



**THE EFFECT OF CRITICAL READING STRATEGIES ON
READING REPORT TEXT AT GRADE XI SMA NEGERI 1
SIABU**

A THESIS

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

Written By:

MASRIDA NASUTION
Reg.Number. 13 340 0060

ENGLISH EDUCATION DEPARTMENT

**TARBIYAH AND TEACHER TRAINING FACULTY
STATE INSTITUTE FOR ISLAMIC STUDIES
PADANGSIDIMPUAN
2018**



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NEGERI 1 SIABU**

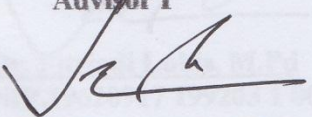
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Written By:

MASRIDA NASUTION
Reg. Number. 13 340 0060

Advisor I


Dr. Fitriadi Lubis, M.Pd.
NIP. 19620917 199203 1 002

Advisor II


Fitri Rayani Siregar, M.Hum.
NIP. 19820731 200912 2 004

ENGLISH EDUCATION DEPARTMENT

**TARBIYAH AND TEACHER TRAINING FACULTY
STATE INSTITUTE FOR ISLAMIC STUDIES
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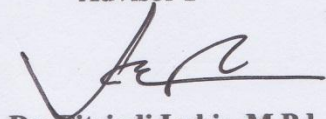
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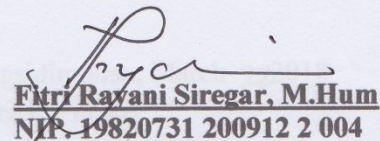
Wassalamu'alaikum Wr.Wb.

Advisor I



Dr. Fitriadi Lubis, M.Pd
NIP.19620917 199203 1 002

Advisor II



Fitri Raxani Siregar, M.Hum
NIP.19820731 200912 2 004

DECLARATION OF SELF THESIS COMPLETION

The name who signed here:

Name : Masrida Nasution
Registration Number : 13 340 0060
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Reg. Num. 13 340 0060

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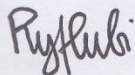
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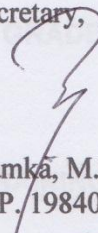
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Faculty/ Department : Tarbiyah and Teacher Training Faculty/ English Education Department
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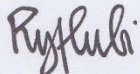
Rayendriani Fahmei Lubis, M.Ag.
NIP. 19710510 200003 2 001

Secretary,

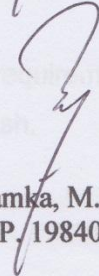


Hamka, M.Hum
NIP. 19840815 200912 1 005

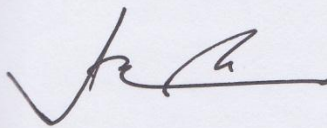
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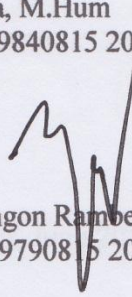
Rayendriani Fahmei Lubis, M.Ag.
NIP. 19710510 200003 2 001



Hamka, M.Hum
NIP. 19840815 200912 1 005



Dr. Fitriadi Lubis, M. Pd
NIP. 19620917 199203 1 002



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

Proposed :

Place : Padangsidempuan
Date : Mei, 22th 2018
Time : 13.30 Wib - Finish
Result/ Mark : 76.37 (B)
IPK : 3.23
Predicate : Very Good

Dr. Lelya Lubis, M. Ag
NIP. 19720829 200003 2 002



RELIGION MINISTRY REPUBLIC OF INDONESIA
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 CRITICAL READING STRATEGIES ON
READING REPORT TEXT AT GRADE XI SMA N 1 SIABU**
Written By : MASRIDA NASUTION
Reg. Number : 13 340 0060
Faculty/Department : TARBIYAH AND TEACHER TRAINING FACULTY/TBI-2

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

Padangsidempuan, 06 June 2018

Dean of Tarbiyah



Dr. Lelya Hilda, M.Si
NIP.19720920 200003 2 002

ACKNOWLEDGEMENT

بسم الله الرحمن الرحيم

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 the thesis entitled “**The Effect of Critical Reading Strategies On Reading Report Text At Grade XI SMA Negeri 1 Siabu** ”. Besides, shalawat and salam be upon to the prophet Muhammad SAW that has brought the human **from** the darkness era into the lightness era.

It is a pleasure to acknowledgement the help and contribution to all lecturers, institution, family and friends who have contributed in different ways. Therefore, in this chance the writer would like to express the deepest gratitude to the following people:

1. Dr. Fitriadi Lubis, M.Pd., as my advisor I and Mrs. Fitri Rayani Siregar, M.Hum., as my advisor II who had given researcher suggestions, ideas, criticism, and guidance in writing this Thesis.
2. Mr. Dr. H. Ibrahim Siregar, MCL., as the Rector of State Institute for Islamic Studies (IAIN) Padangsidempuan.
3. Mrs. Dr. Lelya Hilda, M.Si., as the Dean of Tarbiyah and Teacher Training Faculty in IAIN Padangsidempuan.
4. Special thanks are also due to Mrs. Rayendriani Fahmei Lubis, M.Ag., as the Leader of English Education Department.
5. All lectures and all the academic cavities of IAIN Padangsidempuan who had given so much knowledge and helped during I studied in this beloved instituted.
6. Mrs. Yusri Fahmi, S.Ag, M.Hum., as the Chief of IAIN Padangsidempuan Library and his staff for their cooperative and permission to use many books of the library.

7. Mrs. Yusri annur Lubis, S.Pd., who have given information related to this research, helped me in doing the research, and given me motivation.
8. Mrs. Erna Ikhawati M.Pd., as my beloved Academic Advisor who gladly supported and counseled me till finishing this thesis.
9. My beloved parents (Pardomuan Nasution and Dame Martiana), and my beloved sisters (Lailah Saroh Nst, Wahyuni Nasution, Rahma Yani Nst) and my beloved young brother (Rahmad pauzi Nst, Ahmad Paisal Nst) who always give me motivation, attention, supporting, praying, and give me spirit to complete this Thesis and always help me to solve my problems. Thank you so much my parents, sisters and my brother.
10. My Beloved friends at classmate, boarding house and all of my friends in IAIN Padangsidimpuan, good luck for you then all of the people who have helped me to finish my study that I can't mention one by one.

May Allah, the Almighty bless them all, Amiin.

Padangsidimpuan, Desember, 2017
Yours Truly

MASRIDA NASUTION
Reg. Number. 13 340 0060

Name : MASRIDA NASUTION
Reg. Number : 13 340 0060
Faculty/ Department : ENGLISH EDUCATION DEPARTMENT/TBI-2
Title of Thesis : THE EFFECT OF CRITICAL READING STRATEGIES ON READING REPORT TEXT AT GRADE XI SMA NEGERI 1 SIABU.

ABSTRACT

This research focus about the effect of Critical Reading Strategies on Reading Report Text at Grade XI SMAN 1 Siabu. The problems of this research were many students in class still did not reach the target of Minimum Mastery Criterion (KKM) it was 75 score. Students reading comprehension especially reading report text does not fulfill to get comprehension since they were done have any chance to share information while reading activity. The purpose of this research was to examine the effect of Critical Reading on Reading Report Text.

This research employed Experimental research. The population of this research was the eleventh grade IPA SMAN 1 Siabu. The total of population were three classes. Then, the sample of the research were two classes experimental class (XI IPA 3) and control class (XI IPA 2). It was taken randomly after conducting Normality and Homogeneity test. To collect the data, research used test for measuring students' reading report text. To analysis the data, the researcher use t- test.

Based on the result of the research, researcher showed the description of the data was found that the result of experimental class was higher than control class ($81.91 > 71.87$), and the score of t_{count} was bigger than t_{table} ($13.38 > 1.678$). It means that the hypothesis alternative (H_a) was accepted. It was concluded that there was the significant effect of Critical Reading Strategies on Reading Report Text at grade XI SMAN 1 Siabu.

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CHAPTER I

INTRODUCTION

A. Background of the Problem

English is one of international languages in the world. It is studied by students from elementary school up to universities level. By speaking English everyone will be able communicate to international community in globalization era, also make good relation with another country, and remember that good communication will make a good relation. Everyone must communicate well by using English in this era. English that is used to communicate in many aspects such as in politics, economy, education, technology, science, and culture.

In the Senior High School Curriculum, English is one of the subject that should be studied, there are four skills must be mastered by the students, namely; listening, speaking, reading and writing. Reading is one of the four language skill that is used to grasp the ideas that presented to get the information, reading is important to be learned and mastered by human. Reading is a way to get information from something that was written, reading is an interaction between readers and the text, reading holds important matter in teaching English.

The basic competence that should be achieved in the reading subject is the students must give respond the meaning and rhetorical stages of essay using a variety of write language accurately, fluently and acceptable in the context of daily life and to use science in text form; report, narrative, analytical exposition.

Reading report text is activity to get factual information or specific information, to find the purpose of reading text, to find implicit information, to identify topic, supporting idea, make reference, to find synonym or antonym, the meaning of word, phrase or sentence.

The important of reading report text, Firstly, reading report text help students' education to reinforce grammar, vocabulary, and functional language. Makes themselves understood, to get information from document, information classify and describe the phenomena of our world. Information reports are reading about living things like plants and animals, societies, land masses, mathematical operation, historical ears weather patterns and non-living things like phones, bikes or oceans. Secondly, the students are leaded to share information based on the text. It can be said that the students are rarely guided to work in group to share information about the natural or social phenomena with their friends.

Teaching reading is an activity done by the teacher in guiding students to comprehension reading text. In this activity the teacher will apply some role in teaching reading such as to give material, text, guiding the students to identify topic, the students to grasp the information in the text, analyzing main ideas, and understanding vocabulary. This activity generally has purpose to make the students getting the meaning of all information in reading text, the activity will be considered achieving the aim if the students figure out all information dealing with the element of reading report text. There are some ways to increase students report text, the Mrs. Yusri Annur Lubis as English teacher of SMAN 1 Siabu had made

effort to increase students report text, through giving task to students, to translate a text, answer reading question, discussion, and memorize at least ten words in a week. So, from the teacher effort, students are hoped to able comprehending of report text well.

Nevertheless the facts indicated that many students in class still did not reach the target of Minimum Mastery Criterion (KKM) it was 75 score. However, the data found at grade XI SMAN 1 Siabu reveals the average of students reading comprehension is 65-70. In brief, students' reading comprehension especially reading report text does not fulfill the expectation. Based on the researcher interviewed with English teacher at SMAN 1 Siabu that many students are difficult to get comprehension since they were done have any chance to share information while reading activity.¹

There are some factors in students reading report text, such as; media, materials, motivation, students interested, intelligent and strategy. It is very influence to students reading report text but students cannot comprehend the text such as report text, because students only did reading activity to complete the task from the teacher did not to grasp the information of the text. The students are passive in the class, it caused the strategy of teaching is not suitable. That strategy is a factor of reading.

¹Yusri Annur Lubis, *Private interview to the English Teacher of SMAN 1 Siabu*. (Siabu: SMAN 1, September 02th, 2016 on 10 pm).

Strategy is the tool for active, self directed involvement that is necessary for developing communicative ability. Strategy is not single event, but rather a creative sequence of events that learners actively use. Then, strategy is a method or plan chosen to bring about a desired future, such as achievement of a goal or solution to a problem.

There are a lot of strategies in teaching reading like skimming, scanning, silent reading, loud reading, SQ3R (Survey, Read, Recite, And Review), P2R (Preview, Read, Review) Reading Faster, Extensive Reading, Reciprocal Teaching Strategy, and Critical Reading Strategies. The researcher will apply Critical Reading Strategies.

Critical Reading Strategies is that readers must think about and react what they read and get a writers' full meaning, readers should go beyond what the authors say and able to consider what they intend, in other side, they need to evaluate or react critically to what the authors say.² Critical Reading is a vital part of the writing process. In fact, reading and writing processes are like. Some have expanded the meaning of "text" to include anything that can be read.³ The text here concluded to the genre of the text and one of kind of the text is report text. It might help students to comprehend the text well.

² Kathleen T. McWhorter, *Efficient and Flexible Reading* (Harper Collins Publisher, 1992), p. 377.

³ Colorado State University, In Article of *Writing@CSU Writing Guide Critical Reading*, [Http://writing.colostate.edu/guides/guide.cfm?guideid=31](http://writing.colostate.edu/guides/guide.cfm?guideid=31). Accessed on 20th January 2017at 11.05 a.m. p.1

Based on the explanation above, the researcher interest in conducting experimental research of which purpose to solve student's problem with title "*The Effect of Critical Reading Strategies on Reading Repot Text at Grade XI SMAN 1 Siabu*".

B. The Identification of the Problem

Reading report text is a text that to get information in report text, such as; to get factual information or specific information, general classification and description. Reading report text is one of aspect ability for students for master English in report text.

There are some factors that give effect on reading report text. such as; media, materials, motivation, students interested, intelligent and strategy. Strategy is a plan chosen to bring about a desired future, such as achievement of a goal or solution to a problem. It means that strategy is one of the factors that affect reading report text. The strategy means here is critical reading strategy.

C. The Limitation of the Problem

There are many strategies in teaching reading report text, such us; skimming, scanning, silent reading, loud reading, SQ3R (Survey, Read, Recite, And Review), P2R (Preview, Read, Review) Reading Faster, Extensive Reading, Reciprocal Teaching Strategy, and Critical Reading Strategies.

Here the researcher does not discuss all strategies. The researchers just choose one strategy that is critical reading strategies. The researcher has reason why researcher used critical reading strategies because this strategy is good and

easy to understanding the report text that their read and make a learning become fun.

D. The Formulation of the Problem

The formulations of the problem in this research were:

1. How was the students' reading report text ability without using Critical Reading Strategies at grade XI SMA N 1 Siabu?
2. How was the students' reading report text ability after using Critical Reading Strategies at grade XI SMA N 1 Siabu?
3. Was there an significant effect using Critical Reading Strategies on reading report text at grade XI SMA N 1 Siabu?

E. The Purpose of the Research

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

1. To describe the students' reading report text ability without using Critical Reading Strategies at grade XI SMA N 1 Siabu.
2. To describe the students' reading report text ability after using Critical Reading Strategies at grade XI SMA N 1 Siabu.
3. To examine whether there is or there is not an significant effect of using Critical Reading Strategies on Reading Report text at grade XI SMA N 1 Siabu.

F. The Significances of the Research

The research expert to be significances as follows:

1. For the headmaster of SMAN 1 Siabu to give the direction to the English teacher about the critical reading strategies to learn reading report text.
2. For the English teachers as an input in teaching reading skill, especially teaching reading report text.
3. For this research is hopes to help the other researchers who will conduct further research in the same topic.

G. The Systematic of the Thesis

The systematic of this research divide into five chapters, and each chapter consist of many sub chapter with detail as follows:

In chapter one, consist of background of the problem, identification of the problem, limitation of the problem, formulation of the problem, research objectives, research significances, definition of operational variable.

In chapter two, consist of theoretical description, which consist sub chapter such as theoretical review consist of definition critical reading strategies, genre based language teaching and reading comprehension. Then review of related finding, and conceptual framework, hypothesis.

In chapter three, consist of place and time of the research, research design, population and sample, definition of operational variable, instruments of data collecting, procedure of research, testing of instrument, data collecting, and data analysis.

In chapter four, consist of the result of the research which consist of description of the data, the testing of hypothesis, the result of research. The last is chapter five, consist of conclusion and suggestion.

CHAPTER II

LITERATURE REVIEW

A. Theoretical Description

1. Reading Report Text

a. Definition of Reading Report Text

Reading is the ability to understand information presented in written form. It is the process of getting meaning from printed. According to Goodman, “reading is interaction between thought and language and base evaluation of success in comprehension on to extent to which the reader’s reconstruct message agrees with the writers in tended message”.¹

Reading is complex process which takes part of useful of good and poor ability.² According to H. Douglas Brown “reading is primarily matter of developing appropriate, efficient comprehension strategies”.³ From definition above can be conclude, reading is to getting information from the writer message, text printed or from the text.

Report text is a text which presents information about something, as it is. It is as result of systematic observation and analysis.⁴ According to Paterson “report text is a text that presents information in a structured

¹ Wayne Otto, *How to Teach Reading*, (America: Addisen. Wesley Publishing company, 1979), p. 161.

² Golden Wain wringht, *Speed Reading Better Recalling*, (Jakarta: Gramedia, 2007), p. 42.

³ H. douglas Brown, *Teaching by Principles an Interactive Approach to Language Paedagig*, (New Jersay: Prentice Hall, Inc Englewoods Cliffs, 1994), p. 291.

⁴ Puguhyulianto, *Report Text*, Available at <https://www.google.co.id/amp/s/pakguguh.wordpress.com/2011/08/27/report-text>, Accesses On 28 September 2017 at 15. 03 p.m.

manner about a subject by giving facts”.⁵ According to Pardiyono “report text is a text that gives general information about something”.⁶

According to Otong Setiawan Djuhari “report text is a text of pure result perception, research, observation, or study about object, animal, people or place”.⁷ From definition above can be conclude, reading report text is to getting information about something, like people, plants, and animals, that giving facts.

b. The Purpose of Reading Report Text

The purposes of reading report text are to get and find information include content and meaning of the text based on the purpose. William Grabe says that the purpose of reading report text as follows:

- 1) Reading to search for information (scanning and skimming)
- 2) Reading for quick understanding (skimming)
- 3) Reading to learn
- 4) Reading to integrate information
- 5) Reading to evaluate, critique, and use information
- 6) Reading for general comprehension (in many cases, reading for interest or reading to entertain).⁸

Besides that, Henry Guntur Tarigan says that the purposes of reading report text as follows:

- 1) Reading is for identifying important information
- 2) Reading is for main ideas
- 3) Reading is for finding the specific information
- 4) Reading is for underlining the important information

⁵ Heater Peterson, *Text type book*, (Campbell: Campbell High School, 2015), p. 26.

⁶ Pardiyono, *Pasti Bisa Teachning Genre Based Writing* (Yogyakarta : Andi Offset, 2007),p. 271

⁷ Otong Setiawan Djuharie, *Genre* (Bandung: Yrama Widya, 2007), p. 26.

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

- 5) Reading is to classify the difficult word
- 6) Reading is to evaluate
- 7) Reading is to compare or contrast.⁹

Based on explain above, the researcher concluded the purposes of reading report text divided into seven importance, they are reading to search for information (scanning and skimming), reading is for main ideas, reading to learn, reading to evaluate, critique, and use information, reading is to classify the difficult word, reading is to compare or contrast and reading for general comprehension.

The purpose of reading report text at Senior High School Negeri 1 Siabu based on the curriculum are identifying the structure of a text, identifying topic of the text, and identifying information from the text.¹⁰

c. The Process of Reading Report Text

Reading report text is an important skill in academic achievement. However, the readers also have to know what their purpose is in reading a text, the strategy for accomplishing that purposes, and how to retain the information. So, before accomplishing the readers' purpose, they should to know how the process of reading comprehension. The process of reading report text can be divided into three categories, they are:

- 1) Bottom-up models
- 2) Top-down models

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

¹⁰ Syllabus of English, (Siabu: SMA Negeri 1 Siabu, 2016/2017 Academic Year).

3) Interactive models¹¹

Besides that, William Grabe also says that the process of reading report text can be divided into three categorized, they are:

- 1) Bottom up models
- 2) Top-down models
- 3) Interactive models¹²

From the explanation above there are three categories as the process of reading report text, they are Bottom-up models as the models traditionally depict reading as a mechanical process in which the readers decodes the on going text letter by letter, word by word, sentence by sentence. Top-down models as the models assume that the reader actively controls the comprehension process. Directed by reader goals, expectations, and strategic processing. Then, interactive models as the models are the typical compromise solution. The basic assumption is that useful elements from bottom up and top down views can be combined in some massively interactive set of processes.

