \frac{89400}{870}$$

$$= 102.75$$

The Formula was used to test the hypothesis was:

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

4. XI IPA 2 and XI IPA 3 :

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

So:

$$F = \frac{102.75}{91.52}$$

$$= 1.12$$

After doing the calculation, researcher found that $F_{\text{count}} = 1.12$. It had been compared to F_{table} with { EMBED Equation.3 }5% and dk numerator and deminator were same (n_1 and $n_2 = 30$; $dk = 30-1 = 29$). From the distribution list F, researcher found that $F_{\text{table}} = 4.18$, so

$F_{\text{count}} < F_{\text{table}} (1.12 < 4.18)$. It could be concluded that there is no difference variant between the XI IPA 2 class and XI IPA 3 class. It means that the variant is homogenous.

T-test of the Both Averages in Pre-Test

The formula was used to analyse homogeneity test of the both averages was t-test, that:

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

$$Tt = \frac{61.19 - 59.9}{\sqrt{\left(\frac{(30-1)71.86 + (30-1)292.21}{30+30-2}\right) \left(\frac{1}{30} + \frac{1}{30}\right)}}$$

$$Tt = \frac{1.29}{\sqrt{\left(\frac{29(71.86) + 29(292.21)}{58}\right) \left(\frac{2}{30}\right)}}$$

$$Tt = \frac{1.29}{\sqrt{\left(\frac{4983.94 + 8474.09}{58}\right) (0.07)}}$$

$$Tt = \frac{1.29}{\sqrt{(232.035)(0.07)}}$$

$$Tt = \frac{1.29}{\sqrt{16.24}}$$

$$Tt = \frac{1.29}{4.03}$$

$$Tt = 0.320$$

Based on researcher calculation result of homogeneity test of the both averages, researcher found that $t_{\text{count}} = 0.320$ with opportunity $(1 - \{ \text{EMBED Equation.3} \}) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 30 + 30 - 2 = 58$, researcher found that $t_{\text{table}} = 1.67155$, because $t_{\text{count}} < t_{\text{table}}$ ($0.320 < 1.67155$). So, H_a was rejected, it means that there is no difference in average between experimental class and control class in pre test.

Appendix 23

T-test of the Both Averages in Post-Test

The formula was used to analyse homogeneity test of the both averages was t-test, that:

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

$$Tt = \frac{76.1 - 72.81}{\sqrt{\left(\frac{(30-1)91.5 + (30-1)102.75}{30+30-2}\right) \left(\frac{1}{30} + \frac{1}{30}\right)}}$$

$$Tt = \frac{3.29}{\sqrt{\left(\frac{29(91.5) + 29(102.75)}{58}\right) \left(\frac{2}{30}\right)}}$$

$$Tt = \frac{3.29}{\sqrt{\left(\frac{2653.5 + 2979.75}{58}\right) \left(\frac{2}{30}\right)}}$$

$$Tt = \frac{3.29}{\sqrt{\left(\frac{5633.25}{58}\right) (0.07)}}$$

$$Tt = \frac{3.29}{\sqrt{(37.125)(0.07)}}$$

$$Tt = \frac{3.29}{\sqrt{2.227}}$$

$$Tt = \frac{3.29}{1.492}$$

$$Tt = 2.205$$

Based on researcher calculation result of homogeneity test of the both averages, researcher found that $t_{\text{count}} = 2.053$ with opportunity $(1 - \{\text{EMBED Equation.3}\}) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 30 + 30 - 2 = 58$, $t_{\text{table}} = 1.67155$, cause $t_{\text{count}} > t_{\text{table}} (2.205 > 1.67155)$. It means that H_a was accepted, it means there was the difference average between experimental class and

control class in post test. It can be concluded that there was the significant effect of Numbered Head Together technique on students' reading comprehension at grade XI SMA N 5 Padangsidimpua.

