



**THE EFFECT OF GRAMMAR TRANSLATION  
METHOD ON STUDENTS' ABILITY IN READING  
DESCRIPTIVE TEXT AT GRADE X OF SMA NEGERI 1  
ARSE**

**A THESIS**

*Submitted to the State Institute for Islamic Studies Padangsidempuan  
as a Partial Fulfillment of the Requirement for the Degree of Graduate of  
Islamic Education (S.Pd.I) In English*

**By:**

**ITA PURNAMASARI SIREGAR**

**Reg. No. 11 340 0013**

**ENGLISH EDUCATION DEPARTMENT**

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

**2015**



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**By:**

**ITA PURNAMASARI SIREGAR**  
Reg. No. 11 340 0013

**Advisor I**

**Drs. Fitriadi Lubis, M.Pd**  
NIP. 19620917 199203 1 002

**Advisor II**

**Sojuangon Rambe, S.S., M.Pd**  
NIP. 19790815 200604 1 003



**ENGLISH EDUCATION DEPARTMENT**

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

**2015**

## LETTER OF AGREEMENT

Term : Munaqosyah Padangsidimpuan, 5<sup>th</sup> October 2015  
a.n. Ita Purnamasari Siregar To : Dean Faculty of Tarbiyah and Teacher Training  
Item : 7 (seven) Exemplars in Padangsidimpuan

Assalamu'alaikum Wr. Wb.

After reading, studying and giving advice for necessary revision on thesis belongs to **Ita Purnamasari Siregar**, entitled "**The Effect of Grammar Translation Method On Students' Ability in Reading Descriptive Text at Grade X of SMAN 1 Arse**", we approved that the thesis has been acceptable to complete the requirement to fulfill for Graduate Degree of Islamic Education Scholar (S.Pd.I) in English Education Department, Faculty of Tarbiyah and Teacher Training in IAIN Padangsidimpuan.

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

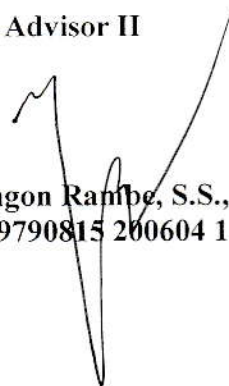
Wassalamu'alaikum Wr. Wb.

**Advisor I**



**Drs. Fitriadi Lubis, M.Pd.**  
**NIP. 19620917 199203 1 002**

**Advisor II**



**Sojuangon Rambe, S.S., M.Pd.**  
**NIP. 19790815 200604 1 003**

## DECLARATION OF SELF THESIS COMPLETION

The name who signed here:

Name : **ITA PURNAMASARI SIREGAR**  
Registration Number : 11 340 0013  
Faculty/Department : Tarbiyah and Teacher Training Faculty/TBI-I  
The Title of a Thesis : The Effect of Grammar Translation Method  
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ITA PURNAMASARI SIREGAR

Reg. No: 11 340 0013

**AGREEMENT OF PUBLICATION OF FINAL TASK  
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As Academic Cavity of The State Institute for Islamic Studies Padangsidimpuan, the name who signed here:

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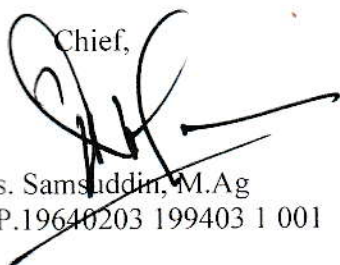
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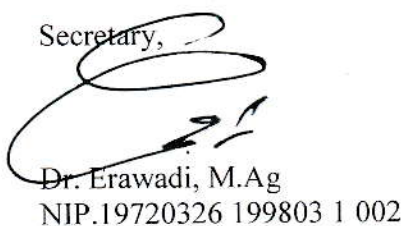
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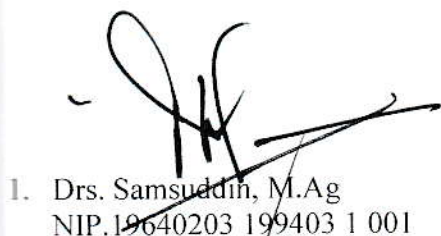
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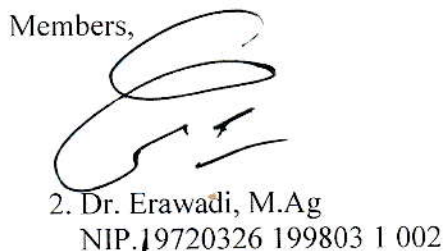
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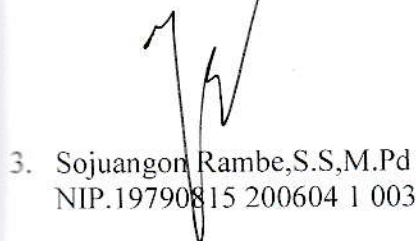
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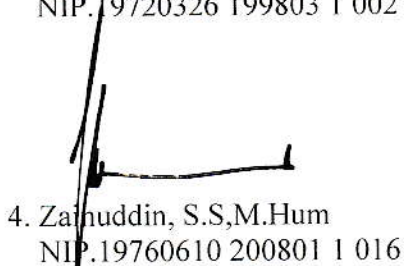
Chief,  
  
Drs. Samsuddin, M.Ag  
NIP.19640203 199403 1 001

Secretary,  
  
Dr. Erawadi, M.Ag  
NIP.19720326 199803 1 002

  
1. Drs. Samsuddin, M.Ag  
NIP.19640203 199403 1 001

Members,  
  
2. Dr. Erawadi, M.Ag  
NIP.19720326 199803 1 002

  
3. Sojuangon Rambe, S.S., M.Pd  
NIP.19790815 200604 1 003

  
4. Zainuddin, S.S., M.Hum  
NIP.19760610 200801 1 016

Proposed:

Place	: Padangsidempuan
Date	: November, 03 <sup>th</sup> 2015
Time	: 09.00 WIB - Finish
Result/Mark	: 74,12 (B)
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**RELIGION MINISTRY THE STATE INSTITUTE  
FOR ISLAMIC STUDIES PADANGSIDIMPUAN  
TARBIYAH AND TEACHER TRAINING FACULTY**

Alamat: Jl. H.T. Rizal Nurdin Km. 4,5 Telp. (0634) 22080 Sihitang 22733 Padangsidempuan

**LEGALIZATION**

Thesis : **THE EFFECT OF GRAMMAR TRANSLATION  
METHOD ON STUDENTS' ABILITY IN READING  
DESCRIPTIVE TEXT AT GRADE X OF SMAN 1 ARSE**

Written By : **ITA PURNAMASARI SIREGAR**

Reg. No : **11 340 0013**

The Thesis had been accepted as a partial fulfillment of the requirement for the degree  
of graduate of Islamic education (S.Pd.I) in English

Padangsidempuan, 13<sup>th</sup> November 2015

Dean



**Hj. ZULHIMMA, S.Ag.,M.Pd**  
**NIP. 19720702 199703 2 003**



**Name** : ITA PURNAMASARI SIREGAR  
**Register Number** : 11 340 0013  
**Faculty** : Tarbiyah and Teacher Training Faculty  
**Department** : English Education (TBI-1)  
**The Title of the Thesis** : **The Effect of Grammar Translation Method on Students' Ability in Reading Descriptive Text at grade X SMA Negeri 1 Arse.**

### **ABSTRACT**

This research aims to explained about the effect of grammar translation method on students' ability in reading descriptive text at grade X of SMA Negeri 1 arse. The problems of this research were most of them students get low achievement in reading, and most of them lack of motivation in reading, and also most of them do not have a good method in reading or they do not have the strategy. So, the students' ability in reading did not fulfill expectation. The aim of this research was to find out the effect of grammar translation method on students' ability in reading descriptive text at grade X of SMA Negeri 1 arse.

This research employed experimental research. The population of this research was the tenth grade of SMA Negeri 1 Arse. The total of population were fourth classes. Then, the sample of the research was 2 classes, experiment class (X-1) and control class X-2). It was taken after conducting normality and homogeneity test. To collect the data, researcher used test for measuring students' ability in reading descriptive text. To analysis the data, the researcher used t-test.

Based on the result of the research, researcher showed the description of the data was found that the result of experimental class and control class in pre-test ( $72.1 > 70.2$ ). In post test the result of experiment class and control class was higher than control class ( $80.6 > 66.8$ ), and the score of  $t_{count}$  was bigger than  $t_{table}$  ( $2.14 > 2.021$ ). It means that the hypothesis alternative ( $H_a$ ) was accepted. It was concluded that there was the effect of grammar translation method on students' ability in reading descriptive text at grade X of SMAN 1 Arse.

## ACKNOWLEDGEMENT

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Firstly, the researcher would like to convey her grateful to Allah SWT. The most Creator and Merciful who has given her the health, time and chance for finishing this thesis: **“The Effect of Grammar Translation Method on Students’ Ability in Reading Descriptive Text at Grade X of SMAN 1 Arse”**. This thesis is written in order to fulfill one of the requirements for English Education Department of State Institute for Islamic Studies (IAIN) Padangsidempuan. Hence, this thesis paper has been undertaken.

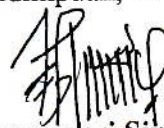
In writing this thesis, the researcher is assisted by some people and institutions. Therefore, in this opportunity the researcher would like to express her gratitude to the following people:

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This thesis is still so far from being perfect based on the weakness of the research. Therefore, the researcher aspects the constructive criticisms and suggestions from the readers in order to improve this thesis.

Padangsidempuan, 5 Oktober 2015



**Ita Purnamasari Siregar**  
**Reg. No: 113400013**

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# CHAPTER I

## INTRODUCTION

### **A. The Background of the Problem**

English is one of international language that used by many people in some countries for social relationship. Indonesia is one of many countries that used English for connecting a huge relationship to another country people. Then, English in Indonesian is used as a subject in the schools since the elementary schools, junior high schools, senior high schools until university.

In English, there are four skills that should be mastered. They are speaking, writing, listening and reading. Speaking and writing are productive skills. Listening and reading is a receptive skill. In this case, the researcher focuses on reading skill that is one of the problematic in English learning.

Reading is a receptive skills, it is a transactional between a reader and a writer or interactive process between the readers and the text. Reading happens in human minds, people receive the text and then process with their mind. In processing in their minds, they make their own interpretations of the text they read.

There are significance of reading for our life. We can get knowledge through reading. Reading is a fluent process of reader combining information from a text and their own background knowledge to build meaning. Many people or students misunderstand to understanding the text and difficult to find some information in book, textbook, newspaper, magazine, and tabloid.

To know some information above they must be reading the information from these source so they know and comprehend about the information. The more we read, we know more information and add our knowledge.

Reading activates our brain for thinking and problem solving. In reading process, our brain is activated to remember, analyze and synthesize information. When we reading some information, our brain give us remember something in our own knowledge like images or our experience before reading the text. Our brain can be a library can save many information. Reading can open doors to new worlds, new ideas and the imagination and our brain in turn will develop our ability in thinking and solving our problem in the real world.

Reading activities help us to reinforce our knowledge. Learning to read well, and learning to read better is key to gaining our knowledge. We can learn and thinking about some information that we read with easy.

Unfortunately, not all students able to read well; not all students understanding about the material especially in reading descriptive text. Many students difficult for understanding the text and don't know the meaning of the text, reading materials selected are not suitable with their development.

The researcher describe in SMAN 1 Arse that the students get some difficulties in mastering English especially in reading descriptive text. However reading skills is problematic at SMAN 1 ARSE. The aspect of

achievement or motivation. The actual fact is revealed in the following illustration.

Based on UU.Sisdiknas No 23 Tahun 2006, passing grade of English in senior high school is 75<sup>1</sup> for all subject includes reading skill. Then, the data found in SMAN 1 Arse asserts the average of students' reading comprehension achievement of grade X: 58, grade XI: 60 and grade XII: 65<sup>2</sup>. It means that students' reading achievement is still unsatisfactory.

It was also found students' lack in motivation. Based on interview with English teacher, researcher found that students' is lazy to go to library for reading the book. She said that the library still vacant when students' is taking a rest. They chose to go to the canteen for eating, playing games, chatting than reading in library<sup>3</sup>.

Students' difficult in understanding text. Rahmad said that he cannot read as good as possible because he does not have the suitable method for reading. He does not understand the meaning of the text. So, He does not read the text when teacher gives some texts in learning<sup>4</sup>.

In relation statement above, the researcher employs the method in teaching reading descriptive text. There are many methods that can be used in

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<sup>1</sup>UU.Sisdiknas no.23 tahun 2006, *standarpendidikan nasional*.

<sup>2</sup>Buku kumpulannilai SMAN 1 Arse, *Privat Document*, (SMAN 1 Arse: September 14<sup>th</sup>, 2014 at 3p.m)

<sup>3</sup>Ernisyafriyanti as English teacher in class 10, *private interview* (SMAN 1 Arse: September 14<sup>th</sup>, 2014 at 2 p.m)

<sup>4</sup>Rahmad as a students in the 10<sup>th</sup> class, *Private Interview*, (SMAN 1 Arse: September 20<sup>th</sup>, 2014 at 10.00 a.m)

teaching reading descriptive text such as GBLT (Genre based language teaching), Silent way, and GTM (Grammar Translation Method).

From the factor above, the researcher choose to employ grammar translation method (GTM) to teaching reading descriptive text and researchers has some reasons for choosing this method. First, it was found that students learning material is textbook. Textbook is related with grammar translation method because students' can learnt the material and memorize it. Second, grammar translation method is a way to easy the students in understanding text. Students can translate whole texts word for word. It can help the students' enable to read and translate. The last, develop students' ability in reading. When Students' is reading, they are combining information from a text and their own background knowledge to build a meaning. They are exposing themselves to new words and ideas.

The role of GTM in teaching reading descriptive text, GTM is a way of analysis a language that approaches the language first through detailed analysis of its grammar rules, followed by application of this knowledge to the task of translating sentences and texts into out of the target language. These methods theoretically judged to be good to apply in reading descriptive text.

Based on the background above, to solve the problems the researcher interested to conduct a experimental research through the title The Effect of

Grammar Translation Method on Students' Ability in Reading Descriptive text at grade X of SMA N 1 Arse.

## **B. Identification of the problem**

Reading is a receptive skills, it is a transactional between a reader and a writer or interactive process between the reader and the text. Reading is a process of reader in bringing some meaning and getting meanings from printed and written material.

There are many methods that can be used in teaching reading descriptive text such as genre based language testing (GBLT), silent way, and grammar translation method (GTM). At SMAN 1 Arse, researcher find that there are some problem in reading at grade X of SMA N 1 Arse as following are: 1) students' low achievement in reading. 2) students' lack of motivation. 3) students' feel difficult in reading.

## **C. Limitation of the problem**

As mention above, There are many methods that can be used in teaching reading descriptive text such as genre based language testing (GBLT), silent way, grammar translation method (GTM).

Here the researcher does not discuss all the factors. The researcher discusses one factor only that is the grammar translation method (GTM).

The researcher has some reason to chooses grammar translation method, first can help the students' understanding the text. Second, the

quickest way to learn a foreign language. And then, develop students' ability in reading.

#### **D. Formulation of the problem**

Based on background and identification of the problem above, the researcher describe the formulation of the problem is "Was there any significant effect of Grammar Translation Method on students' ability in reading descriptive text at grade X of SMAN 1 Arse ?

#### **E. Purpose of the research**

The aims of the research are as follows:

1. To describe the students' ability in reading descriptive text by using grammar translation method of the tenth grade students' of SMAN 1 Arse.
2. To examine whether the significant effect of grammar translation method on students ability in reading descriptive text of the tenth grade students of SMAN 1 Arse.

#### **F. Significances of the research**

There are many significances of this research, may be for future researcher, students, science and also for teachers, this research is useful for:

1. Head master of the school, to motive the English teachers' to teach English in a good way.
2. English teacher as information to increase knowledge especially about the effect of grammar translation method on student's ability in reading descriptive text.

3. Educational, to improve the quality of education especially in English by using appropriate method in teaching English.

#### **G. Systematic of the Thesis**

The systematic of this research is divided into five chapters. Each chapter consists of many sub chapters with detail as follow: in chapter one, it is consist of background of the problem, identification of the problem, limitation of the problem, formulation of the problem, purpose of research, significances of the research, and systematic of the thesis.

In chapter two, it is consist of the theoretical description, which consists of sub chapters such as theoretical consists of description of direct method, and description of vocabulary. Then, review of related findings, conceptual of frame work and hypothesis.

In chapter three, it is consist of research methodology which consist of time and place of the research, research methodology, population and sample, instrument of research, the techniques of data collection and the last the techniques of data analysis and outline of the thesis.

In chapter four, it is the result of the research talking about the analysis of data. This chapter four, it is consist of description of data, hypothesis testing, discussion and the threats of research.

Finally, in chapter five consist of conclusion that is giving conclusion about the result of research and suggestion that given suggestion to students and teacher by researcher.

## CHAPTER II

### REVIEW OF RELATED LITERATURE

#### A. Theoretical Description

##### 1. General concept of Reading

###### a. Definition of Reading

Actually, reading is receptive skill; it is one of reaction between reader and writer. There are many definition of reading that has been explained by the experts. According to David Nunan stated that, “Reading is a fluent process of readers combining information from a text and their own background knowledge to build meaning. The goal of reading is comprehension”.<sup>1</sup> According to Kathelen “reading, at first, may appear to be routine activity in which individual words are combined to produce meaning”.<sup>2</sup> It means that the reader can make the comprehension about the text, not only comprehend about the structure and grammar, vocabulary, but the reader also can establish a paragraph with finding a topic, main idea, supporting sentences and the others.

Additionally, Barnett indicates “reading is a communication as a mental process, and making the reader’s active participation in the

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<sup>1</sup>David Nunan. *Practical English Language Teaching* (New York: Mc Grow Hill, 2003) p. 68.

<sup>2</sup>Kathelen T. McWhorter, *Efficient and Flexible Reading* (USA: Harper Collins Publisher, 1992), p. 23.



creation of meaning”.<sup>3</sup> It means that reading can make the reader more active to construct the meaning from a text through mental process. Basically, mental process is how the way the reader thinking when they read a text.

According to Tarigan, “reading is a process of reader in bringing some meanings and getting meanings from printed and written material”.<sup>4</sup> Additionally, reading cognitive process in combining physic and mental to get the information from a text.<sup>5</sup>

Based on definition both of them can be concluded that reading is certainly to get information from printed material, not only using mental or mind to think what text talks about, but in this case the readers also need physic to read; for example the readers use their eyes when they read. Reading is a complex process; it involves much more than adding word meaning together. Reading involves not only understanding ideas, but also recognizing the relationships and structures among ideas.<sup>6</sup> Reading is useful for other purpose too; any exposure to English (provided students understand it more or less) is a good thing for language students. At they very least, some of the

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<sup>3</sup>Alice Omaggio Hadley, *Teaching Language in Context* (Urbana-Champaign: University of Illinois, 2000), p. 177.

<sup>4</sup>Henry Guntur Tarigan, *Membaca sebagai Suatu Keterampilan Berbahasa* (Bandung: Angkasa, 2005), p. 8.

<sup>5</sup>DP. Tampubolon, *Kemampuan Membaca, Teknik Membaca Efektif dan Efisien* (Bandung: Angkasa, 1987), p. 228.

<sup>6</sup>Kathlen T. Mc. Whorter. *Efficient and Flexible Reading* (Harper Collins Publisher, 1992) p. 165.

language sticks in their minds as part of the process of language acquisition, and if the reading the text is especially interesting and engaging, acquisition is likely to be even more successful.<sup>7</sup>

From all of explanation above researcher concluded that reading is an activity the reader to get information from text or reading is a process communication from the writer to the reader for understanding what means of writer. According to Henry Guntur Tarigan stated that, there are two aspects in reading they are:

- a. Mechanical skills in the lower order. This aspects includes introducing the for of word alpha beties, the linguistic elements, correlation correspondence of spelling and sound and speed of slow reading.
- b. Comprehension skill in higher order. This aspects includes comprehension simple definition, understanding significance or meaning evaluation of speed flexible reading.<sup>8</sup>

From explanation above.it can conclude aspect in reading is mechanical skills in slow reading and comprehension skill is skill in speed flexible reading.

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<sup>7</sup>Jeremy Harwer. *How to Teach English* (Addison Wesley Longman Limited, 1998) p. 68.

<sup>8</sup>Henry Guntur Tarigan. *Membaca Sebagai Suatu Keterampilan Berbahasa* (Bandung: Aksara, 1986) p. 11.

## **b. The Reading Goals**

The main goals of reading are to get and find information include content and meaning of the text based on the purpose. Here some goals of reading such as:

- a. Reading is for identifying important information.
- b. Reading is for main ideas.
- c. Reading is for finding the specific information.
- d. Reading is for underlining the important information.
- e. Reading is to classify the difficult word.
- f. Reading is to evaluate.
- g. Reading is to compare or contrast<sup>9</sup>.

## **c. Kinds of Reading**

If seen from listen or not reader's voice when they reading, so reading process can divided in two kinds.

### **1. Silent Reading**

According to oxford dictionary silent is condition of not speaking and without a sound track<sup>10</sup>. Then Tarigan said "reading is a process who done and be used by reader to get message from written. silent reading is reading a text without voice. silent reading is to training students to really pay attention to can understand text. Reading is primarily a silent activity."<sup>11</sup>

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<sup>9</sup> Henry Guntur Tarigan, *Op. Cit.*, p.9

<sup>10</sup> Horn by, Oxford Advanced Learners Dictionary (New York : Oxford University Press : 1995) p. 887.

<sup>11</sup> Henry Guntur Tarigan, *Loc. Cit.*, p. 22.

According to David Nunan, “silent reading generally focus in the classroom should be on getting meaning from print when comparison is the goal of reading”.<sup>12</sup> Henry Guntur Tarigan Said “silent reading it is use only visual memory, by silent reading, the student to be train really can understand material of text”. so silent reading is a process who done and be used by reader to get message from written by condition not speaking and without sound track. The researcher conclude silent reading is reading activity with doing without voice.

There were many skills wasclimed in silent reading, as follow:

- a) Reading without voice, without move of lip
- b) Reading without the move of head
- c) Silent reading is faster than voice reading
- d) Reading without finger of things as director
- e) Understanding of the text
- f) The speed of eyes is climed in reading
- g) Reading with the good understanding
- h) To coherent of speed with difficulties in the text.<sup>13</sup>

## 2. Reading aloud

According to Kasihani stated that, “loud reading is to train students able to read with good pronunciation or speak. the aim of loud reading is able to tell good words, fares, and sentence of

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<sup>12</sup>David Nunan, *Op .Cit.*, p. 64.

<sup>13</sup>*Ibid.*, p. 24.

English<sup>14</sup>. According to H. Douglas Brown, “silent reading is the test-taker sees separate letters, words, and/ or short sentences and read them a loud, one by one, in the presence of an administrator. since the easements is of reading comprehension, any recognize sable oral approximation of the target response is considered correct.<sup>15</sup>

Further, Ag, BambangSetiyadi stated that “Oral reading is relatively uncommon in modern language classes. this type of reading is still important in improving learners pronunciation. working in groups will make language learners feel confident to pronounce word in foreign accent and practice is really recommended in this method. this is really helpful for language learners who are reluctant and say to imitate the teacher expression individually.<sup>16</sup>

Henry Guntur Tarigan said “loud reading is a activity to read use voice and saying and the correct intonation to listener and reader can get information by also, likes thinking, feeling, attitude, or writers experience”<sup>17</sup>. Generally loud reading is oral matter, therefore, especially in teaching foreign language, loud reading

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<sup>14</sup>Kasihani K.E. Suyanto, *Op. Cit.*,p. 64.

<sup>15</sup>H. Douglas Brown, *Language Assessment*(San Fransisco: State University, 2004)p. 190.

<sup>16</sup>Ag. BambangSetiyadi, *Teaching English as A Foreign Language* (Yogyakarta :Grahallmu, 2006) p. 67.

<sup>17</sup>Henry Guntur Tarigan, *Loc.cit.*, p. 22.

activity is more depend to pronunciation instead of reading comprehension. for this case reading text must be choice which the content and language is easier to understand.

**d. Reading Assessment**

Assessment require planning and organization. The key lies identifying the purpose of reading assessment and matching instructional activities to that purpose. Assessment is a tool to measure how far the students ability and comprehension of the material<sup>18</sup>. In assessing reading comprehension, there are some indicators:

Table 1  
Indicators of Reading Assessment

NO	Indicators of Reading Comprehension
1.	Identifying main idea
2.	Identifying vocabulary from the text
3.	Identifying Specific Information
4.	Identifying characteristic of people or thing from the text
5.	Grammar

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<sup>18</sup>J.Michael O, Malley and Lorraine Valdez Pierce, *Authentic Assessment for English Language Learners* (United States of America: Addison-Wesley Publishing Company.1996),p.98

There are some techniques in assessing or testing, one of them is multiple choice test. A multiple choice test item is usually set out in such a way that the candidate is required to select the answer from a number of given options. Only one of which is correct, the marking process is totally objective because the marker is not permitted to exercise judgment when marking the candidate's answer, agreement has already been reached as to the correct answer to the each item.<sup>19</sup>

**e. Descriptive Text**

Descriptive text is a text which describes person, place, mood, situation, and etc. According to John Langan, a description is a verbal picture of a person, place, or object.<sup>20</sup> Then, John Schacter, Ph.D said "descriptive writing describes a person, place, or thing in a way that enables the reader to visualize it."<sup>21</sup> Next, OtongSetiawanDjuharie also definite the purpose of description is to describe a person, thing, place, or a specific animal.<sup>22</sup>

According to the definitions above it can be concluded that the descriptive text is the text which is describes person, place, mood,

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<sup>19</sup>CyrrillJ.Weir, *Communicative Language Testing* (New York : Prentice Hall, 1990), p.43

<sup>20</sup> John Langan, *College Writing Skills with Reading*, (New York: McGraw-Hill, 1942), p. 111.

<sup>21</sup> John Schacter, Ph.D, *The Master Teacher Series Descriptive Writing*, (New York: -, 2007), p. 4.

<sup>22</sup>OtongSetiawanDjuharie, *TeknikdanPanduanMenulisMelaluiExplorasi Model danLatihan Essay Writing*, (Bandung: YramaWidya, 2009), p. 153.

situation, and etc., it is also describes an object that appeal to the sense.

Mursyid says that “Descriptive Text is a kind of text with a purpose to give information”. The context of this kind of text is the description of particular thing, animal, person, or others, for instance: our pets or a person we know well. It differs from Report which describes things, animals, persons, or others in general. The Social Function of Descriptive Text is to describe a particular person, place, or thing.<sup>23</sup>

Beside that descriptive text has the characteristic like Sharon Sorenson said that there are some characteristics of descriptive text, they are:

1. A subject worthy of description,
2. An emphasis, either direct or indirect, on the five senses,
3. Use of figures of speech, especially to enrich description and spark reader interest,
4. A topic or thesis sentence that names the subject to be described and establishes the attitude toward the subject,
5. One of three patterns of organization: chronological, spatial, or order of importance,
6. A single, consistent tone and mood (*see tone and mood in the Glossary*),
7. Details that support the tone and mood,
8. Unity within the paragraphs and the paper as a whole,
9. Vocabulary that clarifies,
10. Varied sentence structure, which enhances the general attitude and adds appropriate emphasis,

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<sup>23</sup> M. Mursyid PW, *The Learning of Descriptive Text*, (Karangdadap: WidyaUtama, 2005), p. 4.



## 11. An effective conclusion<sup>24</sup>.

Mursyid explains that the descriptive text has the generic structure and language features, it can be defined by a series of contrast:

1. The Generic Structure of Descriptive Text consists of Identification and Description.

- a. Identification: Identifies phenomenon to be described.
- b. Description: Describes parts, qualities, characteristics, etc.

2. Language Features, descriptive often uses 'be' and 'have'. Tense which is often used is Simple Present Tense. However, sometimes it uses Past tense if the thing to be described doesn't exist anymore. Significant Grammatical Features:

- a. Focus on specific participants (My English teacher, Andini's cat, My favorite place)
- b. Use of Simple Present Tense
- c. Verbs of being and having 'Relational Processes'. (My mum is really cool, She has long black hair)
- d. Use of descriptive adjectives (strong legs, white fangs)
- e. Use of detailed Noun Phrase to give information about the subject. (a very beautiful scenery, a sweet young lady, very thick fur)
- f. Use of action verbs 'Material Processes' (It eats grass, It runs fast)
- g. Use of adverbials to give additional information about behavior (fast, at tree house)
- h. Use of Figurative language (John is as white as chalk.)<sup>25</sup>

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<sup>24</sup> Sharon Sorenson, *Webster's New World Students' Writing Handbook*, (Canada, Wiley, Hoboken, 2010),p.90

<sup>25</sup>M.Mursyid PW,*Op.Cit.*,p.4

## Example of descriptive text

### THE LESSER SLOW LORIES

The lesser Slow Loris is a mammal which can clamp on to branches for long periods of time. It is a solitary animal, which belongs to the family of Lorisidae bush baby and potto. It is found in Southern Asia, Vietnam, Borneo, and Sumatra.

It is a small mammal which is 175-250 mm long and can weigh as much as 12 ounces or 340 grams. Being nocturnal, the Loris has large round eyes. It has no tail, but it has broad grasping feet. On its second toe, it has a sharp claw. It also has an enlarged thumb and a reduced index finger.

The Lesser slow Loris is a plump animal with soft, thick fur ranging in color from light brownish-grey to deep reddish-brown with a dark stripe down the back and neck. It has a long snout with comb-like front teeth which are used in grooming. It is a very slow animal, but a deliberate climber. An interesting fact about this animal is that it has a single-note whistle. As it is tree-living, it is restricted to tropical rain forests. The diet of the Loris is made up of fruit and leaves, tender shoot, insect, birds, small mammals, and reptiles. It is nocturnal and sleeps by day rolled up in a ball<sup>26</sup>.

## 2. Grammar Translation Method

### a. Background of Grammar Translation Method

The first concern with language teaching method had to do with the teaching of Latin and Greek grammars. The methods used at the time were mostly designed to enable people to speak, read and write Latin. All of methods were related to the method which was popularly known as the grammar method<sup>27</sup>. Zainil says, “grammar

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<sup>26</sup>Hefi Sulistyawati, *English for Senior High School Students* (PT. Masmedia Buana Pustaka, Sidoarjo: 2013), p.78

<sup>27</sup>Bambang Setiyadi., *Teaching English as a Foreign Language* (Yogyakarta: Graham Ilmu, 2006), p.31

translation method started from 1840s to 1940s.”<sup>28</sup> So, this method is the oldest method of foreign language teaching.

GTM is not a new thing in language learning, which is only slightly different. In the nineteenth century the classical method came to be known as the grammar translation method. At the beginning of this century, this method is used to assist students in reading and understanding a foreign language literature. But it is also expected that it is in studying or understanding the grammar of the desired target language, students will become more familiar with the language rules in accordance with the source language and a deeper understanding of this will further help them in reading and writing according to the source language to be better.

From explanation above, the researcher concluded that the grammar translation is the method that focus on translating sentence from native language to target language.