So, it can be concluded that reading report text is a process to understand of written text or printed material. Which is the process of

¹¹ David Nunan, *Practical English Language Teaching*, (New York: McGraw Hill inc, 2003), p. 70-73.

¹² William Grabe, *Reading in a Second Language*, (Cambridge: Cambridge University Press), p. 89.

reading use some factors, such as; intelligence, skill in language, background knowledge, and others.

d. The Technique of Reading Report Text

Technique is a way of carrying out a particular task, especially the execution or performance of an artistic work or a scientific procedure.

According to Karl McDonald, there are four technique of reading. There are:

1. Skimming is sometimes referred to as gist reading. Skimming may help in order to know what the text is about at its most basic level. You might typically do this with a magazine or newspaper and would help you mentally and quickly shortlist those articles which you might consider for a deeper read. You might typically skim to search for a name in a telephone directory. You can reach a speed count of even 700 words per minute if you train yourself well in this particular method. Comprehension is of course very low and understanding of overall content very superficial.
2. Scanning is involves getting your eyes to quickly scuttle across sentence and is used to get just a simple piece of information. Interestingly, research has concluded reading off a computer screen actually inhibits the pathways to effective scanning and thus, reading of paper is far more conducive to speedy comprehension of text.
3. Intensive reading is a list the chronology of events in a long passage, that will need to read it intensively. This type of reading has indeed beneficial to language learners as it help to understand vocabulary by deducing the meaning of words in context. It moreover, helps with retention of information for long periods of time and knowledge resulting from intensive reading persists in your long term memory.
4. Extensive reading involves reading for pleasure. Because there is an element of enjoyment in extensive reading it is unlikely that students will undertake extensive reading of a text they do not like. It also requires a fluid decoding and assimilation of the text and content in front of you. If the text is difficult and you stop every

few minutes to figure out what is being said or to look up new word in the dictionary, you are breaking your concentration and diverting your thoughts.¹³

According to Oregon, there are techniques of reading. There are:

1. Orientation (*Orientierung*) is the goal prereading preparation
2. Skimming is the goal to get the general meaning (gist) of the story without trying to decode exactly what each word means.
3. Scanning is the goal to extract specific pieces of information.
4. Decoding is the goal to thorough comprehension.
5. Global Understanding is the goal to understand and critically evaluate the “why” of the text.¹⁴

From explanation above, there are four the technique of reading report text. There are: extensive reading, intensive reading, decoding and global understanding. Extensive reading is involves that reading long texts or large quantities for general understanding, with the intention of enjoying the text, intensive reading is involves that reading short text, decoding is involves that reading the text with slowly and carefully analyzing each word unit, and global understanding is involves to understand and critically evaluate the “why” of the text that have done read.

¹³ Karl McDonald, *Different Reading Techniques and When to Use Them*, Available at <http://www.howtolearn.com/20/12/08/different-reading-techniques-and-when-to-use-them>. Accessed on 11th September 2017 at 09. 27 a.m.

¹⁴ Oregon, *Reading Technique: Five Step Approach*, Available at <https://oregonstate.edu/instruct/ger341/reading2.htm>, Accessed on 11th September 2017 at 09.34 a.m.

e. The Structure Element of Reading Report Text

1. Social Function

According to Pardiyono “social function is telling what the aim of the text”.¹⁵ The purpose of a report text is to present information about something generally. It generally describes the way things are with reference to arrange of natural, manmade and social phenomenon in our environment, such as: mammals, the planets, rocks, plants, countries of region, cultures, transportations, and so on.¹⁶ So, it can be concluded social function is to present information about something to the reader.

2. Generic Structure

According to “Otong Setiawan Djuharie says, “*generic structure mengacu pada alur yang tersaji dalam text atau tahapan – tahapan pemetaan gagasan/ informasi teks*”.¹⁷ It means generic structure is the structure of the text contains idea or information of the text.

According to Sanggam Siahaan and Kisno Shinoda “generic structure is the culture of the native speakers of a language to select and use the linguistic units of their language in the production and

¹⁵ Pardiyono, *Pasti Bisa Teachning Genre Based Writing, Op.Cit.*, p.272

¹⁶ Suryaluphani4, *Report Text*, Available at <http://suryaluphani4.blogspot.co.id/2012/12/report-text.html> , Accessed on 24th March 2017 at 11.02 a.m.

¹⁷ Otong Setiawan Djuharie, *Genre, Log.Cit.*, p. 26.

interpretation a text as the tool of an effective and efficient communication”.¹⁸ Based on explanation above, it can be concluded generic structure is the structure of the text consist of important information.

Then generic structure of report refers to general statements which explain reported subject, additional information, and its classification. It means that the generic structures of the report text are:

a) General Classification

As Pardiyono says “general classification is a statement related to the topic in which have been proud in title:.”¹⁹ While, Linda Gerot and Peter Wignell says “general classification tells what the phenomenon under discussion”.²⁰

General classification stating classification of general aspect of thing; animal, public, place, plant, etc. which will be discussed in general.²¹ Starting classification of general aspect of thing; animal, public place, and plant, which will be describe in general. So, general classification is statement that tells about the

¹⁸ Sanggam Siahaan and Kisno Shinoda, *Generic Text Structure*, (Yogyakarta : Graha 2008), p. 26.

¹⁹ Pardiyono, *Pasti Bisa Teachning Genre Based Writing*, *Op.Cit.*, p.276.

²⁰ Linda Gerot and Peter Wignell, *Making Sense of Functional Grammar* (Sydney: Gerd stabler, 1994), p .56.

²¹ Abd Salam, *Genre: Report Text*, available at <http://Abd Salam reporttext.blogspot.com>. Accessed on 24th March 2017at 10. 17 a.m.

animal, plant, place, public or the phenomenon that will be discussion.

b) Description

According to Pardiyono “description is a part gives describing of the things which will be discussion in detail”.²² Description is describing the thing which will be discussed in detail part of part, customs or deed for living creature and usage for materials.²³ An information report is a piece of text that information presents information about a subject. An information report usually contains fact about the subject, a description and information on this parts, habit or behavior and qualities.

From explanation above, description is a part that describing animal, plant, place, public or the phenomenon.

3. Lexicogrammatical Features

A lexicogrammatical features is the rule in arranging a text. It is the domain language feature that is used in the text such as focus on general noun, use of relational process, and use simple present tense.

According to Otong Satiawan Djuharie said, “*Lexicogrammatical identik dengan syntax (dalam tata bahasa tradisional). Lexicogrammatical mengacu pada struktur tertentu yang*

²² Pardiyono, *Pasti Bisa Teachning Genre Based Writing*, Op.Cit., p. 76.

²³ Abd Salam, *Genre: Report Text*, available at <http://Abd Salam reporttext.blogspot.com>. Accessed on 24th March 2017 at 10.17 a.m.

digunakan untuk mengungkapkan makna tertentu”.²⁴ It means that lexicogrammatical is identical syntax in traditional Grammar and refers to certain structure which is used to express certain meaning.

A Ghani Johan also argues, “*Lexicogrammatical adalah tata aturan penulis suatu wacana berdasarkan tata bahasa Inggris yang baik*”.²⁵ It means lexicogrammatical is the Grammar of the rules of the authors of a discourse based on good English Grammar.

From definition above can be concluded, lexicogrammatical is traditional Grammar of the rule of the authors in the text.

a) General Noun

Noun is the name of person, place or thing.²⁶ Hotben Lingga D says, *kata benda adalah kata yang digunakan untuk menamai seseorang, tempat, benda, sifat, ide, atau perbuatan. Kata benda adalah kata yang digunakan sebagai nama orang, binatang, benda atau nama tempat*.²⁷ It means that noun is the word that is used to accompany someone place, thing, attitude, idea or Action. Noun is the word that used as the name of someone, animal, thing or place.

²⁴ Oton Setiawan Djuharie, *Genre, Op.Cit.*, p. 28.

²⁵ A Ghani Johan, *Reading and Translation*, (Yogyakarta: Pustaka Pelajar, 2006), p. 5.

²⁶ Joyce Armstrong Carrel, *Writing and Grammar*, (Texas: Prentice Hall, 2001), p.68

²⁷ Hotben Lingga D, *Intisari Tata Bahasa Inggris Kontemporer*, (Jakarta: Kesaint Blanc, 2003), p. 7.

Bases on definition above, can be concluded noun is the word the refers to a person, place, and thing.

b) Use of Relational Process

Relasional process involve state of being (including having). They can be classified. According to Linda Gerot and Peter Wingnell “relational process is whether they are being used to identify something”.²⁸ *Relational process merujuk pada kata kerja yang dapat menggambarkan participant atau mengisyaratkan kepemilikan lazimnya relational process terwujudkan dengan penggunaan linking verbs.*²⁹ It means relasional process is refers to a verb that can be describe the participant or the ownership of relasional process is realized by the use of linking verbs.

From definition above, it can be conclude relational process is refer to verb that can be describe the participant and realized linking verbs.

1) Use of Simple Present Tense

Simple Present Tense is used to talk habitual Action.

Michael Payle and Mary Ellen says, “this tense is usually not

²⁸ Linda Gerot and Peter Wignell, *Op.Cit.*, p. 67.

²⁹ Otong Setiawan Djuharie, *Op.Cit.*, p. 14

used to indicate present time.³⁰ The present tense is tense for description, definition, and statements of general truth.

According to Homby “Simple Present Tense is used to describe the present tense of in active verb that is formed without an auxiliary verb.”³¹ Jhon says, “Simple Present Tense is expressed that an Action took Place at present in simple form or habitual Action was not relate whith time.”³²

So, it can be concluded that simple present tense was used to show that an Action took Places at present, general truth or an Action was not relate with time. As known that the simple present tense is when a verb is used for event situations in present time.

f. The Example of Reading Report Text

What Are Clouds?

Cloud are water vapour condensed into minute water particles which floats in masses in the atmosphere. There are the main types of clouds, classified according to the height at which they occur. Clouds were first named by the English chemist Luke Howard in 1803, a pioneer of methodology. The types he named were cirrus, cumulus and stratus.

Cirrus cloud are usually high and appear as delicate whitish threads against a blue sky. Because of their height, they are composed of ice crystals and not of water droplest.

³⁰ Michael A Playle and Marry Ellen, *TOEFL* (India: Willey Dreamleach, 2002), p. 57.

³¹ A.S Homby, *Oxford Advanced Learner's Dictionary*, (New York: Oxford University Press, 2005), p. 1187.

³² JhonS.Hartantoet.eL Accurate, *Brief and Clear English Grammar*, (Delhi: Book Place, 2003), p. 2012

Cumulus clouds typically have a rounded appearance and sometimes reach 20.000 feet into the sky. They are often characterized by having an anvil shape in the center of the cloud.

Stratus clouds are layers of cloud which can form at any height and tend to cover the whole sky. Often, the sky is overcast and the sun is probably completely concealed.

This is the basic grouping of types of clouds. The ever-changing cloud formations are an important aspect of meteorology and clouds can be further described in many ways.

Based on the example of the text, the structural element of report text are:

1. Social Function : To Inform us about cloud

2. Generic Structure :

General Classification	Clouds are water vapour condensed into minute water particles which float in messes i the atmosphere. Three are main types of clouds, classified according to the heght at which they occur. Cloud Wet First named by the english chemist luke Howard in 1803, a Pioneer of meteorologi. The types he named Wet cirrus, cumulus and stratus.
Description	<p>a) Cirrus clouds are usually high and appear as delicate whitish threads against a blue sky. Because of their height, they are somposed of ice crystals and not of water droplets.</p> <p>b) Cumulus clouds typically have a rounded appearance and sometimes reach 20.000 feet into the sky. They are often characterized by having an anvil shape in the center of the cloud.</p> <p>c) Stratus clouds are layers of cloud which caan form at any height and tend to cover the whole sky. Often, the sky is overcast and the suni s propably completely conceated</p>
Lexicogrammatical Features	<p>a) General Noun: clouds</p> <p>b) Use Relatinal Process: Classified, because,</p> <p>c) Use Simple Present Tense: Cirrus clouds are usually high and appear.³³</p>

³³ F.A. Soeprapoto & Mariana Darwis, *Linked to The World 2 English for Senior High SchoolI*, (Jakarta: Yudhistira, 2006), p. 8.

g. The Assessment of Reading Report Text

Assessments require planning and organization. Assessment is a tool to measure how far the students ability and comprehension of the material. In assessing reading comprehension, there are some indicators. There are: Identifying topic sentence, Identifying main idea, Identifying important information, Identifying vocabulary, Identifying grammar, Identifying conclusion.³⁴

According to Arthur Hughes, there are some indicators in reading. There are: Identify the topic sentence, Identify the main idea, Identify kind of the text, Identify vocabulary, Identify grammar, Identify important information, Identify conclusion, Distinguishing fact and opinion³⁵

Based on the explanation above it can be concluded the indicator of reading. There are: Identifying topic sentence, Identifying main idea, Identifying important information, Identifying vocabulary, Identifying grammar, Identifying conclusion.

There are some techniques to test reading. Such as: multiple choice, short answer questions, fill-in-the-blank and so on, to measure students reading. But, in this research the researcher choose multiple choice questions.

³⁴ J. Michael O, Malley and Lorraine Valdez Pierce, *Autentic Assessment for English Language Learners*, (America: Addision-Wesley Publishing Company, 1996), p. 98.

³⁵ Athur Hughes, *Testing for Language Teacher second edition*, (New York: Cambrige University Press, 2003), p. 139.

A multiple choice question test item is usually set out in such a way that 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 each item.³⁶

So, in advantages of multiple choice test are the answer have a clear because just there is one the answer of the question. Save a time to correct, and easy to give a score of students based on true or false answer, whereas the disadvantages difficult to make a multiple choice answering and generally students just make a guess to answer the question.

2. Critical Reading Strategies

a. Definition of Critical Reading Strategies

There are four skills in English, namely: listening, speaking, reading and writing. According to McWhorter, "Critical Reading is that readers must think about and react what they read and get a writers' full meaning, readers should go beyond what the authors say and able to consider what they intend, in other side, they need to evaluate or react critically to what the authors say".³⁷

³⁶ Cyril J. Weir, *Communicative language Testing*, (New York: Prentice Hall, 1990), p. 43.

³⁷ Kathleen T. McWhorter, *Efficient and Flexible Reading* (Harper Collins Publisher, 1992), p. 377.

According to Albert in Gardon Wainwright, “Critical Reading is the kind of reading that is done effectively, evaluative, analytic, deeply, and do not just looking for the mistakes only”.³⁸ As McDonald (as cited in Tomasek), says “Critical Reading as an alternative way of reading that goes beyond the “typical approach to reading such as information processing or personal response”.³⁹

According to Linda Jeffries and Beatrice S. Mikulecky, “Critical Reading refer to critical reading, namely Evaluating web sites, Evaluating Text, Determining the purpose, Recognizing point of view, Recognizing bias”.⁴⁰ As Axelrod & Cooper, says “Critical Reading Strategies refer to, Annotating, Previewing, Scan & Skimming, Facts vs. Opinions, Drawing Conclusions, Monitoring One’s Own Comprehension, Summary, Paraphrase, Synthesizing and Questioning that proposed. Most of critical reading strategies are often based on readers’ background knowledge, what readers know from life experiences or from reading other texts”.⁴¹

Besed on some definition above, it conclude that Critical Reading strategies is an alternative way of reading that readers must think about their

³⁸ Gardon Wainwright. *Speed Reading Better Recalling*, (Jakarta: Gramedia Pustaka Utama, 2007), p. 89.

³⁹ M. Khabiri dan M. Pakzad, in McDonald. *The Effect of Teaching Critical Reading Strategies on EFL Learners’ Vocabulary Retention*, vol. 4 no. 1, p. 78.

⁴⁰ Beatrice s. Mikulecky and Linda Jeffries, *Advanced Reading Power Extensive Reading, Vocabulary Building, Comprehension Skill, Reading Faster*, (Pearson Longman 2007), p. 216.

⁴¹ Axelrod and Cooper, in Moh Mohammad Ali Nasrollahi, Pramela Kris N.Krishnasamy and Noorizah Mohd Noor Journal, “*Identifying the Critical Reading Strategies Employed by Iranian EFL Learners*,” Volume 5, No. 2223-4934 E and 2227-393X Print 2015, p. 360.

read to get information that author says, such as: making inference, facts, opinions, determining the purpose and recognizing bias.

b. The Principles of Critical Reading Strategies

There are four principles of critical reading strategies. They are:

1. Critical reading represents a challenge to the skill-based orientation of many cognitive psychological models which emphasise to building of discrete kinds of abilities based- albeit often implicitly-on some supposed hierarchy of difficulty.
2. Critical reading does not see non-native speaker readers in their reading of authentic, non-pedagogic text, as necessarily disadvantaged-on the contrary.
3. Critical reading does not privilege an author's communicative intent but is concerned with effect.
4. Critical readers do not just comment metacognitively, showing awareness of the cognitive strategies they make use of, but also metacritically.⁴²

According to Kurland's, there are principles of critical reading strategies:

1. If we think about it, we have been told a lot in general about how to approach reading a text, and surprisingly little about how exactly to find meaning in a text.
2. The language we learn first, the spoken language, remains our base throughout life. We use the model of spoken communication as the basis for much of our inferences when we read.
3. Critical reading thus relies on an analysis of choices of content language, and structure.
4. The choice of content both determines and reflects the overall perspective and understanding.

⁴² Chatherine Wallace, *Critical Reading in Language Education*, (published: Palgrave Macmillan, 2003)., p. 42.

5. Probably the single greatest key to critical reading is the realization that critical reading is not concerned with what the examples are, as with what the examples are examples of.
6. Just as authors must choose what to say, they must choose how to say it.
7. To make sense of the whole, we try to break it into more manageable, and hopefully more meaningful, parts,
8. Much what we understand-whether when listening or reading-we understand indirectly, by inference.
9. Reading is an act of inquiry, a search for meaning.
10. Readers draw on prior knowledge and past experience to infer the appropriate meaning.⁴³

The quotations above show that there are ten principles for teaching critical reading strategies, they are critical reading represents a challenge to the skill-based orientation of many cognitive psychological models which emphasise to building of discrete kinds of abilities based- albeit often implicitly-on some supposed hierarchy of difficulty, critical reading does not see non-native speaker readers in their reading of authentic, non-pedagogic text, as necessarily disadvantaged-on the contrary, critical reading does not privilege an author's communicative intent but is concerned with effect, critical readers do not just comment metacognitively, showing awareness of the cognitive strategies they make use of, but also metacritically, critical reading thus relies on an analysis of choices of content language, and structure, critical reading is the realization that critical reading is not concerned with what the examples are, as with what the examples are

⁴³ Dan Kurland's, *Principles of Critical Reading and Writing*, Available at <http://www.Criticalreading.com/principle.htm>. Access on 11th September 2017 at 09.50 a.m.

example of, just as authors must choose, what to say, they must choose how to say it, to make sense of the whole, reading is an act of inquiry, a search for meaning, readers draw on prior knowledge and past experience to infer the appropriate meaning.

c. The Advantages and Disadvantages of Critical reading Strategies

Critical reading strategies is one of the strategy in reading. The strategies have advantages, there are:

1. Increased comprehension and idea generation
2. Increased retention
3. Elimination of unnecessary and timely processes (such as re-reading a text at exam time or re-reading to locate information)
4. Improved analysis of materials.⁴⁴

According to Maddy Koz, the advantages of critical reading strategies are:

1. Discover authors' arguments to understand the text.
2. Helps to understand more difficult reading assignment and to obtain a better understanding for what was read.
3. Helps to make opinions and assumptions based on what is read.
4. Helps base judgements on evidence.⁴⁵

From explanation above, the advantages of critical reading are: increase comprehension and idea, discover authors' arguments to understand the text, to help make opinions and improve analysis of materials.