Appendix 24

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 25

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
-3.2	0.00069	0.00066	0.00064	0.00062	0.00060	0.00058	0.00056	0.00054	0.00052	0.00050
-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	0.00368	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
-2.3	0.01072	0.01044	0.01017	0.00990	0.00964	0.00939	0.00914	0.00889	0.00866	0.00842
-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
-0.6	0.27425	0.27093	0.26763	0.26435	0.26109	0.25785	0.25463	0.25143	0.24825	0.24510

-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

Appendix 26

Percentage Points of the t Distribution

Pr df	0.25	0.10	0.05	0.025	0.01	0.005	0.001
	0.50	0.20	0.10	0.050	0.02	0.010	0.002
1	1.00000	3.07768	6.31375	12.70620	31.82052	63.65674	318.30884
2	0.81650	1.88562	2.91999	4.30265	6.96456	9.92484	22.32712
3	0.76489	1.63774	2.35336	3.18245	4.54070	5.84091	10.21453
4	0.74070	1.53321	2.13185	2.77645	3.74695	4.60409	7.17318
5	0.72669	1.47588	2.01505	2.57058	3.36493	4.03214	5.89343
6	0.71756	1.43976	1.94318	2.44691	3.14267	3.70743	5.20763
7	0.71114	1.41492	1.89458	2.36462	2.99795	3.49948	4.78529
8	0.70639	1.39682	1.85955	2.30600	2.89646	3.35539	4.50079
9	0.70272	1.38303	1.83311	2.26216	2.82144	3.24984	4.29681
10	0.69981	1.37218	1.81246	2.22814	2.76377	3.16927	4.14370
11	0.69745	1.36343	1.79588	2.20099	2.71808	3.10581	4.02470
12	0.69548	1.35622	1.78229	2.17881	2.68100	3.05454	3.92963
13	0.69383	1.35017	1.77093	2.16037	2.65031	3.01228	3.85198
14	0.69242	1.34503	1.76131	2.14479	2.62449	2.97684	3.78739
15	0.69120	1.34061	1.75305	2.13145	2.60248	2.94671	3.73283
16	0.69013	1.33676	1.74588	2.11991	2.58349	2.92078	3.68615
17	0.68920	1.33338	1.73961	2.10982	2.56693	2.89823	3.64577
18	0.68836	1.33039	1.73406	2.10092	2.55238	2.87844	3.61048
19	0.68762	1.32773	1.72913	2.09302	2.53948	2.86093	3.57940
20	0.68695	1.32534	1.72472	2.08596	2.52798	2.84534	3.55181
21	0.68635	1.32319	1.72074	2.07961	2.51765	2.83136	3.52715
22	0.68581	1.32124	1.71714	2.07387	2.50832	2.81876	3.50499
23	0.68531	1.31946	1.71387	2.06866	2.49987	2.80734	3.48496
24	0.68485	1.31784	1.71088	2.06390	2.49216	2.79694	3.46678
25	0.68443	1.31635	1.70814	2.05954	2.48511	2.78744	3.45019
26	0.68404	1.31497	1.70562	2.05553	2.47863	2.77871	3.43500
27	0.68368	1.31370	1.70329	2.05183	2.47266	2.77068	3.42103
28	0.68335	1.31253	1.70113	2.04841	2.46714	2.76326	3.40816
29	0.68304	1.31143	1.69913	2.04523	2.46202	2.75639	3.39624
30	0.68276	1.31042	1.69726	2.04227	2.45726	2.75000	3.38518
31	0.68249	1.30946	1.69552	2.03951	2.45282	2.74404	3.37490
32	0.68223	1.30857	1.69389	2.03693	2.44868	2.73848	3.36531
33	0.68200	1.30774	1.69236	2.03452	2.44479	2.73328	3.35634
34	0.68177	1.30695	1.69092	2.03224	2.44115	2.72839	3.34793
35	0.68156	1.30621	1.68957	2.03011	2.43772	2.72381	3.34005
36	0.68137	1.30551	1.68830	2.02809	2.43449	2.71948	3.33262
37	0.68118	1.30485	1.68709	2.02619	2.43145	2.71541	3.32563
38	0.68100	1.30423	1.68595	2.02439	2.42857	2.71156	3.31903
39	0.68083	1.30364	1.68488	2.02269	2.42584	2.70791	3.31279
40	0.68067	1.30308	1.68385	2.02108	2.42326	2.70446	3.30688