#### **b. Definition of GTM**

Zainil says, “The grammar translation method is based on the idea that the quickest way to learn a foreign language through the understanding of grammar and the use of the native language in explaining it.”<sup>29</sup> Karl Plotz in Bambang Setiyadi said that “the

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<sup>28</sup>Zainil. *Language Teaching Method*, (Padang: CV. Sukabina Offset, 2008), p. 1.

<sup>29</sup>*Ibid.*

grammar translation method is the method included rote learning of grammar rules, learning to put grammatical labels on words and learning to apply the rules by translating sentences.”<sup>30</sup>

In conclusion, the grammar translation method is the method that is used by teacher in the classroom that emphasize to translation activity from the second language to the native language.

Grammar translation method focuses on grammatical rules, memorization of vocabulary and of various declensions and conjunctions, translations of texts, doing written exercises<sup>31</sup>. As other languages began to be taught in educational institutions in the eighteenth and nineteenth centuries, the classical method was adopted as the chief means for teaching foreign languages. Little thought was given at the time to teaching someone how to speak the language; after all, languages were not being taught primarily to learn/aural communication but to learn for the sake of being “scholarly” or in some instance for gaining a reading proficiency in a foreign language. Since there was little if any theoretical research on second language acquisition in general or on the acquisition of reading proficiency, foreign languages were taught as any other skill was taught.

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<sup>30</sup>Ag.BambangSetiyadi, *Teaching English as a Foreign Language*, (Yogyakarta: GrahaIlmu, 2006), p. 31.

<sup>31</sup>H.Douglas Brown (1994), *Teaching By Principles: An Alternative Approach to Language Pedagogy*. New Jersey. Prentice hall Regent. Hal.52

From the explanation above, Grammar Translation Method is the method to translate foreign language from native language to target language. This method focuses on the grammatical rules as the basis for translating from the second language to the native language.

In addition, Prator and Celce-Mursiain Douglas Brown listed the major characteristics of grammar translation is:

1. Classes are taught in the mother tongue, with little active use of the target language.
2. Much vocabulary is taught in the form of lists of isolated words.
3. Long elaborate explanations of the intricacies of grammar are given.
4. Grammar provides the rules for putting words together, and instruction often focuses on the form and inflection of words.
5. Reading of difficult classical texts is begun early.
6. Little attention is paid to the content of texts, which are treated as exercises in grammatical analysis.
7. Often the only drills ere exercises in translating disconnected sentences from the target language into the mother tongue.
8. Little or no attention is given to pronunciation<sup>32</sup>.

Based on explanation above, the researcher concludes that the characteristic of grammar translation method is the classes are used their mother tongue, much vocabulary, elaborate explanations, grammar, reading, translate the sentence and pronunciation.

### **c. Objectives of Grammar Translation method**

According to BambangSetiyadi,

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<sup>32</sup> *Ibid.,hal.53*

“A fundamental purpose of teaching the target language through the GTM is to be able to read literature written in the target language. This purpose can be reached by learning about the grammar rules and vocabulary of the target language. It is also believed that studying a foreign language provides students with good mental exercise which helps develop students’ minds.”<sup>33</sup>

Next, Diane Larsen says,

“Earlier in this century, this method was used for the purpose of helping students read and appreciate foreign language literature. It was also hoped that, through the study of the grammar of the target language, students would become more familiar with the grammar of their native language and that this familiarity would help them speak and write their native language better.”<sup>34</sup>

In conclusion, the purpose of grammar translation method is to increase the students’ knowledge based on grammatical rules and increase students vocabularies of the target language.

#### **d. The principles of Grammar Translation Method**

A fundamental purpose of teaching the target language through the GTM is to be able to read the literature written in the target language. Principally, the grammar translation method focuses on translating grammatical forms, memorizing vocabulary, learning rules and studying conjugations. Anthony’s terms in “in the sense that the method is not an overall plan of language teaching, the method also

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<sup>33</sup>Ag.BambangSetiyadi, *Op. Cit*, p. 33.

<sup>34</sup>Diane Larsen-Freeman.*Techniques and Principles in Language Teaching*,( New York: Oxford University Press, 2002), p. 11.

has principles regarding to language teaching. The principles of the grammar translation method are these:

- a. Grammar rules are presented and studied explicitly. Grammar is taught deductively and then practiced through translation exercises.
- b. The primary skills to be developed are reading and writing.
- c. Hardly any attention is paid to speaking and listening skill.
- d. Teacher correction is the only way to make students produce the right forms of the foreign language.
- e. The goal of foreign language learning is the ability to understand the text written in the foreign language.
- f. Mastering the grammar of the foreign language is essential in order for students to understand the written target language.
- g. Vocabulary is learnt from bilingual word lists.
- h. A paramount use of translation exercises is given.<sup>35</sup>

**e. The advantage and advantages of grammar translation method**

1. The advantages of Grammar Translation Method are:

- a. The phraseology of the target language is quickly explained.

Translation is the easiest way of explaining meanings or words and phrases from one language into another. Any other method of explaining vocabulary items in the second language is found time consuming. A lot of time is wasted if the meanings of lexical items are explained through definitions and illustrations in the second language. Further, learners acquire some short of accuracy in understanding synonyms in the source language and the target language.

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<sup>35</sup>*Ibid*, p. 34.

b. Teacher's labor is saved. Since the textbooks are taught through the medium of the mother tongue, the teacher may ask comprehension questions on the text taught in the mother tongue. Pupils will not have much difficulty in responding to questions on the mother tongue. So, the teacher can easily assess whether the students have learnt what he has taught them. Communication between the teacher and the learners does not cause linguistic problems. Even teachers who are not fluent in English can teach English through this method. That is perhaps the reason why this method has been practiced so widely and has survived so long<sup>36</sup>.

2. The disadvantages of grammar translation method they are:
  - a. Wrong idea of what languages
  - b. Less learners' motivation
  - c. Create frustration for learners

#### **f. The Procedure of Grammar Translation Method**

To teach this method, the researcher has a procedure as follow:

1. The class is reading passage an excerpt from foreign language.
2. Students' translate the passage from English to Indonesian.
3. The teacher ask students' in their native language if they have any questions. A student asks one and is answered in her native language.
4. Students write out the answers to reading comprehension questions.

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<sup>36</sup>Zainil. *Language Teaching Method*, (padang: CV.Sukabina Offset, 2008)



5. The teacher decides whether an answer is correct or not. If the answer is incorrect, the teacher selects a different student to supply the correct answer or the teacher herself gives the right answer.
6. Students translate new words from English to Indonesian.
7. Students learn that English cognates.
8. Students are given a grammar rule for the use of a direct object with two-words verbs like verbal or nominal in present.
9. Students apply a rule to examples they are given.
10. Students memorize vocabulary.
11. The teacher asks students to state the grammar rule.
12. Students' memorize present tense, past tense, and past participle forms of one set of irregular verbs<sup>37</sup>.

Based on explanation above, the researcher conclude that the procedure in grammar translation method there are twelve and It procedure is the activities planned use in teaching grammar translation method in the class.

### 3. Conventional Method in Teaching

Conventional method is the method that usually used by the teachers to teach the text to students.<sup>38</sup> In addition, it uses the traditional way in teaching and learning process. The researcher concluded that conventional method is the way that is used by the teachers in teaching a material based on the agreement of the teacher at school.

#### a. Definition of Conventional

Conventional or traditional teaching is concerned with the teacher being the controller of the learning environment. Power and

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<sup>37</sup> Diane Larsen –Freeman 2000, *Techniques and Principles in Language Teaching*. Oxford University press. new York.

<sup>38</sup> JhonDeriden. *Conventional Strategy* (<http://www.britannia.com/EBchecked/topic/421797/nuclear-strategy/52993/conventional-strategy>), retrieved on October 17, 2014 at 08.00 p.m.

responsibility are held by the teacher and they play the role of instructor and decision maker they regard students as having 'knowledge holes' that need to be filled with information.<sup>39</sup> According to Hudson that “conventional teaching is a method that used by the teachers based on mutual agreement in a school.<sup>40</sup> Then conventional teaching is also the teaching or the way that usually used by the teachers to teach the text to students.<sup>41</sup> In addition, it uses traditional way in teaching and learning process. In short the traditional teacher views that it is the teacher that causes learning to occur.

#### **b. The classification of conventional teaching**

As we know that there are many kinds of teaching method that can be applied by teacher. One of the teaching methods is conventional or traditional method. Conventional method can be divided in some kinds. They are: lecturer method, project method, catechize method, discuss method, lecture discussion, problem solving method, homework, recitation method, demonstration and

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<sup>39</sup>BeliasDimitrios. 2013. *Traditional Teaching Method*.(Online). Vol.9. No. 28. ([Http://olam.Ed.asu.edu/epaa/](http://olam.Ed.asu.edu/epaa/), diakses 27 April 2015).

<sup>40</sup>Hudson. *The meaning of Conventional Teaching*.(Online).(<http://www.conventional-strategy/topic/54372-strategy>), retrieved on April 27, 2015)

<sup>41</sup>JhonDeriden. *Conventional Teaching* .(Online). (<http://www.britannia.com/EBchecked/topic/421797/nuclear-strategy/52993/conventional-strategy>), retrieved on April 27, 2015)

experiment method, role play method, and so on.<sup>42</sup> But the most traditional in teaching method is:

### **1. Lecturer method**

Lecturer method is traditional method because this method had be used long since is as an oral communication tool between teacher and students in interaction educative. Moreover in educative and traditional teaching it is like in rural that have weakness in learning facilities and teacher.<sup>43</sup>

According to Abu Ahmadi, there are some the strangeness and weakness of this method:

#### **a. The strangeness and weakness**

- 1) In short time teacher is able to convoy the material as many as possible.
- 2) The organization of class is more simple, it is not important to group of students like other method
- 3) Teacher can master the overall of class goodly
- 4) Teacher is as lecturer go through goodly, so it can make the spirit and creative
- 5) Flexible

#### **b. The weakness**

- 1) Teacher is difficult to know the student's comprehension with the material had been given.
- 2) Sometimes teacher wants to convoy the material as many as possible until it is characteristic of pump.
- 3) Students is passive

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<sup>42</sup>SyaifulBahriDjamarah. *Strategy Belajar-Mengajar*. (Jakarta: PT. Asdi Mahasatya, 2006). p.83

<sup>43</sup>SyaifulBahriDjamarah. *Guru dan Anak Didik (Dalam Interaksi Edukatif)*. (Jakarta: PT. Rineka Cipta, 2000). p.205

- 4) If teacher do not pay attention the students' aspect psychology, may be the lecturer will be boring.<sup>44</sup>

So, it can conclude that the strangeness of this method is teacher has a freehand in organizing the time allocate and the facilities of learning that done for finishing demand of syllabus whereas the weakness of this method is that students is looking passive when they follow the learning process. The interactions of learning reflect a one direction communication. Students are depend at the material what presented by teacher. So the teachers' ability in learning is just demand a material what taught in syllabus.

## 2. The steps of lecturer method

There are some steps before showing this method, they are:

- a) Preparation (Create the learning condition to students)
- b) Implementation (Teacher convoys the material then give opportunity to students for connecting and comparing the material of lecturer that had accepted through catechizing)
- c) Evaluation (Give a test to students for looking students' comprehension about material that had learned)<sup>45</sup>

### c. The Principles of conventional teaching

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<sup>44</sup>Abu Ahmadi and Joko Tri Prasetya.*Strategy BelajarMengjar*(Bandung:CVPustaka Setia,2005).p.55-56

<sup>45</sup>SyaifulBahriDjamarah,.*Op-cit*.p. 99

there are some principles of teaching conventional that to be approach, it can be applied in teaching process. They are:

- 1) There is not theory that formulated to discuss the learning activity in traditional education system
- 2) Motivation is based of punishment, reward or prize and rivalry
- 3) Study with memorizing and save the information without inscription
- 4) The behavioral psychology has the clear significant
- 5) The cognitive psychology does not give the significant
- 6) In general, the learning process in traditional education system is not generated by the certain theory
- 7) The learning dominant is teacher center<sup>46</sup>

#### **d. The steps of conventional teaching**

There are some steps in conventional method teaching as follow:

- 1) Teacher gives an apperception to students and give a motivation to students about the material
- 2) Teacher gives a mutation
- 3) Teacher explains the material in verbal
- 4) Teacher gives the examples
- 5) Teacher gives an opportunity to students for asking and answering the question
- 6) Teacher gives an assignment to students that appropriate with material and the example of question
- 7) Teacher confirm the assignment that had worked by students
- 8) Teacher guide students to conclude the point of material<sup>47</sup>

After explaining some examples, teacher is given an opportunity to students for making a summary and generalization

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<sup>46</sup>Adnan Unm. *Pendidika Tradisional*, (Online), (<https://www.scribd.com/doc/45067367/PENDIDIKAN-TRADISIONAL#scribd>). Retrieve on May 16,2015.

<sup>47</sup>RofaYuliaAzhar. *Metode Ceramah dalam Pembelajaran (Metode Konvensional)* .(Online).(<http://www.rofayuliaazhar.com/2012/06/metode-ceramah-dalam-pembelajaran.html>).Retrieve May 16,2015.

about the main problems in formula, rule or general principles. Then, teacher gives ideas to students' idea that organized as completing, correction and stressing. In other hand, teacher also gives a conclusion and formula clearly.

From above explanation, the conventional teaching method is traditional teaching method that often applied by teacher. The one of conventional teachings is lecturer method which a teaching style that is used for conveying information about some subject. Thereby, it can be understood that lecturer method is the step of learning presentation that done by teacher with talking or explanting in direct.

Based on the explanation above, the researcher concludes that the procedure used by the English teachers at SMA N 1 Arse, are as follows:

- a. Explain the subject matter
- b. Identify the difficult words
- c. Ordering the students translate in target language.
- d. Ordering the students to memorize

## **B. Review of Related Findings**

There were some related findings related to this research. LenniSriwahyuniDaulay had done research about "The Comparative Study Between Direct Method and GTM in Teaching Present Continuous Tense to the Grade VII at SMP N 3 Padangsidimpuan in 2007/ 2008 Academic Year".

Her conclusion in her research, she said that the observed  $t$  value -1,82 is lower than the value of  $t$  table. It means that the null hypothesis is accepted and the alternative hypothesis is rejected. Then, the result of teaching present continuous tense by using direct method do not get better than the result of teaching present continuous tense by using grammar translation method. So that, from her research, we can find that Grammar Translation Method is better than Direct Method<sup>48</sup>.

Next, Rosita Dalimunthe had done research about “A Case Study on the Correlation Between The Mastery on Grammar and Reading Comprehension of SMKN 1 Padangsidimpuan”. Based on the Arikunto’s table of interpretation the correlation is sufficient, because the correlation between reading comprehension of the students and grammar competence is 0,720<sup>49</sup>.

The last, Lindayanti had done research about “The Comparative Study between SQ3R (Survey, question, read, recite and review) and Discussion Method to the Grade XI Madrasah Aliyah Ittihadul Muballighin Ujung Gading Students’ Comprehending Narrative Text Ability in 2010-2011 Academic Year”. The result of her research said that the students are better in comprehension narrative text by using SQ3R method based on the mean score

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<sup>48</sup>Lenni Sriwahyuni Daulay. 2008. “The Comparative Study Between Direct Method and GTM in Teaching Present Continuous Tense to the Grade VII at SMP N 3 Padangsidimpuan in 2007/ 2008 Academic Year”. *Skripsi*. Padangsidimpuan: FKIP, Universitas Muhammadiyah Tapanuli Selatan.

<sup>49</sup>Rosita Dalimunthe. 2007. “A Case Study on the Correlation Between The Mastery on Grammar and Reading Comprehension”. *Skripsi*. Padangsidimpuan: FKIP, Universitas Muhammadiyah Tapanuli Selatan.

70, discussion method that have the mean score is 68,75. So that, SQ3R better than discussion method<sup>50</sup>.

Based on related findings above, it could be concluded that reading comprehension was a big problem in the some schools, and the researchers had done a research about reading comprehension by using some strategies to solve the reading problem. So, the researcher hoped that Grammar Translation Method could increase the student's reading comprehension and this research completed and contributed a previous findings. Moreover, the researcher wanted to research about "The Effect of Grammar Translation Method on Student's ability in Reading descriptive text at Grade X SMAN 1 Arse.

### **C. Conceptual Framework**

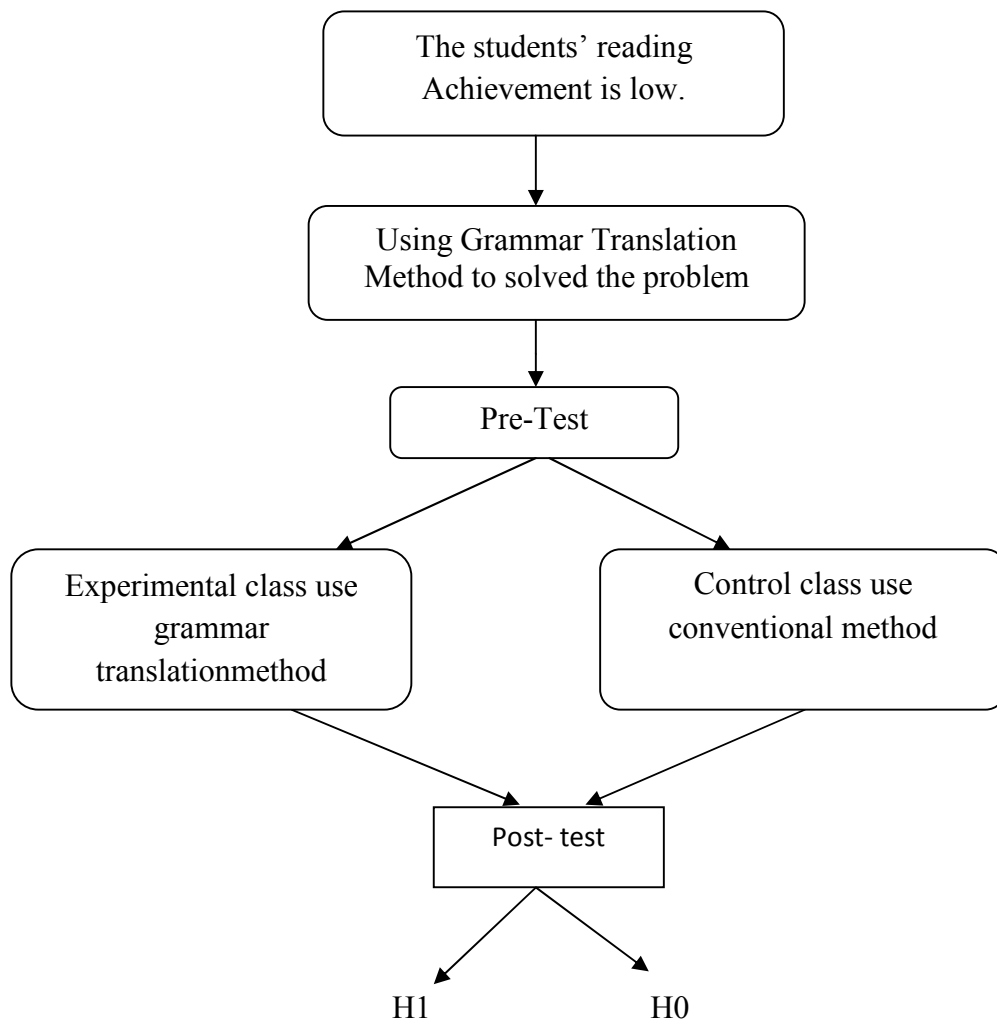
The successful of reading comprehension depended on many factors. One of them was how the teacher teaches reading to the students. The suitable method was very important to teach reading. Reading comprehension is to make the material owns. So, the students' must have the reading method. Reading method is the method that used while the students read the material. So, they can more easily to understand and comprehend the material. Grammar Translation method is one method has the effect in reading

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<sup>50</sup>Lindayanti, 2011. "The Comparative Study between SQ3R (Survey, question, read, recite and review) and Discussion Method to the Grade XI Madrasah AliyahIttihadulMuballighin Ujung Gading Students' Comprehending Narrative Text Ability in 2010-2011 Academic Year". *Skripsi*. Padangsidempuan: FKIP, UniversitasMuhammadiyahTapanuli Selatan.



comprehension. The relation of Grammar Translation Method on reading comprehension can be seen as the diagram follow:



#### D. Hypothesis

Hypothesis is a provisional result of the research.<sup>51</sup> While according to L.R. Gay said, “A hypothesis is a tentative prediction result of the research findings.”<sup>52</sup> So, the purpose of hypothesis is to answer a certain specific question. Based on formulation of the problem above, the hypothesis of the research were:

1. There was the significant effect of Grammar Translation Method on students’ ability in reading descriptive text at grade X SMA Negeri 1 Arse”.(H<sub>a</sub>)
2. There was no significant effect of Grammar Translation Method on students’ ability in reading descriptive text at grade X SMA Negeri 1 Arse”.(H<sub>0</sub>)

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<sup>51</sup>SuharsimiArikunto.*ProsedurPenelitianSuatuPendekatanPraktik* (Jakarta: RinekaCipta, 2006), p. 71.

<sup>52</sup>L. R Gay and Peter Airaisan. *Educational Research for Analysis and Application*, (America: Prentice Hall, 1992), p. 71.

## CHAPTER III

### RESEARCH METHODOLOGY

#### A. Place and Time of the research

The location of this research had been done at SMA Negeri 1 Arse. It is located on Simangambat Street. The subject of this research was the tenth grade of the students' at SMA N 1 Arse. The time of this research had been done from October 2014 up to finished.

#### B. Research Design

The kind of the research was conducted with experimental research. L. R. Gay said, "Experimental research is the only type of research that can test hypothesis to establish cause and effect."<sup>1</sup> And then, Creswell said, "Experimental research included the experiment with the random assignment of subject to treatment condition as well as quasi experiment that use none randomized."<sup>2</sup>

From the definition above, researcher concluded that the experiment is a kind of research that has aim to know the causal effect relationship between one or more variable to other variables.

In this research, the researcher uses two classes, as an experiment class and as a control class. The experiment class is the class that taught with GTM,

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<sup>1</sup>L. R. Gay and Peter Airasian. *Op. Cit.*, p. 367.

<sup>2</sup>Jhon Creswell. *Research Design Qualitative, Quantitative and Mixed Methods Approaches Second Edition* (USA: Prentice hall, 2000), p.14.

as a treatment. Meanwhile the control class is the class that taught with using conventional method or without treatment. It can be seen from the table:

Table 2  
Table of Research Design

Class	Pretest	Treatment	Post test
Experiment	T <sub>1</sub>	X	T <sub>2</sub>
Control	T <sub>1</sub>		T <sub>2</sub>

### C. Population and Sample

#### 1. Population

According to Gay, population is the group of interest to the researcher, the group to which she or he would like the result of the study to be generalizable.<sup>3</sup> Meanwhile, SuharsimiArikunto said, “A population is a set (collection) of all elements processing one or more attributes of interest.”<sup>4</sup> This research will be implemented in SMA N 1 Arse. The population is grade X students at SMA N 1 Arse.

Based on the Quotation above, the research will be done for the grade X students of SMA N 1 Arse. The population of research consists of 4 classes with 93 students. It can be seen from the table follow:

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<sup>3</sup>L. R. Gay and Peter Airasian. *Op. Cit.*, p. 122.

<sup>4</sup>SuharsimiArikunto.*Op. Cit.*, p. 108.

**Table 3**  
**GRADE X SMA N 1 ARSE**

<b>No</b>	<b>Classroom</b>	<b>Amount</b>
1.	X.1	25
2.	X.2	27
3.	X.3	30
4.	X.4	27
<b>Total of students</b>		109

## **2. Sample**

According to Gay and Airasian, "Sample comprises the individuals, items, or events selected from a larger group referred to as a population." Then, Muhammad Ali stated that sample is partial taken from the whole subject and representative of the population. So, Sample is the part of population that is chosen as respondent of the research.

Experimental research decides to take two classes as a sample. They are experimental class and control class. So, the researcher takes two classes as sample. So that, one class is experimental class and the other is control class. Then, the researcher selects the sample by using random sampling technique. The tricks to use random sampling are using a ordinal, lottery, random number table or computer.

In this research, the researcher uses random sampling. The researcher take sample for, those are X.1 consists of 25 students and X.2

consists of 27 students. Therefore, total samples are 52 students. It can be seen in the table below:

Table 4  
Sample of the research

Experimental Class	Control Class
X.1=25	X.2=27

To determine an appropriate sample of the population is tested with Normality and Homogeneity test.

a. Normality Test

In Normality test, the data can be tested with Chi-square:<sup>5</sup>

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

Where:

$x^2$ =Chi-Square

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

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

To calculate the result of Chi-Square, it was used significant level 5% (0.05) and degree of freedom as big as total of frequency is lessened 3 ( $dk = k - 3$ ). If result  $x^2_{count} < x^2_{table}$ . So, it can be concluded that data is distributed normal.

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<sup>5</sup>Mardalis, *Metode Penelitian: Suatu Pendekatan Proposal* (Jakarta: Bumi Aksara, 2003), p. 85.

## b. Homogeneity Test

Homogeneity test is used to know whether control class and experimental class have the same variant or not. If both of classes are same, it can be called homogeneous. Homogeneity is the similarity of variance of the group will be compared. So, the function of homogeneity test is to find out whether the data homogeneity or not. It used Harley test, as follow:<sup>6</sup>

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

Where:

$n_1$  = Total of the data that bigger variant

$n_2$  = Total of the data that smaller variant

Hypothesis is rejected if  $F \leq F_{\frac{1}{2}\alpha(n_1-1)(n_2-1)}$  While if

$F_{count} > F_{table}$  hypothesis is accepted.

## D. Instrumentation

In this research, the researcher uses test. This test includes the cognitive test. The tests measure the current status of individuals on school-taught subjects. Standardized achievement tests are available for individual curriculum areas such as reading.<sup>7</sup>

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<sup>6</sup>AgusIrianto.*StatistikKonsepDasardanAplikasinya*(Padang: P2PLTK, 2003), p. 276.

<sup>7</sup>L.R. Gay and Peter Airasian, *Op. cit.*, p 154.

From explanation in chapter II the indicator of reading comprehension has five indicators, The indicators are students able to identify main idea of the paragraph,able to find vocabulary in text, able to identify information from the paragraph ,able to identify characteristic of people or thing from the text, able to identify grammar.

**Table 5**

**THE INDICATORS READING DESCRIPTIVE TEXT**

**PRE-TEST**

NO	Indicators	Items	Number of items	Score	Total score
1	Able to identify main idea of the paragraph	10	1,6,22,26,30,36,40,42	2	20
2	Able to identify vocabulary from the text	10	2,7,15,17,28,32,41,45	2	20
3	Able to identify specific information from the text	10	3,24,25,31,34,37,38,46	2	20
4	Able to identify characteristic of people or thing from the text	10	4,16,19,21,27,33,44,47	2	20
5	Grammar	10	5,9,13,29,35,43,49,50	2	20
TOTAL		50			100



## POST-TEST

NO	Indicators	Items	Number of items	Score	Total score
1	Able to identify main idea of the paragraph	10	1,4,7,22,24,26,39,41	2	20
2	Able to identify vocabulary from the text	10	2,5,21,25,28,38,44,45	2	20
3	Able to identify specific information from the text	10	3,11,12,23,27,37,34,46	2	20
4	Able to identify characteristic of people or thing from the text	10	6,10,13,16,29,33,43,48	2	20
5	Grammar	10	14,17,18,19,32,35,36,47	2	20
TOTAL		50			100

There are two essential aspects to find more information about the specific tests; those are validity of measuring instruments and Reliability of measuring instruments. These two aspects are explained in the following paragraph.

### **1. Validity of measuring instruments**

Validity is the most important quality of a test. It is the degree to which a test measures what it is supposed to measure and, consequently permits appropriate interpretations of test scores. There are three main point forms of validity are content, criterion-related, and construct.

In this research, the writer uses content validity to establish validity of instrument. Content validity is of prime importance for achievement test. Content validity is determined by expert judgment of item and sample validity.<sup>8</sup>

To know the validity of items, researcher uses the correlation Biserial formula, as follow:

$$r_{pbi} = \frac{Mp - Mt}{SD_t} \sqrt{\frac{p}{q}}$$

Where:

$r_{pbi}$  = Number of index Correlation point Biserial

$Mp$  = Re-average of the score of the students answer correctly

$M_t$  = Re-average of the total score that achieved success by member of the test.

$SD_t$  = Standard of deviation

$P$  = Proportion of the students answer correctly

$P = \frac{\text{Total of the students answer correctly}}{\text{Total of the students}}$

$q = \frac{\text{Total of the students}}{\text{Total of the students}}$

$q$  = Proportion of the incorrect answer students<sup>9</sup>

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<sup>8</sup>*Ibid.*, p. 161.

<sup>9</sup>AnasSudijono, *PengantarStatistikPendidikan* (Jakarta: RajaGrafindoPersada, 2008) p. 254

Result of calculation by coefficient of correlation Biserial is determined if  $r_{pbi} > r_{table}$  with the significant level 5 % (0,374) with the table r product moment. So, the item is tested valid.

## 2. Reliability of measuring instruments

An instrument of the research must be reliable. A reliable test is consistent and dependable.<sup>10</sup> To get the reliability of the test, SuharsimiArikunto said that to obtain the reliability of the test, the researcher uses formula K-R 20. The formula, as follow:

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

Where:

$R_{11}$  : Reliability of the Instrument

$N$  : Total of Question

$St^2$  : Variants Total

$P$  :  $\frac{\text{Proporsi Subject who is right Answer}(1)}{N}$

$Q$  :  $\frac{\text{Proporsi Subject who is Wrong Answer (0)}^{11}}{N}$

Reliability is a good character of the test that refers to the consistency of the measurement. The test is reliable  $r_{count} > r_{table}$  by using formulation KR-20 with  $r_{table}$  0.70.

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<sup>10</sup>H. Douglas Brown. *Language Assessment Practical and language Practice*, (San Francisco: Longman, 2003), p. 21.

<sup>11</sup>SuharsimiArikunto, *Op. Cit.*, p. 188

Criteria of test reliability is as follows:

$r_{11} = 0,70$  high correlation (reliable)

$r_{11} > 0,70$  high correlation (reliable)

$r_{11} < 0,70$  low correlation (un- reliable)<sup>12</sup>

## **E. Technique of Data Collection**

In collecting data, the research conducts twice of test for these classes. The process of testing is explained as follow:

### **1. Pre-test**

Experimental class and control class are tested with using pre-test before doing treatment. The pre-test is conducted to find out the homogeneity of the sample. The function of the pre-test is to find the mean scores of the experimental class and conventional class before the researcher give treatment.

### **2. Treatment**

The writer teaches that one group, and the writer divided class into two. (as experiment class and control group). The writer chose group A using method (as experiment class) and class B without using method (as control class).

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<sup>12</sup>AnasSudijono.*Op.Cit.*,p. 209

### 3. Post-test

Experimental class and control class are give the final test after the treatment. This test is to measure students' reading comprehension. This test is used for investigating the difference of reading achievement between the GTM class and conventional class.