⁴⁴Messay, Critical Reading: The Benefits, Available at, <http://owll.massey.ac.nz/study-skills/critical-reading-the-benefits-.php>, Accessed on 11th September 2017 at 10.10 a.m.

⁴⁵ Maddy Koz, *Benefits of Critical Reading*, Available at <http://prezi.com/pd8wld9kpt4e/benefits-of-critical-reading/>, Accessed on 11th September 2017 at 10.03.

According to Catherine Wallace, the disadvantages of critical reading strategies are:

1. Critical reading is not possible.
2. Critical reading is not only fundamentally unfeasible.
3. Critical reading is redundant.⁴⁶

According to Micah McDunnigan, the disadvantage of critical reading is Critical reading is not a fast process.⁴⁷

From the quotation above the disadvantages of critical reading are: critical reading is not a fast process it means used a long time, critical reading is not only fundamentally unfeasible it means to engage in it are unethical. Critical reading is redundant it means to see the way text position.

d. Steps of Critical Reading Strategies

There are some steps that we can be used in teaching and learning process. According to Salisbury, the steps of critical reading strategies. They are:

1. Previewing
2. Contextualizing
3. Questioning to understand and remember
4. Reflecting on challenges to your beliefs and values
5. Outlining and summarizing
6. Evaluating an argument

⁴⁶ Chatherine Wallace, *Critical Reading in Language Education*, Op.Cit., p. 45.

⁴⁷ Micah McDunnigan, *Critical Reading: The Disadvantages*, Available at <http://writing.umn.edu/sws/quickhelp/process/disadvantages/reading.html>. Accessed on 11th September 2017 at 10. 27 a.m.

7. Comparing and contrasting related reading.⁴⁸

In another source, said that are three steps of critical reading strategies.

They are :

1. Reading with a purpose
2. Pre-reading and reading strategies
3. Summarizing information.⁴⁹

Based on explanation above, the researcher concluded they are steps for critical reading strategies. They are:

1) Previewing

it means to learning a text before really reading, to get a sense of what the text is about and how it is organized before reading it closely, to grasp a certain message, to find important detail, to answer a specific question, to evaluate what you are reading, to apply what are you reading and to be entertained.

2) Contextualizing

It means to know and value from living a particular time, place, historical, biographical, cultural context from the text.

⁴⁸ Salisbury, 7 *Critical Reading Strategies and Activities to do with Students to Encourage and Develop Critical Reading Ability*, available at <http://www.salisbury.edu/counseling/new/7criticalreadingstrategies.html>, retrieved on March, 11th 2017 at 09.03 a.m).

⁴⁹ Saint Joseph College, *Critical Reading Strategies*, available at <http://www.Center-For-Academic-Excellence-com>, retrieved on March 11th 2017 at 11. 47 a.m.

3) Questioning to understand and remember

It means to ask questions about the context from the text. The questions focus on main idea.

4) Reflecting on challenges to your beliefs and values

It means to examining your personal responses, to challenge the attitudes, unconsciously held beliefs, or position on current issue.

5) Outlining and summarizing

It means to identifying the main ideas and restating them in your own words. Outlining reveals the basic structure of the text and annotating process. Summarizing is being able to distinguish between the main ideas and the supporting ideas and example. Summarizing begins with outlining, but instead of merely listing the main ideas, a summary recomposes them to form a new text.

6) Evaluating an argument

It means testing the logical of a text as well as its credibility and emotional impact, and to recognize every assertion as an argument that must be carefully evaluated. An argument has two essential part, they are a claim and support. The claim asserts a conclusion an idea, an opinion, a judgment, or point of view, that the writer wants you to accept. The support includes reasons (shared, beliefs, assumptions, and values) and evidence (fact, examples, statistic and authorities) to give the readers the basis for accepting the conclusion.

7) Comparing and contrasting related reading

It means exploring likenesses and differences between texts to understand the better.

3. Conventional Strategy

a. Definition of conventional Strategy

Conventional Strategy is a traditional way that is used by a teacher in teaching and learning process. Conventional Strategy is the strategy or the way that usually used by the teachers to teach the text to students.⁵⁰ According to Hudson that conventional strategy is the strategy used by the teachers based on mutual agreement in a school.⁵¹ So, the researcher concludes that conventional strategy is the strategy used by a teacher in common ways.

b. The Advantages and Disadvantages of Conventional Strategy

Conventional or traditional teaching is concerned with the teacher being the controller of the learning environment. The teacher actually is the leader in the class. Actually, using conventional (Lecture) strategy are many advantages and disadvantages in teaching and learning process.

The advantages of conventional (Lecture) strategy as follows:

- 1) In short time, teacher is able to convey the material as many as possible.
- 2) The organization of class more simple

⁵⁰ Jhon Deriden. *Conventional Strategy*, retrieved from: <http://www.britania.com/EBchecked/topic/421797/nuclear-strategy/52993/conventional-strategy> on May 7th 2017 at 10.00 a.m.

⁵¹ Hudson, *The Meaning of Conventional Strategy*, retrieved from: <http://www.conventional-strategy/topic/54372-strategy> on October 7th 2016 at 10.00 a.m.

- 3) Teacher can handle overall of the class
- 4) Teacher easy in prepare the material and convey it to the student.⁵²

Then, According to Andrean, the advantages of conventional strategy are:

- 1) Conventional is a method that is cheap and easy.
- 2) Conventional can present subject matter is broad.
- 3) Conventional can provide material points which need to be highlighted.
- 4) Through conventional teachers can control the state of the class, because class is the responsibility of who teachers explain.
- 5) Class organization by using conventional can be set to be more simple.⁵³

Based on the quotation above the conventional strategy are many advantages in teaching learning strategies. The advantages of conventional strategy are able to convey the material as many as possible in short time, the teacher easy to prepare the material, the teacher can control the state of the class, and the teacher focus on students.

The advantages of conventional (Lecture) strategy as follows:

- 1) Teacher is difficult to know the students' comprehension about the material that had been given.
- 2) This strategy can make the students become passive students.
- 3) This strategy can make students easy to feel bored.⁵⁴

The disadvantage of conventional strategy, Andrean says:

- 1) Material held by students from the explanations will be limited to controlled teachers.

⁵² Syaiful Bahri Djarmah, *Strategy Belajar- Mengajar* , (Jakarta: PT. Asdi Mahasatya, 2006), p. 97.

⁵³ Andrean Prime, *Defenition, Adventages and Disadvantages Lecture Method*, available at <http://materiinside.co.id/2014/12/pengertian-kelebihan-kekurangan-metode-ceramah.html> (Accessed on January, 20, 2017 at 11. 00 a.m)

⁵⁴ Syaiful Bahri Djarmah, *Strategy Belajar-Mengajar, Op.Cit*, p. 98.

- 2) Conventional are not accompanied by demonstrations could lead to the occurrence of verbal;
- 3) Teachers who lack the ability to speak good, conventional often regarded as tedious method;
- 4) Through Conventional, it is very difficult to know whether all the students already understand what is being described or not.⁵⁵

Based on the researcher concluded the disadvantages of conventional strategy are easy for students boring in class, make students lazy, very difficult to know whether all the students already understand what is being described or not.

c. Steps of Conventional Strategy

There are many strategies that we can be used in teaching and learning process. One of them is conventional or traditional strategy. Conventional strategy can be divided into some strategy, such as: lecture strategy, problem solving, homework, recitation, demonstration, and so on.⁵⁶

From those strategy, there is strategy that is often used by the teacher, such a lecture strategy or teacher-centered. It is conventional strategy because it has been used for a long time in teaching and learning process. In this strategy, the teacher usually gives all of the explanation of the materials or it is a teacher centered. This conventional strategy sometimes will make the students be easier to feel bore and difficult to understand the material in learning process.

⁵⁵ Andrean Prime, *Advantages and Disadvantages Lecture Method*, available at <http://materiinside.co.id/2014/12/pengertian-kelebihan-kekurangan-metode-ceramah.html> (Accessed on January, 20, 2017 at 11. 00 a.m)

⁵⁶ Syaiful Bahri Djamrah, *Strategy Belajar-Mengajar, Op.Cit.*, p. 83.

There are some steps of Conventional (Lecture) strategy, they are:

- 1). Preparation phase
 - a. Formulate goals to be achieved.
 - b. Determine the main points of the material to be explain.
 - c. Prepare tools.
- 2). Implementing Phase
 - a. Steps Opening
 - i) Make sure that students understand the objectives to be achieved.
 - ii) Do apersepsi steps, that is step thinking the subject matter and the material that will be delivered.
 - b. Steps Presentation
 - i) Maintain continuous eye contact with students
 - ii) The use of communicative language and easily digestible students
 - iii) Present learning materials in systematic, no bounding to be easily captured by the students.
 - iv) Respond to immediate students responses.
 - v) Keep the class conducive and exciting to learn.
- 3). Ending or Closing Phase
 - a. Guide students to draw conclusion or summarize the subject matter.
 - b. Stimulate students to be able to respond or provide some review sessions of learning material that have been submitted.
 - c. Conduct an evaluation to determine that students ability to master the learning material that had just delivered.⁵⁷

In another source, said that there are steps that steps of Conventional (Lecture) strategy classroom, they are:

- 1) Opening Phase
 - a. Formulate goals to be achieved
 - b. Determine the main points of the material to be explain
 - c. Prepare tools
- 2) Presentation Phase
 - a. Maintain continuous eye contract with students
 - b. Present learning materials in systematic, no bounding to be easily captured by the students.
 - c. Respond to immediate students response.
 - d. Keep the class conducive and exciting to learn.

⁵⁷ Andrean Prime, *Step Implementing Teaching Method*, available at <http://materiinside.co.id/2014/12/pengertian-kelebihan-kekurangan-metode-ceramah.html> (Accessed on January, 20, 2017 at 11.00 a.m)

3) Closing Phase

- a. Giving conclusion of subject matter
- b. Evaluate the students ability in learning process by given a test based on the subject matter that have been learned.⁵⁸

Based on the explanation above, there are three steps procedure of Conventional (Lecture) strategy, they are: preparation/ Opening phase, Implementing phase and ending or Closing Phase. The first, in preparation phase a teacher open the class with formulate the objectives to be achieved, determine the main points of the material will be explain, and preparing tool. The second, in Implementing phase a teacher gives and explain the material. The third, in ending or closing phase a teacher gives a task or exercise for evaluating the students comprehension or ability about the material that have been learned by the teacher.

B. Review of Related Findings

Researcher was study about certain object to find out new facts about it. There have been many researches done regard to this research. And the writer found some related researcher such as:

First, Lonni Nur Iffah Nasution “The Effect of Cooperative Integrated Reading Composition (CIRC) Strategy on Students’ Reading Comprehension at XI Grade of MAN 1 Padangsidempuan”. The concluding of her research, there is the effect of CIRC strategy on reading comprehension, where the mean score of

⁵⁸ Umar Farooq, *The Procedure of Teaching Lecture Strategy*, available at <http://www.studylecturenates.com/socialeducation/382-lecture-methodof-teaching-difinition-steps/html>., Accesses on April, 27th 2017 at 09.05).

experimental class is 73.40 and control class is 67.85 with t_{count} higher than t_{table} ($2.780 > 2.021$). So, the application of CIRC strategy is better, effective and efficient than conventional strategy.⁵⁹

Second, Khoridah “The Effect of STAD (Student Teams Achievement Divison) on Students’ Reading Comprehension at Grade VIII SMP Negeri 5 Padangsidempuan.” The concluding of her research, there is the effect of STAD on students’ reading comprehension, where the mean score of experimental class is 72.55 and control class is 66.64 with t_{count} higher than t_{table} ($1.718 > 1.671$). So, the implication of STAD is better achievement in teaching reading comprehension than conventional technique.⁶⁰

Third, Rafika Sa’adah Siregar “The Effect of Determining Main Ideas Strategy On Students’ Reading Comprehension at Grade VIII SMP Negeri 5 Padangsidempuan.” The concluding of her research, there is the effect of STAD on students’ reading comprehension, where the mean score of experimental class is 81.15 and control class is 70.3 with t_{count} higher than t_{table} ($32.35 > 2.000$), So, the implication of STAD is better achievement in teaching reading comprehension than conventional technique.⁶¹

⁵⁹ Lonni Nur Iffah Nasution, *The Effect of Cooperative Integrated Reading Composition (CIRC) Strategy on Students’ Reading Comprehension at XI Grade of MAN 1 Padangsidempuan*, (Unpublished thesis), (Padangsidempuan: IAIN Padangsidempuan, 2015).

⁶⁰ Khoridah, *The Effect of STAD (Student Teams Achievement Divison) on Students’ Reading Comprehension at Grade VIII SMP Negeri 5 Padangsidempuan*, (Unpublished thesis), (Padangsidempuan: IAIN Padangsidempuan, 2015).

⁶¹ Rafika Sa’adah Siregar, *The Effect of Determining Main Ideas Strategy On Students’ Reading Comprehension at Grade VIII SMP Negeri 5 Padangsidempuan*, , (Unpublished thesis), (Padangsidempuan: IAIN Padangsidempuan, 2015).

The last, Hermita Harianja, her thesis is “*The Influence of Critical Reading Strategies Mastery on Students’ Reading Comprehension at English Education Study Program State College for Islamic Studies Padangsidempuan*”. The purpose of the research is examination the influence of critical reading strategies mastery on students’ reading comprehension at English Education Study Program State College for Islamic Studies Padangsidempuan, and the kind of this research was quantitative analysis, and using product moment. Then, the conclusion are: in mastering of critical reading strategies was “high” by getting mean score were 75.47. While in comprehending the text or reading comprehension at fourth grade of students at English Education study program was “high” by getting mean score were 67.86. The correlation product moment r_{xy} were 15.93. The significant correlation level was done by locking r_{tabel} (rt) on significant level 5% was 0.224 an on significant level 1% was 0.317. It meant there was significant o influence of critical reading strategies mastery on students’ reading comprehension⁶².

C. The Conceptual of Framework

Reading is interactive skill between the reader and with the text to getting comprehension. Report text is to getting information about something such as things, peoples, and animals. The successful of teaching reading report text depend

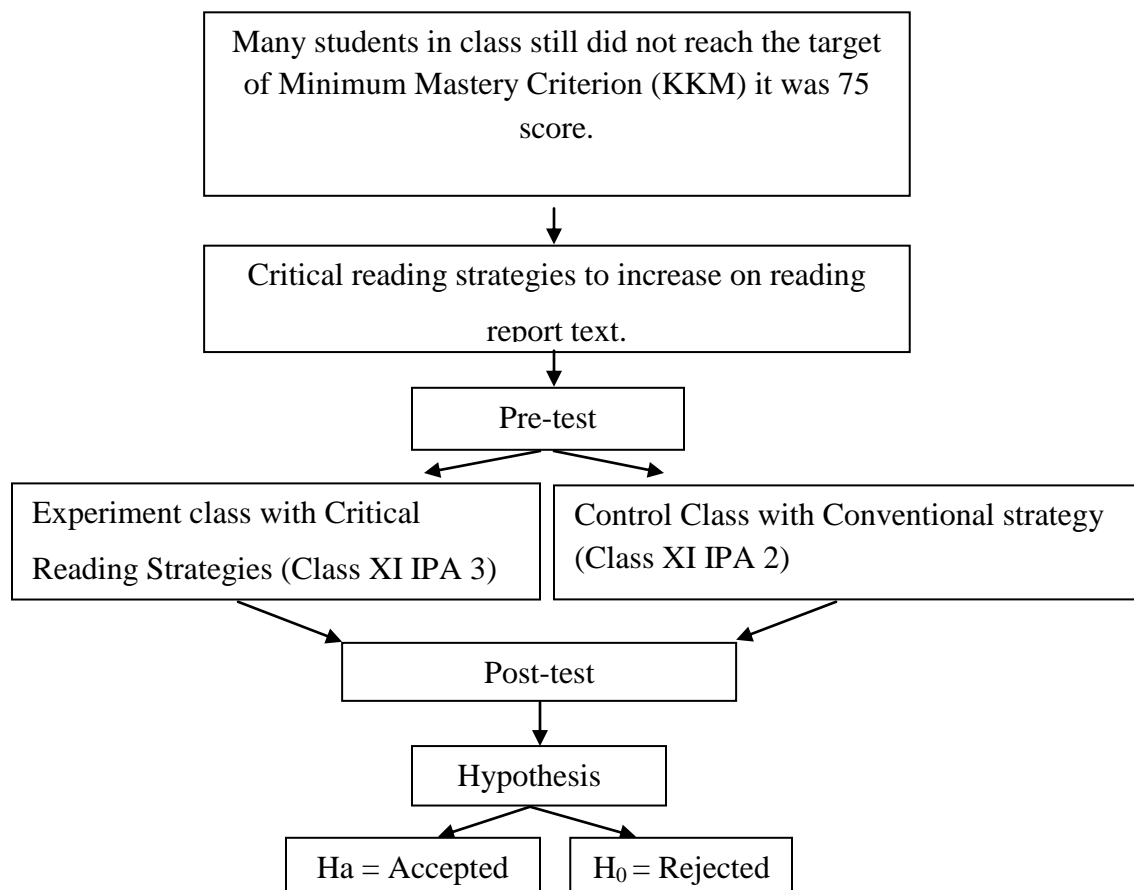
⁶² Hermita Harianja, *The Influence of Critical Reading Strategies Mastery on Students’ Reading Comprehension at English Education Study Program State College for Islamic Studies Padangsidempuan*, (Published thesis), (Padangsidempuan: IAIN Padansidempuan, 2011), p. 71.

on many factors. One of them is how the teacher chooses the suitable strategy in a classroom.

Critical Reading strategies are an alternative way of reading that readers must think about their read to get comprehending and information that the text their read such as: making inference, facts, opinions, determining the purpose and recognizing bias. Reading is the interactive skills between the reader and the text. Reading is process of organ of speech to produced sound.

Conventional strategy is a strategy that the use the teacher teaching in the classroom, for teaching listening, speaking, reading and writing which the teacher as facilitator three phase technique consist of pre reading, while reading and post reading.

Base on the literature review of related theories above, conceptual framework need to be figured to explain more about the theories used. Here is the conceptual framework related to the theory:



D. Hypothesis

L.R. Gays, “A hypothesis is a researchers’ tentative prediction of result of the research findings. It states the researcher’s expectation concerning the relationship between the variables in the research problem”.⁶³ The hypothesis of this research is state that: “Using Critical Reading Strategies is significant effect on reading report text at grade XI SMA N 1 Siabu”.

⁶³ L.R. Gay and Peter Airasian, *Education Research for Analysis and application*, (American: Prentice Hall, 19s92), p. 71.

CHAPTER III

RESEARCH METHODOLOGY

A. Place and Time of the Research

The location of this research is SMA Negeri 1 Siabu. It is Jln. Medan Padang. Kec. Siabu, Kab. Mandailing Natal. This research had been done 26th August 2016 up to 30th November 2017. This research was the eleventh grade of the students.

B. Research Design

The kind of the research is used quantitative research with Experimental method. L.R Gay said” Experimental research is the only type of the research that can the hypothesis to establish cause and effect.”¹ And then, Cresweell said “Experimental research included the experiment with the random assignment of subject to treatment condition as well as quasi experiment that use non randomized”.²

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

¹ L.R. Gay and Peter Airasian, *Educational Research* (USA: Merril, 2000), p. 367.

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

In this research, the researcher choose to use the pretest and post test control group design. It can be seen from the table below:

Table 1. Pretest-Posttest Control Group Design

R	O ₁	X	O ₂
R	O ₃		O ₄

Notes:

- R = the sample of the research
- O₁ = pre-test in experimental class
- O₂ = post-test in experimental class
- X = treatment
- O₃ = pre-test in control class
- O₄ = post-test in control class³

From the definition above, it can be concluded that the experimental research was a kind of research that tries to observe the cause and effect relation between one variable with another variable. Variable in this research is concept critical reading strategies and reading report text. Experimental research also used to know the cause and effect relations by comparing the result of experimental group who get a treatment with control group who do not get a treatment. Experimental class is the class that taught with critical reading strategies as a treatment. Meanwhile the control class is a class that taught with using conventional strategy or without a treatment.

³Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif, dan R&D* ,(Bandung: Alfabeta, 2013), p. 76.

C. Population and Sample

a. Population

Gay and Airasian stated that population is the group of interest to the researcher, the group to which she or he would like the results of the study to be generalize. It means that the population of this research is all of the XI class of SMA Negeri 1 Siabu. It consists of 3 classes with students. It can be seen in the following table:

Table 2. The population of the grade XI students SMAN 1 Siabu

No	Class	Total Student
1.	XI IPA 1	22
2.	XI IPA 2	24
3.	XI IPA 3	24
Total of Students		68

b. Sample

Gay and Airasian state “sample is comprises the individuals, items, or events selected from a larger group referred to as a population”.⁴ According to Arikunto says: “*Sampel adalah sebagian atau wakil populasi yang diteliti*”.⁵ It means is sample is the partial or representative of the Population under study.

In this research, the researcher choose two classes as a sample for 48 students as sample. Two classes divided into experimental class (XI IPA 3)

⁴*Ibid.*, p. 121.

⁵ Surhasimi Arikunto, *Prosedur Penelitian Suatu Pendekatan*, (Jakarta: Rineka Cipta, 2006), p. 131.

which consist 24 students, and control class (XI IPA 2) which consists of 24 students.

Table 3. Sample of Eleventh Grade Students of SMAN 1 Siabu in 2016/2017 Academic Year

No	Class	Total
1.	XI IPA ²	24
2.	XI IPA ³	24

The researcher chooses eleventh grade students because report text subject is studied by the students. The researcher will use random sampling to take the sample. Random sampling is the process of selecting a sample in such a way that all individuals in the defined population have an equal and independent chance of being selected for the sample.⁶ Before using random sampling, the researcher must use normality and homogeneity test.

1) Normality Test

Normality test is use to know whether the data of research is normal or not. Here, to know the normality, the researcher use Chi-Quadrate formula, as follow:

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

Where :

x^2 = Chi-Quadrate

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

⁶*Ibid*, p. 132.

f_h = Frequency is get from the sample as image from frequency is hope from the population.⁷

To conclude the result of Chi-Quadrate use significant level 5 % (0,05) and degree of freedom as big as total of frequency is lessen 3 (dk= k-3). If result $\chi^2_{\text{count}} < \chi^2_{\text{table}}$. So, it can be conclude that data is distribution by normal.

2) 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.⁸

Hypothesis is rejected if $F \leq F_{\frac{1}{2}\alpha(n_1-1)(1=n_2-1)}$ While if $F_{\text{count}} > F_{\text{table}}$ hypothesis is accepted. It determined with significant level 5% (0, 05) and dk numerator is $(n_1 - 1)$ while dk denominator is $(n_2 - 1)$.

⁷ Anas Sudijono, *Pengantar Statistik Pendidikan*. (Jakarta: PT. Raja Grafindo Persada, 2005), p. 298.

⁸ L.R. Gay and Peter Airasian, *Educational Research, Op, Cit*, p. 250.

D. Definition of Operational Variables

1. Reading

Reading is interactive skill between a reader with the text to get information from the writer message or from the text.

2. Report Text

Report Text is a text to inform the things, people, and animals, which has the aim to inform the reader.

3. Critical Reading Strategies

Critical Reading Strategies is a way of reading that the reader must think that their read to get information that author says, such as: fact, opinion, and recognizing bias. Critical reading strategies can we use with steps: Previewing, Contextualizing, Questioning to understand and remember, Reflecting on challenges to your beliefs and values, Outlining and summarizing, Evaluating an argument, Comparing and contrasting related reading

E. Instrument of Collecting Data

Instrument is very important to support every research. This research make test as the instrument to collect the data of students' reading report text. The researcher used test multiple choice. According to Brown, multiple choice items, "which may on the surface appear to be simple items to construct".⁹ In this research, the researcher will use a test. Good instrument certify the validity of the

⁹ H. Douglas Brown. *Language Assesment Practical and Language Practice*, (San Fransisco: Longman, 2003), p.67.

data. The researcher use instrument of validity and reliability for the take the valid data. The researcher use test as instrumentation. Test is some of question or view or other tool use for measure skill, knowledge, intelligence and ability.

The researcher collect by give the multiple-choice test. In this research, before validity the test consist of 100 questions, where 50 for pre-test, and 50 for post-test. This give to both group, expeiment and control class.

Table 4. The Indicators Reading Report Text of Pre-Test

NO	Indicators	Number of Items	Items	Total Score
1	Able to identify topic of the text	1,24,42,	3	6
2	Able to identify main idea of the text	2,21,25,35,43	5	10
3	Able to identify specific information of the text	3,4,5,13,14,17,18,22,23,27,28,29,30,31,40,44,48,49	18	36
4	Able to identify grammar of the text	6,7,8,9,16,26,34,39,41,45,46,	11	22
5	Able to identify the meaning of underlining word	10,11,12,15,19,32,33,36,37,47	10	20
6	Able to identifying conclusion	20,38,50	3	6
TOTAL			50	100

Table 5. The Indicators Reading Report Text of Post-Test

NO	Indicators	Number of Items	Items	Total Score
1	Able to identify topic of the text	1,19,39	3	6
2	Able to identify main idea of the text	2,12,29,30,48,	5	10
3	Able to identify specific information of the text	4,5,6,7,8,17,20,21,22,23,25,26,31,33,35,37,41,48,49,	19	38
3	Able to identify grammar of the text	3,11,16,18,24,36,38,42,43,44,45,	11	22
4	Able to identify the meaning of underlining word	9,10,13,14,27,28,32,46,47,	9	18
6	Able to identifying conclusion	15,34,50	3	6
TOTAL			50	100

F. Validity and Reliability Instrument

a. Validity

Anas Sudijono state that the “validity is a characteristic of the good test.

To get the validity of an achievement test can be use two way”.¹⁰

a) Totality of the test validity

b) Item validity

Beside that Gay and Airasian state that validity is the most important characteristic a test or measure instrument can possess.¹¹

¹⁰ Anas Sujiono, *Pengantar Evaluasi Pendidikan*, Op.Cit., p. 163.

¹¹ Gay and Airasian, *Op. Cit*, p. 161

There are three types of validity in quantitative research:

- 1) Face and content validity
- 2) Concurrent and predictive validity
- 3) Construct validity¹²

In this research, the researcher use item validity to get the validity of instrument. Item validity is a part of the test as a totality to measure the test by item. Where, the test consist of 140 questions of multiple-choice test. It is divided into two groups: 70 for pre-test and 70 for post-test.

To know the validity of the each question will be refer to list r biserial with r , in 5% significant: 0,361 and 1% significant: 0,463. So if r account $> r$ table the test is classify valid.

So, to get the validity test, the researcher use the formula of r pointbiserial can be use as follow:

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

Where:

r_{pbi} : Coefficient item validity

M_p : Mean score of the total sore

SD_t : Standard Deviation of the total score

P : Presentation of the right answer of the item test validity.

q : Presentation of the wrong answer of the item test validity.¹³

¹²*ibid.*, 179

b. Reliability

Reliability is the degree of accuracy or precision in the measurements made by a research instrument.¹⁴ To get the reliability of the test, Suharsimi Arikunto state that the obtain the reliability of the test, the researcher use formula K-R 20.

The formula are :

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

Where :

R_{11} = Reliability of the instrument (test)

$\sum pq$ = Total of the result times p and q

P = Proporsi Subject who is right Answer (1)

N

Q = Proporsi Subject who is wrong Answer (0)

N

n = Total of Question

S_t^2 = Variants Total.¹⁵

Reliability is a good character of the test that refers to the consistent of the measurement. The test is reliable if $r_{\text{count}} > r_{\text{table}}$ by use formulation K-R20.

¹³Anas Sujiono, *Op.Cit.*p. 166

¹⁴*Ibid.*, p. 181

¹⁵Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik* (Jakarta: Rineka Cipta, 2006), p. 188.

Then, here the criteria of test reliability is as follow:

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

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

$R_{11} < \text{low correlation}$ (not reliable) .¹⁶

G. Procedures of Data Collection

In completing the data, the researcher continued to the next step. The next step is collecting the data. The function of data collecting is to determine the result of the research. In collecting data the researcher used some steps. They are:

1. Pre test

- a. The researcher prepared the test 50 items.
- b. The researcher distributed the paper of the test to students of experimental class and control class.
- c. The researcher explained what students to do.
- d. Giving time.
- e. The students answer the question.
- f. Collect their paper test to researcher.
- g. The researcher checked the answer of students and find the mean score of control and experimental class.

¹⁶ Anas Sudijono. *Pengantar Evaluasi Pendidikan*, Op.Cit, P. 209.

2. Treatment

The treatment has done after the pre-test. Control class is through Conventional Strategy, and experimental class is through by applying critical Reading Strategies.

3. Post test

- a. After giving treatment, the researcher conducted a post-test which the different test with the pre-test, and has not been conducted in the previous of the research. The researcher prepared the test 50 items.
- b. The researcher distributed the paper of the test to students of experimental class and control class.
- c. The researcher explained what students to do.
- d. Giving time.
- e. The students answer the question.
- f. Collect their paper test to researcher.

Post-test is the final test in the research, especially measuring the treatment, whether is an effect or not. After conducting the post-test, the researcher analyzed the data. And the researcher found out the effect of using critical reading strategies in the experimental class. The researcher checked the answer of students and found the mean score of control and experimental class.

H. Technique of Analyzing Data

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

1. Requirement test

a) Normality test by use Chi-Quadrat formula, as follow:

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

Where:

x^2 = Chi-Quadrate

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

f_h = Frequency is get from the sample as image from frequency is
hope from the population.¹⁷

b) Homogeneity test

To test the data whether homogen or not, the researcher use Harley
test, as follow:

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

Hypothesis is accept if $F_{(count)} \leq F_{(table)}$

Hypotheses is reject if $F_{(count)} \geq F_{(table)}$.¹⁸

¹⁷ Anas Sudijono, *Pengantar Statistik Pendidikan*, Op.it., p. 298.

¹⁸ Agus Irianto, *Op.Cit.*,p.276

2. Testing of Hypothesis

Based on the hypothesis, the analysis of the data will be done to find out the ability of two groups that are divided into experiment class and control class. From the hypothesis is to answer the result of the research. So, the data will be analyzed by using the following t-test formula:

$$H_a : \mu_1 > \mu_2$$

$$H_o : \mu_1 \leq \mu_2$$

If $H_a : \mu_1 > \mu_2$,¹⁹

It is meant the result of students reading report text by using critical reading strategies at grade XI SMAN 1 Siabu is better than conventional technique.

But, if the $H_o : \mu_1 \leq \mu_2$, it is meant the result of students reading report text by using critical reading strategies at grade XI SMAN 1 Siabu is not better than conventional technique. To test the hypothesis, researcher uses the formula as follows:

$$Tt = \frac{M_1 - M_2}{\sqrt{\left(\frac{\sum x_1^2 + \sum x_2^2}{n_1 + n_2 - 2}\right) \left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

Where:

T : The value which the statistical significance

M₁ : The average score of the experimental class

M₂ : The average score of the control class

¹⁹ Suharsimi Arikunto, *Op. Cit.*, p. 311

X_1^2 : Deviation of the experimental class

X_2^2 : Deviation of the control class

n_1 : Number of experimental

n_2 : Number of control.²⁰

t-test is used to know the significant effect of the application of treatment in reading report text teaching. As Scott explains that a *t-test* is used to determine if two groups of an independent variable differ on a dependent variable. If a *t-test* is found to be statistically significant, we would say that two groups differ on the dependent variable.²¹ So, based on the kind of research, this research used *t-test* to analyzing the data and also as the end of measurement.

²⁰ Sugiyono, *Statiska Untuk Penelitian, Op.Cit.*, p. 135.

²¹ Scott W. Vanderstoep and Deirdre D. Johnston, *Research Methods for Everyday Life: Blending Qualitative and Quantitative Approaches*, (San Fransisco: Jossey Bass, 2009) p. 122

CHAPTER IV

THE RESEARCH RESULT

As mentioned in earlier chapter, in order to evaluate the of effect of critical reading strategies on reading report text, the researcher has calculated the data using pre-test and post-test. The researcher used the formulation of T-test the hypothesis. Next, the researcher described the data as follows:

A. Description of Data

1. Description of Data before Using Critical Reading Strategies

a. Score of Pre-test Experimental Class

The result of the test in experimental class before using Critical Reading Strategies on Students Report Text in the appendix 17 and 18, can be seen in following table:

Table 6. The Score of Experimental Class in Pre-test

Total	1484
Highest score	78
Lowest score	44
Mean	61.6
Median	71.5
Modus	64.5
Range	34
Interval	7
Standard deviation	10.1
Variant	126.23

Based on the table, the total score of experimental class in pre-test was 1484, mean was 61.6, median was 71.5, modus was 64.5, range was 34, interval was 7, researcher got the highest score was 78 and the lowest score was 44, and the last standard deviation was 10.1. Then, the calculation of the frequency distribution of the students' score in experimental class can be applied into table frequency distribution as follows:

Table 7. Frequency Distribution of Experimental Class (Pre-test)

No	Interval	MidPoint	F	Percentages
1	44 – 50	49	6	25.19%
2	51 – 57	54	4	15.54%
3	58 – 64	61	4	16.54%
4	65 – 71	70	6	25.19%
5	72 – 78	75	4	17.54%
$i=7$		-	24	100%

Based on the table above, the students score that is there in class interval between 44-50 was 6 students (25.19%), class interval between 51-57 was 4 students (15.54%), class interval 58-64 was 4 students (16.54%), class interval 65-71 was 6 students (25.19%), and the class interval 72-78 was 4 students (17.54%).

Based on the table above, it could be seen the histogram on the following figure:

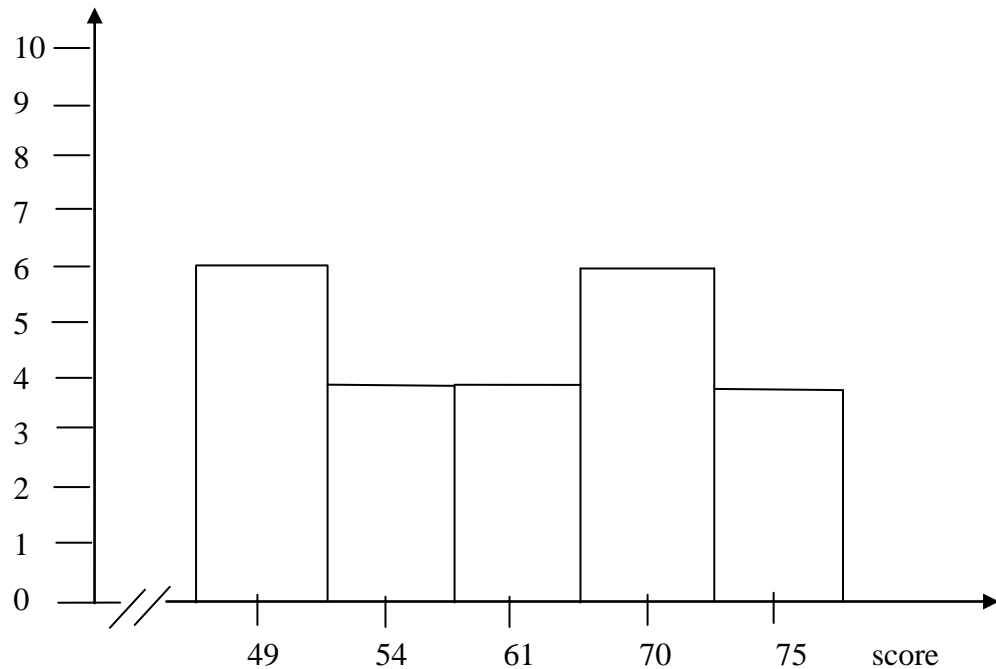
Frequency

Figure 1: Description of Experimental Class (Pre-Test)

Based on the table and histogram above, the students' score from 49 was 6 students, the student score 54 was 4 students, the students' score 61 was 4 students, the students' score 70 was 6 students, and the students' 75 was 4 students.

b. Score of Pre-Test Control Class

The result of the pre-test of control class, the researcher calculated is gotten by the students in answering the test at the control class. The score of pre-test control class can be seen in following table:

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

Total	1428
Highest score	80
Lowest score	36
Mean	60.62
Median	63.49
Modus	59.44
Range	44
Interval	9
Standard deviation	10.21
Variant	153.13

Based on the table can be seen the total score in control class in pre-test was 1428, mean was 60.62, variant was 153.13 range was 44, interval was 9, median was 60.49, and modus was 59.44, researcher got the highest score was 80 and the lowest score was 36, and the last standard deviation was 10.21. Then, the calculation of the frequency distribution of the students' score of control class can be applied into table frequency distribution as follows:

Table 9. Frequency Distribution of Control Class (Pre-Test)

No	Interval	Mid Point	Frequency	Percentages
1	36 – 44	40	2	12.59%
2	45 – 53	49	3	15.13%
3	54 – 62	58	9	30.55%
4	63 – 71	67	6	25.19%
5	72 – 80	75	4	16.54%
$i = 9$		-	24	100%

Based on the table , it can be shown that the students' score that is there in class interval between 36 – 44 was 2 students (12.59%), class interval between 45-53 was 3 students (15.13%), class interval 54-62 was 9 students (30.55%), class interval 63-71 was 6 students (25.19%), and the last class interval 72-80 was 4 students (16.54%).

Based on the table, it could be seen the histogram on the following figure:

Frequency

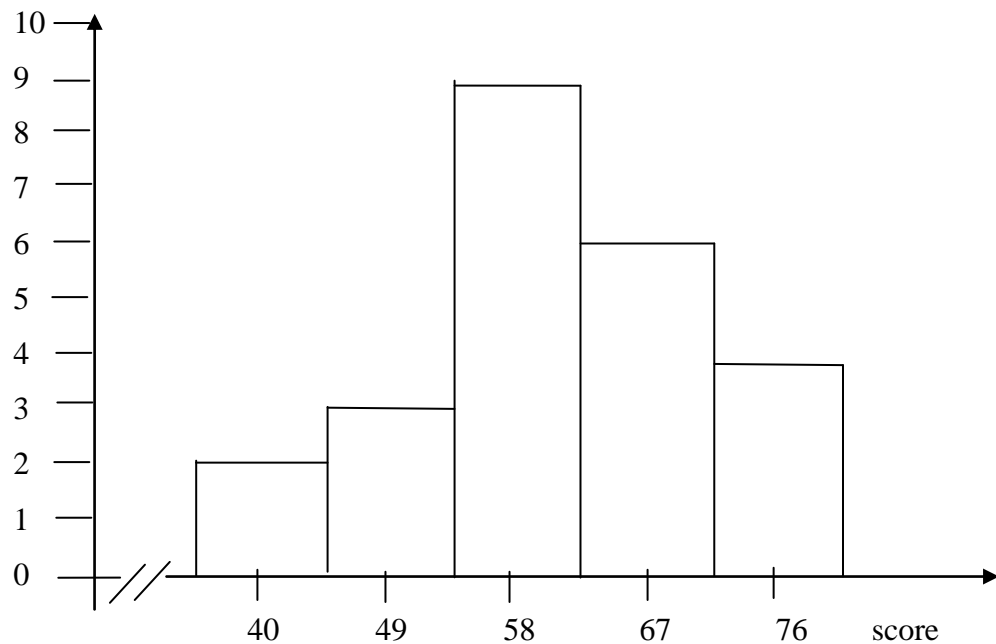


Figure 2: Description of Control Class (Pre-Test)

Based on the table and the histogram above, the students' score 40 was 2 students, the students' score 49 was 3 students, the students' score

58 was 9 students, the students' score 67 was 6 students, and the students' score 76 was 4 students.