Percentage Points of the t Distribution

Pr df	0.25	0.10	0.05	0.025	0.01	0.005	0.001
	0.50	0.20	0.10	0.050	0.02	0.010	0.002
41	0.68052	1.30254	1.68288	2.01954	2.42080	2.70118	3.30127
42	0.68038	1.30204	1.68195	2.01808	2.41847	2.69807	3.29595
43	0.68024	1.30155	1.68107	2.01669	2.41625	2.69510	3.29089
44	0.68011	1.30109	1.68023	2.01537	2.41413	2.69228	3.28607
45	0.67998	1.30065	1.67943	2.01410	2.41212	2.68959	3.28148
46	0.67986	1.30023	1.67866	2.01290	2.41019	2.68701	3.27710
47	0.67975	1.29982	1.67793	2.01174	2.40835	2.68456	3.27291
48	0.67964	1.29944	1.67722	2.01063	2.40658	2.68220	3.26891
49	0.67953	1.29907	1.67655	2.00958	2.40489	2.67995	3.26508
50	0.67943	1.29871	1.67591	2.00856	2.40327	2.67779	3.26141
51	0.67933	1.29837	1.67528	2.00758	2.40172	2.67572	3.25789
52	0.67924	1.29805	1.67469	2.00665	2.40022	2.67373	3.25451
53	0.67915	1.29773	1.67412	2.00575	2.39879	2.67182	3.25127
54	0.67906	1.29743	1.67356	2.00488	2.39741	2.66998	3.24815
55	0.67898	1.29713	1.67303	2.00404	2.39608	2.66822	3.24515
56	0.67890	1.29685	1.67252	2.00324	2.39480	2.66651	3.24226
57	0.67882	1.29658	1.67203	2.00247	2.39357	2.66487	3.23948
58	0.67874	1.29632	1.67155	2.00172	2.39238	2.66329	3.23680
59	0.67867	1.29607	1.67109	2.00100	2.39123	2.66176	3.23421
60	0.67860	1.29582	1.67065	2.00030	2.39012	2.66028	3.23171
61	0.67853	1.29558	1.67022	1.99962	2.38905	2.65886	3.22930
62	0.67847	1.29536	1.66980	1.99897	2.38801	2.65748	3.22696
63	0.67840	1.29513	1.66940	1.99834	2.38701	2.65615	3.22471
64	0.67834	1.29492	1.66901	1.99773	2.38604	2.65485	3.22253
65	0.67828	1.29471	1.66864	1.99714	2.38510	2.65360	3.22041
66	0.67823	1.29451	1.66827	1.99656	2.38419	2.65239	3.21837
67	0.67817	1.29432	1.66792	1.99601	2.38330	2.65122	3.21639
68	0.67811	1.29413	1.66757	1.99547	2.38245	2.65008	3.21446
69	0.67806	1.29394	1.66724	1.99495	2.38161	2.64898	3.21260
70	0.67801	1.29376	1.66691	1.99444	2.38081	2.64790	3.21079
71	0.67796	1.29359	1.66660	1.99394	2.38002	2.64686	3.20903
72	0.67791	1.29342	1.66629	1.99346	2.37926	2.64585	3.20733
73	0.67787	1.29326	1.66600	1.99300	2.37852	2.64487	3.20567
74	0.67782	1.29310	1.66571	1.99254	2.37780	2.64391	3.20406
75	0.67778	1.29294	1.66543	1.99210	2.37710	2.64298	3.20249
76	0.67773	1.29279	1.66515	1.99167	2.37642	2.64208	3.20096
77	0.67769	1.29264	1.66488	1.99125	2.37576	2.64120	3.19948
78	0.67765	1.29250	1.66462	1.99085	2.37511	2.64034	3.19804
79	0.67761	1.29236	1.66437	1.99045	2.37448	2.63950	3.19663
80	0.67757	1.29222	1.66412	1.99006	2.37387	2.63869	3.19526

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DOCUMENTATION