## F. Technique of Data Analysis

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

### 1. Requirement test

#### a. Normality test

Normality test by using Chi-quadrade formula, as follow:

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

Where:

$x^2$  = Chi-Quadrate

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

$f_h$  = Frequency is gotten from the sample as image from frequency is  
hoped from the population<sup>13</sup>.

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<sup>13</sup>Mardalis, *Loc.cit.*

b. Homogeneity test

Homogeneity test is used to know whether control class and experimental class have the same variant or not. If the both of classes are same, it is can be called homogeneous. To test it, researcher used formula as follow:

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

Where:

$n_1$  = Total of the data that bigger variant

$n_2$  = Total of the data that smaller variant<sup>14</sup>

Hypothesis is rejected if  $F \leq F_{\frac{1}{2}\alpha(n_1-1)(1=n_2-1)}$  While, if

$F_{count} > F_{table}$  hypothesis is accepted.

2. Hypotheses test

In analysis data, researcher uses t-test to test hypotheses, as follow:<sup>15</sup>

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

Where:

$\bar{x}_1$  = Mean of experimental class sample

$\bar{x}_2$  = Mean of control class sample

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<sup>14</sup>*Ibid.* p. 250.

<sup>15</sup>Sugiyono. *Statistika untuk Penelitian*. (Bandung: Alfabeta, 2011), p. 138-139.

$n_1$  = Total of experimental class sample

$n_2$  = Total of control class sample

and the formula of standard deviation was:

$$s = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$$

Where:

$s$  = Variant

$s_1^2$  = Variant of experimental class

$s_2^2$  = Variant of control class

## CHAPTER IV

### DATA ANALYSIS

This chapter presents research result. In this case, it discussed the effect of grammar translation method on students' ability in reading descriptive text. The researcher has calculated the data using pre test and post test. Applying quantitative research, the research used the formulation of T-test. Next, researcher will describe the result based on the data that has been researched as follow:

#### A. Description of Data

##### 1. Description of Data Before Using Grammar Translation Method

###### a. Score of Pre-Test Experimental Class

In pre-test experimental class, the researcher calculated the result that got by the students in answering the question (test). The scores pre-test experimental class could be seen in the following table.

**Tabel7**  
**The score of Experimental Class in Pre-Test**

Total	1545
Highest score	75
Lowest score	45
Mean	71.2
Median	73
Modus	67
Range	30
Interval	5
Standart deviation	8.5
Varians	93.5

Based on the table above the total score of experiment class in pre-test was 1545, mean was 71.2, standart deviation was 8.5, varians was 93.5, median was 73, range was 30, modus was 67, interval was 5. The researcher



got the highest score was 75 and the lowest score was 45. It can be seen on appendix 18. Then, the computed of the frequency distribution of the students' score of experiment class could be applied into table frequency distribution as follow:

**Table 8**  
**Frequency Distribution of Students' Score**

No	Interval	Mid Point	Frequency	Percentages
1	45 – 49	47	2	8%
2	50 – 54	52	3	12%
3	55 – 59	57	4	16%
4	60 – 64	62	4	16%
5	65 – 69	67	6	24%
6	70 – 74	72	4	16%
7	75 – 79	77	2	8%
$i = 5$			25	100%

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

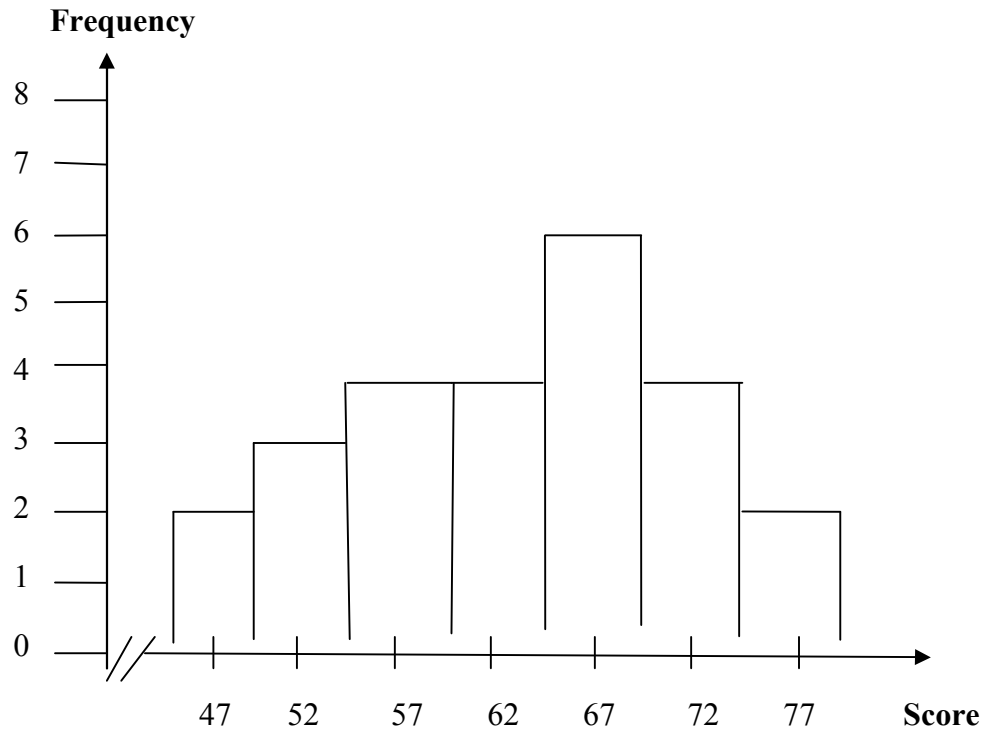


Figure 1: Description Data Pre Test of Experimental Class

**b. Score of Pre Test Control Class**

In pre-test control class, the researcher calculated the result that got by the students in answering the question (test). The scores pre test in control class could be seen in the following table:

**Tabel9**  
**The Score of Control Class in PreTest**

Total	1555
Highest score	75
Lowest score	45
Mean	72.5
Median	71.5
Modus	65.7
Range	30
Interval	5
Standart deviation	7.15
Varians	91.0

Based on the table above the total score of control class in pre-test was 1675, mean was 72.5, median was 71.5, modus was 65.7, range was 30, interval was 5, standart deviation was 7.15, varians was 91.0. The researcher got the highest score was 75, and the lowest score was 45. It can be seen on appendix 18. Then, the computed of the frequency distribution of the students' score of experiment class could be applied into table frequency distribution as follow:

**Table 10**  
**Frequency Distribution of Students' Score**

No	Interval Class	Mid Point	F	Percentages
1	45 – 49	47	3	11.11%
2	50 – 54	52	4	14.81%
3	55 – 59	57	4	14.81%
4	60 – 64	62	5	18.51%
5	65 – 69	67	6	22.22%
6	70 – 74	72	3	11.11%
7	75 – 79	77	2	7.40%
<i>i</i> = 5			27	100%

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

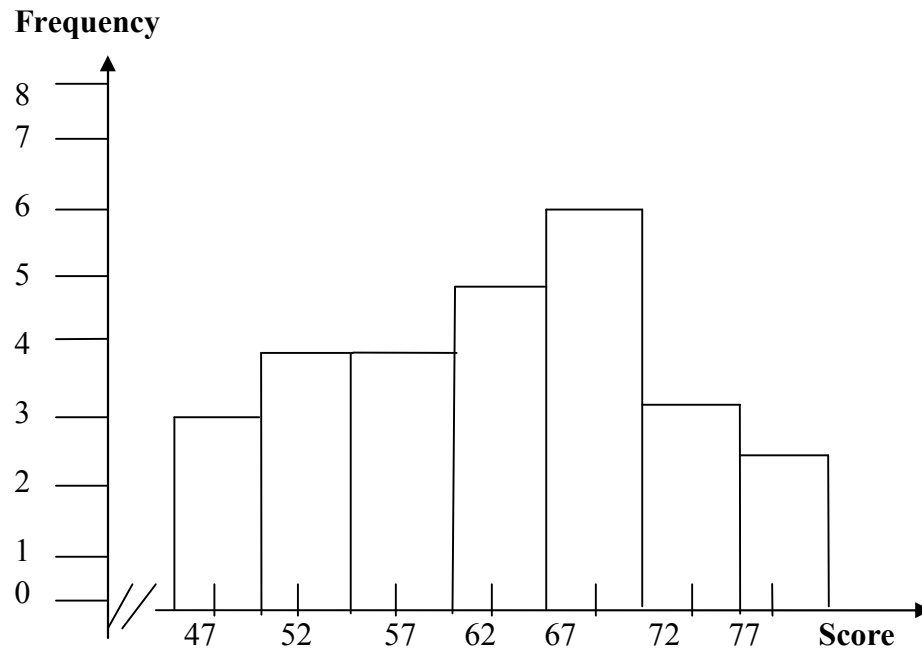


Figure 2: Description Data Pre test of Control Class

## 2. Description of Data After Using Grammar Translation Method

### a. Score Post-Test of Experimental Class

**Tabel11**  
**Score of Experimental Class in Post-Test**

Total	2035
Highest score	95
Lowest score	65
Mean	80.6
Median	73
Modus	67
Range	30
Interval	5
Standart deviation	8.4
Varians	74

Based on the table above the total score of experiment class in post-test was 2035, mean was 80.6, median was 73, modus was 67,

range was 30, interval was 5, standart deviation was 8.4, varians was 74. The researcher got the highest score was 95 and the lowest score was 65. The calculation can be seen on the appendix 20. Then, the computed of the frequency distribution of the students' score of experiment class could be applied into table frequency distribution as follow:

**Table 12**  
**The Frequency Distribution of Students' Score**

No	Interval Class	Mid Point	F	Percentages
1	65 – 69	67	2	8%
2	70 – 74	72	2	8%
3	75 – 79	77	3	12%
4	80 – 84	82	7	28%
5	85 – 89	87	5	20%
6	90 – 94	92	3	12%
7	95 – 99	97	3	12%
<i>i</i> = 5			25	100%

Based on the table above, it can be drawn at histogram as follow:

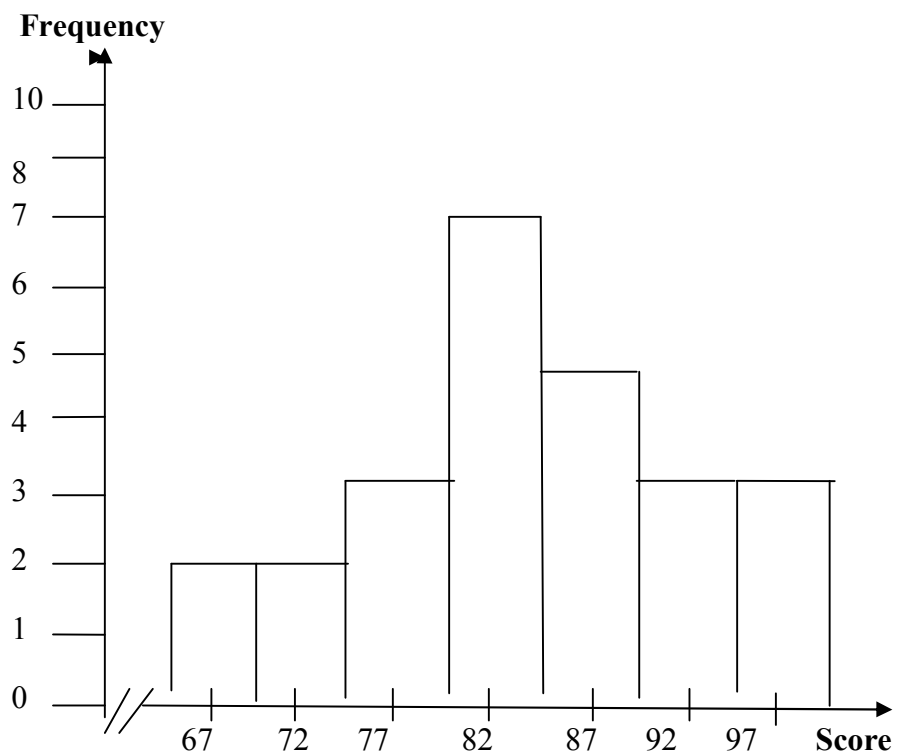


Figure 3: Description Data Post test Experimental Class

**b. Score of Control Class in Post-Test**

**Tabel13**  
**The Score of Control Class in Post-Test**

Total	1755
Highest score	80
Lowest score	50
Mean	66.8
Median	71.25
Modus	67
Range	30
Interval	5
Standart deviation	8.4
Varians	34.6

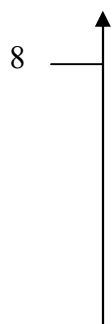
Based on the table above the total score of control class in post-test was 1755 ,mean was 66.8, standart deviation was 8.4, varians was 34.6, median was 71.25, modus was 67, range was 30, interval was 5. The researcher got the highest score was 80 and the lowest 50 score was. The calculation can be seen in the appendix 21. Then, the computed of the frequency distribution of the students' score of control class could be applied into table frequency distribution as follow:

**Table 14**  
**Frequency Distribution of Students' Score**

No	Interval Class	Mid Point	F	Percentages
1	50 – 54	52	3	11.11%
2	55 – 59	57	3	11.11%
3	60 – 64	62	4	14.81%
4	65 – 69	67	7	25.92%
5	70 – 74	72	4	14.81%
6	75 – 79	77	3	11.11%
7	80 – 84	82	3	11.11%
<i>i</i> = 5			27	100%

Based on the table above, it can be drawn at histogram as follow:

**Frequency**



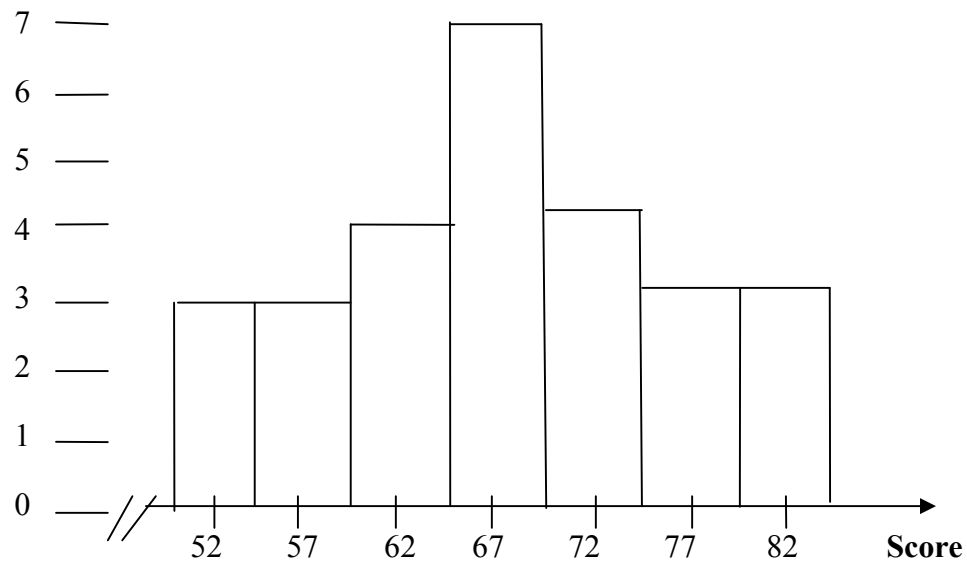


Figure 4: Description Data Post test Control Class

### c. Technique of Data Analysis

#### 1. Requirement test

##### a. Normality and Homogeneity Pre-Test

##### 1) Normality of Experimental Class and Control Class in Pre-Test

**Tabel15**  
**Normality and Homogeneity in Pre-Test**

Class	Normality Test		Homogeneity Test	
	$t_{count}$	$t_{table}$	$t_{count}$	$t_{table}$
Experiment Class	5.77	5.991	1.02 < 2.060	
Control Class	1.17	5.991		

Based on the table above researcher calculation, the score of exsperiment class  $Lo=5.77 < Lt=5.991$  with  $n =25$  and control class  $Lo=1.17 < Lt=5.991$  with  $n =27$ , and real level  $\alpha 0.05$ . Cause  $Lo < Lt$



in the both class. So,  $H_a$  was accepted. It mean that experiment class and control class were distributed normal. It can be seen in appendix 18 and 19.

## 2) Homogeneity of Experimental Class and Control Class in Pre-test

The coefficient of  $F_{count} = 1.02$  was compared with F table. Where F table was determined at real  $\alpha = 0.05$ , and the different numerator  $dk = N-1 = 25-1=24$  and denominator  $dk N-1 = 27-1 = 26$  So, by using the list of critical value at F distribution is got  $F_{0.05} = 2.060$  and 2.052. It showed that  $F_{count} (1.02) < F_{table} (2.060 \& 2.052)$ . So, the researcher concluded that the variant from the data of the students' ability in reading descriptive text at SMAN 1 Arseby experimental and control class was homogen. The calculation can be seen on the appendix 19.

## b. Normality and Homogeneity Post Test

### 1) Normality of experimental class and control class in Post-test

**Tabel16**  
**Normality and homogeneity in post-test**

Class	Normality Test		Homogeneity Test	
	$t_{count}$	$t_{table}$	$t_{count}$	$t_{table}$
Experiment Class	0.6	5.991	2.13 < 2.060	
Control Class	1.51	5.991		

Based on the table above, the score of eksperimental class  $L_o = 0.6 < L_t = 5.991$  with  $n = 25$  and control class  $L_o = 1.51 < L_t = 5.991$  with  $n = 27$ , real level  $\alpha$  was 0.05, Cause  $L_o < L_t$  in the both class. So,

$H_a$  was accepted, it mean that experiment class and control class were distributed normal. It can be seen on appendix 20 and 22.

## 2) Homogeneity of Experimental Class and Control Class in Post-Test

The coefficient of  $F_{count} = 1.13$  was compared with F table. Where F table was determined at real  $\alpha = 0.05$ , and the different numerator  $dk = N - 1 = 35 - 1 = 34$  and denominator  $dk N - 1 = 27 - 1 = 26$  So, by using the list of critical value at F distribution was got  $F_{0.05} = 2.060$  and 2.052. It show that  $F_{count} (1.13) < F_{table} (2.060 \& 2.052)$ . So, the researcher concluded that the variant from the data of the students' ability in reading descriptive text at SMAN 1 Arseby experimental and control class was homogeny. The calculation can be seen on the appendix 22.

## 2. Hypothesis Test

The data would be analyzed to prove hypothesis by using formula of T-test. Hypothesis alternative ( $H_a$ ) of research was "There was the effect of Grammar Translation Method on Students' ability in reading descriptive text. The calculation can be seen on the appendix 24

**Table 17**  
**Result of T-test from the Both Averages**

Pre-test		Post-test	
$t_{count}$	$t_{table}$	$t_{count}$	$t_{table}$
0.72	2.021	2.14	2.021

$$H_a: \mu_1 > \mu_2$$

Where:

$H_a: \mu_1 > \mu_2$  “ Grammar Translation Method better than conventional method on Students’ ability in reading descriptive text.”

Based on researcher calculation, researcher found that  $t_{count} 2.14$ . while  $t_{table} 2.021$ . With opportunity  $(1 - \alpha) = 1 - 5\% = 95\%$  and  $dk = (n_1 + n_2 - 2) = (25 + 27 - 2) = 50$ , cause  $t_{count} > t_{table} (2.14 > 2.021)$ . It means that hypothesis ( $H_a$ ) was accepted. So, there is the significant effect of Grammar Translation Method on students’ ability in reading in descriptive text. In this case, the mean score of experiment class by using Grammar Translation Method was 80.6, and mean score of control class was 65.7. The calculation can be seen on the appendix 23 and 24.

#### **d. Discussion**

Based on the related findings, the researcher discussed the result of this research and compared with the related findings. First, the result by using Direct Method and GTM in Teaching Present Continuous Tense was found that mean score was 82, and the hypothesis was accepted and the alternative hypothesis is rejected. Then, the result of teaching present continuous tense by using direct method do not get better than the result of teaching present continuous tense by using grammar translation method. So from her research, we can find that Grammar Translation Method is better than Direct

Method. Second, the mean score result of a research by using Grammar and Reading Comprehension of SMKN 1 Padangsidimpuan was 73.93. Based on the Arikunto's table of interpretation the correlation is sufficient, because the correlation between reading comprehension of the students and grammar competence is 0,720. Third, the research by using SQ3R (Survey, question, read, recite and review) and Discussion Method to the Grade XI Madrasah Aliyah Ittihadul Muballighin Ujung Gading Students' Comprehending Narrative Text Ability in 2010-2011 Academic Year". The result of her research said that the students are better in comprehension narrative text by using SQ3R method based on the mean score 70, discussion method that have the mean score is 68,75. So that, SQ3R better than discussion method.

Then, the research by using grammar translation method showed the result of mean score in experimental class was 80.6 and control class was 66.8. It means the result and hypothesis testing showed that grammar translation method had the effect, and hypothesis alternative ( $H_a$ ) was accepted and hypothesis zero ( $H_0$ ) was rejected. It was indicated that the score of experimental class was bigger than control class ( $80.6 > 65.7$ ), and also indicated  $t_0 > t_t$  ( $2.14 > 2.021$ ).

Based on the explanation above, the researcher concluded that hypotheses alternative was accepted and there was effect of grammar translation method on students' ability in reading descriptive text.

**e. Threats of the Research**

The researcher found the threats of this research as follows:

1. The researcher found the students' problems in the classroom teaching learning reading comprehension process.
2. There were some students that were noisy while teaching and learning process. So, it can disturb the concentration of the others.
3. The researcher was lack of knowledge and experience in processing data. So, the researcher needed much time to finish the thesis.

## CHAPTER V

### CONCLUSION AND SUGGESTION

#### A. Conclusion

Based on the result of the research and calculation of the data, the researcher got the conclusion that there was the effect of using grammar translation method on students' ability in reading descriptive text at grade X of SMAN 1 Arse. The hypothesis alternative ( $H_a$ ) was accepted. It was based on the mean score of experimental class in pre test was 70.2, and the mean score of experimental class in post test was 80.6, it was bigger than control class (80.6 > 70.2) and proven with  $t_{count}$  was higher than  $t_{table}$  (2.14 > 2.021). So, the researcher concluded that grammar translation method was an effective on students' ability in reading descriptive text.

#### B. Suggestion

After finishing this research, the researcher got much information in English teaching and learning process. Therefore, the writer has suggestion to:

1. The Principal of SMAN 1 Arse, to motivate the teacher, especially English teachers to teach as well as possible by maximizing the using of grammar translation method in teaching because through this research, it was significantly proven that this strategy increased the students' reading comprehension.

2. The English teacher, to increase the students' ability in learning English, especially in increasing the students' ability in reading comprehension. One of the efficient and effective strategy that can increase reading comprehension was through grammar translation method.
3. Other researcher, the researcher hopes that the others researchers who want to conduct a research related to this research to find the others influence of these strategies deeply.

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## **CURRICULUM VITAE**

### **A. Identity**

Name : ITA PURNAMASARI SIREGAR  
Nim : 11 340 0013  
Place and Birthday : L.LOBU, 4<sup>th</sup> October 1993  
Sex : Female  
Religion : Moslem  
Address : Sipirok Arse, Kec. Arse Nauli

### **B. Parent**

1. Father's name : Muhammad Idris Siregar
2. Mother's name : Nurasih Harahap

### **C. Educational Background**

1. Elementary School : SD N 1004003 Arse (2005)
2. Junior High School : MTS S Modren Baharuddin (2008)
3. Senior High School : MAN 2 Model Padangsidempuan (2011)
4. Institute : IAIN Padangsidempuan (2015)

## APPENDIX 1

### Experimental Class

#### RENCANA PELAKSANAAN PEMBELAJARAN (RPP)

Nama Sekolah	: SMA NEGERI 1 ARSE
Mata Pelajaran	: BAHASA INGGRIS
Kelas/Semester	: X / 2
Alokasi Waktu	: 4 X 45 MENIT
<b>Standar Kompetensi</b>	: memahami makna dalam esei pendek sederhana berbentuk Descriptive untuk berinteraksi dengan lingkungan sekitar.
<b>Kompetensi Dasar</b>	: membaca nyaring bermakna teks fungsional dan esei pendek sederhana berbentuk Descriptive dengan menggunakan ragam bahasa tulis secara akurat, lancar dan berterima untuk berinteraksi dengan lingkungan sekitar.
<b>Jenis teks</b>	: Descriptive Text
<b>Aspek/skill</b>	: membaca

##### 1. Indikator:

- Membaca dan memahami teks *descriptive*
- Mengidentifikasi topic dalam teks *descriptive*
- Mengidentifikasi ide pokok dalam teks *descriptive*
- Memahami informasi yang penting dalam teks *descriptive*
- Mengidentifikasi cirri-ciri orang atau benda yang dideskripsikan dalam teks *descriptive*

- Memahami kosa kata yang terdapat dalam esei pendek berbentuk *descriptive*
- Mengidentifikasi tokoh yang terdapat dalam teks *descriptive*
- Menjawab pertanyaan berdasarkan informasi yang ada dalam esei pendek berbentuk *descriptive*

## 2. Tujuan Pembelajaran:

Pada akhir pembelajaran siswa diharapkan:

- Siswa mampu membaca dan memahami teks *descriptive*
- Siswa mampu mengidentifikasi topic dalam teks *descriptive*
- Siswa mampu mengidentifikasi ide pokok dalam teks *descriptive*
- Siswa mampu memahami informasi yang penting dalam teks *descriptive*
- Siswa mampu menggambarkan ciri-ciri orang atau benda dalam teks *descriptive*
- Siswa mampu memahami kosa kata yang terdapat dalam esei pendek berbentuk *descriptive*
- Siswa mampu mengidentifikasi tokoh yang terdapat dalam teks *descriptive*
- Siswa mampu menjawab pertanyaan berdasarkan informasi yang ada dalam esei pendek berbentuk *descriptive*

## 3. Materi Pembelajaran

- Teks monolog berbentuk *Descriptive*

## 4. Metode pembelajaran: GTM (Grammar Translation Method)

## 5. Langkah-langkah Kegiatan

### A. Pendahuluan

Apersepsi:

- Tanya jawab mengenai teks tulis fungsional dan esei pendek sederhana berbentuk *Descriptive* yang berkaitan dengan lingkungan terdekat.

Motivasi:

- Menjelaskan pentingnya materi yang akan dipelajari berikut kompetensi yang harus dikuasai siswa.

## **B. Kegiatan Inti**

Dalam kegiatan inti, Guru:

1. Guru memberikan bahan ajar berupa text tertulis kepada siswa
2. Guru memerintahkan siswa untuk membaca beberapa baris dari text
3. Guru menyuruh siswa menerjemahkan teks yang sudah dibaca
4. Guru menanyakan siswa jika mereka mempunyai pertanyaan
5. Guru memerintahkan siswa untuk menulis jawaban dari pertanyaan (reading question)
6. Guru menentukan apakah jawaban mereka benar atau salah.
7. Guru mengajarkan cognates dari kata-kata sulit yang ada di dalam teks
8. Guru megajarkan present tense dalam bentuk nominal dan verbal kepada siswa
9. Guru menyuruh siswa membuat contoh lain sesuai dengan contoh yang sudah diberikan
10. Guru menyuruh siswa untuk menghafal kosa katanya
11. Guru menyuruh siswa menuliskan formula present tense
12. Guru menyuruh siswa menghafal present tense
13. Guru memberikan soal kuis kepada siswa
14. Guru menyuruh siswa mengerjakan soal kuis yang sudah diberikan

## **C. Penutup**

Dalam kegiatan penutup, guru:

- Guru bersama siswa memberi simpulan tentang materi yang dipelajari dan mencatat informasi yang penting

- o Memberikan penilaian berupa latihan-latihan untuk mengetahui sejauh mana kemampuan siswa

**6. Alat/ sumber Belajar:**

- Buku yang relevan
- Dictionary
- Papan tulis
- Kapur/spidol
- Penghapus

**7. Penilaian**

<b>Indicator pencapaian kompetensi</b>	<b>Teknik penilaian</b>	<b>Bentuk instrument</b>	<b>Instrument soal</b>
1. Mengidentifikasi topik yang terkait dalam teks berbentuk descriptive 2. Mengidentifikasi kalimat atau ide pokok yang terdapat dalam teks 3. Mengidentifikasi informasi tertentu/penting yang terdapat dalam teks 4. Mengidentifikasi ciri-ciri dari orang/benda yang di deskripsikan dalam teks 5. Mengidentifikasi tokoh dalam teks	Teks tulisan	Pilihan ganda	Read the text carefully and then choose the correct answer based on the text by crossing a,b,c, or d

a. Pedoman penilaian

- Jumlah skor maksimal keseluruhan adalah 100
- Setiap jawaban yang benar diberi skor 5. Jumlah skor keseluruhan  $5 \times 20 = 100$ . (test tertulis)
- Nilai maksimal =  $\frac{\text{jumlah jawaban yang benar}}{\text{Jumlah soal}}$

b. Instrument: answer the question based on the text

c. Rubrik Penilaian

uraian	Skor
Jawaban benar	5
Wrong answer	0

Padangsidempuan, 2015

**Validator**

**Researcher**

**Sojuangon Rambe.,S.S.,M.Pd**  
**NIP.19790815 200604 1 003**

**Ita Purnamasari Siregar**  
**NIM.11 340 0013**



## APPENDIX 2

### Control Class

#### RENCANA PELAKSANAAN PEMBELAJARAN (RPP)

Nama sekolah : SMA NEGERI 1 ARSE

Mata Pelajaran : BAHASA INGGRIS

Kelas/semester : X/2

Alokasi Waktu : 4 X 45 MENIT

**Standar Kompetensi** : memahami makna dalam esei pendek sederhana berbentuk Descriptive untuk berinteraksi dengan lingkungan sekitar.

**Kompetensi Dasar** : membaca nyaring bermakna teks fungsional dan esei pendek sederhana berbentuk Descriptive dengan menggunakan ragam bahasa tulis secara akurat, lancar dan berterima untuk berinteraksi dengan lingkungan sekitar.

**Jenis teks** : Descriptive Text

**Aspek/skill** : membaca

#### 1. Indikator:

- Membaca dan memahami teks *descriptive*
- Mengidentifikasi topic dalam teks *descriptive*
- Mengidentifikasi ide pokok dalam teks *descriptive*
- Memahami informasi yang penting dalam teks *descriptive*
- Mengidentifikasi cirri-ciri orang atau benda yang dideskripsikan dalam teks *descriptive*

- Memahami kosa kata yang terdapat dalam esei pendek berbentuk *descriptive*
- Mengidentifikasi tokoh yang terdapat dalam teks *descriptive*
- Menjawab pertanyaan berdasarkan informasi yang ada dalam esei pendek berbentuk *descriptive*

## 2. Tujuan Pembelajaran:

Pada akhir pembelajaran siswa diharapkan:

- Siswa mampu membaca dan memahami teks *descriptive*
- Siswa mampu mengidentifikasi topic dalam teks *descriptive*
- Siswa mampu mengidentifikasi ide pokok dalam teks *descriptive*
- Siswa mampu memahami informasi yang penting dalam teks *descriptive*
- Siswa mampu menggambarkan ciri-ciri orang atau benda dalam teks *descriptive*
- Siswa mampu memahami kosa kata yang terdapat dalam esei pendek berbentuk *descriptive*
- Siswa mampu mengidentifikasi tokoh yang terdapat dalam teks *descriptive*
- Siswa mampu menjawab pertanyaan berdasarkan informasi yang ada dalam esei pendek berbentuk *descriptive*

## 3. Materi Pembelajaran

- Teks monolog berbentuk Descriptive

## 4. Metode pembelajaran: Conventional strategy

## 5. Langkah-langkah Kegiatan

### A. Pendahuluan

Apersepsi:

- Tanya jawab mengenai teks tulis fungsional dan esei pendek sederhana berbentuk Descriptive yang berkaitan dengan lingkungan terdekat.