2. Description of Data After Using Critical Reading Strategies

a. Score of Post-Test Experimental Class

The result of the calculation that had been gotten by the students in answering the question (test) after the researcher did the treatment by using Critical Reading Strategies can be seen the table:

Table 10. The Score of Experimental Class in Post Test

Total	1960
Highest score	96
Lowest score	62
Mean	81.91
Median	81.66
Modus	80.75
Range	34
Interval	7
Standard deviation	7.259
Variant	59.62

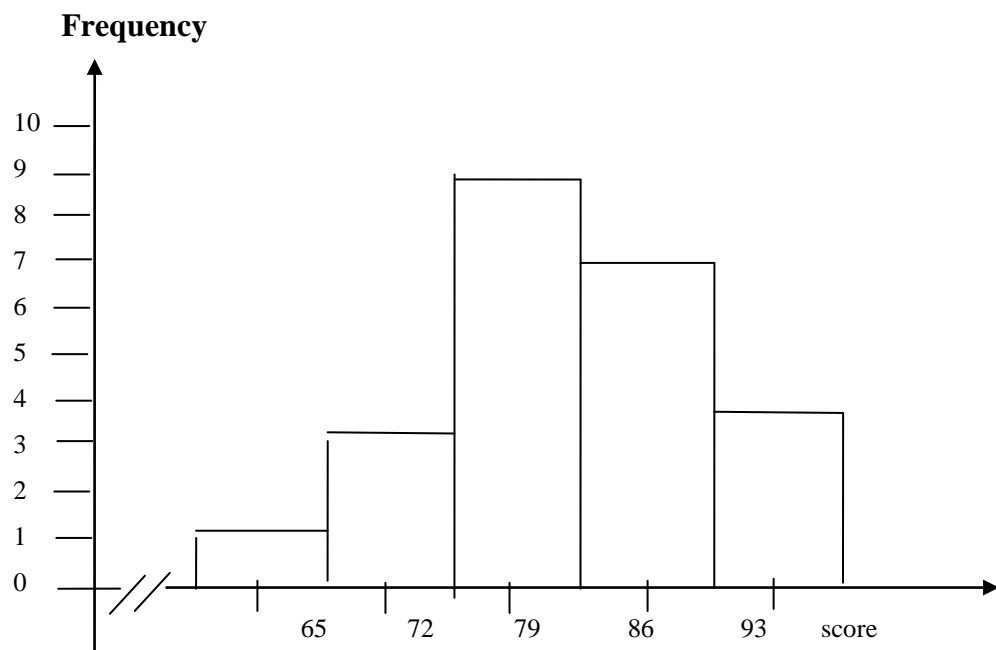
Based on the table above the total score of experiment class in post-test was 1960, mean was 81.91, standard deviation was 7.259, variant was 59.62, median was 81.66, range was 24, modus was 80.75, and interval was 7, researcher got the highest score was 96 and the lowest score was 62, and the last standard deviation. Then, the calculation of the frequency distribution of the students' score of experiment class can be applied into table frequency distribution as follows:

Table 11. Frequency Distribution of Students' Score

No	Interval	Mid Point	Frequency	Percentages
1	62 – 68	65	1	9.05%
2	69 – 75	72	3	10.16%
3	76 – 82	79	9	33.07%
4	83 – 89	86	7	29.86%
5	90 – 96	93	4	21.66%
$i = 7$		-	24	100%

Based on the table above, it can be shown that the students score is there in class interval between 62-68 was 1 student (9.05%), class interval between 69-75 was 3 students (10.16%), class interval 76-82 was 9 students (33.07%), class interval 83-89 was 7 students (29.86%), and the class interval 90-96 was 4 students (21.66%).

Based on the table above, it could be seen the histogram on the following figure:

**Figure 3: Description of Experimental Class (Post-Test)**

Based on the table and the histogram above, the students' score 65 was 1 student, the students' score 72 was 3 students, the students' score 79 was 9 students, the students' score was 86 was 7 students, and the students' 93 was 4 students.

b. Score of Post-Test Control Class

The result of control class in post-test, the researcher took class IX IPA 2 as control class, could had been gotten by the students in answering the question (test) after the researcher taught the reading report text by using conventional strategy can be seen the table below:

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

Total	1724
Highest score	88
Lowest score	54
Mean	71.87
Median	71.26
Modus	70.81
Range	34
Interval	7
Standard deviation	6.79
Variant	64.31

Based on the table above the total score of control class in post-test was 1724, mean was 71.87, variant was 64.31, median was 71.87, range was 34, modus was 70.81, and interval was 7, researcher got the highest score was 88 and the lowest score was 54 and the last standard deviation was 6.79.. Then, the calculation of the frequency distribution of

the students' score of control class can be applied into table frequency distribution as follows:

Table 13. Frequency Distribution of Students' Score

No	Interval	Mid Point	Frequency	Percentages
1	54 – 60	57	1	9.85%
2	61– 67	64	4	18.24%
3	68 – 74	71	13	42.38%
4	75 – 81	78	3	13.93%
5	82 – 88	85	3	15.60%
$i = 7$		-	24	100%

Based on the table above, it can be shown that the students score is there in class interval between 54-60 was 1 student (9.85%), class interval between 61-67 was 5 students (18.24%), class interval 68-74 was 13 students (42.38%), class interval 75-81 was 3 students (13.90%), and the class interval 82-88 was 3 students (15.60%).

Based on the table above, it could be seen the histogram on the following figure:

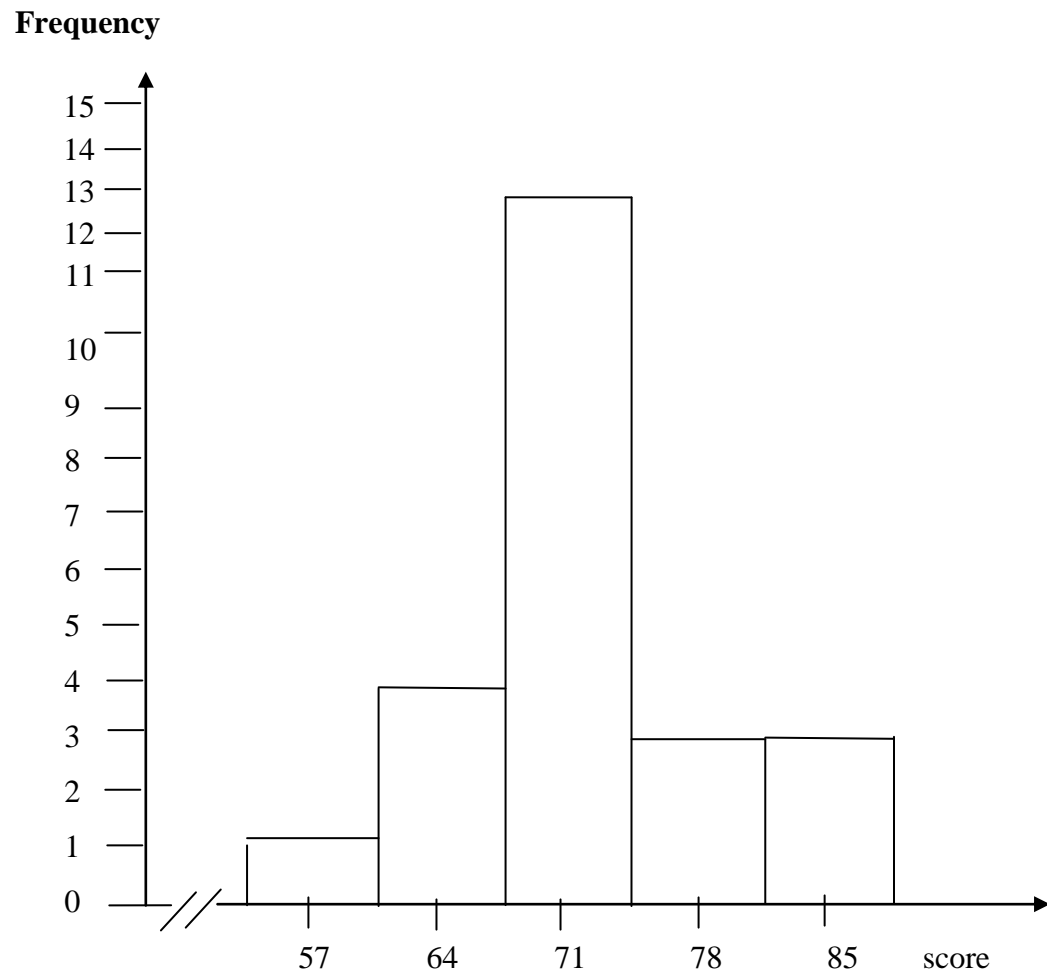


Figure 4: Description of Control Class (Post-Test)

Based on the table and the histogram above, the students' score 57 was 1 student, the students' score 64 was 4 students, the students' score 71 was 13 students, the students score 78 was 3 students, and the students' score 85 was 3 students.

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

1. The Comparison Data between Pre-test and Post-test by using Critical Reading Strategies

The comparison the data between pre-test and post-test by using critical reading strategies. While the researcher done the research in pre-test, the researcher did not apply treatment to experimental, but in the post test to experimental the researcher gave the treatment.

Based on the description data in pre-test of experimental and control class, there was comparison score between pre-test experimental class before and after gave a treatment by using Critical Reading Strategies. It can be seen the table below:

Table 14. The Comparison Score of Students' Reading Comprehension in Pre-test and Post-test (Experimental Class)

Students' Reading Comprehension in Pre-test				
No	Interval	Mid Point	F	Percentages
1	44 – 50	49	6	25.19%
2	51 – 57	54	4	15.54%
3	58 – 64	61	4	16.54%
4	65 – 71	70	6	25.19%
5	72 – 78	75	4	17.54%
Students' Reading Comprehension in Post-test				
No	Interval	Mid Point	Frequency	Percentages
1	62 – 68	65	1	9.05%
2	69 – 75	72	3	10.16%
3	76 – 82	79	9	33.07%
4	83– 89	86	7	29.86%
5	90 – 96	93	4	21.66%

Based on the table, it can be shown that the students score is there in class interval between that the highest interval score in pre-test experimental class was 72-78 (4 students/17.54%) and the lowest interval score was 44-50 (6 students/25.19%), meanwhile the highest interval score in post-test was 90-96 (4 students/21.66%) and the lowest score was 62-68 (1 students/9.05%).

Based on the table, it could be seen the histogram on the following figure:

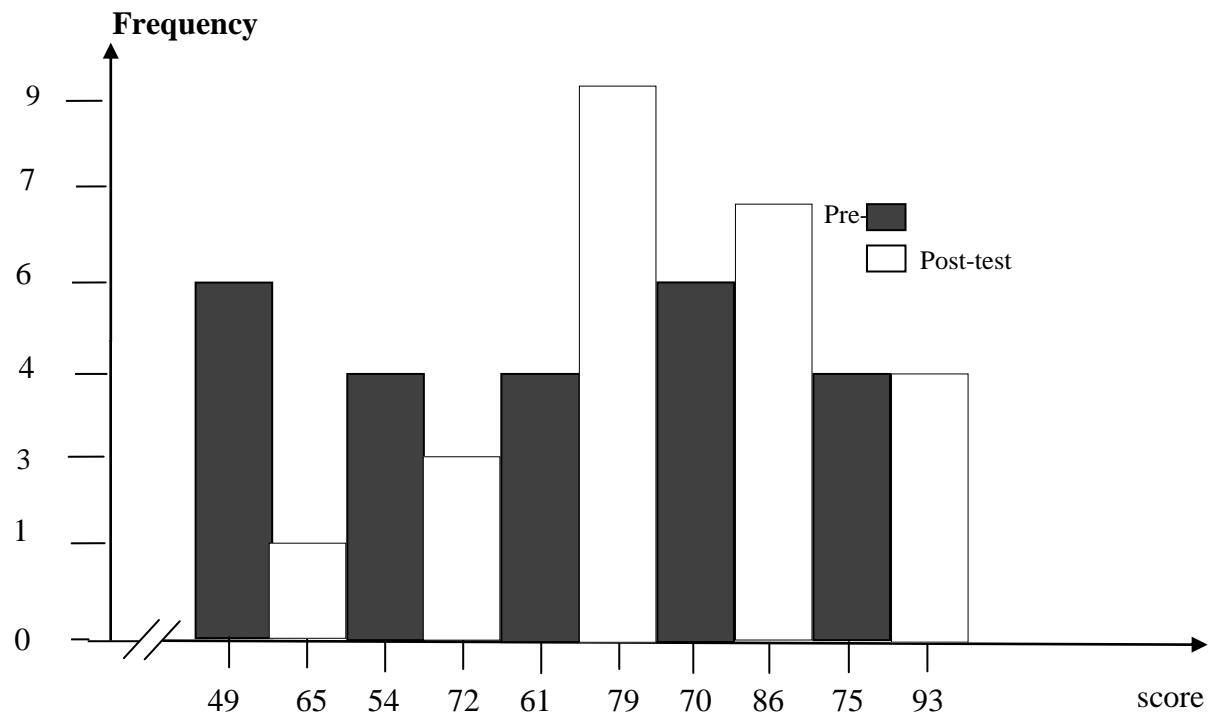


Figure 5. Histogram the Comparison Data of Students' Reading Comprehension in Pre-test and Post-test (Experimental Class)

Based on the histogram above, the frequency of students' score of experimental class from 44 up to 50 (6 students/25.19%) in pre-test, and 62

up to 68 (1 student/9.05%) in post-test; 51 up to 57 (4 students/15.54%) in pre-test, and 69 up to 75 (3 students/10.16%) in post-test; 58 up to 64 (4 students/16.54%) in pre-test, and 76 up to 82 (9 students/33.07%) in post-test; 65 up to 71 (6 students/25.19%) in pre-test, and 83 up to 89 (7 students/29.86%) in post-test; 72 up to 78 (4 students/17.54%) in pre-test, and 90 up to 96 (4 students/21.66%) in post-test.

Then, the interval which had highest frequency in pre test was 58-64 (4 students/16.54%) and the interval which had lowest frequency was 34-42 (3 students/12%). In post test of experimental class, the interval which had highest frequency was 70-76 (9 students/36%) and the interval which had lowest frequency was 56-62 (3 students/12%).

2. The Comparison Data between Pre-test and Post-test by Using Conventional Strategy

The comparison data between pre-test and post-test by using conventional strategy. Based on the description data in pre-test and post-test of control class, there was the comparison score between pre-test control class before and after gave a treatment by using Conventional strategy. It can be seen in table below:

Table 15. The Comparison Score of Students' Reading Comprehension in Pre-test and Post-test (Control Class)

Students' Reading Comprehension in Pre-test				
No	Interval	Mid Point	Frequency	Percentages
1	36 – 44	40	2	12.59%
2	45 – 53	49	3	15.13%
3	54 – 62	58	9	30.55%
4	63 – 71	67	6	25.17%
5	72 – 80	75	4	16.54%
Students' Reading Comprehension in Post-test				
No	Interval	Mid Point	Frequency	Percentages
1	54 – 60	57	1	9.85%
2	61 – 67	64	4	18.24%
3	68 – 74	71	13	42.38%
4	75 – 81	78	3	13.93%
5	82 – 88	85	6	15.60%

Based on the table above, it can be shown that the students score is there in class interval between pre-test and post-test (control class) was 72-80 (4 students/16.54%) and the lowest interval score was 36-44 (2 students/12.59%), meanwhile the highest interval score in post-test was 82-88 (3 students/15.60%), and the lowest score was 54-60 (1 student/9.85%).

Based on the table above, it could be seen the histogram on the following figure:

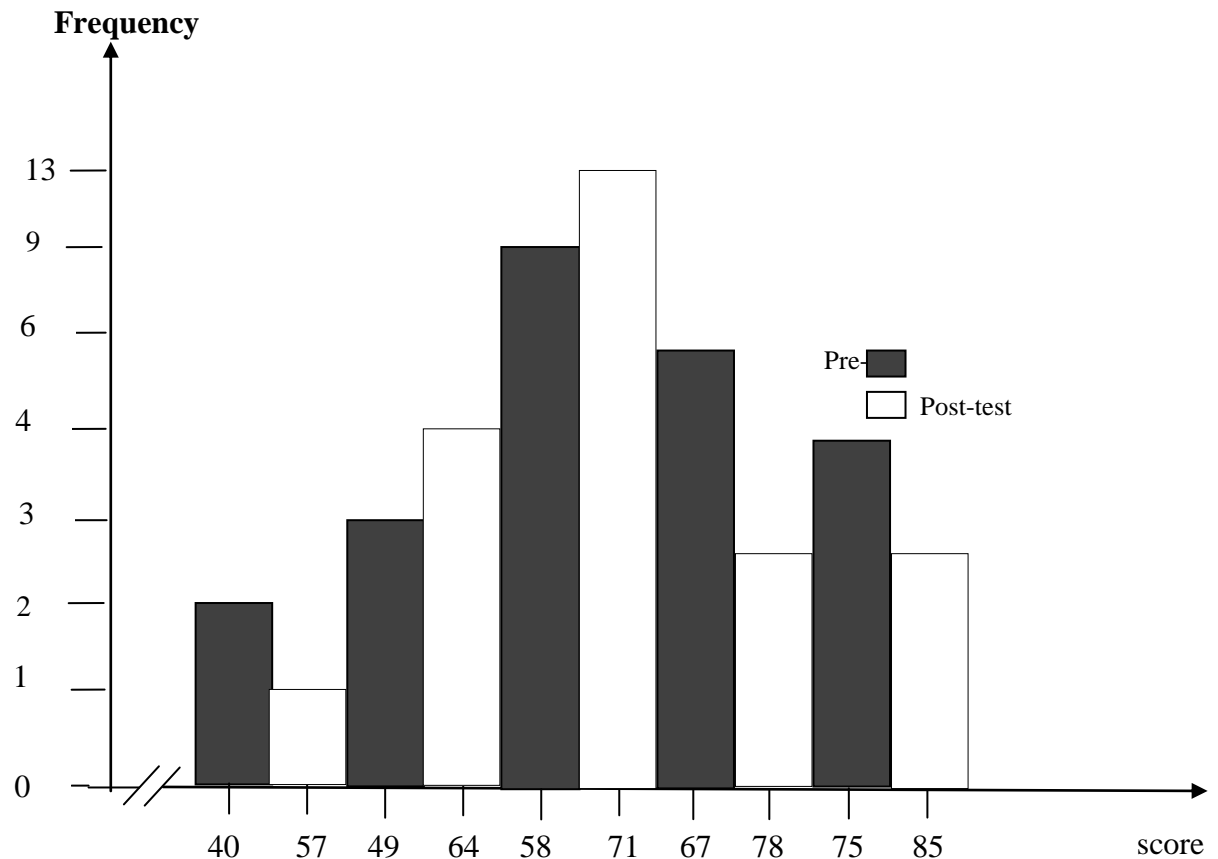


Figure 6. Histogram the Comparison Data of Students' Reading Comprehension in Pre-test and Post-test (Control Class)

Based on the figure above, the frequency of students' score of control class from 36 up to 44 (2 students/12.59%) in pre test, and 54 up to 60 (1 student/18.24%) in post-test; 45 up to 53 (3 students/15.13%) in pre-test, and 61 up to 67 (4 students/18.24%) in post-test; 54 up to 62 (9 students/30.55%) in pre-test, and 68 up to 74 (13 students/42.38%) in post-test; 63 up to 71 (6 students/25.19%) in pre-test, and 75 up to 81 (5 students/13.91%) in post-test; 72 up to 80 (4 students/16.54%) in pre-test, and 82 up to 88 (3 students/15.60%) in post-test.