Motivasi:

- Menjelaskan pentingnya materi yang akan dipelajari berikut kompetensi yang harus dikuasai siswa.

## **B. Kegiatan inti**

Dalam kegiatan inti, Guru:

1. Guru menyajikan bahan ajar yang berhubungan dengan pelajaran
2. Menggunakan alat Visualisasi, seperti papan tulis atau media yang tersedia untuk menjelaskan pokok bahasan yang disampaikan
3. Guru menjelaskan arti, karakteristik, dan isi dari teks Descriptive
4. Guru memberikan contoh dan penjelasan contoh dari Descriptive text dan komponen-komponen teks Descriptive
5. Membiasakan peserta didik membaca dan menulis yang beragam melalui tugas-tugas tertentu yang bermakna
6. Guru menugaskan siswa untuk membaca teks dalam memahami teks yang dipelajari
7. Guru memberikan penjelasan tentang kosa-kata dan tata bahasa yang berkaitan dengan teks Descriptive yang dibaca
8. Memfasilitasi terjadinya interaksi antarpeserta didik dan guru, lingkungan dan lainnya
9. Melibatkan peserta didik secara aktif dalam setiap kegiatan pembelajaran
10. Guru memberikan soal yang bersangkutan dengan pelajaran
11. Guru menyuruh siswa menjawab soal yang sudah diberikan

## **C. Penutup**

Dalam kegiatan penutup, guru:

- Guru bersama siswa member simpulan tentang materi yang dipelajari dan mencatat informasi yang penting

- Memberikan penilaian berupa latihan-latihan untuk mengetahui sejauh mana kemampuan siswa.

**6. Alat/ sumber Belajar:**

- Buku yang relevan
- Dictionary
- Papan tulis
- Kapur/spidol
- Penghapus

**7. Penilaian**

<b>Indicator pencapaian kompetensi</b>	<b>Teknik penilaian</b>	<b>Bentuk instrument</b>	<b>Instrument soal</b>
1. Mengidentifikasi topik yang terkait dalam teks berbentuk descriptive 2. Mengidentifikasi kalimat atau ide pokok yang terdapat dalam teks 3. Mengidentifikasi informasi tertentu/penting yang terdapat dalam teks 4. Mengidentifikasi ciri-ciri dari orang/benda yang di deskripsikan dalam teks 5. Mengidentifikasi tokoh dalam teks	Teks tulisan	Pilihan ganda	Read the text carefully and then choose the correct answer based on the text by crossing a,b,c, or d

a. Pedoman penilaian

- Jumlah skor maksimal keseluruhan adalah 100
- Setiap jawaban yang benar diberi skor 5. Jumlah skor keseluruhan  $5 \times 20 = 100$ . (test tertulis)
- Nilai maksimal =  $\frac{\text{jumlah jawaban yang benar}}{\text{Jumlah soal}}$

b. Instrument: answer the question based on the text

c. Rubrik Penilaian

uraian	Skor
Jawaban benar	5
Wrong answer	0

Padangsidempuan, 2015

**Validator**

**Researcher**

**Erni Syafriyanthi srg,S.Pd**  
**NIP.19800319 200801 2 004**

**Ita Purnamasari Siregar**  
**NIM.11 340 0013**

## Experiment class

### Learning Material

#### A. Descriptive text

Communicative purpose: to describes person, place, mood, situation.

#### B. Generic structure of descriptive text

1. Identification: identifies phenomenon to be described
2. Description: Describes parts, qualities, characteristics, etc.

#### C. Language Features

1. Focus on specific participants (My English teacher, Andini's cat, My favorite place)
2. Use of Simple Present Tense
3. Verbs of being and having 'Relational Processes'. (My mum is really cool, She has long black hair)
4. Use of descriptive adjectives (strong legs, white fangs)
5. Use of detailed Noun Phrase to give information about the subject.(a very beautiful scenery, a sweet young lady, very thick fur)
6. Use of action verbs 'Material Processes' (It eats grass, It runs fast)
7. Use of adverbials to give additional information about behavior (fast, at tree house)
8. Use of Figurative language (John is as white as chalk.)

#### D. Example of Descriptive Text

##### MY PET

I have a pet. It is a dog, and I call it Brownie. Brownie is a Chinese breed.

It is small, fluffy, and cute. It has got thick brown fur. When I cuddle it, the fur feels soft. Brownie does not like bones. Every day it eats soft food like steamed rice, fish or bread. Every morning I give her

milk and bread. When I am at school, Brownie plays with my cat. They get along well, and never fight maybe because Brownies does not bark a lot. It treats the other animals in our house gently, and it never eats shoes. Brownie is really a sweet and friendly animal.

### **MAXIM'S**

One of the world's great restaurants is Maxim's. it is on the Rue Royale in Paris. From the street, you see only a typical Parisian building and the famous red awning that says "Maxim's". but when you walk inside, you know immediately that this is a restaurant devoted to luxury. the light isn't very bright, so it takes a few minutes to see the lovely gold mirror, the paintings of famous customers, the white tablecloths, the red velvet seats, and the beautifully-dressed men and woman have familiar faces. Maxim's is a favorite eating place of the world's celebrities.

#### **(My Pet): Question 1-5.**

1. What is text talking about?
2. What is main idea in second paragraph?
3. What is the brownie food?
4. What is the brownie color?
5. What animal is described in the text?

#### **(Maxim's): Question 6-10**

6. What is the topic of the text?
7. What is main idea from the text?
8. Where is Maxim's located?
9. How is the light in Maxim's?
10. What is described in the text?

## E. Simple present tense

Simple present tense adalah kejadian yang terjadi secara berulang-ulang dan terjadi pada masa sekarang.

### a. Nominal

(+) S+Tobe ( is, am, are)	I	→ am
(-) S+Tobe (is,am,are)+not	We,you,they	→ are
(?) Tobe(is,am,are)+S	she,he,it	→ is

Ex:

- |                          |                           |
|--------------------------|---------------------------|
| (+) she is beautiful     | (dia (pr) cantik)         |
| (-) she is not beautiful | (dia (pr) tidak cantik)   |
| (?) is she beautiful ?   | (apakah dia (pr) cantik?) |
  
- |                                   |                                   |
|-----------------------------------|-----------------------------------|
| (+) they are in the classroom     | (mereka ada didalam kelas)        |
| (-) they are not in the classroom | (mereka tdk ada didalam kelas)    |
| (?) are they in the classroom?    | (apakah mereka ada didalamkelas?) |
  
- |                      |                                |
|----------------------|--------------------------------|
| (+) I am a student   | ( saya seorang siswa ?         |
| (-) I am not student | ( saya bukan seorang siswa?)   |
| (?) am I student ?   | ( apakah saya seorang siswa? ) |

### b. Verbal

(+) S+V1	I,you,we they	→ VI
(-) S+do/does+V1	she, he, it	→ V1+S/es
(?) do/does+S+V1		

Ex:

- |                          |                              |
|--------------------------|------------------------------|
| (+) She eats rice        | (dia (pr) makan nasi)        |
| (-) She doesn't eat rice | (dia (pr) tidak makan nasi)  |
| (?) does she eat rice ?  | (apakah dia (pr) makan nasi) |
  
- |                                     |                                      |
|-------------------------------------|--------------------------------------|
| (+) I read newspaper everyday       | (saya membaca Koran setiap hari)     |
| (-) I don't read newspaper everyday | (saya tdk membaca Koran setiap hari) |



(?) do I read newspaper everyday ?( apakah saya membaca Koran setiap hari?)

3. (+) we go to the market (kami pergi kepasar)  
(-) we don't go to market (kami tidak pergi ke pasar)  
(?) do we go to market? ( apakah kami pergi kepasar?)
4. (+) he goes to her uncle house (dia pergi kerumah pamannya )  
(-)he doesn't go her uncle house(dia tdk pergi kerumah pamannya)  
(?)does he visit her uncle?(apakah dia pergi kerumah pamannya?)
5. she always get up early (dia selalu bangun pagi-pagi)
6. she is never late to school (dia tak pernah terlambat ke sekolah)

I (saya)		he(dia(lk))	
You(kamu)	⇒	do	she(dia(pr)) ⇒ does
We(kita/kami)			it(benda(tunggal))
They(mereka)			

➤ Time signal

- Everyday setiap hari
- Every week setiap minggu
- Every morning setiap pagi
- On Sunday pada tiap-tiap hari senin
- On Monday's pada tiap-tiap hari minggu

➤ Adverbs of Frequency

- Always selalu
- Usually biasanya
- Often seringkali
- Seldom jarang
- Sometimes kadang-kadang
- Ever pernah
- Never tidak pernah
- Generally biasanya



15. He ..... a flower in the garden  
a. Don't cut      b. cut      c. cuts      d. does cut
16. I drink milk .....
- a. Every morning      b. yesterday      c. last week      d. just now
17. they ..... angry  
a. isn't      b. don't      c. aren't      d. doesn't
18. .... we come to campus ?  
a. Are      b. does      c. do      d. don't
19. It .... A pencil  
a. Is      b. Does      c. Don't      d. Do
20. .... he visit his mother?  
a. Do      b. Is      c. Does      d. Doesn't
21. He ..... cook a cake  
a. Is      b. Does      c. Always      d. Don't
22. We are ..... study together  
a. Ever      b. Doesn't like      c. Are      d. Does
23. We go to the beach .....
- a. Yesterday      b. On Monday      c. Tomorrow      d. Last week
24. They .... Very kind  
a. Are      b. Is      c. Do      d. Does
25. .... he a doctor ?  
a. Is      b. Do      c. Doesn't      d. Don't
26. She .... Read a book  
a. Lazy      b. Often      c. Like      d. Does
27. I teach in school .....
- a. Tomorrow      b. Two week again      c. On Sunday      d. Last week
28. She ..... a diligent student  
a. Isn't      b. Doesn't      c. Don't      d. Aren't
29. She is ..... go to the office  
a. Don't      b. Doesn't      c. Sometimes      d. Comes late

30. He is.... Sing at home  
a. Usually      b. Likes      c. Doesn't      d. Don't like
31. .... she play a doll ?  
a. Do      b. Don't      c. Is      d. Does
32. .... He angry ?  
a. Isn't      b. Is      c. Does      d. Doesn't
33. Rudi .... a husband  
a. Doesn't      b. Don't      c. Not      d. Isn't
34. We .... A rich family  
a. Don't      b. Are not      c. Doesn't      d. Isn't
35. They ....visit their friend in hospital  
a. visits      b. don't      c. doesn't      d. does
36. I .... In the house  
a. Not      b. Don't      c. Am not      d. Do
37. .... they a stupid boy ?  
a. Are      b. Aren't      c. Does      d. Don't
38. I .... Write letter  
a. Does      b. Do      c. Don't      d. Am
39. Rina .... teach her sister in bedroom  
a. does      b. is      c. don't      d. doesn't
40. I .... Buy Some fruits and vegetable in the market  
a. Don't      b. doesn't      c. do      d. does

## **Control class**

### **Learning material**

#### **1. Descriptive text**

Descriptive text is used to create a vivid impression of a person, place, object, or event, e.g to: describe a special place and why it is special, describe the most important person in your life or describe the animal habitat.

#### **2. Generic structure of descriptive text**

- a. Identification: identifies phenomenon to be described
- b. Description: describes characteristic, qualities, etc.

#### **3. Example of descriptive text**

##### **Hydroponics: Farming without soil**

Hydroponics is an unconventional growing technique. It is the cultivation of plants in water. The idea of hydroponics comes from the assumption that plants do not need soil as such. They need only the nutrients and moisture in the soil, and these can be supplied through gravel beds that contain water.

Hydroponics is not a new process. As long ago as 1690, an English physician tried growing plants in water in a laboratory experiment. In 1800, some German researchers used the method to develop many of the formulas for plant nutrient solutions, which are still in use today. About a generation ago, hydroponics moved out of the research laboratory into commercial use. In 1936, a Californian physiologist, W.F. Gerick, published guidelines for hydroponics agriculture.

One of the leading companies in the field of hydroponics is Hydroponics Incorporated of Glendale, Arizona. It operates about 200 greenhouses on a 48 hectare site. It produces more than 2.7 million kilograms of fruit and vegetable each year, mostly tomatoes, but also cucumbers, lettuces and melons. Crop yields are excellent. For example, each mature tomato plant produces an average of 12.1 kilograms of fruit in a

year of two growing cycles. This compares with about 9 kilos for two crops of the average soil grown plant.

Everything is carefully controlled in the greenhouses: the temperature, the humidity and the air circulation. Wind, hail, frost, drought, weeds and insects are all excluded.

In recent years, hydroponics farming has been expanding in many parts of the world. A hydroponics farm operated by the government of Kuwait produces fresh tomatoes at a desert site near the capital city. At Puerto Penasco, Mexico and on Sadiyat Island in Abu Dhabi, experimental hydroponics farms use seawater that is desalinated by special installations located on the coast.

### **London**

London, the capital city of England, has been one of the major cities in Europe for centuries. Because of its long history, it has many old buildings. Known as the city which covers only about 2.6 sq km, the city is capitalized, distinguished it from the larger metropolis. This is where London began as a Roman colonial town around AD 50, at the point where the Romans built the centres. Most of the financial activities are crowded along Thread Needle Street, near the intersection known as the change, and the stock exchange.

The permanent residential of the city is now less than 6000, but about 350,000 commute here daily to work. The only large residential portion of the city Barbican Centre, a concrete complex of towers, parking garage, and pedestrian walkways located on the northern edge of the city. The Barbican was built to replace older buildings destroyed in world war II (1939-1945), when the German heavily bombed London.

**Questions (hydroponics):**

1. What is hydroponics?
2. What do plants basically need?
3. Who started hydroponics in 1690?
4. Who published a guideline for hydroponics agriculture?
5. Which produce more: a hydroponics tomato plant or a soil grown tomato plant?
6. What are carefully controlled in greenhouse?
7. Which paragraph identifies phenomenon to be described?
8. Which paragraph gives a description of hydroponics?

**Questions (London):**

1. How wide is London?
2. What was the Barbican built for?
3. “and pedestrian walkways located on the northern edge of the city”. What is the similar meaning of the underlined word?
4. “...which include the huge book of English complex”. What is the antonym of the underlined word?
5. Today this area is one of the world leading financial centres”. What do the underline word refer to?
6. Why was London been one of the major cities in Europe for centuries?
7. What does the text mainly discuss about?
8. What is purpose of the text?

➤ Kunci jawaban

1. B	11. A	21. C	31. D
2. C	12. C	22. A	32. B
3. A	13. C	23. B	33. D
4. C	14. D	24. A	34. B
5. B	15. C	25. A	35. B
6. D	16. A	26. B	36. C
7. B	17. C	27. C	37. A
8. D	18. C	28. A	38. C
9. A	19. A	29. C	39. D
10. A	20. C	30. A	40. A



## APPENDIX 3

### Instrument Pre Test

**Name:**

**Class:**

**Instruction: choose the correct Answer by crossing (X) A, B, C, or D**

**Question 1-14:** This text below is for question number 1 up to 14. Choose the best answer based on text.

Butterflies are beautiful, flying insects with large scaly wings like all insects. They have six legs, three body parts, a pair of antennae, and compound eyes. The three body parts are the head, thorax (the chest), and abdomen (the tail end). The four wings and the six legs of the butterfly are connected to the thorax. The thorax contains the muscles that make the legs and wings move.

Butterflies are very good fliers. They have two pairs, of large wings covered with colorful scales. Butterflies and moths are the only insects that have scaly wings. The wings are connected to the butterfly's thorax (mid-section). Butterflies can only fly if their body temperature is above 27 degrees Centigrade. Butterflies sun themselves to warm up in cool weather. As butterflies get older, the color of the wings fades and the wings become ragged.

The speed varies among butterfly species (the poisonous varieties are slower than non – poisonous varieties). The fastest butterflies can fly at about 50 kilometers per hour (kph) or faster. Slow flying butterflies fly about 8 kph.

Therefore, so many people like them because they are so beautiful. As human kind, we should give a big thanks to our God because He creates us in many varieties, and surely we should keep their population in the world.

1. What is main idea in the second paragraph?
  - a. Butterflies can only fly if their body temperature is above 27 degrees Centigrade
  - b. Butterflies are very good fliers
  - c. The fastest butterflies can fly at about 50 kilometers per hour (kph)
  - d. Butterflies are beautiful, flying insects with large scaly wings like all insects

2. The word *beautiful* in paragraph 1, first line can be replaced by \_\_\_\_\_.
  - a. Sad
  - b. Precious
  - c. Crying
  - d. Angry
3. According to passage, which statement is TRUE?
  - a. The fastest butterflies can fly at about 100 kph
  - b. The body parts of butterflies are the head, feet, abdomen, and forehead
  - c. Slow flying butterflies fly about 8 kph
  - d. Butterflies are very good fliers
4. What is characteristic of butterfly?
  - a. Butterfly is very beautiful
  - b. Butterfly have six legs, three body parts, a pair of antennae, and compound eyes
  - c. Many people like butterfly
  - d. Slow flier
5. Butterflies ..... very good fliers.
  - a. Is
  - b. Aren't
  - c. Are
  - d. does
6. What is main idea in first paragraph?
  - a. Butterflies are beautiful, flying insects with large scaly wings like all insects
  - b. They have two pairs, of large wings covered with colorful scales
  - c. Butterflies sun themselves to warm up in cool weather
  - d. The thorax contains the muscles that make the legs and wings move
7. The word *they* in first paragraph line 1 refers to \_\_\_\_\_.
  - a. Good flier
  - b. Wings
  - c. Butterfly
  - d. Human

8. Butterflies ..... only fly if their body temperature is above 27 degrees Centigrade.
- can
  - can not
  - is
  - are
9. Many people like butterflies because they are so\_\_\_\_\_.
- Beautifulies
  - Beautiful
  - Beauty
  - Beautifully
10. The fastest butterflies can fly at about 50 kilometers per hour (kph). The underline word refers to?
- High
  - Faster
  - Flit
  - Fat
11. What is the wings color of butterfly?
- Color of the wings fades and the wings become ragged
  - Red
  - Bright
  - Purple
12. The word *thanks* in last paragraph line 2 can be replaced by?
- Happy
  - Blessing
  - Gratitude
  - Goodness
13. How fast the butterfly can fly?
- The fastest butterflies can fly at about 30 kilometers per hour (kph)
  - The fastest butterflies can fly at about 50 kilometers per hour (kph)
  - The fastest butterflies can fly at about 20 kilometers per hour (kph)
  - The fastest butterflies can fly at about 40 kilometers per hour (kph)

14. How many pairs the butterflies have?

- a. Three
- b. Two
- c. Four
- d. One

**Question 15-27:** This text below is for question number 15 up to 27. Choose the best answer based on text.

Borobudur is Hindu Buddhist temple. It was built in the ninth century under Sailendra dynasty of ancient Mataram kingdom. Borobudur is located in Magelang, Central Java, Indonesia.

Borobudur is well-known all over the world. Its construction is influenced by the Gupta architecture of India. The temple is constructed on a hill 46 m high and consists of eight steps like stone terrace. The first five terraces are square and surrounded by walls adorned with Buddhist sculpture in bas-relief. The upper three are circular. Each of them is with a circle of bell shape-stupa. The entire edifice is crowned by a large stupa at the centre at the centre of the top circle.

The way to the summit extends through some 4.8 km of passage and stairways. The design of Borobudur which symbolizes the structure of universe influences temples at Angkor, Cambodia. Borobudur temple which is rededicated as an Indonesian monument in 1983 is a valuable treasure for Indonesian people.

15. What is main idea in the first paragraph?

- a. Borobudur is well-known all over the world
- b. Borobudur temple which is rededicated as an Indonesian monument in 1983 is a valuable treasure for Indonesian people
- c. Borobudur is Hindu Buddhist temple
- d. The temple is constructed on a hill 46 m high and consists of eight steps like stone terrace

16. According to text, which statement is NOT true?

- a. Borobudur temple which is rededicated as an Indonesian monument in 1983 is a valuable treasure for Indonesian people
- b. Borobudur is located in Magelang, Central Java, Indonesia

- c. Borobudur is a Budist-Temple
- d. Borobudur temple is the smallest temple in Indonesia

17. Where is Borobudur located?

- a. Sumatra
- b. Cambodia
- c. Magelang
- d. Mataram

18. What is main idea in last paragraph?

- a. The upper three are circular
- b. Borobudur temple which is rededicated as an Indonesian monument in 1983 is a valuable treasure for Indonesian people.
- c. The way to the summit extends through some 4.8 km of passage and stairways.
- d. Borobudur is Hindu is Budhist temple. It was built in the ninth century under Sailendra dynasty of ancient Mataram kingdom.

19. What is the symbol of Borobudur temple ?

- a. The structure of universe influences temples at Angkor, Cambodia.
- b. Hindu budhist
- c. Big temples
- d. Mataram kingdom

20. The word *it* in paragraph 1, first line can be replaced by \_\_\_\_\_.

- a. Borobudur
- b. Hindu temple
- c. Architecture
- d. Structure of universe

21. Borobudur ..... located in Magelang.

- a. Do
- b. Are
- c. Is
- d. Isn't

22. What is main idea in second paragraph?

- a. Its construction is influenced by the Gupta architecture of India

- b. Each of them is with a circle of bell shape-stupa
- c. Borobudur is well-known all over the world
- d. The upper three are circular

23. Which statement is TRUE from the text?

- a. Borobudur is located in Magelang, Central Java, Indonesia
- b. Borobudur is constructed on a hill 40 m high
- c. Borobudur located in Surakarta
- d. All answer is TRUE

24. The word *summit* in last paragraph synonym with?

- a. High
- b. Climax
- c. Big
- d. Plate

25. How is the construction of Borobudur temple?

- a. The temple is constructed on a hill 46 m high and consists of eight steps like stone terrace.
- b. The temple is constructed on a hill 40 m high and consists of eight steps like stone terrace
- c. All answer is FALSE
- d. The temple is constructed on a hill 46 m high and consists of ninety steps like stone terrace

26. What is Borobudur temple?

- a. A big temple
- b. Famous place
- c. Beautiful temple
- d. Hindu Budhist temple

27. Borobudur temple.....built in the ninth century under Sailendra dynasty of ancient Mataram kingdom.

- a. Is
- b. Are
- c. Was

- d. does

**Question 28-40:** This text below is for question number 28 up to 40. Choose the best answer based on text.

The National Monument (or Monument Nasional) is a 132 meters tower in the center of Merdeka Square, Central Jakarta. It symbolizes the fight for Indonesia's independence. The monument consists of a 117.7 m obelisk on a 45 m square platform at a height of 17 m.

The towering monument symbolizes the philosophy of Lingga and Yoni. Lingga resembles, rice pestle (alu) and Yoni resembles mortar rice (lesung), two important items in Indonesian agricultural tradition.

The construction began in 1961 under the direction of President Soekarno and the monument was opened to the public in 1975. It is topped by a flame covered with gold foil. The monument and museum is opened daily from 08.00 – 15.00 every day throughout the week, except for the last Monday of the month the monument is closed.

28. What is main idea in the second paragraph?

- a. The National Monument (or Monument Nasional) is a 132 meters tower in the center of Merdeka Square, Central Jakarta
- b. The National Monument is located in Central Java
- c. The towering monument symbolizes the philosophy of Lingga and Yoni
- d. The monument and museum is opened daily from 08.00 – 15.00 every day

29. What is the meaning of Lingga and Yoni?

- a. Stick and Bowl
- b. Rice pestle (alu) and Mortar rice (lesung)
- c. Spoon and Fork
- d. Simple and Modern

30. According to passage, which statement is TRUE?

- a. The National Monument is not opened for public
- b. The National Monument (or Monument Nasional) is a 175 meters tower in the center of Merdeka Square, Central Jakarta
- c. The construction began in 1992 under the direction of President Megawati
- d. The Monument Nasional is topped by a flame covered with gold foil

31. What is main idea in the first paragraph?

- a. The National Monument (or Monument Nasional) is a 132 meters tower in the center of Merdeka Square, Central Jakarta
  - b. The philosophy of Lingga and Yoni
  - c. It symbolizes the fight for Indonesia's independence
  - d. It is topped by a flame covered with gold foil
32. The word *important* in paragraph 2 line 2 can be replaced by?
- a. False
  - b. Sign
  - c. Personal
  - d. Substantial
33. What is main idea in the last paragraph?
- a. Lingga resembles, rice pestle (alu) and Yoni resembles mortar rice (lesung), two important items in Indonesian agricultural tradition.
  - b. The construction began in 1961 under the direction of President Soekarno and the monument was opened to the public in 1975
  - c. It is topped by a flame covered with gold foil
  - d. The monument consists of a 117.7 m obelisk on a 45 m square platform at a height of 17
34. It ..... topped by a flame covered with gold foil
- a. Is
  - b. are
  - c. Did
  - d. Was
35. Lingga and yoni is the symbol of \_\_\_\_\_.
- a. Borobudur
  - b. National monument
  - c. Central Jakarta
  - d. Museum
36. The monument and museum is opened daily from 08.00 – 15.00 every day. The underline word refers to\_\_\_\_\_.
- a. Close
  - b. There



- c. Unclose
- d. Present

37. When is the national monument closed?

- a. Saturday
- b. Sunday
- c. Monday
- d. In afternoon

38. What is the two important items in Indonesian agricultural tradition?

- a. Bells stupa
- b. Lingga Yoni
- c. Yoni bells
- d. Stupa terrace

39. For the last Monday of the month the monument .....

- a. Was closed
- b. Is closed
- c. Doesn't closed
- d. Were closed

40. The monument and museum is opened daily from 08.00 – 15.00 .....

- a. Everyday
- b. Yesterday
- c. Tomorrow
- d. Last month

## APPENDIX 4

### Instrument Post Test

**Name:**

**Class:**

**Instruction: choose the correct Answer by crossing (X) A, B, C, or D**

**Question 1-17:** This text below is for question number 1 up to 17. Choose the best answer based on text.

Nusa Tenggara is the name for the chain of islands which lies to the east of Bali. Including the islands of Komodo, Lombok, Flores and Timor, Nusa Tenggara spans variety of landscape, from tropical forests, high volcanic lakes and dry savannahs.

The largest of smaller islands between East Nusa Tenggara has 566 islands. The long northern arch of the island chain is the result of volcanic activity, whilst the southern islands are formed from coral deposits.

In every part of Nusa Tenggara Island has the different weather. Most of the eastern islands are arid, due to hot winds blowing from the continent of Australia and sparsely vegetated. The Western half of Nusa Tenggara is moister and has denser vegetation. The Northern part of the chain is known for deep lake contained in the craters of extinct volcanoes, the most famous of which are the colored mineral lakes on Gunung Keli Mutu in Flores.

Moreover, some tourists will be interested to visit Nusa Tenggara because the view of Nusa Tenggara is so beautiful, and also it will be a credit to Indonesia.

1. What is main idea in the first paragraph?
  - a. The Northern part of the chain is known for deep lake contained in the craters of extinct volcanoes
  - b. Most of the eastern islands are arid, due to hot winds blowing from the continent of Australia and sparsely vegetated
  - c. The largest of smaller islands between East Nusa Tenggara has 566 islands
  - d. Nusa Tenggara is the name for the chain of islands which lies to the east of Bali

2. The word *arid* in paragraph 2 can be replaced by \_\_\_\_\_.
  - a. Cool
  - b. Damp
  - c. Dry
  - d. Softly
3. According to text, which statement is NOT true?
  - a. Nusa Tenggara is the name for the chain of islands which lies to the east of Bali
  - b. The Western half of Nusa Tenggara is moister and has denser vegetation
  - c. Gunung Keli Mutu in North Sumatera
  - d. Nusa Tenggara the islands of Komodo, Lombok, Flores and Timor, Nusa Tenggara spans variety of landscape, from tropical forests, high volcanic lakes and dry savannahs
4. What is main idea in the third paragraph?
  - a. The most famous of which are the colored mineral lakes on Gunung Keli Mutu in Flores
  - b. In every part of Nusa Tenggara Island has the different weather
  - c. The Western half of Nusa Tenggara is moister and has denser vegetation
  - d. The largest of smaller islands between East Nusa Tenggara has 566 islands
5. The word *interested* in last paragraph refers to?
  - a. Want
  - b. Like
  - c. Concerned
  - d. Happy
6. In every part of Nusa Tenggara Island has the different weather. What is the different of Nusa Tenggara weather?
  - a. The eastern islands are arid, due to hot winds blowing from the continent of Australia and sparsely vegetated
  - b. Very hot in Australia and eastern Island
  - c. Arid in sparsely vegetated
  - d. Hot winds blowing, cool

7. What is main idea in second paragraph?
  - a. The long northern arch of the island chain is the result of volcanic activity
  - b. The largest of smaller islands between East Nusa Tenggara has 566 islands
  - c. In every part of Nusa Tenggara Island has the different weather
  - d. The southern islands are formed from coral deposits
8. What is the most famous in Niagara Falls?
  - a. The waterfalls
  - b. Beautiful place
  - c. Tropical florest
  - d. The colored mineral lakes on Gunung Keli Mutu in Flores
9. What is the Nusa tenggara?
  - a. One of the place in Bali
  - b. The name for the chain of islands which lies to the east of Bali
  - c. A place for holiday
  - d. Interesting place of tourist
10. According to text, which statement is TRUE?
  - a. The largest of smaller islands between East Nusa Tenggara has 566 islands
  - b. Niagara falls have many waterfalls
  - c. Niagara place located in magelang
  - d. Many tourist come to Niagara falls to do experiment
11. How many island in east Nusa tenggara?
  - a. 521 island
  - b. 540 island
  - c. 560 island
  - d. 566 island
12. Nusa Tenggara ..... the name for the chain of islands which lies to the east of Bali
  - a. Is
  - b. Are
  - c. Was
  - d. Were

13. Some tourists ..... interested to visit Nusa Tenggara
- should be
  - will
  - will be
  - were
14. What is make the tourism come to nusa tenggara?
- Because Travelling
  - Just walking
  - Because the view of Nusa Tenggara is so beautiful, and also it will be a credit to Indonesia
  - All answer is FALSE
15. In every part of Nusa Tenggara Island ..... the different weather
- Have
  - Has
  - Do
  - Does
16. The most famous of which .... the colored mineral lakes on Gunung Keli Mutu in Flores
- Are
  - Is
  - Was
  - Does
17. The Western half of Nusa Tenggara ..... moister and has denser vegetation
- Are
  - Was
  - Is
  - does

**Question 18-30:** This text below is for question number 18 up to 30. Choose the best answer based on text.

Kuta Beach is a beautiful beach in a southern Bali. Its location is in Badung Regency, 9 km from Denpasar, the capital of Bali exactly near Bali's Ngurah Rai Airport. Kuta is one of the first towns with substantial tourist development and also remains one

of Indonesia's major tourist destinations. Its long sandy beach is known internationally, with its varied accommodation, many restaurants and bars, and many renowned surfers.

It is also well-known as the right place for people to see scenic sunset in the afternoon. People who come to Bali will be very unlucky if they do not see the panoramic sunset in this town. It is real that tourists feel happy to be there. They can sunbathe, swim, surf, play soccer beach, kite flying, play volleyball or just take a walk. For persons who like playing soccer, do not forget to try the game with some locals. The locals usually set up the goal posts between Hard Rock Cafe and Discovery Shopping Mall at 16.00.

Kuta with its beauty of the beach will make the tourists feel satisfied and hope to visit it back. Believe it or not, though for 50 years ago Kuta is the village of fishermen nowadays it is called as the International City because this town is the place where tourists all over the world meet each other. Therefore, Kuta Beach is one of interesting places in Indonesia.

18. The word *it* in the second paragraph line 1 refers to \_\_\_\_\_.
- Kuta Beach
  - Sand
  - Sea
  - Fish
19. What is main idea in third paragraph?
- Kuta with its beauty of the beach will make the tourists feel satisfied and hope to visit it back
  - For persons who like playing soccer, do not forget to try the game with some locals
  - Therefore, Kuta Beach is one of interesting places in Indonesia
  - Its long sandy beach is known internationally, with its varied accommodation, many restaurants and bars, and many renowned surfers
20. Where is kuta beach located?
- Surabaya
  - Bandung
  - Denpasar
  - Jakarta

21. What is main idea in the first paragraph?
- Kuta Beach is a beautiful beach in a southern Bali
  - Its long sandy beach is known internationally, with its varied accommodation, many restaurants and bars, and many renowned surfers
  - The locals usually set up the goal posts between Hard Rock Cafe and Discovery Shopping Mall at 16.00
  - Its location is in Badung Regency, 9 km from Denpasar, the capital of Bali exactly near Bali's Ngurah Rai Airport
22. The word *location* in paragraph 1 line 1 synonym with \_\_\_\_\_.
- Place
  - Position
  - Street
  - building
23. What is main idea in second paragraph?
- It is real that tourists feel happy to be there
  - For persons who like playing soccer, do not forget to try the game with some locals
  - It is also well-known as the right place for people to see scenic sunset in the afternoon
  - Kuta with its beauty of the beach will make the tourists feel satisfied and hope to visit it back
24. According to the text, which statement is NOT TRUE?
- Kuta beach is a beautiful beach in southern Bali
  - Kuta beach is one of interesting place in Indonesia
  - Kuta beach for 50 years ago is the village of fishermen
  - Kuta beach is located in south sumatera
25. The word *goal* in paragraph 2 last line can be replace by\_\_\_\_\_.
- Something
  - Intention
  - Food
  - Person

26. What is the people do in kuta beach?
- a. Sunbathe, swim, surf, play soccer beach, kite flying, play volleyball or just take a walk
  - b. Fishing
  - c. Shopping
  - d. Washing
27. Kuta Beach ..... a beautiful beach in a southern Bali
- a. Is
  - b. Are
  - c. Was
  - d. Were
28. Kuta with its beauty of the beach will make the tourists feel \_\_\_\_\_.
- a. Satisfied
  - b. Satisfaction
  - c. Satisfacting
  - d. Satisfacturing
29. People who..... to Bali will be very unlucky if they do not see the panoramic sunset in this town.
- a. Came
  - b. Come
  - c. Comes
  - d. Coming
30. What is an interesting fact about kuta beach?
- a. a beautiful beach
  - b. its location is in Bandung
  - c. many tourism come to there
  - d. small beach



**Question 31-40:** This text below is for question number 31 up to 40. Choose the best answer based on text.

Niagara Falls is a famous area of waterfalls. It is one of the most beautiful natural wonders of North America. It is on the Niagara River, about halfway between Lake Erie and Lake Ontario. The Niagara River forms part of the border between Canada and the United States. At Niagara Falls, Ontario, Canada is on one side of the river, and the U.S. state of New York is on the other side. Niagara Falls really has two waterfalls. The Horseshoe Falls are in Canada, and the American Falls are in the United States.

The Niagara River drops into a steep gorge or canyon, at the falls. Most of the water flows over the Horseshoe Falls. They are not as high as the American Falls, but they are 2,600 feet (792 meters) wide—about 0.5 mile (0.8 kilometer). The American Falls are about 1,000 feet (305 meters) wide. Beyond the falls are the Whirlpool Rapids. There, the powerful swirling water has carved a bowl out of the rock.

At night, colored lights shine on the thundering falls. In fact, there is about 10 million people visit Niagara Falls each year. Therefore, we must keep Niagara Falls because it is one of heritages of world.

31. The word *famous* in line 1 first paragraph can be replaced by \_\_\_\_\_.
- a. Scarce
  - b. Popular
  - c. Run
  - d. Continuously
32. What is main idea in the first paragraph?
- a. The Horseshoe Falls are in Canada, and the American Falls are in the United States
  - b. In fact, there is about 10 million people visit Niagara Falls each year
  - c. Niagara Falls is a famous area of waterfalls
  - d. Most of the water flows over the Horseshoe Falls
33. According to text, which statement is NOT true?
- a. There is about 10 million people visit Niagara Falls each year
  - b. Niagara falls is on the Niagara River, about halfway between Lake Erie and Lake Ontario

- c. The American Falls are about 1,500 feet (350 meters) wide
- d. At Niagara Falls, Ontario, Canada is on one side of the river

34. What is main idea in second paragraph?

- a. The Niagara River drops into a steep gorge or canyon, at the falls
- b. The American Falls are about 1,000 feet (305 meters) wide
- c. Niagara Falls really has two waterfalls
- d. There, the powerful swirling water has carved a bowl out of the rock.

35. The word *fact* in last paragraph refers to \_\_\_\_\_.

- a. Even
- b. Never
- c. Opinion
- d. True

36. The word *world* in last paragraph can be replace by\_\_\_\_\_.

- a. Earth
- b. Star
- c. Global
- d. Big

37. Where is Niagara falls located?

- a. North america
- b. Lombok
- c. Canada
- d. Paris

38. Niagara Falls really has two waterfalls .Where is the two waterfalls located?

- a. Canada
- b. United Stated
- c. America
- d. Canada and united Stated

39. The high of American Falls are about?

- a. 1,000 feet (305 meters) wide
- b. 1,500 feet (325 meters) wide
- c. 1,250 feet (298 meters) wide

d. 1,000 feet ( 325 meters) wide

40. The Niagara rivers halfway between?

a. Canada and American

b. Meksiko and U.S

c. Lake Erie and Lake Ontario

d. Lake Ontorio and canada

Appendix 5

**Key Answer**

**A. Pre Test**

- |       |       |
|-------|-------|
| 1. B  | 21. C |
| 2. B  | 22. C |
| 3. D  | 23. A |
| 4. B  | 24. B |
| 5. C  | 25. A |
| 6. A  | 26. D |
| 7. C  | 27. C |
| 8. A  | 28. C |
| 9. B  | 29. B |
| 10. C | 30. D |
| 11. A | 31. A |
| 12. C | 32. D |
| 13. B | 33. B |
| 14. B | 34. A |
| 15. C | 35. B |
| 16. D | 36. C |
| 17. C | 37. C |
| 18. C | 38. B |
| 19. A | 39. B |
| 20. A | 40. A |

**B. Post Test**

- |       |       |
|-------|-------|
| 1. D  | 21. A |
| 2. C  | 22. B |
| 3. C  | 23. C |
| 4. B  | 24. D |
| 5. C  | 25. B |
| 6. A  | 26. A |
| 7. B  | 27. A |
| 8. D  | 28. A |
| 9. B  | 29. B |
| 10. A | 30. A |
| 11. D | 31. B |
| 12. A | 32. C |
| 13. C | 33. C |
| 14. C | 34. A |
| 15. B | 35. A |
| 16. A | 36. A |
| 17. C | 37. A |
| 18. A | 38. D |
| 19. C | 39. A |
| 20. B | 40. C |



**Reliability Pre Test**

NO	NO ITEM																																													Xt	Xt <sup>2</sup>								
	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	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45			46	47	48	49	50			
1	0	1	0	1	1	0	0	0	1	1	0	0	1	0	1	1	1	0	0	0	1	1	1	0	0	1	1	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	0	1	1	1	0	1	1	30	900			
2	1	1	0	0	1	1	1	0	1	1	0	0	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	40	1600			
3	1	1	1	0	0	1	1	0	1	0	0	1	1	1	0	0	0	0	1	1	0	1	1	0	1	1	0	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	32	1024				
4	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	100				
5	0	0	0	0	1	0	1	1	1	1	0	1	1	1	0	0	0	0	1	0	0	0	0	1	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	20	400			
6	1	1	1	0	0	1	1	1	1	1	0	1	0	1	0	0	1	0	1	0	0	1	0	0	1	0	0	1	0	0	1	1	1	0	0	1	0	0	1	0	0	1	0	1	1	1	1	0	1	1	28	784			
7	1	1	1	1	1	1	1	0	1	1	0	0	0	0	1	1	1	1	1	1	1	1	0	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	36	1296				
8	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	169					
9	1	1	1	0	1	1	1	0	1	0	0	0	0	0	1	0	1	1	1	1	1	0	0	0	0	1	0	1	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	841					
10	1	1	0	0	1	1	1	0	1	1	0	0	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	1	0	1	0	1	1	1	0	1	1	38	1444						
11	1	1	1	1	1	1	1	0	1	1	0	0	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	43	1849					
12	1	1	1	0	0	1	1	0	0	1	0	0	0	0	1	1	0	1	1	1	1	1	0	0	1	1	0	0	1	1	1	1	1	1	1	0	1	1	0	0	1	1	1	1	1	0	1	1	33	1089					
13	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	64					
14	1	1	1	1	1	1	1	0	1	1	1	0	1	0	1	1	1	0	1	1	1	0	0	1	1	1	1	0	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	40	1600				
15	0	0	1	1	1	0	1	0	0	1	0	0	1	0	1	1	0	1	1	0	0	1	0	0	1	1	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	32	1024					
16	1	1	0	0	1	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	36	1296					
17	1	0	1	0	0	1	0	1	1	0	0	1	0	1	1	0	0	1	0	0	0	1	0	0	0	0	0	1	1	1	1	0	0	1	1	1	1	0	0	1	0	0	0	1	1	1	0	1	0	24	576				
18	1	0	1	0	1	1	0	0	0	1	0	0	1	0	1	1	0	1	0	1	1	1	0	0	1	0	1	0	1	1	0	0	1	1	0	0	1	0	0	0	0	0	0	1	1	0	0	1	25	625					
19	1	0	1	1	1	1	0	0	1	1	0	0	1	0	0	1	1	0	0	1	0	1	0	1	0	0	1	1	0	1	0	0	1	0	0	0	0	1	0	0	1	1	1	0	0	1	1	0	24	576					
20	0	1	1	1	1	0	0	1	1	0	0	1	1	1	1	1	0	1	0	1	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	30	900					
21	1	1	0	1	1	1	1	0	0	0	0	1	1	1	1	0	1	0	1	1	0	1	0	1	1	1	0	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	34	1156					
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23	1	1	1	1	1	0	0	0	0	1	1	0	1	0	0	0	0	1	1	1	0	1	1	1	1	0	0	0	0	1	0	0	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	0	28	784				
24	1	1	1	0	1	0	0	0	1	1	0	0	1	0	1	1	1	0	1	1	0	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	31	961				
25	0	0	0	1	1	1	0	0	1	0	0	0	0	0	1	1	0	0	1	0	0	1	0	0	0	1	0	0	1	1	1	0	1	0	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0	25	625				
N=25	2	1	1	1	1	1	1	5	1	1	3	7	1	8	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	720	22644				
P	,8	,6	,7	,5	,7	,5	,5	,2	,7	,7	,1	,2	,6	,3	,6	,6	,5	,5	,7	,8	,4	,7	,2	,5	,6	,6	,6	,7	,4	,5	,5	,5	,5	,5	,3	,3	,3	,3	,4	,3	,4	,9	,3	,4	,5	,5	,3	,3	,2	,2	,8	,3	,4	Σxt	Σxt <sup>2</sup>
Q	,2	,4	,3	,5	,3	,5	,5	,8	,3	,3	,9	,8	,4	,7	,4	,4	,5	,5	,3	,2	,6	,3	,8	,5	,4	,4	,4	,3	,6	,5	,5	,5	,5	,3	,3	,3	,4	,3	,4	,9	,3	,4	,5	,5	,3	,3	,2	,2	,8	,3	,4				
pq	,1	,2	,2	,2	,2	,2	,2	,1	,2	,2	,9	,1	,2	,2	,2	,2	,2	,2	,2	,1	,2	,2	,1	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	,2	10,61	Σpq		



## Appendix 7

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

### A. Calculation of Pre-Test

#### 1. Means score from score total ( $M_t$ )

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

$$M_t = \frac{720}{25} = 28.80$$

#### 2. Standard Deviation ( $SD_t$ )

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

$$SD_t = \sqrt{\frac{22664}{25} - \left(\frac{720}{25}\right)^2}$$

$$SD_t = \sqrt{906.56 - 28.80^2}$$

$$SD_t = \sqrt{906.56 - 829.44} = \sqrt{77.12} = 8.78$$

#### 3. Means Score ( $M_p$ )

Item 1  $M_{p1} = \frac{\text{the total of students score that true item answer}}{n1}$

$$M_{p1} = \frac{40+32+28+36+13+29+38+43+33+8+40+32+36+24+25+24+34+31+28+31}{20}$$

$$M_{p1} = \frac{616}{20} = 30.80$$

Item 2  $M_{p2} = \frac{\text{the total of students score that answer true item}}{n2}$

$$M_{p2} = \frac{30+40+32+10+28+36+13+29+38+43+33+40+36+30+34+28+31}{17}$$

$$M_{p2} = \frac{551}{17} = 32.41$$

Item 3  $M_{p3} = \frac{\text{the total of students score that answer true item}}{n3}$

$$M_{p3} = \frac{32+28+36+29+43+33+40+32+24+25+24+30+31+28+31}{15}$$

$$M_{p3} = \frac{491}{15} = 32.73$$

Item 4  $M_{p4} = \frac{\text{the total of students score that answer true item}}{n4}$

$$M_{p4} = \frac{30+40+36+43+40+32+24+30+34+28+25}{11}$$

$$M_{p4} = \frac{362}{11} = 32.90$$



$$\text{Item 5 } M_{p5} = \frac{\text{the total of students score that answer true item}}{n8}$$

$$M_{p5} = \frac{30+40+10+20+36+13+29+38+43+40+32+36+25+24+30+34+28+31}{18}$$

$$M_{p5} = \frac{567}{18} = 31.50$$

$$\text{Item 6 } M_{p6} = \frac{\text{the total of students score that answer true item}}{n6}$$

$$M_{p6} = \frac{40+32+28+36+29+38+43+33+40+36+24+25+24+34+31+25}{16}$$

$$= \frac{518}{16} = 32.37$$

$$\text{Item 7 } M_{p7} = \frac{\text{the total of students score that answer true item}}{n7}$$

$$M_{p7} = \frac{40+32+20+28+36+29+38+43+33+40+32+34+31}{13}$$

$$= \frac{436}{13} = 33.53$$

$$\text{Item 8 } M_{p8} = \frac{\text{the total of students score that answer true item}}{n5}$$

$$M_{p8} = \frac{20+28+24+30+31}{5}$$

$$M_{p8} = \frac{133}{5} = 26.60$$

$$\text{Item 9 } M_{p9} = \frac{\text{the total of students score that answer true item}}{n9}$$

$$M_{p9} = \frac{30+40+32+20+28+36+13+29+38+43+8+40+36+24+24+30+31+25}{18}$$

$$M_{p9} = \frac{583}{18} = 32.38$$

$$\text{Item 10 } M_{p10} = \frac{\text{the total of students score that answer true item}}{n10}$$

$$M_{p10} = \frac{30+40+10+20+28+36+13+38+43+33+8+40+32+25+24+31+31+25}{18}$$

$$M_{p10} = \frac{535}{18} = 29.72$$

$$\text{Item 11 } M_{p11} = \frac{\text{the total of students score that answer true item}}{n49}$$

$$M_{p11} = \frac{40+36+28}{3}$$

$$M_{p11} = \frac{104}{3} = 34.66$$

$$\text{Item 12 } M_{p12} = \frac{\text{the total of students score that answer true item}}{n34}$$

$$M_{p12} = \frac{32+20+28+24+30+34+31}{7}$$

$$M_{p12} = \frac{199}{7} = 28.42$$

$$\text{Item 13 } M_{p13} = \frac{\text{the total of students score that answer true item}}{n13}$$

$$M_{p13} = \frac{30+40+32+20+38+43+40+32+36+25+24+30+34+28+31}{17}$$

$$M_{p13} = \frac{483}{15} = 32.20$$

$$\text{Item 14 } = \frac{\text{the total of students score that answer true item}}{n14}$$

$$M_{p14} = \frac{32+20+28+40+24+30+34+31}{8}$$

$$M_{p14} = \frac{239}{8} = 29.87$$

$$\text{Item 15 } M_{p15} = \frac{\text{the total of students score that answer true item}}{n15}$$

$$M_{p15} = \frac{30+40+36+29+38+43+33+40+32+36+24+25+30+34+31+31+25}{17}$$

$$M_{p15} = \frac{557}{17} = 32.76$$

$$\text{Item 16 } M_{p16} = \frac{\text{the total of students score that answer true item}}{n23}$$

$$M_{p16} = \frac{30+40+36+38+43+33+40+32+36+25+24+30+31+31+25}{15}$$

$$M_{p16} = \frac{494}{15} = 32.93$$

$$\text{Item 17 } M_{p17} = \frac{\text{the total of students score that answer true item}}{n17}$$

$$M_{p17} = \frac{30+40+28+36+29+38+43+40+36+24+30+34+31+31}{14}$$

$$M_{p17} = \frac{470}{14} = 33.57$$

$$\text{Item 18 } M_{p18} = \frac{\text{the total of students score that answer true item}}{n18}$$

$$M_{p18} = \frac{40+20+36+13+29+10+43+33+32+36+24+25+28}{13}$$

$$= \frac{369}{13} = 28.38$$

$$\text{Item 19 } M_{p19} = \frac{\text{the total of students score that answer true item}}{n19}$$

$$M_{p19} = \frac{32+28+36+13+29+38+43+33+8+40+32+36+30+34+31+28+31+25}{18}$$

$$M_{p19} = \frac{567}{18} = 31.50$$

$$\text{Item 20 } M_{p20} = \frac{\text{the total of students score that answer true item}}{n40}$$

$$M_{p20} = \frac{40+30+28+36+13+29+38+43+33+8+40+36+24+25+24+34+31+28+31}{19}$$

$$M_{p20} = \frac{571}{19} = 30.05$$

$$\text{Item 21 } M_{p21} = \frac{\text{the total of students score that answer true item}}{n21}$$

$$M_{p21} = \frac{30+40+36+38+43+33+40+32+25+30}{10}$$

$$M_{p21} = \frac{347}{10} = 34.70$$

$$\text{Item 22 } M_{p22} = \frac{\text{the total of students score that answer true item}}{n22}$$

$$M_{p22} = \frac{30+40+32+36+38+43+33+32+36+25+24=34+31+28+31+25}{16}$$

$$M_{p22} = \frac{518}{16} = 32.37$$

$$\text{Item 23 } M_{p23} = \frac{\text{the total of students score that answer true item}}{n16}$$

$$M_{p23} = \frac{32+28+33+36+28}{5}$$

$$M_{p23} = \frac{157}{5} = 31.40$$

$$\text{Item 24 } M_{p24} = \frac{\text{the total of students score that answer true item}}{n24}$$

$$M_{p24} = \frac{40+10+20+36+38+43+40+36+24+24+34+31+28+25}{14}$$

$$M_{p24} = \frac{453}{14} = 32.35$$

$$\text{Item 25 } M_{p25} = \frac{\text{the total of students score that answer true item}}{n25}$$

$$M_{p25} = \frac{30+40+32+38+43+40+32+36+25+30+34+28+31}{13}$$

$$M_{p25} = \frac{439}{13} = 33.76$$

$$\text{Item 26 } M_{p26} = \frac{\text{the total of students score that true item answer}}{n26}$$

$$M_{p126} = \frac{30+40+32+10+20+28+36+29+38+43+33+40+36+30+34+28+31}{17}$$

$$M_{p126} = \frac{562}{17} = 33.05$$

$$\text{Item 27 } M_{p27} = \frac{\text{the total of students score that answer true item}}{n27}$$

$$M_{p27} = \frac{30+40+36+29+38+43+33+40+32+36+24+25+30+34+31+31+25}{17}$$

$$M_{p27} = \frac{557}{17} = 32.76$$

$$\text{Item 28 } M_{p28} = \frac{\text{the total of students score that answer true item}}{n39}$$

$$M_{p28} = \frac{30+40+32+36+20+28+36+13+29+38+43+40+36+32+24+30+34+31+25}{19}$$

$$M_{p28} = \frac{597}{19} = 31.42$$

$$\text{Item 29 } M_{p29} = \frac{\text{the total of students score that answer true item}}{n29}$$

$$M_{p29} = \frac{40+32+38+43+33+40+36+24+25+30+25}{11}$$

$$M_{p48} = \frac{366}{11} = 33.27$$

$$\text{Item 30 } M_{p30} = \frac{\text{the total of students score that answer true item}}{n30}$$

$$M_{p30} = \frac{40+20+36+13+29+38+43+33+24+25+24+30+34+28}{14}$$

$$M_{p30} = \frac{457}{14} = 32.64$$

$$\text{Item 31 } M_{p31} = \frac{\text{the total of students score that answer true item}}{n31}$$

$$M_{p6} = \frac{40+32+28+36+29+38+43+33+40+32+24+34+31+25}{14}$$

$$= \frac{465}{14} = 33.21$$

$$\text{Item 32 } M_{p32} = \frac{\text{the total of students score that answer true item}}{n32}$$

$$M_{p32} = \frac{40+32+20+28+36+29+38+43+33+40+32+34+31}{13}$$

$$= \frac{436}{13} = 33.53$$

$$\text{Item 33 } M_{p33} = \frac{\text{the total of students score that answer true item}}{n33}$$

$$M_{p33} = \frac{30+40+32+20+28+36+29+38+43+33+40+40+32+36+25+34+31+31+25}{18}$$

$$M_{p33} = \frac{583}{18} = 32.38$$

$$\text{Item 34 } M_{p34} = \frac{\text{the total of students score that answer true item}}{n12}$$

$$M_{p34} = \frac{30+40+32+10+28+29+43+33+40+32+36+24+25+34+31+28+31+25}{18}$$

$$M_{p34} = \frac{561}{18} = 31.16$$

$$\text{Item 35 } M_{p35} = \frac{\text{the total of students score that answer true item}}{n35}$$

$$M_{p35} = \frac{30+40+32+20+36+29+38+43+40+32+36+25+24+30+34+28+31+25}{18}$$

$$M_{p35} = \frac{573}{18} = 31.83$$

$$\text{Item 36 } M_{p36} = \frac{\text{the total of students score that answer true item}}{n36}$$

$$M_{p36} = \frac{30+40+32+20+36+29+38+43+33+40+32+36+24+34+31+31+25}{17}$$

$$M_{p36} = \frac{554}{17} = 32.58$$

$$\text{Item 37 } M_{p37} = \frac{\text{the total of students score that answer true item}}{n37}$$

$$M_{p37} = \frac{30+40+32+36+28+29+38+43+33+40+32+36+24+25+34+31+28+31}{18}$$

$$M_{p37} = \frac{590}{18} = 32.77$$

$$\text{Item 38 } M_{p38} = \frac{\text{the total of students score that answer true item}}{n38}$$

$$M_{p38} = \frac{30+40+32+36+38+43+33+32+36+25+24+30+34+31+28+31+25}{17}$$

$$M_{p38} = \frac{548}{17} = 32.23$$

$$\text{Item 39 } M_{p39} = \frac{\text{the total of students score that answer true item}}{n28}$$

$$M_{p39} = \frac{20+32+36+28}{4}$$

$$M_{p39} = \frac{116}{4} = 29.00$$

$$\text{Item 40 } M_{p40} = \frac{\text{the total of students score that answer true item}}{n20}$$

$$M_{p40} = \frac{30+40+32+28+36+29+38+43+33+40+32+24+30+34+31+28+31+25}{18}$$

$$M_{p40} = \frac{584}{18} = 32.44$$

$$\text{Item 41 } M_{p41} = \frac{\text{the total of students score that answer true item}}{n41}$$

$$M_{p16} = \frac{30+40+36+38+43+33+40+32+36+25+24+30+31+31+25}{15}$$

$$M_{p16} = \frac{494}{15} = 32.93$$

$$\text{Item 42 } M_{p42} = \frac{\text{the total of students score that answer true item}}{n42}$$

$$M_{p17} = \frac{30+40+28+36+29+38+43+40+36+24+30+34+31+31}{14}$$

$$M_{p17} = \frac{470}{14} = 33.57$$

$$\text{Item 43 } M_{p43} = \frac{\text{the total of students score that answer true item}}{n43}$$

$$M_{p43} = \frac{30+40+36+43+40+32+24+30+34+28+25}{11}$$

$$M_{p43} = \frac{362}{11} = 32.90$$

$$\text{Item 44 } M_{p44} = \frac{\text{the total of students score that answer true item}}{n44}$$

$$M_{p44} = \frac{40+32+28+36+29+38+43+33+8+40+32+36+30+34+31+28+31+25}{18}$$

$$M_{p44} = \frac{587}{18} = 32.61$$

$$\text{Item 45 } M_{p45} = \frac{\text{the total of students score that answer true item}}{n45}$$

$$M_{p45} = \frac{30+40+32+28+36+29+38+43+33+40+32+24+30+34+31+28+31+25}{18}$$

$$M_{p20} = \frac{584}{18} = 32.44$$

$$\text{Item 46 } M_{p46} = \frac{\text{the total of students score that answer true item}}{n46}$$

$$M_{p46} = \frac{30+40+32+28+36+29+38+43+33+40+32+36+24+25+24+30+34+31+28+25}{20}$$

$$M_{p46} = \frac{638}{20} = 31.90$$

$$\text{Item 47 } M_{p47} = \frac{\text{the total of students score that answer true item}}{n47}$$

$$M_{p47} = \frac{30+40+32+28+36+29+38+43+33+40+32+36+24+25+24+30+34+31+28+31}{20}$$

$$M_{p47} = \frac{644}{20} = 32.20$$

$$\text{Item 48 } M_{p48} = \frac{\text{the total of students score that answer true item}}{n48}$$

$$M_{p48} = \frac{32+28+33+36+28}{5}$$

$$= \frac{157}{5} = 31.40$$

$$\text{Item 49 } M_{p49} = \frac{\text{the total of students score that answer true item}}{n11}$$

$$M_{p49} = \frac{30+40+32+20+28+36+29+38+43+33+40+32+36+24+34+31+31+25}{18}$$

$$M_{p49} = \frac{582}{18} = 32.33$$

$$\text{Item 50 } M_{p50} = \frac{\text{the total of students score that answer true item}}{n50}$$

$$M_{p50} = \frac{30+40+32+20+38+43+40+32+36+25+24+30+34+28+31}{13}$$

$$M_{p50} = \frac{483}{15} = 32.20$$

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

$$\text{Item 1 } r_{pbi} = \frac{M_p - M_t}{SD_t} \sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{30.80 - 28.80}{8.78} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{2.00}{8.78} \sqrt{4}$$

$$r = 0.227 \times 2 = 0.455$$

$$\text{Item 2 } r_{pbi} = \frac{32.41 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{3.61}{8.78} \sqrt{1.5}$$

$$r = 0.411 \times 1.22 = 0.501$$

$$\text{Item 3} = r_{\text{pbi}} = \frac{32.75 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$
$$r = \frac{3.93}{8.78} \sqrt{1.5}$$

$$r = 0.447 \times 1.2 = 0.546$$

$$\text{Item 4} = r_{\text{pbi}} = \frac{32.90 - 28.80}{8.78} \sqrt{\frac{0.5}{0.5}}$$

$$r = \frac{4.1}{8.78} \sqrt{1}$$

$$r = 0.466 \times 1 = 0.466$$

$$\text{Item 5} = r_{\text{pbi}} = \frac{31.50 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.70}{8.78} \sqrt{2.33}$$

$$r = 0.307 \times 1.5 = 0.461$$

$$\text{Item 6} = r_{\text{pbi}} = \frac{32.37 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{3.57}{8.78} \sqrt{2.32}$$

$$r = 0.406 \times 1.5 = 0.620$$

$$\text{Item 7} = r_{\text{pbi}} = \frac{33.53 - 28.80}{8.78} \sqrt{\frac{0.5}{0.5}}$$

$$r = \frac{4.73}{8.78} \sqrt{1}$$

$$r = 0.538 \times 1 = 0.538$$

$$\text{Item 8} = r_{\text{pbi}} = \frac{26.60 - 28.80}{8.78} \sqrt{\frac{0.2}{0.8}}$$

$$r = \frac{-2.2}{8.78} \sqrt{0.25}$$

$$r = -0.250 \times 0.5 = -0.125$$



$$\text{Item 9 } r_{\text{pbi}} = \frac{32.38 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{3.58}{8.78} \sqrt{2.3}$$

$$r = 0.407 \times 1.52 = 0.611$$

$$\text{Item 10 } r_{\text{pbi}} = \frac{0.92}{8.78} \sqrt{2.33}$$

$$r = 0.104 \times 1.5 = 0.109$$

$$\text{Item 11 } r_{\text{pbi}} = \frac{34.66 - 28.80}{8.78} \sqrt{\frac{0.1}{0.9}}$$

$$r = \frac{5.86}{8.78} \sqrt{0.11}$$

$$r = 0.668 \times 0.3 = 0.222$$

$$\text{Item 12 } r_{\text{pbi}} = \frac{28.42 - 28.80}{8.78} \sqrt{\frac{0.2}{0.8}}$$

$$r = \frac{-0.38}{8.78} \sqrt{0.25}$$

$$r = -0.043 \times 0.5 = -0.021$$

$$\text{Item 13 } r_{\text{pbi}} = \frac{32.20 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{3.40}{8.78} \sqrt{1.5}$$

$$r = 0.387 \times 1.2 = 0.464$$

$$\text{Item 14 } r_{\text{pbi}} = \frac{29.87 - 28.80}{8.78} \sqrt{\frac{0.3}{0.7}}$$

$$r = \frac{1.07}{8.78} \times 0.42$$

$$r = 0.121 \times 0.65 = 0.072$$

$$\text{Item 15 } r_{\text{pbi}} = \frac{32.76 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{3.96}{8.78} \sqrt{1.5}$$

$$r = 0.451 \times 1.2 = 0.541$$

$$\text{Item 16 } r_{\text{pbi}} = \frac{32.93 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{4.13}{8.78} \sqrt{1.5}$$

$$r = 0.470 \times 1.2 = 0.564$$

$$\text{Item 17 } r_{\text{pbi}} = \frac{33.57 - 28.80}{8.78} \sqrt{\frac{0.5}{0.5}}$$