Next, the interval which had highest frequency in pre test was 54-62 (9 students/30.55%) and the interval which had lowest frequency was 36-44 (2 students/12.59%). In post test of control class, the interval which had highest frequency was 68-74 (13 students/42.38%) and the interval which had lowest frequency was 54-60 (1 student 9.85%).

3. The Comparison Data between Using Critical Reading Strategies and Conventional Strategy in Post-test

After the researcher gave pre-test to both of classes, before researcher giving a treatment to (XI IPA 3 as experimental class and XI IPA 2 as control class), the researcher knew the ability of students' on reading report text. In pre- test, the researcher did not apply treatment to experimental and control class, but in post test, the researcher giving a treatment in experimental class. In Experimental class by using Critical Reading Strategies and control class by using Conventional Strategy. It can be seen in table below:

Table 16. The Comparison Score of Students' Reading Comprehension in Experimental and Control Class (Post-test)

Students' Reading Comprehension in Post-test (Experimental Class)				
No	Interval	Mid Point	Frequency	Percentages
1	62 – 68	65	1	9.05%
2	69 – 75	72	3	10.16%
3	76 –82	79	9	33.07%
4	83 – 89	86	7	29.86%
5	90 – 96	93	4	21.66%
Students' Reading Comprehension in Post-test (Control Class)				
No	Interval	Mid Point	Frequency	Percentages
1	54 – 60	57	1	9.85%
2	61 – 67	64	4	18.24%

3	68 – 74	71	13	42.38%
4	75 – 81	78	3	13.93%
5	82 – 88	85	3	15.60%

Based on the table above, it can be shown that the highest interval score in post test of experimental class was 90-96 (4 students/21.66%) and the lowest interval score was 62-68 (1 student/9.05%), meanwhile the control class was 82-88 (3 students/15.60%), and the last the lowest interval score was 54-60 (1 student/9.85%).

Based on the table above, it could be seen the histogram on the following figure:

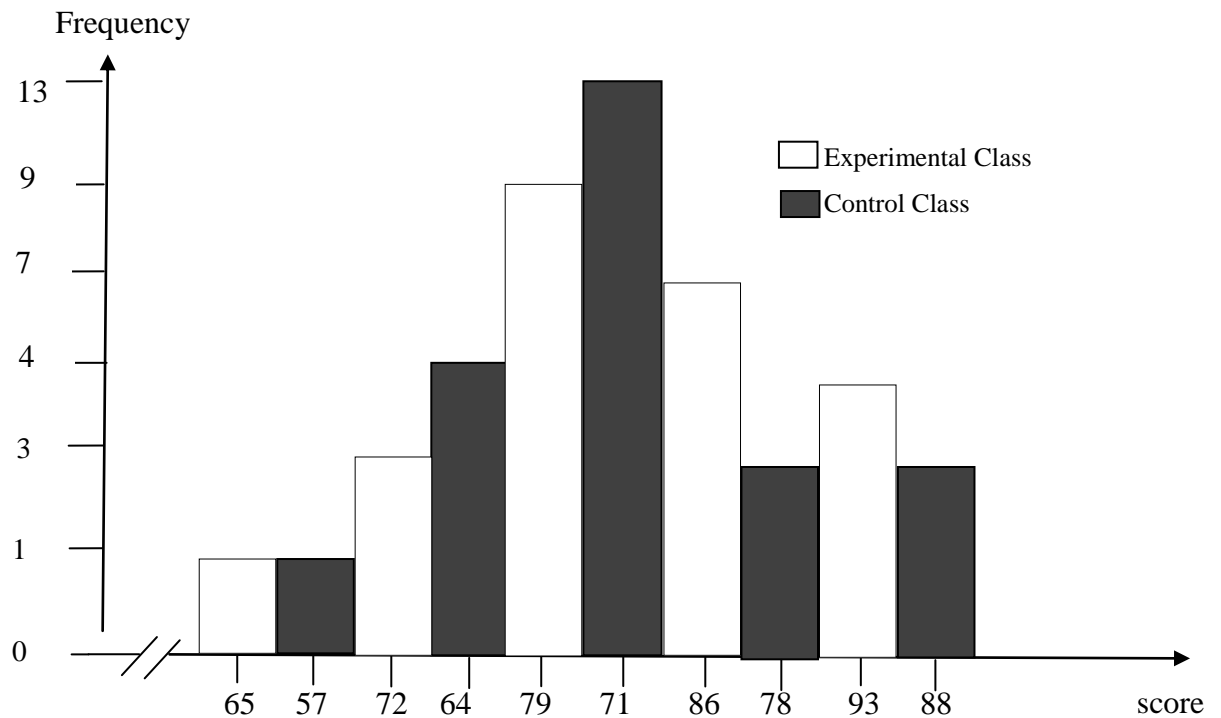


Figure 7. Histogram the Comparison Data of Students' Reading Comprehension in Experimental and Control Class (Post-test)

Based on the figure, it can be shown the frequency of students' score in post test from 62 up to 68 (1 students/9.05%) for experimental class, and 54 up to 60 (1 student/9.85%) for control class; 69 up to 75 (3 students/10.16%) for experimental class, and 61 up to 67 (4 students/18.24%) for control class; 76 up to 82 (9 students/33.07%) for experimental class, and 68 up to 74 (13 students/42.38%) for control class; 83 up to 89 (7 students/29.86%) for experimental class, and 75 up to 81 (3 students/13.93%) for control class; 90 up to 96 (4 students/21.66%) for experimental class, and 82 up to 88 (3 students/15.60%) for control class.

Next, the interval which had highest frequency in post test of experimental class was 90-96(4 students/21.66%) and the interval which had lowest frequency was 62-68 (1 students/9.05%). In post test of control class, the interval which had highest frequency was 82-88 (3 students/13.93%) and the interval which had lowest frequency was 54-60 (1 student/9.85%).

Based on the description of comparison from the data, it can be shown that the students' scores of experimental class by using Critical Reading Strategies was higher than the students' score of control class by using Conventional strategy.

C. Data Analysis

1. Requirement Test

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

Table 17. Normality and Homogeneity in Pre-Test

Class	Normality Test		Homogeneity Test	
	χ^2_{count}	χ^2_{table}	f_{count}	f_{table}
Experimental Class	7.636	11.070	1.21 < 1.98	
Control Class	4.802	11.070		

Based on the table above researcher calculation, the score of experiment class $Lo = 7.636 < Lt = 11.070$ with $n = 24$ and control class $Lo = 4.802 < Lt = 11.070$ with $n = 24$, and real level $\alpha 0.05$. Cause $Lo < Lt$ in the both class. So, H_a was accepted. It means that experiment class and control class were distributed normal. Researcher calculation, it can be seen in appendix 18.

The coefficient of $F_{\text{count}} = 1.21$ was compared with F_{table} . Where F_{table} was determined at real $\alpha 0.05$, and the different numerator $dk = N - 1 = 24 - 1 = 23$ and denominator $dk N - 1 = 24 - 1 = 23$. So, by using the list of critical value at F distribution is got $F_{0.05} = 1.98$. It showed that $F_{\text{count}} 1.21 < F_{\text{table}} 1.98$. So, it can be concluded that the variant from the data the effect of critica reading strategies on reading report text at grade XI SMA Negeri 1 Siabu by using experimental and control class was homogeny.

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

Table 18. Normality and Homogeneity in Post-Test

Class	Normality Test		Homogeneity Test	
	χ^2_{count}	χ^2_{table}	f_{count}	f_{table}
Experimental Class	8.763	11.070	1.21 < 1.98	
Control Class	7.042	11.070		

Based on the table above, the score of experimental class $Lo = 8.765 < Lt = 11.070$ with $n = 24$ and control class $Lo = 7.042 < Lt = 11.070$ with $n = 24$, and real level $\alpha 0.05$. Because $Lo < Lt$ in the both class, it means H_a was accepted. It meant that experiment class and control class were distributed normal. Researcher calculation, It can be seen in appendix 21.

The coefficient of $F_{\text{count}} = 1.21$ was compared with F_{table} . Where F_{table} was determined at real $\alpha 0.05$, and the different numerator $dk = N-1 = 24-1 = 23$ and denominator $dk N-1 = 24-1 = 23$. So, by using the list of critical value at F distribution is got $F_{0.05} = 1.21$. It showed that $F_{\text{count}} 1.21 < F_{\text{table}} 1.98$. So, the researcher concluded that the variant from the data of the students' reading comprehension at IX grade of SMAN 1 Siabu in experimental and control class was homogenous. The calculation of the data can be seen on the appendix 21.

2. Hypothesis Test

After calculated the data of post-test, researcher has found that post-test result of experimental and control class is normal and homogenous. The data would analyzed to prove the hypothesis. It used formula of t-test. Hypothesis of the research was “critical reading strategies has significant effect on reading report text at IX grade of SMAN 1 Siabu”. The calculation can be seen on the appendix 23 and 24. The result of t-test was as follow:

Table 19. Result of T-test from the Both Averages

Pre-test		Post-test	
t_{count}	t_{table}	t_{count}	t_{table}
-1.07	1.678	13.38	1.678

The test hypothesis have two criteria. First, if $t_{\text{count}} < t_{\text{table}}$, H_0 is accepted. Second, $t_{\text{count}} > t_{\text{table}}$, H_a is accepted. Based on researcher calculation in pre test, researcher found that t_{count} -1.07 while t_{table} 1.678 with opportunity $(1 - \alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 24 + 24 - 2 = 44$. Cause $t_{\text{count}} < t_{\text{table}}$ (-1.07 < 1.678), it means that hypothesis H_a was rejected and H_0 was accepted. So, in pre test, the two classes were same. There is no difference in the both classes. But, in post test, researcher found that t_{count} 13.38 while t_{table} 1.678 with opportunity $(1 - \alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 24 + 24 - 2 = 44$. Cause $t_{\text{count}} > t_{\text{table}}$ (13.38 > 1.678), it means that hypothesis H_a was accepted and H_0 was rejected. The calculation can be seen on the appendix 23. In this case, the mean score of experimental class by using Critical Reading

Strategies 81.91 and mean score of control class was 71.87 that was taught by using conventional strategy. So, there was the significant effect of Critical Reading Strategies on Reading Report Text at Grade XI SMAN 1 Siabu

D. Discussion

Based on the related findings, the researcher discussed the result of this researcher and compared the related findings. It also discussed with the theory that has been stated by the researcher. First, *Determining Main Ideas Strategy*¹ showed that the experimental group got 70.3. Second, *Cooperative Integrated Reading and Composition (CIRC)*² showed that the experimental group got 56.64 for the mean score of pretest. *Determining Main Ideas Strategy* pre-test result was higher than *Cooperative Integrated Reading and Composition (CIRC)* result. Third, *Critical Reading Strategies*³ showed that the experimental group 60.5 for the mean score of pre-test. The last, *STAD (Student Team Achievement Division)*⁴ showed the experimental group got 56.64. *Critical Reading Strategies* pre test

¹ Rafika Sa'adah Siregar, The Effect of Determining Main Ideas Strategy On Students' Reading Comprehension at Grade VIII SMP Negeri 5 Padangsidimpuan in Academic Year 2015/2016, *Unpublished Thesis*, Padangsidimpuan: Faculty and Teacher Training, STAIN PADangsidimpuan, 2016.

² Lonni Nur Iffah Nasution, The Effect of Cooperative Integrated Reading and Composition (CIRC) Strategy on Students' Reading Comprehension at XI Grade of MAN 1 Padangsidimpuan in Academic Year 2014/2015, *Unpublished Thesis*, Padangsidimpuan: Faculty and Teacher Training, STAIN PADangsidimpuan, 2015.

³ Ermita Harianja, The Influence of Critical Reading Strategies Mastery On Students Reading Comprehension at English Aducation Study Program State Collage for Islamic Studies Padangsidimpuan in Academic Year 2011/2012, *Unpublished Thesis*, Padangsidimpuan: Faculty and Teacher Training, STAIN Padangsidimpuan, 2012.

⁴ Khoridah, The Effect of STAD (Student Team Achievement Division) On Students' Reading Comprehension at Grade VIII N 5 Padangsidimpuan in Academic Year 2014/2015, *Unpublished Thesis*, Padangsidimpuan: Faculty and Teacher Training, STAIN PADangsidimpuan, 2015.

result was higher than *STAD (Student Team Achievement Division)* result. Then, *Determining Main Ideas Strategy, Cooperative Integrated Reading and Composition (CIRC), Critical Reading Strategies* pre test result was higher than *STAD (Student Team Achievement Division)*.

Then, for the post-test result, *Determining Main Ideas Strategy* ⁵ got the experimental class' score was 81.15. *Cooperative Integrated Reading and Composition (CIRC)*,⁶ got the experimental class' score was 80.95, and *Determining Main Ideas Strategy* was higher than *Cooperative Integrated Reading and Composition (CIRC)*. *STAD (Student Team Achievement Division)*,⁷ got the experimental class' score was 80.5, and *Critical Reading Strategies* ⁸ got the experimental class' score was 75.47, and *STAD (Student Team Achievement Division)* was higher than *Critical Reading Strategies*. Then, *Determining Main Ideas Strategy, Cooperative Integrated Reading and Composition (CIRC)* and *STAD (Student Team Achievement Division)* post test result was higher than *Critical Reading Strategies* result. Beside, the researcher got the mean score for experimental class after using *Critical Reading Strategies* was 81.91 and was the highest score among the related findings.

from the description, it can be seen that the highest mean score of post-test of the experimental group was gotten by researcher where the mean score of

⁵Rafika Sa'adah Siregar, The Effect of Determining Main Ideas Strategy, *Op.Cit.*, ...

⁶ Lonni Nur Iffah Nasution, The Effect of Cooperative Integrated Reading and Composition (CIRC), *Op.Cit.*, ...

⁷Khoridah, The Effect of STAD (Student Team Achievement Division), *Op.Cit.*, ...

⁸ Ermita Harianja, The Influence of Critical Reading Strategies, *Op.Cit.*, ...

post-test was 81.91 and the lowest mean score of post test was gotten by CRS in her thesis where the mean score of post-test 75.47. So, among the mean score of post-test, the mean scores have increased than pre-test. Where, for the researcher result, the mean score of post-test was passed the standardization where the standardization mark is 75.

Based on the result, the researcher has got the significant effect of using Critical Reading Strategies, so have the researcher who mentioned in related finding. *Determining Main Ideas Strategy*⁹ found that t_0 was higher than t_t ($32.35 > 2.000$). *Cooperative Integrated Reading and Composition (CIRC)*¹⁰ found that t_0 was higher than t_t ($6.98 > 2.021$). *STAD (Student Team Achievement Division)*¹¹ found that t_0 was higher than t_t ($1.71 > 1.67$). *Critical Reading Strategies*¹² found that t_0 was higher than t_t ($0.244 > 0.217$). From the description, t-test result from *Determining Main Ideas Strategy*, was highest between *Cooperative Integrated Reading and Composition (CIRC)* and *STAD (Student Team Achievement Division)* result and t-test result from *Critical Reading Strategies* was lowest among them. Beside, the researcher also found that t_0 is higher than t_t where t_0 was 1.679 and t_t was -1.07 ($1.679 > -1.07$). Where, the researcher result of t-test was the highest among the related findings result. So, the result of t-test of Critical Reading Strategies highest than the result t-test of

⁹ Sa'adah Siregar, The Effect of Determining Main Ideas Strategy, *Op.Cit.*,...

¹⁰ Lonni Nur Iffah Nasution, The Effect of Cooperative Integrated Reading and Composition (CIRC), *Op.Cit.*,...

¹¹ Khoridah, The Effect of STAD (Student Team Achievement Division), *Op.Cit.*,...

¹² Harianja, The Influence of Critical Reading Strategies, *Op.Cit.*,...

related findings. It can be seen that among the researchers, the using of Critical Reading Strategies gave the effect to students' reading report text especially at grade XI SMA N 1 Siabu where it is suitable with the theory from Muhammad Ali Nasrollahi, Pramela Kris N. Krishnasamy and Noorizah Mohd Noor, Critical Reading Strategies helps students to read their textbooks and various reading passage systematically and critically.¹³ It means that theory has been proved where the students can think critically and use their higher order thinking elements to analyze, synthesize, and evaluate a text, they need to understand it, which can be difficult when they are reading complicated material.¹⁴ So, Critical Reading Strategies has given the significant effect to the researcher that has been done by researcher or the other researcher who mentioned in related findings.

from the result of the research that is previously stated, it was proved that students of the experimental group who were taught reading report text by using Critical Reading Strategies got better result than the control group that were taught reading report text by using conventional strategy.

¹³ Moh Mohammad Ali Nasrollahi, Pramela Kris N. Krishnasamy and Noorizah Mohd Noor Journal, *"Identifying the Critical Reading Strategies Employed by Iranian EFL Learners,"* Volume 5, No. 2223-4934 E and 2227-393X Print 2015, p. 360.

¹⁴ *Ibid.* p. 360.

E. Limitation of the Research

The researcher found the threat of this research as follow:

1. The students needed more time for answering the test.
2. There were some of students that were noisy while teaching and learning process. So, it can disturb the concentration of the others.
3. It was also a possibility that some of students were not too serious in answering the pre-test and post-test. It may caused by the test, because they knew before that the test would not influence their score in school. It made them answer the test without thinking hard and the answer of the test was not pure because they did not do it seriously.

CHAPTER V

CONCLUSION AND SUGGESTION

A. Conclusion

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

1. Before using Critical Reading Strategies, students' reading report text was still low. it can be seen by highest score of experimental class in pre test was 78 only and lowest score was 34. While the highest score of control class was 80 and the lowest score was 36. Besides, the mean score of experimental class with using conventional strategy was 60.62 and the control class with using conventional strategy was 63.92, it is on the level low.
2. After using Critical Reading Strategies, researcher got the highest score of experimental class became 96 and the lowest score 62 and the mean score of experimental class was higher than control class ($81 > 91$). it means that by using Critical Reading Strategies, students' reading report text was higher.
3. Based on the calculation of t_{count} was 13.38 was higher than t_{table} 1.678 and the mean score of experimental class in post test was 81.91, meanwhile the mean score of control class in post test was 71.87, it was higher than control class ($81.91 > 71.87$), it can be conclude that there was the

significant effect of Critical Reading Strategies on Reading Report Text at Grade XI SMAN 1 Siabu where H_a was accepted and H_0 was rejected.

B. Suggestion

Based on the above conclusion, the researcher has some suggestion as follow:

1. For headmaster, provides strategy in teaching reading report text. That students' increase to learning English whit strategy.
2. For the English teacher of SMAN 1 Siabu. It is very wise to apply the innovative approach such as Critical Reading Strategies on reading report text.
3. For the research, it is hoped to use Critical Reading Strategies, because it can make them to be able to communicate or communicated competence.