$$r = \frac{4.77}{8.78} \sqrt{1}$$

$$r = 0.543 \times 1 = 0.543$$

$$\text{Item 18 } r_{\text{pbi}} = \frac{28.38 - 28.80}{8.78} \sqrt{\frac{0.5}{0.5}}$$

$$r = \frac{0.42}{8.78} \sqrt{1}$$

$$r = -0.047 \times 1 = 0.047$$

$$\text{Item 19 } r_{\text{pbi}} = \frac{30.38 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.70}{8.78} \sqrt{2.33}$$

$$r = 0.307 \times 1.52 = 0.467$$

$$\text{Item 20 } r_{\text{pbi}} = \frac{30.05 - 28.80}{8.78} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{1.25}{8.78} \sqrt{4}$$

$$r = 0.142 \times 2 = 0.282$$

$$\text{Item 21 } r_{\text{pbi}} = \frac{34.70 - 28.80}{8.78} \sqrt{\frac{0.4}{0.6}}$$

$$r = \frac{5.9}{8.78} \sqrt{0.6}$$

$$r = 0.671 \times 0.816 = 0.548$$

$$\text{Item 22 } r_{\text{pbi}} = \frac{32.37 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{3.57}{8.78} \sqrt{2.3}$$

$$r = 0.406 \times 1.52 = 0.618$$

$$\text{Item 23 } r_{\text{pbi}} = \frac{31.40 - 28.80}{8.78} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{2.60}{8.78} \sqrt{0.25}$$

$$r = 0.296 \times 0.5 = 0.455$$

$$\text{Item 24 } r_{\text{pbi}} = \frac{32.35 - 28.80}{8.78} \sqrt{\frac{0.5}{0.5}}$$

$$r = \frac{3.55}{8.78} \sqrt{1.5}$$

$$r = 0.404 \times 1.2 = 0.485$$

$$\text{Item 25 } r_{\text{pbi}} = \frac{M_p - M_t}{SD_t} \sqrt{\frac{p}{q}}$$

$$r_{\text{pbi}} = \frac{33.76 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{4.96}{8.78} \sqrt{1.5}$$

$$r = 0.564 \times 1.2 = 0.677$$

$$\text{Item 26 } r_{\text{pbi}} = \frac{33.05 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{4.25}{8.78} \sqrt{1.5}$$

$$r = 0.484 \times 1.22 = 0.580$$

$$\text{Item 27 } r_{\text{pbi}} = \frac{32.76 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{3.96}{8.78} \sqrt{1.5}$$

$$r = 0.451 \times 1.2 = 0.541$$

$$\text{Item 28 } r_{\text{pbi}} = \frac{31.42 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.62}{8.78} \sqrt{2.3}$$

$$r = 0.298 \times 1.5 = 0.447$$

$$\text{Item 29 } r_{\text{pbi}} = \frac{33.27 - 28.80}{8.78} \sqrt{\frac{0.4}{0.6}}$$

$$r = \frac{4.47}{8.78} \sqrt{0.6}$$

$$r = 0.509 \times 0.81 = 0.412$$

$$\text{Item 30 } r_{\text{pbi}} = \frac{32.64 - 28.80}{8.78} \sqrt{\frac{0.5}{0.5}}$$

$$r = \frac{3.84}{8.78} \sqrt{1}$$

$$r = 0.437 \times 1 = 0.437$$

$$\text{Item 31 } r_{\text{pbi}} = \frac{33.21 - 28.80}{8.78} \sqrt{\frac{0.5}{0.5}}$$

$$r = \frac{4.41}{8.78} \sqrt{1}$$

$$r = 0.502 \times 1 = 0.502$$

$$\text{Item 32 } r_{\text{pbi}} = \frac{33.53 - 28.80}{8.78} \sqrt{\frac{0.5}{0.5}}$$

$$r = \frac{4.73}{8.78} \sqrt{1}$$

$$r = 0.538 \times 1 = 0.538$$

$$\text{Item 33 } r_{\text{pbi}} = \frac{32.38 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{3.58}{8.78} \sqrt{2.3}$$

$$r = 0.408 \times 1.2 = 0.490$$

$$\text{Item 34 } r_{\text{pbi}} = \frac{31.16 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.36}{8.78} \sqrt{2.33}$$

$$r = 0.268 \times 1.5 = 0.408$$

$$\text{Item 35 } r_{\text{pbi}} = \frac{31.83 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{3.03}{8.78} \sqrt{2.3}$$

$$r = 0.345 \times 1.5 = 0.526$$

$$\text{Item 36 } r_{\text{pbi}} = \frac{32.58 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{3.78}{8.78} \sqrt{1.5}$$

$$r = 0.431 \times 1.2 = 0.527$$

$$\text{Item 37 } r_{\text{pbi}} = \frac{32.77 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{3.92}{8.78} \sqrt{2.3}$$

$$r = 0.452 \times 1.5 = 0.678$$

$$\text{Item 38 } r_{\text{pbi}} = \frac{32.23 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{3.43}{8.78} \sqrt{1.5}$$

$$r = 0.390 \times 1.22 = 0.468$$

$$\text{Item 39 } r_{\text{pbi}} = \frac{29 - 28.80}{8.78} \sqrt{\frac{0.1}{0.9}}$$

$$r = \frac{0.2}{8.78} \sqrt{0.11}$$

$$r = 0.022 \times 0.3 = 0.007$$

$$\text{Item 40 } r_{\text{pbi}} = \frac{32.44 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{3.64}{8.78} \sqrt{2.33}$$

$$r = 0.414 \times 1.52 = 0.630$$

$$\text{Item 41 } r_{\text{pbi}} = \frac{32.93 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{4.13}{8.78} \sqrt{1.5}$$

$$r = 0.470 \times 1.2 = 0.564$$

$$\text{Item 42 } r_{\text{pbi}} = \frac{33.57 - 28.80}{8.78} \sqrt{\frac{0.5}{0.5}}$$

$$r = \frac{4.77}{8.78} \sqrt{1}$$

$$r = 0.543 \times 1 = 0.543$$

$$\text{Item 43 } r_{\text{pbi}} = \frac{32.90 - 28.80}{8.78} \sqrt{\frac{0.5}{0.5}}$$

$$r = \frac{4.10}{8.78} \sqrt{1}$$

$$r = 0.468 \times 1 = 0.468$$

$$\text{Item 44 } r_{\text{pbi}} = \frac{32.61 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{3.81}{8.78} \sqrt{2.3}$$

$$r = 0.434 \times 1.5 = 0.651$$

$$\text{Item 45 } r_{\text{pbi}} = \frac{32.44 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{3.64}{8.78} \sqrt{2.3}$$

$$r = 0.414 \times 1.5 = 0.621$$

$$\text{Item 48 } r_{\text{pbi}} = \frac{31.90 - 28.80}{8.78} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{3.1}{8.78} \sqrt{2}$$

$$r = 0.353 \times 2 = 0.706$$

$$\text{Item 47 } r_{\text{pbi}} = \frac{32.20 - 28.80}{8.78} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{3.40}{8.78} \sqrt{4}$$

$$r = 0.387 \times 2 = 0.774$$

$$\text{Item 49 } r_{\text{pbi}} = \frac{32.33 - 28.80}{8.78} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{3.53}{8.78} \sqrt{2.33}$$

$$r = 0.402 \times 1.5 = 0.603$$

$$\text{Item 50 } r_{\text{pbi}} = \frac{32.20 - 28.80}{8.78} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{3.4}{8.78} \sqrt{1.5}$$

$$r = 0.387 \times 1.2 = 0.473$$

## Appendix 10

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

### B. Calculation of Post-Test

#### 1. Means Score from Score Total ( $M_t$ )

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

$$M_t = \frac{813}{25} = 32.64$$

#### 2. Standard Deviation ( $SD_t$ )

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

$$SD_t = \sqrt{\frac{29176}{25} - \left(\frac{813}{25}\right)^2}$$

$$SD_t = \sqrt{1167.04 - 32.64^2}$$

$$SD_t = \sqrt{1167.04 - 1065.36} = \sqrt{101.68} = 10.08$$

#### 3. Means Score ( $M_p$ )

Item 1  $M_{p1} = \frac{\text{the total of students score that answer true item}}{n1}$

$$M_{p1} = \frac{30+48+30+34+34+32+40+28+42+34+32+34+40+32+44+34+32+44+30+32}{20}$$

$$M_{p1} = \frac{696}{20} = 34.80$$

Item 2  $M_{p2} = \frac{\text{the total of students score that answer true item}}{n2}$

$$M_{p2} = \frac{38+30+34+48+40+34+32+44+40+8+44+44}{12}$$

$$M_{p2} = \frac{466}{12} = 38.27$$

Item 3  $M_{p3} = \frac{\text{the total of students score that answer true item}}{n3}$

$$M_{p3} = \frac{30+38+30+34+48+34+32+40+28+34+32+34+44+40+32+44+34+32+44+30+32}{21}$$

$$M_{p3} = \frac{746}{21} = 35.52$$

Item 4  $M_{p4} = \frac{\text{the total of students score that answer true item}}{n4}$

$$M_{p4} = \frac{30+38+30+34+48+34+32+40+42+34+32+34+44+40+32+44+34+44+32}{19}$$

$$M_{p4} = \frac{698}{19} = 36.73$$



$$\text{Item 5 } M_{p5} = \frac{\text{the total of students score that answer true item}}{n5}$$

$$M_{p5} = \frac{38+34+48+34+40+28+42+34+32+34+44+40+32+32+44+30+32}{17}$$

$$M_{p5} = \frac{618}{17} = 36.35$$

$$\text{Item 6 } M_{p6} = \frac{\text{the total of students score that answer true item}}{n6}$$

$$M_{p6} = \frac{30+38+34+48+12+32+40+28+34+34+44+40+32+44+34+32+44+30+32}{19}$$

$$M_{p6} = \frac{662}{19} = 34.84$$

$$\text{Item 7 } M_{p7} = \frac{\text{the total of students score that answer true item}}{n7}$$

$$M_{p7} = \frac{38+48+12+32+40+28+42+34+44+44+32+44+30}{13}$$

$$M_{p7} = \frac{498}{13} = 38.30$$

$$\text{Item 8 } M_{p8} = \frac{\text{the total of students score that answer true item}}{n8}$$

$$M_{p8} = \frac{48+12+40+8+32+44+32+8+32+44}{10}$$

$$M_{p8} = \frac{300}{10} = 30.00$$

$$\text{Item 9 } M_{p9} = \frac{\text{the total of students score that answer true item}}{n14}$$

$$M_{p9} = \frac{30+38+30+48+34+32+28+42+32+8+44+34+44+30}{14}$$

$$M_{p9} = \frac{474}{14} = 33.85$$

$$\text{Item 10 } M_{p10} = \frac{\text{the total of students score that answer true item}}{n10}$$

$$M_{p10} = \frac{30+38+34+48+34+40+42+34+32+34+44+40+32+44+34+32+44+30+32}{18}$$

$$M_{p10} = \frac{698}{18} = 38.77$$

$$\text{Item 11 } M_{p11} = \frac{\text{the total of students score that answer true item}}{n11}$$

$$M_{p11} = \frac{30+38+30+34+48+34+12+32+40+28+42+34+34+44+40+32+44+34+32+44+30+32}{22}$$

$$M_{p11} = \frac{768}{22} = 34.90$$

$$\text{Item 12 } M_{p12} = \frac{\text{the total of students score that answer true item}}{n12}$$

$$M_{p12} = \frac{30+38+30+34+48+34+32+40+28+42+34+32+34+44+40+32+44+34+32+44+30+32}{22}$$

$$M_{p12} = \frac{788}{22} = 35.81$$

$$\text{Item 13 } M_{p13} = \frac{\text{the total of students score that answer true item}}{n_{13}}$$

$$M_{p13} = \frac{30+38+30+34+48+34+32+40+28+42+34+32+34+44+40+32+44+34+32+44+30+32}{22}$$

$$M_{p13} = \frac{754}{22} = 34.27$$

$$\text{Item 14} = \frac{\text{the total of students score that answer true item}}{n_9}$$

$$M_{p9} = \frac{30+38+30+34+48+34+32+40+28+42+34+34+44+40+32+44+34+30+32}{19}$$

$$M_{p9} = \frac{686}{19} = 36.10$$

$$\text{Item 15 } M_{p15} = \frac{\text{the total of students score that answer true item}}{n_{15}}$$

$$M_{p15} = \frac{30+38+34+48+34+40+28+42+34+32+34+44+44+34+44+30+32}{17}$$

$$M_{p15} = \frac{622}{17} = 36.58$$

$$\text{Item 16 } M_{p16} = \frac{\text{the total of students score that answer true item}}{n_{16}}$$

$$M_{p16} = \frac{38+30+34+48+34+32+40+42+34+32+34+44+40+32+44+34+32+44+32}{19}$$

$$M_{p16} = \frac{700}{19} = 36.84$$

$$\text{Item 17 } M_{p17} = \frac{\text{the total of students score that answer true item}}{n_{17}}$$

$$M_{p17} = \frac{30+38+30+34+48+34+32+40+42+34+34+40+44+34+44+32}{16}$$

$$M_{p17} = \frac{590}{16} = 36.87$$

$$\text{Item 18 } M_{p18} = \frac{\text{the total of students score that answer true item}}{n_{18}}$$

$$M_{p18} = \frac{38+34+48+34+40+28+42+32+34+44+40+32+44+34+32+44+30+32}{18}$$

$$M_{p18} = \frac{662}{18} = 36.77$$

$$\text{Item 19 } M_{p19} = \frac{\text{the total of students score that answer true item}}{n_{20}}$$

$$M_{p19} = \frac{30+48+32+42+34+44+40+44}{8}$$

$$M_{p19} = \frac{314}{8} = 39.25$$

$$\text{Item 20 } M_{p20} = \frac{\text{the total of students score that answer true item}}{n_{19}}$$

$$M_{p20} = \frac{30+48+32+8+42+44+44+30+32}{8}$$

$$M_{p20} = \frac{310}{8} = 38.75$$

$$\text{Item 21 } M_{p21} = \frac{\text{the total of students score that answer true item}}{n21}$$

$$M_{p21} = \frac{30+38+34+48+34+32+40+42+32+44+40+44+34+32}{14}$$

$$M_{p21} = \frac{524}{14} = 37.42$$

$$\text{Item 22 } M_{p22} = \frac{\text{the total of students score that answer true item}}{n22}$$

$$M_{p22} = \frac{30+30+48+12+40+28+42+34+32+34+44+40+44+44+30}{15}$$

$$M_{p22} = \frac{570}{15} = 38.00$$

$$\text{Item 23 } M_{p23} = \frac{\text{the total of students score that answer true item}}{n23}$$

$$M_{p23} = \frac{38+30+34+48+34+32+40+42+34+32+34+44+40+32+44+34+32+44+32}{19}$$

$$M_{p23} = \frac{700}{19} = 36.84$$

$$\text{Item 24 } M_{p24} = \frac{\text{the total of students score that answer true item}}{n33}$$

$$M_{p24} = \frac{30+38+30+34+48+34+32+40+28+42+34+32+34+44+40+32+44+34+32+44+30+32}{22}$$

$$M_{p24} = \frac{788}{22} = 35.81$$

$$\text{Item 25 } M_{p25} = \frac{\text{the total of students score that answer true item}}{n25}$$

$$M_{p25} = \frac{38+30+34+48+12+32+40+28+42+34+32+34+44+48+32+32+44+30+32}{19}$$

$$M_{p25} = \frac{666}{19} = 35.05$$

$$\text{Item 26 } M_{p126} = \frac{\text{the total of students score that answer true item}}{n26}$$

$$M_{p126} = \frac{30+48+30+34+34+32+40+28+42+34+32+34+40+32+44+34+32+44+30+32}{20}$$

$$M_{p126} = \frac{696}{20} = 34.80$$

$$\text{Item 27 } M_{p27} = \frac{\text{the total of students score that answer true item}}{n27}$$

$$M_{p27} = \frac{38+30+34+48+12+32+40+28+42+34+32+34+44+40+32+32+44+30+32}{19}$$

$$M_{p27} = \frac{658}{19} = 34.66$$

$$\text{Item 28 } M_{p28} = \frac{\text{the total of students score that answer true item}}{n28}$$

$$M_{p28} = \frac{30+38+30+34+48+34+32+40+28+34+32+34+44+40+32+44+34+32+44+30+32}{21}$$

$$M_{p28} = \frac{746}{21} = 35.52$$

$$\text{Item 29 } M_{p4} = \frac{\text{the total of students score that answer true item}}{n29}$$

$$M_{p4} = \frac{30+48+34+48+34+32+40+28+34+34+44+40+32+44+34+32+44+30+32}{19}$$

$$M_{p4} = \frac{684}{19} = 36.00$$

$$\text{Item 30 } M_{p30} = \frac{\text{the total of students score that answer true item}}{n30}$$

$$M_{p30} = \frac{38+48+8+42+44+40+8+44+32+44}{10}$$

$$M_{p30} = \frac{340}{10} = 34.00$$

$$\text{Item 31 } M_{p31} = \frac{\text{the total of students score that answer true item}}{n31}$$

$$M_{p31} = \frac{30+48+34+12+8+42+34+32+44+40+32+44+34+32+44}{15}$$

$$M_{p31} = \frac{510}{15} = 34.00$$

$$\text{Item 32 } M_{p32} = \frac{\text{the total of students score that answer true item}}{n32}$$

$$M_{p32} = \frac{38+48+12+40+28+42+34+44+44+32+44+30}{12}$$

$$M_{p32} = \frac{448}{12} = 37.33$$

$$\text{Item 33 } M_{p33} = \frac{\text{the total of students score that answer true item}}{n24}$$

$$M_{p33} = \frac{30+48+8+42+44+40+8+44+32+44}{10}$$

$$M_{p33} = \frac{340}{10} = 34.00$$

$$\text{Item 34 } M_{p34} = \frac{\text{the total of students score that answer true item}}{n34}$$

$$M_{p34} = \frac{48+12+40+8+32+44+32+8+32+44}{10}$$

$$M_{p34} = \frac{300}{10} = 30.00$$

$$\text{Item 35 } M_{p35} = \frac{\text{the total of students score that answer true item}}{n35}$$

$$M_{p35} = \frac{30+38+34+48+34+40+42+34+32+34+44+40+32+44+34+32+44+30+32}{18}$$

$$M_{p35} = \frac{698}{18} = 38.77$$

$$\text{Item 36 } M_{p36} = \frac{\text{the total of students score that answer true item}}{n_{36}}$$

$$M_{p36} = \frac{30+38+30+34+48+34+12+32+40+28+42+34+34+44+40+32+44+34+32+44+30+32}{22}$$

$$M_{p36} = \frac{768}{22} = 34.90$$

$$\text{Item 37 } M_{p37} = \frac{\text{the total of students score that answer true item}}{n_{37}}$$

$$M_{p37} = \frac{30+38+30+34+48+34+32+40+28+42+34+34+44+40+32+44+34+30+32}{19}$$

$$M_{p37} = \frac{680}{19} = 35.78$$

$$\text{Item 38 } M_{p38} = \frac{\text{the total of students score that answer true item}}{n_{38}}$$

$$M_{p38} = \frac{30+38+30+34+48+34+32+40+28+42+34+32+34+44+40+32+44+34+32+44+30+32}{22}$$

$$M_{p38} = \frac{788}{22} = 35.81$$

$$\text{Item 39 } M_{p39} = \frac{\text{the total of students score that answer true item}}{n_{39}}$$

$$M_{p39} = \frac{30+30+48+12+40+28+42+34+32+34+44+40+44+44+30}{15}$$

$$M_{p39} = \frac{540}{15} = 36.00$$

$$\text{Item 40 } M_{p40} = \frac{\text{the total of students score that answer true item}}{n_{40}}$$

$$M_{p40} = \frac{30+38+34+48+34+40+28+42+34+32+34+44+44+34+44+30+32}{17}$$

$$M_{p40} = \frac{622}{17} = 36.58$$

$$\text{Item 41 } M_{p41} = \frac{\text{the total of students score that answer true item}}{n_{41}}$$

$$M_{p41} = \frac{38+30+34+48+34+32+40+42+34+32+34+44+40+32+44+34+32+44+32}{19}$$

$$M_{p41} = \frac{700}{19} = 36.84$$

$$\text{Item 42 } M_{p42} = \frac{\text{the total of students score that answer true item}}{n_{42}}$$

$$M_{p42} = \frac{30+48+34+12+8+42+34+32+14+40+32+44+34+32+44}{15}$$

$$M_{p42} = \frac{480}{15} = 32.00$$

$$\text{Item 43 } M_{p43} = \frac{\text{the total of students score that answer true item}}{n_{43}}$$

$$M_{p43} = \frac{38+48+32+8+42+44+44+32}{8}$$

$$M_{p43} = \frac{280}{8} = 35.00$$

$$\text{Item 44 } M_{p44} = \frac{\text{the total of students score that answer true item}}{n44}$$

$$M_{p44} = \frac{38+34+38+34+40+28+42+32+34+44+40+32+44+34+32+44+30+32}{18}$$

$$M_{p44} = \frac{662}{18} = 36.77$$

$$\text{Item 45 } M_{p45} = \frac{\text{the total of students score that answer true item}}{n45}$$

$$M_{p45} = \frac{30+38+34+48+34+32+40+42+32+44+40+44+34+32}{14}$$

$$M_{p45} = \frac{524}{14} = 37.42$$

$$\text{Item 46 } M_{p46} = \frac{\text{the total of students score that answer true item}}{n46}$$

$$M_{p46} = \frac{30+48+32+42+34+44+40+44}{8}$$

$$M_{p46} = \frac{314}{8} = 39.25$$

$$\text{Item 47 } M_{p47} = \frac{\text{the total of students score that answer true item}}{n47}$$

$$M_{p47} = \frac{30+38+30+48+34+32+28+42+32+8+44+34+44+30}{14}$$

$$M_{p47} = \frac{474}{14} = 33.85$$

$$\text{Item 48 } M_{p48} = \frac{\text{the total of students score that answer true item}}{n48}$$

$$M_{p48} = \frac{38+30+34+48+34+32+40+42+34+32+34+44+40+32+44+34+32+44+32}{19}$$

$$M_{p48} = \frac{700}{19} = 36.84$$

$$\text{Item 49 } M_{p49} = \frac{\text{the total of students score that answer true item}}{n49}$$

$$M_{p49} = \frac{38+34+48+34+40+28+42+34+44+40+8+44+34+32+44+30+32}{17}$$

$$M_{p49} = \frac{606}{17} = 35.64$$

$$\text{Item 50 } M_{p50} = \frac{\text{the total of students score that answer true item}}{n50}$$

$$M_{p50} = \frac{38+30+34+48+40+34+32+44+40+8+44+44}{11}$$

$$M_{p50} = \frac{436}{11} = 39.63$$

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

$$\text{Item 1} = r_{pbi} = \frac{M_p - M_t}{SD_t} \sqrt{\frac{p}{q}}$$

$$r_{pbi} = \frac{34.80 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{2.16}{10.08} \sqrt{4}$$

$$r = 0.214 \times 2 = 0.428$$

$$\text{Item 2} \quad r_{pbi} = \frac{38.83 - 32.64}{10.08} \sqrt{\frac{0.5}{0.5}}$$

$$r_{pbi} = \frac{6.193}{10.08} \sqrt{1}$$

$$r = 0.614 \times 1 = 0.614$$

$$\text{Item 3} \quad r_{pbi} = \frac{35.52 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{2.88}{10.08} \sqrt{4}$$

$$r = 0.285 \times 2 = 0.571$$

$$\text{Item 4} \quad r_{pbi} = \frac{36.73 - 32.64}{10.08} \sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{4.09}{10.08} \sqrt{2.3}$$

$$r = 0.405 \times 1.5 = 0.608$$

$$\text{Item 5} \quad r_{pbi} = \frac{36.35 - 32.24}{10.08} \sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{3.71}{10.08} \sqrt{2.33}$$

$$r = 0.368 \times 1.52 = 0.552$$

$$\text{Item 6 } r_{\text{pbi}} = \frac{34.84-32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{2.2}{10.08} \sqrt{4}$$

$$r = 0.218 \times 2 = 0.436$$

$$\text{Item 7 } r_{\text{pbi}} = \frac{38.30-32.64}{10.08} \sqrt{\frac{0.5}{0.5}}$$

$$r_{\text{pbi}} = \frac{5.66}{10.08} \sqrt{1}$$

$$r = 0.562 \times 1 = 0.562$$

$$\text{Item 8 } r_{\text{pbi}} = \frac{30-32.64}{10.08} \sqrt{\frac{0.4}{0.6}}$$

$$r_{\text{pbi}} = \frac{-2.64}{10.08} \sqrt{0.66}$$

$$r = -2.6 \times 0.186 = -0.213$$

$$\text{Item 9 } r_{\text{pbi}} = \frac{33.85-32.64}{10.08} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{1.21}{10.08} \sqrt{1.5}$$

$$r = 0.120 \times 1.22 = 0.144$$

$$\text{Item 10 } r_{\text{pbi}} = \frac{38.77-32.64}{10.08} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{6.13}{10.08} \sqrt{2.33}$$

$$r = 0.608 \times 1.52 = 0.912$$

$$\text{Item 11 } r_{\text{pbi}} = \frac{34.90-32.64}{10.08} \sqrt{\frac{0.9}{0.1}}$$

$$r_{\text{pbi}} = \frac{2.26}{10.08} \sqrt{9}$$



$$r = 0.224 \times 3 = 0.912$$

$$\text{Item 12 } r_{\text{pbi}} = \frac{35.81 - 32.64}{10.08} \sqrt{\frac{0.9}{0.1}}$$

$$r_{\text{pbi}} = \frac{3.17}{10.08} \sqrt{9}$$

$$r = 0.314 \times 3 = 0.943$$

$$\text{Item 13 } r_{\text{pbi}} = \frac{34.27 - 32.64}{10.08} \sqrt{\frac{0.9}{0.1}}$$

$$r_{\text{pbi}} = \frac{1.63}{10.08} \sqrt{9}$$

$$r = 0.161 \times 3 = 0.485$$

$$\text{Item 14 } r_{\text{pbi}} = \frac{36.10 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{3.46}{10.08} \sqrt{4}$$

$$r = 0.343 \times 2 = 0.686$$

$$\text{Item 15 } r_{\text{pbi}} = \frac{36.58 - 32.64}{10.08} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{3.94}{10.08} \sqrt{2.33}$$

$$r = 0.390 \times 1.52 = 0.586$$

$$\text{Item 16 } r_{\text{pbi}} = \frac{36.84 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{4.2}{10.08} \sqrt{4}$$

$$r = 0.416 \times 2 = 0.833$$

$$\text{Item 17 } r_{\text{pbi}} = \frac{36.87 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{4.23}{10.08} \sqrt{2}$$

$$r = 0.419 \times 2 = 0.839$$

$$\text{Item 18 } r_{\text{pbi}} = \frac{36.77-32.64}{10.08} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{4.13}{10.08} \sqrt{2.33}$$

$$r = 0.409 \times 1.52 = 0.614$$

$$\text{Item 19 } r_{\text{pbi}} = \frac{39.25-32.64}{10.08} \sqrt{\frac{0.3}{0.7}}$$

$$r_{\text{pbi}} = \frac{6.61}{5.01} \sqrt{0.42}$$

$$r = 0.655 \times 0.64 = 0.426$$

$$\text{Item 20 } r_{\text{pbi}} = \frac{38.75-32.64}{10.08} \sqrt{\frac{0.3}{0.7}}$$

$$r_{\text{pbi}} = \frac{6.18}{10.08} \sqrt{0.42}$$

$$r = 0.618 \times 0.64 = 0.396$$

$$\text{Item 21 } r_{\text{pbi}} = \frac{37.42-32.64}{10.08} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{4.78}{10.08} \sqrt{1.5}$$

$$r = 0.474 \times 1.22 = 0.569$$

$$\text{Item 22 } r_{\text{pbi}} = \frac{38-32.64}{10.08} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{5.36}{10.08} \sqrt{1.5}$$

$$r = 0.531 \times 1.22 = 0.630$$

$$\text{Item 23 } r_{\text{pbi}} = \frac{36.84-32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{4.2}{10.08} \sqrt{4}$$

$$r = 0.416 \times 2 = 0.833$$

$$\text{Item 24 } r_{\text{pbi}} = \frac{35.81 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{3.17}{10.08} \sqrt{4}$$

$$r = 0.314 \times 2 = 0.628$$

$$\text{Item 25 } r_{\text{pbi}} = \frac{35.05 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{2.41}{10.08} \sqrt{4}$$

$$r = 0.239 \times 2 = 0.478$$

$$\text{Item 26 } r_{\text{pbi}} = \frac{34.8 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{2.16}{10.08} \sqrt{4}$$

$$r = 0.214 \times 2 = 0.428$$

$$\text{Item 27 } r_{\text{pbi}} = \frac{34.66 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{2.01}{10.08} \sqrt{4}$$

$$r = 0.199 \times 2 = 0.398$$

$$\text{Item 28 } r_{\text{pbi}} = \frac{36.00 - 32.64}{10.08} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{3.36}{10.08} \sqrt{1.5}$$

$$r = 0.333 \times 1.22 = 0.399$$

$$\text{Item 29 } r_{\text{pbi}} = \frac{36.00 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{3.36}{10.08} \sqrt{1.5}$$

$$r = 0.333 \times 2 = 0.666$$

$$\text{Item 30 } r_{\text{pbi}} = \frac{34.00 - 32.24}{10.08} \sqrt{\frac{0.4}{0.6}}$$

$$r_{\text{pbi}} = \frac{1.36}{10.08} \sqrt{0.66}$$

$$r = 0.134 \times 0.816 = 0.109$$

$$\text{Item 31 } r_{\text{pbi}} = \frac{34.00 - 32.64}{10.08} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{1.36}{10.08} \sqrt{1.5}$$

$$r = 0.134 \times 1.2 = 0.160$$

$$\text{Item 32 } r_{\text{pbi}} = \frac{37.33 - 32.64}{10.08} \sqrt{\frac{0.5}{0.5}}$$

$$r_{\text{pbi}} = \frac{4.69}{10.08} \sqrt{1}$$

$$r = 0.465 \times 1 = 0.465$$

$$\text{Item 33 } r_{\text{pbi}} = \frac{34 - 32.64}{10.08} \sqrt{\frac{0.4}{0.6}}$$

$$r_{\text{pbi}} = \frac{1.36}{10.08} \sqrt{0.66}$$

$$r = 0.134 \times 0.186 = 0.110$$

$$\text{Item 34 } r_{\text{pbi}} = \frac{30.00 - 32.64}{10.08} \sqrt{\frac{0.4}{0.6}}$$

$$r_{\text{pbi}} = \frac{-2.64}{10.08} \sqrt{0.66}$$

$$r = -0.261 \times 0.816 = -0.231$$

$$\text{Item 35 } r_{\text{pbi}} = \frac{38.77 - 32.64}{10.08} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{6.13}{10.08} \sqrt{2.33}$$

$$r = 0.608 \times 1.52 = 0.912$$

$$\text{Item 36 } r_{\text{pbi}} = \frac{34.90 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{2.26}{10.08} \sqrt{4}$$

$$r = 0.224 \times 2 = 0.448$$

$$\text{Item 37 } r_{\text{pbi}} = \frac{35.78 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{3.14}{10.08} \sqrt{4}$$

$$r = 0.311 \times 2 = 0.623$$

$$\text{Item 38 } r_{\text{pbi}} = \frac{35.52 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{2.88}{10.08} \sqrt{4}$$

$$r = 0.285 \times 2 = 0.571$$

$$\text{Item 39 } r_{\text{pbi}} = \frac{35.81 - 32.64}{10.08} \sqrt{\frac{0.9}{0.1}}$$

$$r_{\text{pbi}} = \frac{3.17}{10.08} \sqrt{9}$$

$$r = 0.314 \times 3 = 0.943$$

$$\text{Item 40 } r_{\text{pbi}} = \frac{36.00 - 32.64}{10.08} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{3.36}{10.08} \sqrt{2.33}$$

$$r = 0.333 \times 1.52 = 0.499$$

$$\text{Item 41 } r_{\text{pbi}} = \frac{36.84 - 32.64}{10.08} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{4.2}{10.08} \sqrt{2.3}$$

$$r = 0.416 \times 1.5 = 0.625$$

$$\text{Item 42 } r_{\text{pbi}} = \frac{32.00 - 32.64}{10.08} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{-0.64}{10.08} \sqrt{1.5}$$

$$r = -0.06 \times 1.22 = -0.076$$

$$\text{Item 43 } r_{\text{pbi}} = \frac{35.00 - 32.64}{10.08} \sqrt{\frac{0.3}{0.7}}$$

$$r_{\text{pbi}} = \frac{2.36}{10.08} \sqrt{0.42}$$

$$r = 0.234 \times 0.6 = 0.153$$

$$\text{Item 44 } r_{\text{pbi}} = \frac{36.77 - 32.64}{10.08} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{4.13}{10.08} \sqrt{2.32}$$

$$r = 0.409 \times 1.5 = 0.614$$

$$\text{Item 45 } r_{\text{pbi}} = \frac{37.42 - 32.64}{10.08} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{4.78}{10.08} \sqrt{1.5}$$

$$r = 0.474 \times 1.2 = 0.568$$

$$\text{Item 46 } r_{\text{pbi}} = \frac{39.25 - 32.64}{10.08} \sqrt{\frac{0.4}{0.6}}$$

$$r_{\text{pbi}} = \frac{6.61}{10.08} \sqrt{0.66}$$

$$r = 0.655 \times 0.816 = 0.535$$

$$\text{Item 47 } r_{\text{pbi}} = \frac{33.85 - 32.64}{10.08} \sqrt{\frac{0.5}{0.5}}$$

$$r_{\text{pbi}} = \frac{1.21}{10.08} \sqrt{1}$$

$$r = 0.120 \times 1 = 0.120$$

$$\text{Item 48 } r_{\text{pbi}} = \frac{36.84 - 32.64}{10.08} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{4.2}{10.08} \sqrt{4}$$

$$r = 0.416 \times 2 = 0.833$$

$$\text{Item 49 } r_{\text{pbi}} = \frac{35.64 - 32.64}{10.08} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{3.00}{10.08} \sqrt{2.32}$$

$$r = 0.297 \times 1.5 = 0.446$$

$$\text{Item 50 } r_{\text{pbi}} = \frac{39.63 - 32.64}{10.08} \sqrt{\frac{0.5}{0.5}}$$

$$r_{\text{pbi}} = \frac{6.99}{10.08} \sqrt{1}$$

$$r = 0.694 \times 1 = 0.694$$

## Appendix 8

### Table Validity of Pre- Test

Number of Item	$M_p$	$M_t$	$SD_t$	P	Q	$r_{pbi} = \frac{M_p - M_t}{SD_t} \sqrt{\frac{p}{q}}$	$r_t$ on 5% significant	Interpretation
1.	30.80	28.80	8.78	0.8	0.2	0.455	0.396	Valid
2.	32.41	28.80	8.78	0.6	0.4	0.501	0.396	Valid
3.	32.73	28.80	8.78	0.5	0.5	0.546	0.396	Valid
4.	32.90	28.80	8.78	0.6	0.4	0.466	0.396	Valid
5.	31.50	28.80	8.78	0.7	0.3	0.461	0.396	Valid
6.	32.37	28.80	8.78	0.5	0.5	0.620	0.396	Valid
7.	33.53	28.80	8.78	0.5	0.5	0.538	0.396	Valid
8.	26.60	28.80	8.78	0.2	0.8	- 0.125	0.396	Invalid
9.	32.38	28.80	8.78	0.7	0.3	0.611	0.396	Valid
10.	29.72	28.80	8.78	0.7	0.3	-0.109	0.396	Invalid
11.	34.66	28.80	8.78	0.1	0.9	0.222	0.396	Invalid
12.	28.42	28.80	8.78	0.2	0.8	- 0.021	0.396	Invalid
13.	32.20	28.80	8.78	0.6	0.4	0.464	0.396	Valid
14.	29.87	28.80	8.78	0.3	0.7	0.072	0.396	Invalid
15.	32.76	28.80	8.78	0.6	0.4	0.541	0.396	Valid
16.	32.93	28.80	8.78	0.6	0.4	0.564	0.396	Valid
17.	33.57	28.80	8.78	0.5	0.5	0.543	0.396	Valid
18.	28.38	28.80	8.78	0.4	0.6	- 0.047	0.396	Invalid
19.	31.50	28.80	8.78	0.7	0.3	0.467	0.396	Valid
20.	30.05	28.80	8.78	0.8	0.2	0.284	0.396	Invalid
21.	34.70	28.80	8.78	0.4	0.6	0.548	0.396	Valid
22.	32.37	28.80	8.78	0.6	0.4	0.618	0.396	Valid
23.	31.40	28.80	8.78	0.2	0.8	0.148	0.396	Invalid
24.	32.35	28.80	8.78	0.5	0.5	0.485	0.396	Valid
25.	33.76	28.80	8.78	0.5	0.5	0.677	0.396	Valid
26.	33.05	28.80	8.78	0.6	0.4	0.580	0.396	Valid
27.	32.76	28.80	8.78	0.6	0.4	0.541	0.396	Valid
28.	31.42	28.80	8.78	0.7	0.3	0.447	0.396	Valid
29.	33.27	28.80	8.78	0.4	0.6	0.412	0.396	Valid
30.	32.64	28.80	8.78	0.5	0.5	0.437	0.396	Valid
31.	33.21	28.80	8.78	0.5	0.5	0.502	0.396	Valid
32.	33.53	28.80	8.78	0.5	0.5	0.538	0.396	Valid
33.	32.38	28.80	8.78	0.7	0.3	0.490	0.396	Valid
34.	31.16	28.80	8.78	0.7	0.3	0.408	0.396	Valid
35.	31.83	28.80	8.78	0.7	0.3	0.526	0.396	Valid
36.	32.58	28.80	8.78	0.6	0.4	0.527	0.396	Valid
37.	32.77	28.80	8.78	0.7	0.3	0.678	0.396	Valid
38.	32.23	28.80	8.78	0.6	0.4	0.468	0.396	Valid
39.	29.00	28.80	8.78	0.1	0.9	0.007	0.396	Invalid
40.	32.44	28.80	8.78	0.7	0.3	0.630	0.396	Valid
41.	32.93	28.80	8.78	0.6	0.3	0.564	0.396	Valid
42.	33.57	28.80	8.78	0.5	0.5	0.543	0.396	Valid
43.	32.90	28.80	8.78	0.5	0.5	0.468	0.396	Valid
44.	32.61	28.80	8.78	0.7	0.3	0.651	0.396	Valid
45.	32.44	28.80	8.78	0.7	0.3	0.621	0.396	Valid
46.	31.90	28.80	8.78	0.8	0.2	0.706	0.396	Valid
47.	32.20	28.80	8.78	0.8	0.2	0.774	0.396	Valid
48.	31.40	28.80	8.78	0.2	0.8	0.148	0.396	Invalid
49.	32.33	28.80	8.78	0.7	0.3	0.603	0.396	Valid
50.	32.20	28.80	8.78	0.6	0.4	0.473	0.396	Valid



**Appendix 11**

**Table Validity of Post- Test**

Number of Item	$M_p$	$M_t$	$SD_t$	P	Q	$r_{pbi} = \frac{M_p - M_t}{SD_t} \sqrt{\frac{p}{q}}$	$r_t$ on 5% significant	Interpretation
1.	34.80	32.64	10.08	0.8	0.2	0.428	0.396	Valid
2.	38.27	32.64	10.08	0.5	0.5	0.614	0.396	Valid
3.	35.52	32.64	10.08	0.8	0.2	0.571	0.396	Valid
4.	36.73	32.64	10.08	0.8	0.2	0.608	0.396	Valid
5.	36.35	32.64	10.08	0.4	0.6	0.552	0.396	Valid
6.	35.84	32.64	10.08	0.8	0.2	0.436	0.396	Valid
7.	38.30	32.64	10.08	0.5	0.5	0.562	0.396	Valid
8.	30.00	32.64	10.08	0.9	0.1	-0.213	0.396	Invalid
9.	33.85	32.64	10.08	0.6	0.4	0.144	0.396	Invalid
10.	38.77	32.64	10.08	0.7	0.3	0.912	0.396	Valid
11.	34.90	32.64	10.08	0.9	0.1	0.912	0.396	Valid
12.	35.81	32.64	10.08	0.4	0.6	0.943	0.396	Valid
13.	34.27	32.64	10.08	0.9	0.1	0.485	0.396	Valid
14.	36.10	32.64	10.08	0.8	0.2	0.686	0.396	Valid
15.	36.58	32.64	10.08	0.7	0.3	0.586	0.396	Valid
16.	36.84	32.64	10.08	0.8	0.8	0.833	0.396	Valid
17.	36.87	32.64	10.08	0.6	0.4	0.839	0.396	Valid
18.	36.77	32.64	10.08	0.3	0.7	0.614	0.396	Valid
19.	39.25	32.64	10.08	0.3	0.7	0.426	0.396	Valid
20.	38.75	32.64	10.08	0.7	0.3	0.393	0.396	Invalid
21.	37.42	32.64	10.08	0.6	0.4	0.569	0.396	Valid
22.	38.00	32.64	10.08	0.6	0.4	0.630	0.396	Valid
23.	36.84	32.64	10.08	0.8	0.2	0.833	0.396	Valid
24.	35.81	32.64	10.08	0.8	0.2	0.628	0.396	Valid
25.	35.05	32.64	10.08	0.8	0.2	0.478	0.396	Valid
26.	34.80	32.64	10.08	0.8	0.2	0.428	0.396	Valid
27.	34.66	32.64	10.08	0.8	0.2	0.398	0.396	Valid
28.	35.52	32.64	10.08	0.8	0.2	0.571	0.396	Valid
29.	36.00	32.64	10.08	0.7	0.3	0.666	0.396	Valid
30.	34.00	32.64	10.08	0.4	0.6	0.109	0.396	Invalid
31.	34.00	32.64	10.08	0.6	0.4	0.160	0.396	Invalid
32.	37.33	32.64	10.08	0.5	0.5	0.465	0.396	Valid
33.	34.00	32.64	10.08	0.7	0.3	0.110	0.396	Invalid
34.	30.00	32.64	10.08	0.4	0.6	- 0.231	0.396	Invalid
35.	38.77	32.64	10.08	0.7	0.3	0.912	0.396	Valid
36.	34.90	32.64	10.08	0.9	0.1	0.448	0.396	Valid
37.	35.78	32.64	10.08	0.8	0.2	0.623	0.396	Valid
38.	35.81	32.64	10.08	0.9	0.1	0.843	0.396	valid
39.	36.00	32.64	10.08	0.6	0.4	0.399	0.396	Valid
40.	36.58	32.64	10.08	0.7	0.3	0.499	0.396	Valid
41.	36.84	32.64	10.08	0.8	0.2	0.625	0.396	Valid
42.	32.00	32.64	10.08	0.6	0.4	- 0.076	0.396	Invalid
43.	35.00	32.64	10.08	0.3	0.7	0.153	0.396	Invalid
44.	36.77	32.64	10.08	0.7	0.3	0.614	0.396	Valid
45.	37.42	32.64	10.08	0.5	0.5	0.568	0.396	Valid
46.	39.25	32.64	10.08	0.3	0.7	0.535	0.396	Valid
47.	33.85	32.64	10.08	0.5	0.5	0.120	0.396	Invalid
48.	36.84	32.64	10.08	0.8	0.2	0.833	0.396	Valid
49.	35.64	32.64	10.08	0.7	0.3	0.446	0.396	Valid
50.	39.63	32.64	10.08	0.4	0.6	0.694	0.396	Valid







## Appendix 14

### Reliability Pre Test

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

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

$$N = 25$$

$$\sum X_t = 720$$

$$\sum X_t^2 = 22644$$

$$\sum pq = 10.61$$

$$\begin{aligned} S_t^2 &= \sum X_t^2 - \left( \frac{\sum X_t}{N} \right)^2 \\ &= 22644 - \left( \frac{720}{25} \right)^2 = 22644 - \frac{518400}{25} = 22644 - 20736 = 1908 \end{aligned}$$

$$S_t^2 = \frac{\sum X_t^2}{N} = \frac{1908}{25}$$

$$S_t^2 = 76.32$$

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

$$R_{11} = \left( \frac{25}{25-1} \right) \left( \frac{76.32 - 10.61}{76.32} \right) = \left( \frac{25}{24} \right) \left( \frac{65.71}{76.32} \right)$$

$$= (1.04) (0.86)$$

$$= .89 \text{ (} r_{11} > 0.70 = \text{reliable)}$$

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

## Appendix 15

### Reliability Post Test

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

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

$$N = 25$$

$$\sum X_t = 816$$

$$\sum X_t^2 = 29176$$

$$\sum pq = 9.907$$

$$\begin{aligned} S_t^2 &= \sum X_t^2 - \left( \frac{\sum X_t}{N} \right)^2 \\ &= 29176 - \left( \frac{816}{25} \right)^2 = 29176 - \frac{665856}{25} = 29176 - 26634 = 2542 \end{aligned}$$

$$S_t^2 = \frac{\sum X_t^2}{N} = \frac{2542}{25}$$

$$S_t^2 = 101.68$$

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

$$R_{11} = \left( \frac{25}{25-1} \right) \left( \frac{101.68 - 9.907}{101.68} \right) = \left( \frac{25}{24} \right) \left( \frac{91.773}{101.68} \right)$$

$$= (1.04) (0.90)$$

$$= 0.93 \text{ (} r_{11} > 0.70 = \text{reliable)}$$

## Appendix 16

### Score of Experimental Class and Control Class Pre Test

#### 1. Score of Experimental Class Pre Test before using GTM

No	The Initial Name of Students (n)	Pre-Test	No	The Initial Name of Students (n)	Pre-Test
1	AM	45	16	NS	55
2	AD	50	17	NP	55
3	BS	45	18	PDA	70
4	CM	55	19	RA	65
5	DJ.C	70	20	SA	75
6	DPS	65	21	S	50
7	GW	60	22	SA	55
8	IWN	70	23	WM	65
9	JT	75	24	WS	65
10	LM	60	25	WS	70
11	M	65			
12	MN	50			
13	MR	65			
14	MH	60			
15	NR	60			
	Total			1545	

## 2. Score of Control Class Pre Test

No	The Initial Name of Students (n)	Pre-Test	No	The Initial Name of Students (n)	Pre-Test
1	AGP	50	15	PR	65
2	AP	45	16	RG	60
3	AS	70	17	RA	55
4	BR	60	18	RH	55
5	EPD	45	19	RP	65
6	FY	60	20	RM	70
7	IS	55	21	RM	55
8	KA	60	22	SM	65
9	LMP	45	23	SH	65
10	MTD	60	24	TW	55
11	MS	75	25	WI	70
12	ML	50	26	YS	50
13	NR	50	27	ZF	65
14	N	65			
	Total			1555	



## Appendix 17

### Score of Experimental Class and Control Class Post Test

#### 1. Score of Experimental Class Post Test After using GTM

No	The Initial Name of Students (n)	Pre-Test	No	The Initial Name of Students (n)	Pre-Test
1	AM	80	16	NS	80
2	AD	85	17	NP	65
3	BS	85	18	PDA	95
4	CM	90	19	RA	90
5	DJ.C	85	20	SA	80
6	DPS	75	21	S	65
7	GW	80	22	SA	70
8	IWN	75	23	WM	85
9	JT	80	24	WS	95
10	LM	70	25	WS	95
11	M	80			
12	MN	75			
13	MR	80			
14	MH	85			
15	NR	90			
	Total			2035	

## 2. Score of Control Class Pos Test

No	The Initial Name of Students (n)	Post-Test	No	The Initial Name of Students (n)	Post-Test
1	AGP	75	15	PR	60
2	AP	60	16	RG	50
3	AS	80	17	RA	50
4	BR	70	18	RH	65
5	EPD	75	19	RP	65
6	FY	60	20	RM	60
7	IS	65	21	RM	80
8	KA	65	22	SM	65
9	LMP	70	23	SH	70
10	MTD	65	24	TW	55
11	MS	50	25	WI	80
12	ML	55	26	YS	55
13	NR	75	27	ZF	65
14	N	70			
	Total			1755	

## Appendix 18

### RESULT OF NORMALITY TEST IN PRE TEST

#### RESULT OF THE NORMALITY TEST OF X-1 IN PRE-TEST

1. The score of X-1 class in pre test from low score to high score:

45	45	50	50	50	55	55	55	55	60
60	60	60	65	65	65	65	65	65	70
70	70	70	75	75					

2. High = 75

Low = 45

Range = High – Low

= 75 – 45

= 30

3. Total of Classes =  $1 + 3,3 \log (n)$

=  $1 + 3,3 \log (25)$

=  $1 + 3,3 ( 1,39)$

=  $1 + 4.58$

= 5.58

= 6

4. Length of Classes =  $\frac{range}{total\ of\ class} = \frac{30}{6} = 5$

5. Mean

Interval Class	F	X	x	fx	x <sup>2</sup>	fx <sup>2</sup>
45 – 49	2	47	4	8	16	32
50 – 54	3	52	3	9	9	27
55 – 59	4	57	2	8	4	16
60 – 64	4	62	1	4	1	4
65 – 69	6	<b>67</b>	0	0	0	0
70 – 74	4	72	-1	-4	1	4
75 – 79	2	77	-2	-4	4	8
<i>i</i> = 5	25	-	-	21	-	91

$$\begin{aligned}
M_x &= M^1 + i \frac{\Sigma f x^1}{N} \\
&= 67 + 5 \left( \frac{21}{25} \right) \\
&= 67 + 5 (0.84) \\
&= 67 + (4,2) \\
&= 71,2
\end{aligned}$$

$$\begin{aligned}
SD_t &= i \sqrt{\frac{\Sigma f x'^2}{N} - \left[ \frac{\Sigma f x^1}{N} \right]^2} \\
&= \sqrt[5]{\frac{91}{25} - \left( \frac{21}{25} \right)^2} \\
&= \sqrt[5]{3.64 - (0.84)^2} \\
&= \sqrt[5]{3.64 - 0.70} \\
&= \sqrt[5]{2.94} \\
&= 5 (1.71) \\
&= 8.5
\end{aligned}$$

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	$f_h$	$f_0$	$\frac{(f_0-f_h)}{f_h}$
75– 79	79,5	1.08	0.3599	0.16	4	2	0
70 – 74	74,5	0.5	0.1915	-0.27	-6.75	4	-1.59
65 – 69	69,5	-0.08	0.46812	0.21	5.25	6	-0.04
60 – 64	64,5	-0.66	0.25463	0.14	3.5	4	0.14
55 – 59	59,5	-1.24	0.10749	0.07	1.75	4	0.14
50 – 54	54,5	-1.82	0.03438	0.02	0.5	3	7
45 – 49	49,5	-2.40	0.00820	0.006	0.15	2	0.12
	44,5	-2.98	0.00144				
						$X^2$	5,77

Based on table above, reseracher found that  $x^2_{count} = 5,77$  while  $x^2_{table}=5.991$  cause  $x^2_{cause} < x^2_{table}$  ( $5.77 < 5.991$ ) with degree of freedom  $dk = 5 - 3 = 2$  and significat level  $\alpha = 5\%$ . So distribution of X-1 class (Pre-test) is normal.

6. Median

No	Interval of Classes	F	Fk
1	45 - 49	2	3
2	50 - 54	3	6
3	55 - 59	4	10
4	60 - 64	4	14
5	<b>65 - 69</b>	<b>6</b>	20
6	70 - 74	4	24
7	75 - 79	2	26

Position of Me in the interval of classes is number 5, that:

$$Bb = 64.5$$

$$F = 4$$

$$fm = 6$$

$$i = 5$$

$$n = 25$$

$$1/2n = 12.5$$

So :

$$\begin{aligned}
 Me &= Bb + i \left( \frac{n/2 - F}{fm} \right) \\
 &= 64.5 + 5 \left( \frac{12.5 - 4}{5} \right) \\
 &= 64.5 + 5 (1.7) \\
 &= 64.5 + 8.5 \\
 &= 73
 \end{aligned}$$

7. Modus

No	Interval of Classes	F	Fk
1	45 – 49	2	3
2	50 - 54	3	6
3	55 - 59	4	10
4	60 - 64	4	14
5	<b>65 - 69</b>	<b>6</b>	20
6	70 - 74	4	24
7	75 - 79	2	26

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 64.5$$

$$d_1 = 2$$

$$d_2 = 2$$

$$i = 5$$

$$\begin{aligned} M_o &= 64.5 + \frac{2}{2+2} 5 \\ &= 64.5 + 0.5 (5) \\ &= 64.5 + 2.5 \\ &= 67 \end{aligned}$$

## RESULT OF NORMALITY TEST IN PRE TEST

### RESULT OF THE NORMALITY TEST OF X-2 IN PRE-TEST

1. The score of X-2 class in pre test from low score to high score:

45	45	45	50	50	50	50	55	55
55	55	60	60	60	60	60	65	65
65	65	65	65	70	70	70	75	75

2. High = 75

Low = 45

Range = High – Low

$$= 70 - 45$$

$$= 30$$

3. Total of Classes =  $1 + 3,3 \log (n)$

$$= 1 + 3,3 \log (27)$$

$$= 1 + 3,3 ( 1,43)$$

$$= 1 + 4.71$$

$$= 5.71$$

$$= 6$$

4. Length of Classes =  $\frac{\text{range}}{\text{total of class}} = \frac{30}{6} = 5$

5. Mean

Interval Class	F	X	x	fx	x <sup>2</sup>	fx <sup>2</sup>
45 – 49	3	47	4	12	16	48
50 – 54	4	52	3	12	9	36
55 – 59	4	57	2	8	4	16
60 – 64	5	62	1	5	1	5
65 – 69	6	<b>67</b>	0	0	0	0
70 – 74	3	72	-1	-3	1	3
75 – 79	2	77	-2	-4	4	8
<i>i</i> = 5	27	-	-	30	-	116



$$\begin{aligned}
M_x &= M^1 + i \frac{\sum fx^1}{N} \\
&= 67 + 5 \left( \frac{30}{27} \right) \\
&= 67 + 5 (1.11) \\
&= 67 + (5.55) \\
&= 72.5
\end{aligned}$$

$$\begin{aligned}
SD_t &= i \sqrt{\frac{\sum fx'^2}{N} - \left[ \frac{\sum fx'}{N} \right]^2} \\
&= 5 \sqrt{\frac{116}{27} - \left( \frac{30}{27} \right)^2} \\
&= 5 \sqrt{4.29 - (1.11)^2} \\
&= 5 \sqrt{4.29 - 2.22} \\
&= 5 \sqrt{2.07} \\
&= 5 (1.43) \\
&= 7.15
\end{aligned}$$

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	$f_h$	$f_0$	$\frac{(f_0-f_h)}{f_h}$
75–79	79,5	0.88	0.3106	0.20	5.4	2	-0.62
70 – 74	74,5	0.28	0.1103	-0.27	-7.2	3	-1.27
65 – 69	69,5	-0.30	0.38209	0.19	5.13	6	0.16
60 – 64	64,5	-0.90	0.18406	0.11	2.9	5	0.03
55 – 59	59,5	-1.5	0.06681	0.04	1.08	4	2.70
50 – 54	54,5	-2.09	0.01831	0.01	0.27	4	0.17
45 – 49	49,5	-2.69	0.00357	0.00	0	3	0
	44,5	-3.28	0.00052				
						$X^2$	1.17

Based on table above, reseracher found that  $x^2_{count} = 1.17$  while  $x^2_{table} = 5.991$  cause  $x^2_{cause} < x^2_{table}$  ( $1.17 < 5.991$ ) with degree of freedom  $dk = 5 - 3 = 2$  and significat level  $\alpha = 5\%$ . So distribution of X-2 class (Pre-test) is normal.

## 6. Median

No	Interval of Classes	F	Fk
1	45 - 49	3	2
2	50 - 54	4	6
3	55 - 59	4	10
4	60 - 64	5	15
5	<b>65 - 69</b>	<b>6</b>	21
6	70 - 74	3	24
7	75 - 79	2	26

Position of Me in the interval of classes is number 5, that:

$$Bb = 64.5$$

$$F = 5$$

$$fm = 6$$

$$i = 5$$

$$n = 27$$

$$1/2n = 13.5$$

So :

$$Me = Bb + i \left( \frac{n/2 - F}{fm} \right)$$

$$= 64.5 + 5 \left( \frac{13.5 - 5}{6} \right)$$

$$= 64.5 + 5 (1.41)$$

$$= 64.5 + 7.08$$

$$= 71.5$$

7. Modus

No	Interval of Classes	F	Fk
1	45 – 49	3	2
2	50 - 54	4	6
3	55 - 59	4	10
4	60 - 64	5	15
5	<b>65 - 69</b>	<b>6</b>	21
6	70 - 74	3	24
7	75 - 79	2	26

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 64.5$$

$$d_1 = 1$$

$$d_2 = 3$$

$$i = 5$$

$$\begin{aligned} M_o &= 64.5 + \frac{1}{1+3} 5 \\ &= 64.5 + 0.25 (5) \\ &= 64.5 + 1.25 \\ &= 65.7 \end{aligned}$$

## RESULT OF NORMALITY TEST IN PRE TEST

### RESULT OF THE NORMALITY TEST OF X-3 IN PRE-TEST

1. The score of X-3 class in pre test from low score to high score:

45	45	45	45	50	50	50	50	50	55
55	55	60	60	60	60	65	65	65	65
65	65	65	70	70	70	70	75	75	75

2. High = 75

Low = 45

Range = High – Low

$$= 75 - 45$$

$$= 30$$

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 =  $\frac{range}{total\ of\ class} = \frac{30}{6} = 5$

5. Mean

Interval Class	F	X	x	fx	x <sup>2</sup>	fx <sup>2</sup>
45 – 49	4	47	4	16	16	64
50 – 54	5	52	3	15	9	45
55 – 59	3	57	2	6	4	12
60 – 64	4	62	1	4	1	4
65 – 69	7	<b>67</b>	0	0	0	0
70 – 74	4	72	-1	-4	1	4
75 – 79	3	77	-2	-6	2	12
<i>i</i> = 5	30	-	-	31	-	141

$$\begin{aligned}
M_x &= M^1 + i \frac{\Sigma f x^1}{N} \\
&= 67 + 5 \left( \frac{31}{30} \right) \\
&= 67 + 5 (1.03) \\
&= 67 + (5.15) \\
&= 72.1
\end{aligned}$$

$$\begin{aligned}
SD_t &= i \sqrt{\frac{\Sigma f x'^2}{N} - \left[ \frac{\Sigma f x'}{N} \right]^2} \\
&= 5 \sqrt{\frac{141}{30} - \left( \frac{31}{30} \right)^2} \\
&= 5 \sqrt{4.7 - (1.03)^2} \\
&= 5 \sqrt{4.7 - 1.06} \\
&= 5 \sqrt{3.64} \\
&= 5 (1.90) \\
&= 9.5
\end{aligned}$$

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	$f_h$	$f_0$	$\frac{(f_0-f_h)}{f_h}$
75–79	79,5	0.77	0.2794	0.18	5.4	3	-0.44
70 – 74	74,5	0.25	0.0987	0.09	2.7	4	0.48
65 – 69	69,5	-2.6	0.00466	-0.20	-6	7	-2.16
60 – 64	64,5	-0.8	0.21186	0.11	3.3	4	0.21
55 – 59	59,5	-1.32	0.09342	0.06	1.8	3	0.66
50 – 54	54,5	-1.85	0.03216	0.02	0.6	5	7.33
45 – 49	49,5	-2.37	0.00889	0.007	0.21	4	1.80
	44,5	-2.90	0.00187				
						$X^2$	7.88

Based on table above, reseracher found that  $x^2_{count} = 7.88$  while  $x^2_{table}=5.991$  cause  $x^2_{cause} < x^2_{table}$  ( $7.88 < 5.991$ ) with degree of freedom  $dk = 5 - 3 = 2$  and significat level  $\alpha = 5\%$ . So distribution of X-3 class (Pre-test) is not normal.