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CURRICULUM VITAE

A. Identity

Name : **MASRIDA NASUTION**

Reg. No. : 13 340 0060

Place and Birthday : Hutapuli, 21th April 1995

Sex : Female

Religion : Moslem

Address : Jl Medan Padang, Siabu, Kec Siabu, Kab Mandailing
Natal

B. Parent

1. Father's Name : Pardomuan Nasution

2. Mother's Name : Dame Martiana S.Pd

C. Educational Background

1. Graduated from Primary School number 010 Siabu in 2007

2. Graduated from MTS Negeri 1 Siabu 2010

3. Graduated from SMA Negeri 1 Siabu in 2013

4. Graduated from IAIN Padangsidimpuan in 2018

INSTITUT AGAMA ISLAM NEGERI
FAKULTAS TARBIYAH DAN ILMU KEGURUAN

Jalan T. Rizal Nurdin Km. 4,5 Sihitang 22733,
Telp (0634) 22080 Fax (0634) 24022

In.14/E.6a/PP.00.9/08 /2016

Padangsidimpuan, 2 Agustus 2016

Pengesahan Judul dan Pembimbing Skripsi

Kepada Yth:

Bapak/Ibu:

1. Dr. Fitriadi Lubis, M.Pd

2. Fitri Rayani Siregar, M.Hum

Di-

Padangsidimpuan

Assalamu 'Alaikum Wr. Wb

Dengan hormat, Disampaikan kepada Bapak/Ibu bahwa berdasarkan hasil Sidang Tim Pengkaji Kelayakan Judul Skripsi, telah ditetapkan Judul Skripsi Mahasiswa tersebut dibawah ini sebagai berikut:

Nama : Masrida Nasution
Nim : 13 340 0060
Fak/Jurusan : FTIK/Tadris Bahasa Inggris²
Judul Skripsi : The Effect of Critical Reading Strategies on Reading Report Text at Grade XI SMA N 1 Siabu

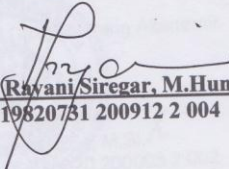
Seiring dengan hal tersebut, kami akan mengharapkan kesediaan Bapak/Ibu menjadi pembimbing I dan Pembimbing II penelitian penulisan skripsi yang dimaksud.

Demikian kami sampaikan, atas kesediaan dan kerjasama yang baik dari Bapak/Ibu, kami ucapkan terimakasih.

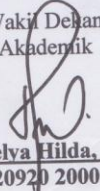
Ketua Jurusan Tadris Bahasa Inggris

Sekretaris Jurusan Tadris Bahasa Inggris


Rayendriani Fahmei Lubis, M.Ag
NIP. 19710510 200003 2 001

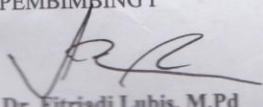

Fitri Rayani Siregar, M.Hum
NIP. 19820731 200912 2 004

Wakil Dehan
Bidang Akademik

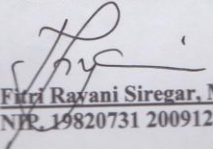

Dr. Lelya Hilda, M. Si
NIP. 19720920 200003 2 002

PERNYATAAN KESEDIAAN SEBAGAI PEMBIMBING

BERSEDIA/TIDAK BERSEDIA
PEMBIMBING I


Dr. Fitriadi Lubis, M.Pd
NIP. 19620917 199203 1 002

BERSEDIA/TIDAK BERSEDIA
PEMBIMBING II


Fitri Rayani Siregar, M.Hum
NIP. 19820731 200912 2 004



KEMENTERIAN AGAMA REPUBLIK INDONESIA
INSTITUT AGAMA ISLAM NEGERI PADANGSIDIMPUAN
FAKULTAS TARBIYAH DAN ILMU KEGURUAN

Jalan T. Rizal Nurdin Km. 4,5 Sihitang 22733
Telepon (0634) 22080 Faksimile (0634) 24022

Nomor : B - 2067 /In.14/E.4c/TL.00/11/2017
Hal : Izin Penelitian
Penyelesaian Skripsi.

19 November 2017

Yth. Kepala SMA Negeri 1 Siabu
Kabupaten Mandailing Natal

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

Nama : Masrida Nasution
NIM : 13 340 0060
Fakultas/Jurusan : Tarbiyah dan Ilmu Keguruan/TBI
Alamat : Sihitang

adalah benar Mahasiswa IAIN Padangsidimpuan yang sedang menyelesaikan Skripsi
dengan Judul "The Effect of Critical Reading Strategies on Reading Report Text at
Grade XI SMA Negeri 1 Siabu". Sehubungan dengan itu, kami mohon bantuan Bapak/Ibu
untuk memberikan data dan informasi sesuai dengan maksud judul diatas.

Demikian disampaikan, atas kerja sama yang baik diucapkan terimakasih.

a.n. Dekan
Wakil Dekan Bidang Akademik

D. Lelya Hilda, M.Si.
NIP. 19720920 200003 2 002



PEMERINTAH PROVINSI SUMATERA UTARA
DINAS PENDIDIKAN
SMA NEGERI 1 SIABU

Jalan. Aek Milas No. 1 Siabu Kode Pos 22976 Kec.Siabu, Kab. Mandailing Natal
Telp (0636) 7324073, Email : sma_siabu@yahoo.com

SURAT KETERANGAN MELAKUKAN PENELITIAN

Nomor : 421.3/ 1002/ SMA/ 2017

Yang bertanda tangan di bawah ini :

Nama : **MASDEWARNI, S.Pd, MM**

NIP : 19621022 198501 2 002

PANGKAT/ GOL : Pembina / IVa

KELOMPOK : Kepala SMA Negeri 1 Siabu

Dengan ini menerangkan bahwa :

Nama : **Masrida Nasution**

NIM : 13 340 0060

Disiplin : Tarbiyah dan Ilmu Keguruan/TBI

Tempat : TBI

Alamat : Sihitang

Yang telah melaksanakan penelitian di SMA Negeri 1 Siabu dengan nomor surat : B-2067 / In.14 /

TL.001 / 11 / 2017, dengan judul Skripsi :

"The Effect of Critical Reading Strategies on Reading Report Text at Grade XI SMA Negeri 1

Siabu"

Demikian surat keterangan ini dibuat dengan sesungguhnya, untuk dapat dipergunakan

Siabu, 30 November 2017

Kepala SMA Negeri 1 Siabu

APPENDIX 1
EXPERIMENTAL CLASS

RENCANA PELAKSANAAN PEMBELAJARAN
(RPP)

Nama Sekolah : SMAN 1 Siabu
Kelas/Semester : XI/2 IPA
Subjek : Bahasa Inggris
Jenis Teks : Text Fungsional
Aspek/Skill : Membaca / *Reading*
Alokasi Waktu : 4 x 45 menit (2x pertemuan)

A. Standar Kompetensi

1. Memahami makna dalam esai pendek sederhana untuk berinteraksi dengan lingkungan sekitar

B. Kompetensi Dasar

- 1.1 Merespon makna dan langkah retorika dalam esei pendek sederhana secara akurat, lancar, dan berterima yang berkaitan dengan lingkungan sekitar.

C. Indikator

1. Siswa mampu menentukan topik sentence
2. Siswa mampu menentukan pokok pikiran utama dari teks
3. Siswa mampu memahami makna-makna tertentu dari sebuah kata
4. Siswa mampu mengambil informasi penting dari teks

5. Siswa mampu membuat kesimpulan dari teks
6. Siswa mampu memahami kosakata

D. Tujuan Pembelajaran

1. Siswa dapat lebih mudah memahami teks bacaan
2. Siswa dapat memprediksi apa yang akan dihadapi oleh mereka dalam teks bacaan

Karakter siswa yang diharapkan: Dapat dipercaya (*Trustworthiness*)
Rasa hormat dan perhatian (*Respect*)
Tekun (*Diligence*)

E. Materi Pembelajaran

- Text fungsional

F. Metode Pembelajaran

- Critical reading strategies

G. Langkah-Langkah Kegiatan

- KegiatanAwal

1. Guru membuka kelas dengan mengucapkan salam.
2. Mempersilahkan siswa untuk membaca do'a belajar sesuai agama dan kepercayaan masing-masing.
3. Guru menjelaskan tujuan pembelajaran yang akan dicapai

- KegiatanInti

1. Guru memberikan teks berbentuk report text kepada siswa.

2. Guru menyuruh siswa memahami report text sebelum dibaca, serta menyuruh siswa untuk mencari informasi yang berkaitan dengan tempat, waktu dan sejarah dalam report text.
3. Guru bertanya kepada siswa apa yang mereka ingat setelah membaca isi dari report teks.
4. Guru menyuruh siswa menandai kata yang baru dikenal.
5. Guru menyuruh siswa menggaris bawahi informasi penting dalam report teks, serta menyuruh siswa untuk menyimpulkan isi dari report teks.
6. Guru menyuruh siswa untuk mengevaluasi isi dari report teks.
7. Guru menyuruh siswa membandingkan antara teks dengan teks yang lebih mereka pahami.

- **Kegiatan Penutup**

- Siswa diberi umpan balik atas kegiatan hari ini.
- Guru mengumpulkan tugas yang telah dikerjakan siswa.

H. Media dan Sumber Belajar

1. Buku yang berkaitan
2. Spidol/Pencil berwarna
3. Kamus
4. Papan tulis
5. Kertas

I. Penilaian

Indikator Pencapaian Kompetensi	Teknik Penilaian	Bentuk Instrumen	Instrumen Soal
<ul style="list-style-type: none">▪ The topic of the text▪ The main idea▪ Vocabulary▪ Grammar▪ Finding The Information▪ Deciding The conclusion	Tes Tulis	Multiple Choice	<i>Read the text Then answer the question!</i>

Siabu, November 2017

Guru Bahasa Inggris

Researcher

Yusri Annur Lbs, S.Pd
NIP: 19780915 200502 2 003

Masrida Nasution
Nim. 13 340 0060

APPENDIX 2

CONTROL CLASS

RENCANA PELAKSANAAN PEMBELAJARAN (RPP)

Nama Sekolah : SMAN 1 Siabu
Kelas/Semester : XI IPA
Subjek : Bahasa Inggris
Jenis Teks : fungsional teks
Aspek/Skill : Membaca / *Reading*
Alokasi Waktu : 4 x 45 menit (2x pertemuan)

A. Standar Kompetensi

2. Memahami makna dalam esai pendek sederhana berbentuk *teks report* untuk berinteraksi dengan lingkungan sekitar

B. Kompetensi Dasar

- 1.1 Merespon makna dan langkah retorika dalam esai pendek sederhana secara akurat, lancar, dan berterima yang berkaitan dengan lingkungan sekitar dalam teks berbentuk descriptive

C. Tujuan Pembelajaran

3. Pada akhir pembelajaran siswa dapat memahami makna dalam teks report

Karakter siswa yang diharapkan:	Dapat dipercaya (<i>Trustworthiness</i>)
	Rasa hormat dan perhatian (<i>Respect</i>)
	Tekun (<i>Diligence</i>)

D. Materi Pembelajaran

- Report text

E. Strategi pembelajaran

- Conventional Strategy

F. Langkah-Langkah Kegiatan

Pertemuan Pertama dan kedua

➤ Kegiatan Awal

Apersepsi : Tanya jawab materi yang akan dipelajari

Motivasi : Menjelaskan pentingnya materi yang akan dipelajari berikut kompetensi yang harus diketahui siswa.

➤ Kegiatan Inti

1. Guru memberikan teks report
2. Guru menyuruh siswa untuk membaca teks dalam hati/tidak bersuara
3. Guru memberikan soal dalam bentuk pilihan berganda
4. Siswa mengerjakan soal yang dibagikan guru
5. Guru dan siswa mendiskusikan jawaban dari soal

➤ Kegiatan Penutup

1. Guru menyimpulkan pelajaran
2. Guru menutup pelajaran dan Siswa memberi salam kepada guru

G. Sumber Belajar

1. Teks yang berkaitan dengan bahan ajar
2. Kamus
3. Internet

4. Penilaian

Indikator Pencapaian Kompetensi	Teknik Penilaian	Bentuk Instrumen	Instrumen Soal
<ul style="list-style-type: none">▪ The topic of the text▪ The main idea▪ Vocabulary▪ Grammar▪ Finding The Information▪ Deciding The conclusion	Tes Tulis	Multiple Choice	<i>Read the text Then answer the question!</i>

Siabu, November 2017

Guru Bahasa Inggris

Researcher

Yusri Annur Lbs, S.Pd
NIP: 19780915 200502 2 003

Masrida Nasution
Nim. 13 340 0060

APPENDIX 3

Learning Material

What Are Clouds?

Clouds are water vapour condensed into minute water particles which floats in masses in the atmosphere. There are the main types of clouds, classified according to the height at which they occur. Clouds were first named by the English chemist Luke Howard in 1803, a pioneer of methodology. The types he named were cirrus, cumulus and stratus.

Cirrus clouds are usually high and appear as delicate whitish threads against a blue sky. Because of their height, they are composed of ice crystals and not of water droplets.

Cumulus clouds typically have a rounded appearance and sometimes reach 20,000 feet into the sky. They are often characterized by having an anvil shape in the center of the cloud.

Stratus clouds are layers of cloud which can form at any height and tend to cover the whole sky. Often, the sky is overcast and the sun is probably completely concealed.

This is the basic grouping of types of clouds. The ever-changing cloud formations are an important aspect of meteorology and clouds can be further described in many ways.

APPENDIX 4

Pre-Test

Instrument Pre-Test

Name:

Class:

Instruction: choose the correct answer by crossing (X) a, b, c, or d

Question 1-23: this text below is for question number 1 up 23. Choose the best answer

based on the text!

Robots have become a common sight in Japanese factories. It is estimated that as many as sixty percent of Japanese manufacturing firms now the Japanese industrial robots or other computer equipment. According to the Japan industrial Robot Association, at least 100,000 robots have been placed on production lines in Japan. There are more robots in Japan than in the rest of the world.

The Robot in Japanese factories are mostly of one type-faceless, bodiless, one-arm robots. Most do the work of the shoulder, elbow, wrist and finger of a human.

Although the simple industrial robot was invented and first developed in the United States, American factories have been slow to use them. However, American scientists have been busy developing more human-like robots which can work in homes and offices.

What are the effects of using so many faceless, bodiless, one-arm robots in Japanese factories? It is clear that there are many advantages. Robots have taken over many of the hot, dirty, dangerous, tiring and boring jobs on the production line, especially in car factories, secondly robots are small, strong and easy to use and look after and are quite cheap. They also work faster and better than humans. They make mistakes and the quality of their work is better. It is easy to see, therefore, the advantages of using industrial robots.

But what about the disadvantages? The main one is unemployment. It is estimated that at least 50,000 workers in Japan have been replaced by robots.

Most of these workers are old and middle-aged men and young women. Although some workers have moved into other jobs in the factory such as sales or computer programming, many workers now spend their time in unimportant positions on the production line, like pushing buttons on robots,

Even though the unemployment problem will grow, it is clear that robots will continue to be used, not only in large car factories but also in the smaller factories and workshops all over Japan. As professor ichiro Kato of Waseda University says, "Now robots are working out of sight, in factories, but by the year 2000s they will be everywhere, in shops, in homes, working in full view. By the year 205 we can expect the robot population of Japan to be something like ten million-about one robot for every ten human beings."

1. What is the topic of the text?
 - a. Japanese factories
 - b. American scientists
 - c. Robot vs Workers
 - d. Computer
2. What the main idea the first paragraph?
 - a. Robots have become a common sight in Japanese factories.
 - b. The Robot in Japanese factories are mostly of one type-faceless, bodiless, one-arm robots.
 - c. Nm What are the effect of using so many faceless, bodiless, one-arm robots in Japanese factories? It is clear that there are many advantages.
 - d. . They make mistakes and the quality of their work is better.
3. How many percent the robot estimated?
 - a. Fifty percent
 - b. Sixty percent
 - c. Sixteen percent
 - d. Fifteen percent
4. How many robot have been place on production?
 - a. 700 robots
 - b. 10.000 robots
 - c. 10 robots
 - d. 100.000 robots
5. Where the robot production?
 - a. In American
 - b. In Korea
 - c. In French
 - d. In Japan

6. What the generic structure the first paragraph?
- General classification
 - Identification
 - Orientation
 - Title
7. What the generic structure the third paragraph?
- Re orientation
 - Description
 - Event
 - complication
8. What the generic structure the fourth paragraph?
- Event
 - General classification
 - Description
 - Identification
9. There....more robots in Japan..
- Are
 - Is
 - Am
 - It
10. The word “large” car (in fifth paragraph),
Underline word antonym with...
- Big
 - Small
 - Bigger
 - Smaller
11. The word “look after” (in third paragraph),
Underline word antonym with...
- Furthermore
 - Meanwhile
 - Before
 - Suddenly
12. The word “young women” (in fifth paragraph),
Underline word antonym, with...
- Child
 - Old

- b. Beautiful d. Older
13. How many workers in Japan have been replaced?
- a. 5 workers c. 50.000 workers
 - b. 60.000 workers d. 6 workers
14. How many million that robot population of Japan?
- a. Ten million c. Six million
 - b. Seven million d. Five million
15. They also work faster and better than humans.
- What is the tenses sentence above?
- a. Past tense c. Simple present continuous tense
 - b. Simple present tense d. Simple perfect tense
16. Industrial robot.... Invented and first developed in the United states.
- a. Were c. Was
 - b. Have been d. Is
17. What the advantage the robot?
- a. Easy broken c. Strong and difficult to use
 - b. Strong and easy to use d. Strong
18. What the disadvantages the robot?
- a. Worker c. Unemployment
 - b. Active d. Enrich
19. The word “work in homes”, the underline word synonym with?
- a. Home c. Houses
 - b. Building d. House
20. What the conclusion of the text above?
- a. By the year 205 we can expect the robot population of Japan to be something like ten million-about one robot for every ten human beings.”
 - b. Three are more robots in Japan than in the rest of the world.

- c. However, American scientists have been busy developing more human-like robots which can work in homes and offices.
 - d. They make mistakes and the quality of their work is better. It is easy to see, therefore, the advantages of using industrial robots.
21. What does paragraph 4 tell us about?
- a. Advantages robot c. Japanese robot
 - b. Disadvantages robot d. American robot
22. Which paragraph talk about American robot?
- a. First paragraph c. Third paragraph
 - b. Second paragraph d. Fourth paragraph
23. What are the types of Japanese robots?
- a. Faceless robots c. One arm robots
 - b. Bodiless robots d. Faceless, bodiless, one-arm robots

Question 24-41: this text below is for question number 24 up 41. Choose the best answer

based on the text!

Blacksands is a large seaside town. Half of the town lies to the north of the River Black and the other half lies the south. It is only a few kilometers to the nearest highway and just ten minutes' drive from the city of Harstone.

Situated near the beach are lots of brightly painted hotels; some of them are very old. Many big-name department stores, as well as smaller shops that sell souvenirs and gifts, are found on the main street just outside the town center. The heart of town is occupied by older houses and many historical buildings. In recent year, some new housing estates have been developed to the south of the town.

There are lots of things to do at Blacksands. There is a harbor with boats for fishing and cruises. There are two beaches which are popular for various water events and whole-year round swimming. A cinema, a swimming pool, a bowling alley as well as a fairground are located within the town. Two parks and several playgrounds are also easily accessible from the town centre and outlying housing estates.

24. What is the topic of the text?
- a. My town
 - b. The liver black
 - c. Buildings
 - d. Fishing
25. The main idea of paragraph 1?
- a. Blacksands is a large seaside town.
 - b. Situated near the beach are lots.
 - c. Many big-name department stores.
 - d. The heart of town is occupied.
26. There Lots of things to do at blacksands?
- a. Is
 - b. Are
 - c. Was
 - d. Were
27. What is blacksands?
- a. A small seaside town
 - b. A harbour with boats
 - c. A large seaside town
 - d. Occupied by older houses
28. Where is it situated?
- a. Town
 - b. Historical buildings
 - c. Harstone
 - d. Near the beach
29. What buildings can we find in that town?
- a. Harstone
 - b. Historical buildings
 - c. Buildings
 - d. City
30. How many beaches that are popular for various water events?
- a. Two beaches
 - b. Three beaches
 - c. Four beaches
 - d. Much beaches
31. What have been develop in blacksands in recent years?
- a. The nearest highway and just ten minutes' drive from the city of Harstone,
 - b. Occupied by older houses and many historical buildings.
 - c. A harbour with boats for fishing and cruises.