## 6. Median

No	Interval of Classes	F	Fk
1	45 - 49	4	2
2	50 - 54	5	7
3	55 - 59	3	10
4	60 - 64	4	14
5	<b>65 - 69</b>	<b>7</b>	21
6	70 - 74	4	25
7	75 - 79	3	28

Position of Me in the interval of classes is number 5, that:

$$Bb = 64.5$$

$$F = 4$$

$$fm = 7$$

$$i = 5$$

$$n = 30$$

$$1/2n = 15$$

$$\begin{aligned} \text{So : Me} &= Bb + i \left( \frac{n/2 - F}{fm} \right) \\ &= 64.5 + 5 \left( \frac{15-4}{7} \right) \\ &= 64.5 + 5 (1.57) \\ &= 64.5 + 7.8 \\ &= 72.3 \end{aligned}$$



7. Modus

No	Interval of Classes	F	Fk
1	45 – 49	4	2
2	50 - 54	5	7
3	55 - 59	3	10
4	60 - 64	4	14
5	<b>65 - 69</b>	<b>7</b>	21
6	70 - 74	4	25
7	75 - 79	3	28

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 64.5$$

$$d_1 = 3$$

$$d_2 = 3$$

$$i = 5$$

$$\begin{aligned} M_o &= 64.5 + \frac{4}{4+4} 5 \\ &= 64.5 + 0.5 (5) \\ &= 64.5 + 2.5 \\ &= 67 \end{aligned}$$

## Appendix 19

### HOMOGENEITY TEST (PRE-TEST)

Calculation of parameter to get variant of the first class as experimental class sample by using grammar translation method and variant of the second class as control class sample by using conventional method are used homogeneity test by using formula:

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

Hypotheses:

$$H_0 : \delta_1^2 = \delta_2^2$$

$$H_1 : \delta_1^2 \neq \delta_2^2$$

A. Variant of the X-1 class is:

NO	Xi	Xi <sup>2</sup>
1	45	2025
2	45	2025
3	50	2500
4	50	2500
5	50	2500
6	50	2500
7	55	3025
8	55	3025
9	60	3600
10	60	3600
11	60	3600
12	60	3600
13	65	4225
14	65	4225
15	65	4225
16	65	4225
17	65	4225
18	70	4900

19	70	4900
20	70	4900
21	70	4900
22	75	5625
23	75	5625
24	75	5625
25	75	5625
	1545	97725

$$n = 25$$

$$\sum xi = 1545$$

$$\sum xi^2 = 97725$$

So:

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

$$= \frac{25(97725) - (1545)^2}{25(25-1)}$$

$$= \frac{2443125 - 2387025}{25(24)}$$

$$= \frac{56100}{600}$$

$$= 93.5$$

B. Variant of the X-2 class is:

NO	Xi	Xi <sup>2</sup>
1	45	2025
2	45	2025
3	45	2025
4	45	2025
5	45	2025
6	50	2500
7	50	2500
8	50	2500
9	50	2500
10	50	2500
11	55	3025
12	55	3025
13	55	3025
14	55	3025
15	60	3600
16	60	3600
17	60	3600
18	65	4225
19	65	4225
20	65	4225
21	65	4225
22	65	4225
23	65	4225
24	70	4900
25	70	4900
26	75	5625
27	75	5625
	1555	91925

$$n = 27$$
$$\sum xi = 1555$$
$$\sum_{xi}^2 = 91925$$

So:

$$\begin{aligned} S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\ &= \frac{27(91925) - (1555)^2}{27(27-1)} \\ &= \frac{2481975 - 2418025}{27(26)} \\ &= \frac{63950}{702} \\ &= 91.0 \end{aligned}$$

C. Variant of the X- 3 class is:

NO	Xi	Xi <sup>2</sup>
1	45	2025
2	45	2025
3	45	2025
4	45	2025
5	50	2500
6	50	2500
7	50	2500
8	50	2500
9	50	2500
10	55	3025
11	55	3025
12	55	3025
13	60	3600
14	60	3600
15	60	3600
16	60	3600
17	65	4225
18	65	4225
19	65	4225
20	65	4225
21	65	4225
22	65	4225
23	65	4225
24	70	4900
25	70	4900

26	70	4900
27	70	4900
28	75	5625
29	75	5625
30	75	5625
	1665	110125

$$\begin{aligned}
 n &= 30 \\
 \sum xi &= 1665 \\
 \sum xi^2 &= 110125
 \end{aligned}$$

So:

$$\begin{aligned}
 S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\
 &= \frac{30(110125) - (1665)^2}{30(30-1)} \\
 &= \frac{3303750 - 2772225}{30(29)} \\
 &= \frac{531525}{870} \\
 &= 61.09
 \end{aligned}$$

The Formula was used to test hypothesis was:

1. X-1 and X -2 :

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

So:

$$\begin{aligned}
 F &= \frac{93.5}{91.0} \\
 &= 1.02
 \end{aligned}$$

After doing the calculation, researcher found that  $F_{\text{count}} = 1.02$  with  $\alpha$  5 % and  $dk = 25$  from the distribution list F, researcher found that  $F_{\text{table}} = 2.060$ , cause  $F_{\text{count}} < F_{\text{table}}$  ( $1.02 < 2.060$ ). So, there is no difference the variant between the X-1 class and X-2 class. It means that the variant is homogenous.

2. X -1 and X -3 :

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

So:

$$\begin{aligned} F &= \frac{93.5}{61.09} \\ &= 1.53 \end{aligned}$$

After doing the calculation, researcher found that  $F_{\text{count}} = 1.53$  with  $\alpha$  5 % and  $dk = 25$  from the distribution list F, researcher found that  $F_{\text{table}} = 2.060$ , cause  $F_{\text{count}} < F_{\text{table}}$  ( $1.53 < 2.060$ ). So, there is no difference the variant between the X-1 class and X-3 class. It means that the variant is homogenous.

3. X -2 and X - 3 :

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

So:

$$\begin{aligned} F &= \frac{91.0}{61.09} \\ &= 1.48 \end{aligned}$$

After doing the calculation, researcher found that  $F_{\text{count}} = 1.48$  with  $\alpha$  5 % and  $dk = 25$  and  $27$  from the distribution list F, researcher found that  $F_{\text{table}} = 2.060$  &  $2.052$ , cause  $F_{\text{count}} < F_{\text{table}}$  ( $1.48 < 2.060$  &  $2.052$ ). So, there is no difference the variant between the X-2 class and X-3 class. It means that the variant is homogenous.



**Appendix 20**

**RESULT OF THE NORMALITY TEST OF EXPERIMENT CLASS  
IN POST-TEST**

1. The score of experiment class in post test from low score to high score:

65	65	70	70	75	75	75	80	80	80
80	80	80	80	85	85	85	85	85	90
90	90	95	95	95					

2. High = 95

Low = 65

Range = High – Low

$$= 95 - 65$$

$$= 30$$

3. Total of Classes =  $1 + 3,3 \log (n)$

$$= 1 + 3,3 \log (25)$$

$$= 1 + 3,3 (1.39)$$

$$= 1 + 4.58$$

$$= 5.58$$

$$= 6$$

4. Length of Classes =  $\frac{\text{range}}{\text{total of class}} = \frac{30}{6} = 5$

5. Mean

Interval Class	F	X	x'	fx'	x' <sup>2</sup>	fx' <sup>2</sup>
65 – 69	2	67	3	6	9	18
70 – 74	2	72	2	4	4	8
75 – 79	3	77	1	3	1	3
80 – 84	7	82	0	0	0	0
85 – 89	5	87	-1	-5	1	5
90 – 94	3	92	-2	-6	4	12
95 – 99	3	97	-3	-9	9	27
<i>i</i> = 5	25	-		-7		73

$$\begin{aligned}
M_x &= M^1 + i \frac{\sum fx^1}{N} \\
&= 82 + 5\left(\frac{-7}{25}\right) \\
&= 82 + 5(-0.28) \\
&= 82 + (-14) \\
&= 80.6
\end{aligned}$$

$$\begin{aligned}
SD_t &= i \sqrt{\frac{\sum fx'^2}{N} - \left[\frac{\sum fx'}{N}\right]^2} \\
&= 5 \sqrt{\frac{73}{25} - \left(\frac{-7}{25}\right)^2} \\
&= 5 \sqrt{2.92 - (-0.28)^2} \\
&= 5 \sqrt{2.92 - 0.078} \\
&= 5 \sqrt{2.842} \\
&= 5 (1.68) \\
&= 8.4
\end{aligned}$$

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 <sub>h</sub>	f <sub>0</sub>	$\frac{(f_0-f_h)}{f_h}$
95–99	99.5	3.75	0.4999	0.07	1.75	3	0.71
90– 94	94.5	3.15	0.4992	0.38	9.5	3	-0.68
85 – 89	89.5	0.29	0.1141	-0.35	-8.75	5	-1.57
80 – 84	84.5	1.90	0.4713	0.06	1.5	7	0.36
75 – 79	79.5	1.30	0.4032	0.12	3	3	2
70 – 74	74.5	0.77	0.2794	-0.09	-2.25	2	-1.88
65 – 69	69.5	0.17	0.3790	0.03	0.75	2	1.66
	64.5	-0.41	0.34090				
						X <sup>2</sup>	0.6

Based on table above, researcher found that  $x^2_{\text{count}} = 0.6$  while  $x^2_{\text{table}} = 5.991$  cause  $x^2_{\text{count}} < x^2_{\text{table}}$  ( $0.6 < 5.991$ ) with degree of freedom  $dk = 5 - 3 = 2$  and significant level  $\alpha = 5\%$ . So distribution of experiment class (Post Test) was normal.

## 6. Median

No	Interval of Classes	F	Fk
1	65 - 69	2	2
2	70 - 74	2	4
3	75 - 79	3	7
4	80 - 84	7	14
5	85 - 89	5	19
6	90 - 94	3	22
7	95 - 99	3	25

Position of Me in the interval of classes is number 4, that:

$$Bb = 79.5$$

$$F = 3$$

$$fm = 7$$

$$i = 5$$

$$n = 25$$

$$1/2n = 12.5$$

So :

$$Me = Bb + i \left( \frac{n/2 - F}{fm} \right)$$

$$= 79.5 + 5 \left( \frac{12.5 - 3}{7} \right)$$

$$= 79.5 + 5(1.35)$$

$$= 79.5 + 6.75$$

$$= 86.25$$

### 7. Modus

No	Interval of Classes	F	fk
1	65 - 69	2	2
2	70 - 74	2	4
3	75 - 79	3	7
4	80 - 84	7	14
5	85 - 89	5	19
6	90 - 94	3	22
7	95 - 99	3	25

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 79.5$$

$$d_1 = 4$$

$$d_2 = 2$$

$$i = 5$$

$$\begin{aligned} M_o &= 79.5 + \frac{4}{4+2} 5 \\ &= 79.5 + 0.66(5) \\ &= 79.5 + 3.3 \\ &= 82.8 \end{aligned}$$

## Appendix 21

### RESULT OF THE NORMALITY TEST OF CONTROL CLASS IN POST TEST

1. The score of control class in post test from low score to high score:

50	50	50	55	55	55	60	60	60
60	65	65	65	65	65	65	65	70
70	70	70	75	75	75	80	80	80

2. High = 80

Low = 50

$$\begin{aligned} \text{Range} &= \text{High} - \text{Low} \\ &= 80 - 50 \\ &= 30 \end{aligned}$$

$$\begin{aligned} 3. \text{ Total of Classes} &= 1 + 3,3 \log (n) \\ &= 1 + 3,3 \log (27) \\ &= 1 + 3,3 ( 1,43) \\ &= 1 + 4,7 \\ &= 5,7 \\ &= 6 \end{aligned}$$

$$4. \text{ Length of Classes} = \frac{\text{range}}{\text{total of class}} = \frac{30}{6} = 5$$

5. Mean

Interval Class	F	X	x	fx	x <sup>2</sup>	fx <sup>2</sup>
50 – 54	3	52	3	9	9	18
55 – 59	3	57	2	6	4	8
60 – 64	4	62	1	4	1	4
65 – 69	7	<b>67</b>	0	0	0	0
70 – 74	4	72	-1	-4	1	4
75 – 79	3	77	-2	-6	4	12
80 – 84	3	82	-3	-9	9	27
<i>i</i> = 5	27	-	-	-1	-	73

$$\begin{aligned}
M_x &= M^1 + i \frac{\sum fx^1}{N} \\
&= 67 + 5 \left( \frac{-1}{27} \right) \\
&= 67 + 5(-0.03) \\
&= 67 + (-0.15) \\
&= 66.8
\end{aligned}$$

$$\begin{aligned}
SD_t &= i \sqrt{\frac{\sum fx'^2}{N} - \left[ \frac{\sum fx'}{N} \right]^2} \\
&= 5 \sqrt{\frac{73}{27} - \left( \frac{-1}{27} \right)^2} \\
&= 5 \sqrt{2.70 - (-0.03)^2} \\
&= 5 \sqrt{2.70 - (-0.09)} \\
&= 5 \sqrt{2.79} \\
&= 5 (1.67) \\
&= 8.4
\end{aligned}$$

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 - 84	84.5	2.10	0.4821	0.04	1.08	3	1.77
75 – 79	79.5	1.51	0.4345	0.11	2.97	3	0.01
70 – 74	74.5	0.91	0.3186	0.19	5.13	4	-0.22
65 – 69	69.5	0.32	0.1255	-0.36	-9.72	7	-0.03
60– 64	64.5	-0.03	0.48803	0.29	7.83	4	-1.72
55- 59	59.5	-0.86	0.19489	0.12	3.24	3	-0.07
50 – 54	54.5	-1.46	0.07215	0.04	1.08	3	1.77
	50.5	-1.94	0.02619				
						$X^2$	1.51

Based on table above, reseracher found that  $x^2_{count} = 1.51$  while  $x^2_{table} = 5.991$  cause  $x^2_{cause} < x^2_{table}$  ( $1.51 < 5.991$ ) with degree of freedom  $dk = 5 - 3 = 2$  and significant level  $\alpha = 5\%$ . So distribution of control class (Post-test) was normal.



## 6. Median

No	Interval Class	F	fk
1	50 - 54	3	2
2	55 - 59	3	5
3	60 - 64	4	9
4	65 - 69	7	13
5	70 - 74	4	17
6	75 - 79	3	20
7	80 - 84	3	23

Position of Me in the interval of classes is number 3, that:

$$Bb = 64.5$$

$$F = 4$$

$$fm = 7$$

$$i = 5$$

$$n = 27$$

$$1/2n = 13.5$$

So :

$$Me = Bb + i \left( \frac{n/2 - F}{fm} \right)$$

$$= 64.5 + 5 \left( \frac{13.5 - 4}{7} \right)$$

$$= 64.5 + 5 (1.35)$$

$$= 64.5 + 6.75$$

$$= 71.25$$

## 7. Modus

No	Interval Class	F	fk
1	50 - 54	3	2
2	55 - 59	3	5
3	60 - 64	4	9
4	65 - 69	7	13
5	70 - 74	4	17
6	75 - 79	3	20
7	80 - 84	3	23

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 64.5$$

$$d_1 = 3$$

$$d_2 = 3$$

$$i = 5$$

$$\begin{aligned} M_o &= 64.5 + \frac{3}{3+3} 5 \\ &= 64.5 + 0.5 (5) \\ &= 64.5 + 2.5 \\ &= 67 \end{aligned}$$

## Appendix 22

### HOMOGENEITY TEST (POST TEST)

#### 1. EXPERIMENT CLASS

NO	$X_i$	$X_i^2$
1	65	4225
2	65	4225
3	70	4900
4	70	4900
5	75	5625
6	75	5625
7	75	5625
8	80	6400
9	80	6400
10	80	6400
11	80	6400
12	80	6400
13	80	6400
14	80	6400
15	85	7225
16	85	7225
17	85	7225
18	85	7225
19	85	7225
20	90	8100
21	90	8100
22	90	8100
23	95	9025
24	95	9025
25	95	9025
	2035	167425

$$n = 25$$
$$\sum x_i = 2035$$
$$\sum x_i^2 = 167425$$

So:

$$\begin{aligned} S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\ &= \frac{25(167425) - (2035)^2}{25(25-1)} \\ &= \frac{4185625 - 4141225}{25(24)} \\ &= \frac{44400}{600} \\ &= 74 \end{aligned}$$

## 2. CONTROL CLASS

NO	$X_i$	$X_i^2$
1	50	2500
2	50	2500
3	50	2500
4	55	3025
5	55	3025
6	55	3025
7	60	3600
8	60	3600
9	60	3600
10	60	3600
11	65	4225
12	65	4225
13	65	4225
14	65	4225
15	65	4225
16	65	4225
17	65	4225
18	70	4900
19	70	4900
20	70	4900
21	70	4900
22	75	5625
23	75	5625
24	75	5625
25	80	6400
26	80	6400
27	80	6400
	1755	113975

$$\begin{aligned}
 n &= 27 \\
 \sum xi &= 1755 \\
 \sum xi^2 &= 114975
 \end{aligned}$$

So:

$$\begin{aligned}
 S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\
 &= \frac{27(114975) - (1755)^2}{27(27-1)} \\
 &= \frac{3104325 - 3080025}{27(26)} \\
 &= \frac{24300}{702} \\
 &= 34.6
 \end{aligned}$$

The Formula was used to test hypothesis was:

1. X-1 and X-2 :

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

So:

$$\begin{aligned}
 F &= \frac{74}{34.6} \\
 &= 1.13
 \end{aligned}$$

After doing the calculation, researcher found that  $F_{\text{count}} = 1.13$  with  $\alpha$  5 % and  $dk = 25$  &  $27$  from the distribution list F, researcher found that  $F_{\text{table}} = 2.060$  &  $2.052$ , cause  $F_{\text{count}} < F_{\text{table}}$  ( $1.13 < 2.042$  &  $2.052$ ). So, there is no difference the variant between the X-1 class and X-2 class. It means that the variant is homogenous.

## Appendix 23

### $T_{\text{test}}$ OF THE BOTH AVERAGES IN PRE-TEST

The formula was used to analyse homogeneity test of the both averages was t-test, that:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \text{ with } S = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 2)S_2^2}{n_1 + n_2 - 2}}$$

So:

$$\begin{aligned} S &= \sqrt{\frac{(25-1) 93.5 + (27-2)91.0}{25+27-2}} \\ &= \sqrt{\frac{24 (93.5) + 25 (91.0)}{51}} \\ &= \sqrt{\frac{2244 + 2275}{51}} \\ &= \sqrt{\frac{4519}{51}} \\ &= \sqrt{88.60} \\ &= 9.41 \end{aligned}$$

So:

$$\begin{aligned} t &= \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \\ t &= \frac{70.2 - 72.1}{9.41 \sqrt{\frac{1}{25} + \frac{1}{27}}} \\ &= \frac{-1.9}{9.41 \sqrt{0.04 + 0.037}} \end{aligned}$$

$$\begin{aligned}
&= \frac{-1.9}{9.41 (0.077)} \\
&= \frac{-1.9}{0.627} \\
&= 0.72
\end{aligned}$$

Based on researcher calculation result of the homogeneity test of the both averages, researcher found that  $t_{\text{count}} = 1.59$  with opportunity  $(1 - \alpha) = 1 - 5\% = 95\%$  and  $dk = n_1 + n_2 - 2 = 25 + 27 - 2 = 50$ , researcher found that  $t_{\text{table}} = 2.021$ , cause  $t_{\text{count}} < t_{\text{table}} (0.72 < 2.021)$ . So,  $H_a$  is accepted, it means no difference the average between the first class as experimental class and the second class as control class in this research.



## Appendix 24

### T<sub>test</sub> OF THE BOTH AVERAGES IN POST – TEST

The formula was used to analyse homogeneity test of the both averages was t-test, that:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \text{ with } S = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 2)S_2^2}{n_1 + n_2 - 2}}$$

So:

$$\begin{aligned} S &= \sqrt{\frac{(25-1)74+(27-2)34.6}{25+27-2}} \\ &= \sqrt{\frac{24(74)+25(34.6)}{50}} \\ &= \sqrt{\frac{1776+865}{50}} \\ &= \sqrt{\frac{2641}{50}} \\ &= \sqrt{52.82} \\ &= 7.26 \end{aligned}$$

So:

$$\begin{aligned}t &= \frac{\bar{X}_1 - \bar{X}_2}{s \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}} \\t &= \frac{68 - 66.8}{7.26 \sqrt{\frac{1}{25} + \frac{1}{27}}} \\&= \frac{1.2}{7.26 \sqrt{0.04 + 0.037}} \\&= \frac{1.2}{7.26 (0.077)} \\&= \frac{1.2}{0.559} \\&= 2.14\end{aligned}$$

Based on researcher calculation result of the homogeneity test of the both averages, researcher found that  $t_{\text{count}} = 2.36$  with opportunity  $(1 - \alpha) = 1 - 5\% = 95\%$  and  $dk = n_1 + n_2 - 2 = 25 + 27 - 2 = 50$ , researcher found that  $t_{\text{table}} = 2.021$ , cause  $t_{\text{count}} > t_{\text{table}} (2.14 > 2.021)$ . So,  $H_a$  was accepted, it means there was the difference average between the first class as experimental class and the second class as control class in this research.

**APPENDIX 25**

**Chi-Square Table**

<b>dk</b>	<b>Significant level</b>					
	<b>50%</b>	<b>30%</b>	<b>20%</b>	<b>10%</b>	<b>5%</b>	<b>1%</b>
<b>1</b>	0,455	1,074	1,642	2,706	3,841	6,635
<b>2</b>	1,386	2,408	3,219	4,605	<b>5,991</b>	9,210
<b>3</b>	2,366	3,665	4,642	6,251	7,815	11,341
<b>4</b>	3,357	4,878	5,989	7,779	9,488	13,277
<b>5</b>	4,351	6,064	7,289	9,236	11,070	15,086
<b>6</b>	5,348	7,231	8,558	10,645	12,592	16,812
<b>7</b>	6,346	8,383	9,803	12,017	14,067	18,475
<b>8</b>	7,344	9,524	11,030	13,362	15,507	20,090
<b>9</b>	8,343	10,656	12,242	14,684	16,919	21,666
<b>10</b>	9,342	11,781	13,442	15,987	18,307	23,209
<b>11</b>	10,341	12,899	14,631	17,275	19,675	24,725
<b>12</b>	11,340	14,011	15,812	18,549	21,026	26,217
<b>13</b>	12,340	15,119	16,985	19,812	22,362	27,688
<b>14</b>	13,339	16,222	18,151	21,064	23,685	29,141
<b>15</b>	14,339	17,222	19,311	22,307	24,996	30,578
<b>16</b>	15,338	18,418	20,465	23,542	26,296	32,000
<b>17</b>	16,338	19,511	21,615	24,769	27,587	33,409
<b>18</b>	17,338	20,601	22,760	25,989	28,869	34,805
<b>19</b>	18,338	21,689	23,900	27,204	30,144	36,191
<b>20</b>	19,337	22,775	25,038	28,412	31,410	37,566
<b>21</b>	20,337	23,858	26,171	29,615	32,671	38,932
<b>22</b>	21,337	24,939	27,301	30,813	33,924	40,289
<b>23</b>	22,337	26,018	28,429	32,007	35,172	41,638
<b>24</b>	23,337	27,096	29,553	33,196	35,415	42,980
<b>25</b>	24,337	28,172	30,675	34,382	37,652	44,314
<b>26</b>	25,336	29,246	31,795	35,563	38,885	45,642
<b>27</b>	26,336	30,319	32,912	36,741	40,113	46,963
<b>28</b>	27,336	31,391	34,027	37,916	41,337	48,278
<b>29</b>	28,336	32,461	35,139	39,087	42,557	49,588
<b>30</b>	29,336	33,530	36,250	40,256	43,773	50,892

**APPENDIX 26**

**Z-Table**

<b>Z</b>	<b>0.00</b>	<b>0.01</b>	<b>0.02</b>	<b>0.03</b>	<b>0.04</b>	<b>0.05</b>	<b>0.06</b>	<b>0.07</b>	<b>0.08</b>	<b>0.09</b>
<b>-3.9</b>	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003
<b>-3.8</b>	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005
<b>-3.7</b>	0.00011	0.00010	0.00010	0.00010	0.00009	0.00009	0.00008	0.00008	0.00008	0.00008
<b>-3.6</b>	0.00016	0.00015	0.00015	0.00014	0.00014	0.00013	0.00013	0.00012	0.00012	0.00011
<b>-3.5</b>	0.00023	0.00022	0.00022	0.00021	0.00020	0.00019	0.00019	0.00018	0.00017	0.00017
<b>-3.4</b>	0.00034	0.00032	0.00031	0.00030	0.00029	0.00028	0.00027	0.00026	0.00025	0.00024
<b>-3.3</b>	0.00048	0.00047	0.00045	0.00043	0.00042	0.00040	0.00039	0.00038	0.00036	0.00035
<b>-3.2</b>	0.00069	0.00066	0.00064	0.00062	0.00060	0.00058	0.00056	0.00054	0.00052	0.00050
<b>-3.1</b>	0.00097	0.00094	0.00090	0.00087	0.00084	0.00082	0.00079	0.00076	0.00074	0.00071
<b>-3.0</b>	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00104	0.00100
<b>-2.9</b>	0.00187	0.00181	0.00175	0.00169	0.00164	0.00159	0.00154	0.00149	0.00144	0.00139
<b>-2.8</b>	0.00256	0.00248	0.00240	0.00233	0.00226	0.00219	0.00212	0.00205	0.00199	0.00193
<b>-2.7</b>	0.00347	0.00336	0.00326	0.00317	0.00307	0.00298	0.00289	0.00280	0.00272	0.00264
<b>-2.6</b>	0.00466	0.00453	0.00440	0.00427	0.00415	0.00402	0.00391	0.00379	0.03680	0.00357
<b>-2.5</b>	0.00621	0.00604	0.00587	0.00570	0.00554	0.00539	0.00523	0.00508	0.00494	0.00480
<b>-2.4</b>	0.00820	0.00798	0.00776	0.00755	0.00734	0.00714	0.00695	0.00676	0.00657	0.00639
<b>-2.3</b>	0.01072	0.01044	0.01017	0.00990	0.00964	0.00939	0.00914	0.00889	0.00866	0.00842
<b>-2.2</b>	0.01390	0.01355	0.01321	0.01287	0.01255	0.01222	0.01191	0.01160	0.01130	0.01101
<b>-2.1</b>	0.01786	0.01743	0.01700	0.01659	0.01618	0.01578	0.01539	0.01500	0.01463	0.01426
<b>-2.0</b>	0.02275	0.02222	0.02169	0.02118	0.02068	0.02018	0.01970	0.01923	0.01876	0.01831
<b>-1.9</b>	0.02872	0.02807	0.02743	0.02680	0.02619	0.02559	0.02500	0.02442	0.02385	0.02330
<b>-1.8</b>	0.03593	0.03515	0.03438	0.03362	0.03288	0.03216	0.03144	0.03074	0.03005	0.02938
<b>-1.7</b>	0.04457	0.04363	0.04272	0.04182	0.04093	0.04006	0.03920	0.03836	0.03754	0.03673
<b>-1.6</b>	0.05480	0.05370	0.05262	0.05155	0.05050	0.04947	0.04846	0.04746	0.04648	0.04551

<b>-1.5</b>	0.06681	0.06552	0.06426	0.06301	0.06178	0.06057	0.05938	0.05821	0.05705	0.05592
<b>-1.4</b>	0.08076	0.07927	0.07780	0.07636	0.07493	0.07353	0.07215	0.07078	0.06944	0.06811
<b>-1.3</b>	0.09680	0.09510	0.09342	0.09176	0.09012	0.08851	0.08691	0.08534	0.08379	0.08226
<b>-1.2</b>	0.11507	0.11314	0.11123	0.10935	0.10749	0.10565	0.10383	0.10204	0.10027	0.09853
<b>-1.1</b>	0.13567	0.13350	0.13136	0.12924	0.12714	0.12507	0.12302	0.12100	0.11900	0.11702
<b>-1.0</b>	0.15866	0.15625	0.15386	0.15151	0.14917	0.14686	0.14457	0.14231	0.14007	0.13786
<b>-0.9</b>	0.18406	0.18141	0.17879	0.17619	0.17361	0.17106	0.16853	0.16602	0.16354	0.16109
<b>-0.8</b>	0.21186	0.20897	0.20611	0.20327	0.20045	0.19766	0.19489	0.19215	0.18943	0.18673
<b>-0.7</b>	0.24196	0.23885	0.23576	0.23270	0.22965	0.22663	0.22363	0.22065	0.21770	0.21476
<b>-0.6</b>	0.27425	0.27093	0.26763	0.26435	0.26109	0.25785	0.25463	0.25143	0.24825	0.24510
<b>-0.5</b>	0.30854	0.30503	0.30153	0.29806	0.29460	0.29116	0.28774	0.28434	0.28096	0.27760
<b>-0.4</b>	0.34458	0.34090	0.33724	0.33360	0.32997	0.32636	0.32276	0.31918	0.31561	0.31207
<b>-0.3</b>	0.38209	0.37828	0.37448	0.37070	0.36693	0.36317	0.35942	0.35569	0.35197	0.34827
<b>-0.2</b>	0.42074	0.41683	0.41294	0.40905	0.40517	0.40129	0.39743	0.39358	0.38974	0.38591
<b>-0.1</b>	0.46017	0.45620	0.45224	0.44828	0.44433	0.44038	0.43644	0.43251	0.42858	0.42465
<b>-0.0</b>	0.50000	0.49601	0.49202	0.48803	0.48405	0.48006	0.47608	0.47210	0.46812	0.46414

**Z-Table**

<b>z</b>	<b>0.00</b>	<b>0.01</b>	<b>0.02</b>	<b>0.03</b>	<b>0.04</b>	<b>0.05</b>	<b>0.06</b>	<b>0.07</b>	<b>0.08</b>	<b>0.09</b>
<b>0.0</b>	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
<b>0.1</b>	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
<b>0.2</b>	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
<b>0.3</b>	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
<b>0.4</b>	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
<b>0.5</b>	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
<b>0.6</b>	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
<b>0.7</b>	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
<b>0.8</b>	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
<b>0.9</b>	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
<b>1.0</b>	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
<b>1.1</b>	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
<b>1.2</b>	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
<b>1.3</b>	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
<b>1.4</b>	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
<b>1.5</b>	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
<b>1.6</b>	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
<b>1.7</b>	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
<b>1.8</b>	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
<b>1.9</b>	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
<b>2.0</b>	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
<b>2.1</b>	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
<b>2.2</b>	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
<b>2.3</b>	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
<b>2.4</b>	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
<b>2.5</b>	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
<b>2.6</b>	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
<b>2.7</b>	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974



APPENDIX 27

Percentage Points of the t Distribution

Two Tail Test						
	0,50	0,20	0,10	0,05	0,02	0,01
One Tail Test						
dk	0,25	0,10	0,005	0,025	0,01	0,05
1	1,000	3,078	6,314	12,706	31,821	63,657
2	0,816	1,886	2,920	4,303	6,965	9,925
3	0,765	1,638	2,353	3,182	4,541	5,841
4	0,741	1,533	2,132	2,776	3,747	4,604
5	0,721	1,486	2,015	2,571	3,365	4,032
6	0,718	1,440	1,943	2,447	3,143	3,707
7	0,711	1,415	1,895	2,365	2,998	3,499
8	0,706	1,397	1,860	2,306	2,896	3,355
9	0,703	1,383	1,833	2,262	2,821	3,250
10	0,700	1,372	1,812	2,228	2,764	3,165
11	0,697	1,363	1,796	2,201	2,718	3,106
12	0,695	1,356	1,782	2,178	2,681	3,055
13	0,692	1,350	1,771	2,160	2,650	3,012
14	0,691	1,345	1,761	2,145	2,624	2,977
15	0,690	1,341	1,753	2,132	2,623	2,947
16	0,689	1,337	1,746	2,120	2,583	2,921
17	0,688	1,333	1,743	2,110	2,567	2,898
18	0,688	1,330	1,740	2,101	2,552	2,878
19	0,687	1,328	1,729	2,093	2,539	2,861
20	0,687	1,325	1,725	2,086	2,528	2,845
21	0,686	1,323	1,721	2,080	2,518	2,831
22	0,686	1,321	1,717	2,074	2,508	2,819
23	0,685	1,319	1,714	2,069	2,500	2,807
24	0,685	1,318	1,711	2,064	2,492	2,797
25	0,684	1,316	1,708	<b>2,060</b>	2,485	2,787
26	0,684	1,315	1,706	2,056	2,479	2,779
27	0,684	1,314	1,703	<b>2,052</b>	2,473	2,771
28	0,683	1,313	1,701	2,048	2,467	2,763
29	0,683	1,311	1,699	2,045	2,462	2,756
30	0,683	1,310	1,697	2,042	2,457	2,750
40	0,681	1,303	1,684	<b>2,021</b>	2,423	2,704
60	0,679	1,296	1,671	2,000	2,390	2,660
120	0,677	1,289	1,658	1,980	2,358	2,617
∞	0,674	1,282	1,645	1,960	2,326	2,576



Appendix 28