- d. New housing estates have been developed to the south of the town
32. The word “several” fairground (in the third paragraph), the underline word synonym with:
- a. An c. Many
 - b. A d. Any
33. The word “smaller shops” (in the second paragraph), the underline word antonym with?
- a. Bigger c. Thin
 - b. Large d. Huge
34. There..... a harbour with boats for fishing and cruises?
- a. Are c. Is
 - b. Been d. Am
35. The main idea the third paragraph?
- a. Blacksands is large seaside town
 - b. There are lots of things to do at blacksands
 - c. Occupied by older houses
 - d. Many big-name department store
36. Outside the town (in the second paragraph), the underline words antonym with?
- a. Behinds c. Beside
 - b. Between d. Inside
37. A few kilometers (in the first paragraph), the underline word antonym with?
- a. a little c. Some
 - b. many d. Any
38. What is the conclusion of the text?
- a. It is only a few kilometers to the nearest highway and just ten minutes’ drive from the city of Harstone.

- b. In recent year, some new housing estates have been developed to the south of the town.
 - c. Some new housing estates have been developed to the south of the town.
 - d. Two parks and several playgrounds are also easily accessible from the town centre and outlying housing estates.
39. What is the generic structure the text about?
- a. General classification-description
 - b. Identification- description
 - c. Orientation-complication-reorientation-conclusion
 - d. Orientation-event-re orientation
40. Blacksands is a large seaside town.
- What is the tense of the sentence?
- a. Simple present tense c. Past tense
 - b. Simple perfect tense d. Simple present continuous tense
41. What is the generic structure from the first paragraph
- a. Description c. Event
 - b. Conclusion d. General classification

Question 42-50: this text below is for question number 42 up 50. Choose the best answer

based on the text!

Cloud are water vapour condensed into minute water particles which floats in masses in the atmosphere. There are the main types of clouds, classified according to the height at which they occur. Clouds were first named by the English chemist Luke Howard in 1803, a pioneer of methodology. The types he named were cirrus, cumulus and stratus.

Cirrus cloud are usually high and appear as delicate whitish threads against a blue sky. Because of their height, they are composed of ice crystals and not of water droplest.

Cumulus clouds typically have a rounded appearance and sometimes reach 20.000 feet into the sky. They are often characterized by having an anvil shape in the center of the cloud.

Stratus clouds are layers of cloud which can form at any height and tend to cover the whole sky. Often, the sky is overcast and the sun is probably completely concealed.

This is the basic grouping of types of clouds. The ever-changing cloud formations are an important aspect of meteorology and clouds can be further described in many ways.

42. What is the topic of the text?
- a. Atmosphere c. What are clouds
 - b. Cirrus clouds d. Status clouds
43. The first paragraph tells us about...
- a. Cirrus clouds are usually high and appear as delicate whitish threads against a blue sky.
 - b. Cumulus clouds typically have a rounded appearance and sometimes reach 20.000 feet into the sky
 - c. Stratus clouds are layers of cloud which caan form at any height and tend to cover the whole sky.
 - d. Clouds are water vapour condensed into minute water particles which float in messes in the atmosphere.
44. What is the topic sentence of paragraph four?
- a. Cirrus clouds are usually high and appear as delicate whitish threads against a blue sky.
 - b. Stratus clouds are layers of cloud which caan form at any height and tend to cover the whole sky.
 - c. Clouds are water vapour condensed into minute water particles which float in messes in the atmosphere.

- d. Cumulus clouds typically have a rounded appearance and sometimes reach 20.000 feet into the sky
45. What the generic structure the first paragraph?
- a. General classification c. Complication
 - b. Orientation d. Identification
46. They..... composed of ice crystals?
- a. Are c. Am
 - b. Is d. It
47. The word "high" (in second paragraph)
- The underline word synonym with....
- a. Small c. soft
 - b. Tall d. fat
48. Who give the first name for clouds?
- a. Luke Howard c. John Luke
 - b. Luis Howard d. Howard
49. When the first name of cloud is give?
- a. 1800 c. 1703
 - b. 1700 d. 1803
50. What is the conclusion of the text?
- a. They are often characterized by having an anvil shape in the center of the cloud.
 - b. The types he named Were cirrus, cumulus and stratus.
 - c. Because of their height, they are somposed of ice crystals and not of water droplets.
 - d. This is the basic grouping of types of clouds. The ever-changing cloud formation area n important aspect of metodologi and clouds can be futher described in many ways.

APPENDIX 5

POST TEST

Instrument Post Test

Name:

Class:

Instruction: choose the correct answer by crossing (X) a, b, c, or d

Question 1-18: this text below is for question number 1 up 18. Choose the best answer

based on the text!

Blacksands is a large seaside town. Half of the town lies to the north of the River Black and the other half lies the south. It is only a few kilometers to the nearest highway and just ten minutes' drive from the city of Harstone.

Situated near the beach are lots of brightly painted hotels; some of them are very old. Many big-name department stores, as well as smaller shops that sell souvenirs and gifts, are found on the main street just outside the town center. The heart of town is occupied by older houses and many historical buildings. In recent year, some new housing estates have been developed to the south of the town.

There are lots of things to do at Blacksands. There is a harbor with boats for fishing and cruises. There are two beaches which are popular for various water events and whole-year round swimming. A cinema, a swimming pool, a bowling alley as well as a fairground are located within the town. Two parks and several playgrounds are also easily accessible from the town centre and outlying housing estates.

1. What is the topic of the text?
 - c. Many town
 - c. Buildings
 - d. The liver black
 - d. Fishing
2. The main idea of paragraph 1?
 - c. Blacksands is a large seaside town.
 - c. Many big-name department stores.

- d. Situated near the beach are lots. d. The heart of town is occupied.
3. There Lots of things to do at blacksands?
- c. Is c. Was
d. Are d. Were
4. What is blacksands?
- c. A small seaside town c. A large seaside town
d. A harbour with boats d. Occupied by older houses
5. Where is it situated?
- c. Town c. Harstone
d. Historical buildings d. Near the beach
6. What buildings can we find in that town?
- c. Harstone c. Buildings
d. Historical buildings d. City
7. How many beaches that are popular for various water events?
- c. Two beaches c. Four beaches
d. Three beaches d. Much beaches
8. What have been develop in blacksands in recent years?
- e. The nearest highway and just ten minutes' drive from the city of Harstone,
f. Occupied by older houses and many historical buildings.
g. A harbour with boats for fishing and cruises.
h. New housing estates have been developed to the south of the town
9. The word "several" fairground (in the third paragraph), the underline word synonym with:
- c. An c. Many
d. A d. Any

10. The word "smaller shops" (in the second paragraph), the underline word antonym with?
- c. Bigger
 - c. Thin
 - d. Large
 - d. Huge
11. There..... a harbour with boats for fishing and cruises?
- c. Are
 - c. Is
 - d. Been
 - d. Am
12. The main idea the third paragraph?
- e. Blacksands is large seaside town
 - f. There are lots of things to do at blacksands
 - g. Occupied by older houses
 - d. Many big-name department store
13. Outside the town (in the second paragraph), the underline words antonym with?
- c. Behinds
 - c. Beside
 - d. Between
 - d. Inside
14. A few kilometers (in the first paragraph), the underline word antonym with?
- c. A little
 - c. Some
 - d. Many
 - d. Any
15. What is the conclusion of the text?
- e. It is only a few kilometers to the nearest highway and just ten minutes' drive from the city of Harstone.
 - f. In recent year, some new housing estates have been developed to the south of the town.
 - g. Some new housing estates have been developed to the south of the town.

- h. Two parks and several playgrounds are also easily accessible from the town centre and outlying housing estates.
16. What is the generic structure the text about?
- e. General classification-description
 - f. Identification- description
 - g. Orientation-complicaion-reorientation-conclusion
 - h. Orientation-event-re orientation
17. Blacksands is a large seaside town.
- What is the tense of the sentence?
- c. Simple present tense c. Past tense
 - d. Simple perfect tense d. Simple present continuous tense
18. What is the generic structure from the first paragraph?
- c. Description c. Event
 - d. Conclusion d. General classification

Question 19-38: this text below is for question number 19 up 38. Choose the best answer

Based on the text!

Indonesia possesses the greatest diversity of traditional textiles in the world-the colourful *bark clothes* of Kalimantan, Irian Jaya, and Sulawesi uplands: the plain *weaves songket silk* of Sumatra; reconfirm and maintain many old and hallowed associations, and also symbolize wealth, status and religious beliefs.

This is about symbolism of producing textiles in Jaya. The shipping and weaving of yarn were traditionally regarded as symbolic of the process of creation, and of human birth in particular. Weaving was generally an exclusively female activity. Men were permitted to participate only in the dyeing of certain colours of the thread, analogous with their role in human conception. Pregnant, menstruating or sick women were excluded from the work. If a death occurred in the village, the weaving would stop at once; otherwise, the spirit of the departed would do an exact vengeance, bringing sickness upon the weaver and causing the threads to lose their strength.

An entire language of textiles develop. For example, the brown and white *rahidup* (pattern of life) cloths of the Bataks were presented to a woman of seven-month pregnant with her first child, as *ulos ni tondi* (a soul cloth). The sacred *maa* cloths of the Torajans of southern Sulawesi are carefully kept in special baskets, and are still considered effective for the population of fertility spirits, and opening a powerful cloth is said to bring immediate rainfall.

Certain cloths, colours and motifs were set aside for exclusive use of kings and nobles, and certainly, the all-purpose-useful cloth is *sarung* or body wrap which is worn by the majority-men and women, children and old, the poor and the haves, throughout Indonesia at any season.

19. What is the topic of the text?
 - a. Textiles
 - b. Colourful
 - c. Symbolism
 - d. The fahnestock expedition
20. In what regions can you find the colourful bark clothes?
 - a. Kalimantan
 - b. Sumatra
 - c. Ternate
 - d. Maluku
21. Where the *songket silk* from?
 - a. Sumatra
 - b. Sulawesi
 - c. Java
 - d. Kalimantan
22. The beautiful batik from?
 - a. Sumatra
 - b. Sulawesi
 - c. Java
 - d. Irian jaya
23. What is the name cloth of Sulawesi?
 - a. Ulos ni tondi
 - b. Maa clothes
 - c. White radihup
 - d. Songket
24. Sick woman..... excluded from the work!
 - a. Am
 - b. Was
 - c. Were
 - d. Is
25. Who generally dyes thread?
 - a. Woman
 - c. Person

- b. Man d. Society
26. Who generally weaves yarn?
- a. Person c. Man
- b. Society d. Woman
27. The word women synonym with?
- a. Female c. Boy
- b. Male d. Man
28. The word man synonym with?
- a. Girls c. Male
- b. Female d. Lady
29. What is the main idea the second paragraph?
- a. This is about the symbolism of producing textiles in Java
- b. An entire language of textiles develop
- c. Certain cloths, colours and motifs were set aside for exclusive use of kings and nobles.
- d. Indonesia possesses the greatest diversity of traditional textiles
30. What is the main idea the third paragraph?
- a. Indonesia possesses the greatest diversity of traditional textiles
- b. An entire language of textiles develop
- c. Certain cloths, colours and motifs were set aside for exclusive use of kings and nobles.
- d. This is about the symbolism of producing textiles in Java
31. Certain cloths, colours and motifs..... set aside for the exclusive use of king and nobles.
- a. Is c. Was
- b. Am d. Were
32. What is the synonym the cloth?
- a. Skirt c. Dress
- b. Veil d. T-shirt

33. What is the cloth of, Batak were presented to a woman of seven-month pregnant with the first child?
- a. Ulos ni tondi
 - b. Maa cloth
 - c. Songket silk
 - d. Radihup
34. What is the conclusion from the text?
- a. The plain *weaves songket silk* of Sumatra; reconfirm and maintain many old and hallowed associations, and also symbolize wealth, status and religious beliefs.
 - b. The spirit of the departed would do an exact vengeance, bringing sickness upon the weaver and causing the threads to lose their strength.
 - c. Considered effective for the population of fertility spirits, and opening a powerful cloth is said to bring immediate rainfall.
 - d. Coth is *sarung* or body wrap which is worn by the majority-men and women, children and old, the poor and the haves, throughout Indonesia at any season.
35. What is the generic structure the text above?
- a. Identification-description
 - b. Orientation-complication-re orientation-conclusion
 - c. Issue-argument-conclusion
 - d. General clasificaton-description
36. Some *maa*..... considered effective.
- a. Was
 - b. Is
 - c. Have
 - d. Are
37. Why would the weaving stop when a death occurred?
- a. Causing the threads to lose their strength
 - b. To bring immediate rainfall.
 - c. Generally an exclusively female activity
 - d. This is about symbolism of producing textiles in Jaya.

38. What is the generic structure of the paragraph 2?

- a. Events
- b. Description
- c. Identification
- d. Re orientation

Question 39-50: this text below is for question number 39 up 50. Choose the best answer

based on the text!

Cloud are water vapour condensed into minute water particles which floats in masses in the atmosphere. There are the main types of clouds, classified according to the height at which they occur. Clouds were first named by the English chemist Luke Howard in 1803, a pioneer of methodology. The types he named were cirrus, cumulus and stratus.

Cirrus cloud are usually high and appear as delicate whitish threads against a blue sky. Because of their height, they are composed of ice crystals and not of water droplest.

Cumulus clouds typically have a rounded appearance and sometimes reach 20.000 feet into the sky. They are often characterized by having an anvil shape in the center of the cloud.

Stratus clouds are layers of cloud which can form at any height and tend to cover the whole sky. Often, the sky is overcast and the sun is probably completely concealed.

This is the basic grouping of types of clouds. The ever-changing cloud formations are an important aspect of meteorology and clouds can be further described in many ways.

39. What is the topic of the text?

- c. Atmosphere c. What are clouds
- d. Cirrus clouds d. Status clouds

40. The first paragraph tells us about...

- e. Cirrus clouds are usually high and appear as delicate whitish threads against a blue sky.

- f. Cumulus clouds typically have a rounded appearance and sometimes reach 20.000 feet into the sky
 - g. Stratus clouds are layers of cloud which caan form at any height and tend to cover the whole sky.
 - h. Clouds are water vapour condensed into minute water particles which float in messes in the atmosphere.
41. What is the topic sentence of paragraph four?
- e. Cirrus clouds are usually high and appear as delicate whitish threads against a blue sky.
 - f. Stratus clouds are layers of cloud which caan form at any height and tend to cover the whole sky.
 - g. Clouds are water vapour condensed into minute water particles which float in messes in the atmosphere.
 - h. Cumulus clouds typically have a rounded appearance and sometimes reach 20.000 feet into the sky
42. What the generic structure the first paragraph?
- c. General classification c. Complication
 - d. Orientation d. Identification
43. What the generic structure the third paragraph?
- a. General classification c. Conclusion
 - b. Description d. Complication
44. What the generic structure the fourth paragraph?
- a. General classification c. Description
 - b. Conclusion d. Orientation
45. They..... composed of ice crystals?
- c. Are c. Am
 - d. Is d. It
46. The word “types” (in first paragraph),
The underline word synonym with...

- a. Kinds c. Adjective
- b. Characteristic d. Clouds

47. The word “high” (in second paragraph)

The underline word synonym with....

- c. Small c. Soft
- d. Tall d. Fat

48. Who give the first name for clouds?

- c. Luke Howard c. John Luke
- d. Luis Howard d. Howard

49. When the first name of cloud is give?

- c. 1800 c. 1703
- d. 1700 d. 1803

50. What is the conclusion of the text?

- e. They are often characterized by having an anvil shape in the center of the cloud.
- f. The types he named Were cirrus, cumulus and stratus.
- g. Because of their height, they are somposed of ice crystals and not of water droplets.
- h. This is the basic grouping of types of clouds. The ever-changing cloud formation area n important aspect of metodologi and clouds can be futher described in many ways.

Appendix 6

ANSWER KEY

PRE TEST

1. C	11. C	21. A	31. D	41. D
2. A	12. D	22. C	32. C	42. C
3. B	13. C	23. D	33. A	43. D
4. D	14. B	24. A	34. C	44. B
5. D	15. C	25. A	35. B	45. A
6. A	16. C	26. C	36. D	46. A
7. B	17. B	27. C	37. A	47. B
8. C	18. B	28. D	38. D	48. A
9. A	19. C	29. B	39. A	49. D
10. B	20. A	30. A	40. A	50. D

POST TEST

1. A	11. C	21. A	31. D	41. B
2. A	12. B	22. C	32. C	42. A
3. B	13. D	23. B	33. A	43. B
4. C	14. A	24. C	34. D	44. B
5. D	15. D	25. B	35. D	45. A
6. B	16. A	26. D	36. D	46. A
7. A	17. A	27. A	37. A	47. B
8. D	18. D	28. C	38. B	48. A
9. C	19. D	29. A	39. C	49. D
10. A	20. A	30. B	40. D	50. D

Appendix 7

Validity of Pre- Test

No	NO ITEMS																																										
	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			
1	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	0	1	1	1	1	1	1	1	1	0	1	1	1	
2	1	1	1	1	1	1	1	1	0	1	0	0	1	1	0	0	1	1	1	1	0	1	1	1	1	1	0	0	1	0	1	0	1	0	1	0	1	1	1	1	0	0	0
3	0	0	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	0	1	0	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	
4	1	1	1	0	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	
5	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	0	1	0	0	1	1	1	1	0	1	0	0	1	1	1	1	1	0	0	1	1	0	0	1	
6	1	1	1	0	1	1	1	1	0	1	0	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	0	1	0	0	0	1	1	0	0	1	1	1	1	1	1	
7	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	0	0	1	1	1	1	0	0	1	1	1	1	1	0	1	0	0	1	1	1	1	1	
8	1	0	1	1	1	0	1	1	0	1	1	1	0	1	0	0	0	1	1	1	1	1	0	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
9	1	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1	1	1	1	1	0	1	1	1	1	1	0	0	1	0	1	1	0	0	0	1	0	1	1	0	1	0	
10	0	1	1	0	0	1	0	1	0	1	0	1	1	0	1	1	0	1	0	1	1	1	1	1	1	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	
11	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	1	1	1	0	0	1	0	0	1	0		
12	1	1	1	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	0	1	1	1	1	1	1	1	
13	0	0	1	1	1	1	1	1	0	0	0	1	1	1	0	0	0	1	1	1	1	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0
14	1	1	0	1	0	0	1	0	1	1	0	1	1	0	0	1	1	1	1	0	1	1	1	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	
15	1	1	0	1	1	1	1	1	0	1	0	1	1	1	0	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	0	1	
16	0	0	1	1	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	1	0	1	1	1	1	1	0	0	0	0	0	1	1	1	1	0	1	1	1	0	1	1	
17	1	1	1	1	1	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1	0	0	1	0	1	0	1	1	1	1	1	1	1	0	1	1	1	
18	0	0	1	1	0	1	0	1	0	0	1	1	0	1	0	1	1	1	1	0	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	0	0	0	0	
19	1	1	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	1	0	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	
20	1	1	1	1	1	1	1	0	0	0	0	0	1	1	0	1	1	1	0	1	0	1	0	1	0	1	0	0	0	0	0	1	1	1	0	0	1	1	1	0	0	1	
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22	1	0	0	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	1	0	1	1	0	0	0	0	0	1	0	1	1	1	0	0	1	0	1	1	1	1	1	
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N=23	15	14	8	6	7	5	5	8	6	14	8	17	7	8	3	5	6	2	5	4	5	8	7	9	5	4	19	6	7	5	1	9	6	5	6	2	7	5	7	6	1		
P	07	06	08	07	07	07	07	08	02	08	02	07	07	08	01	07	07	09	07	06	07	08	07	08	02	02	08	02	07	07	09	08	07	07	07	09	07	07	07	07	07	07	
Q	03	04	02	03	03	03	03	02	08	02	08	03	03	02	09	03	03	01	03	04	03	02	03	02	08	08	02	08	03	03	01	02	03	03	03	01	03	03	03	03	03	03	

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Validity of Pre Test

No	NUMBER OF ITEMS																												Xt	Xt ²			
	4 1	4 2	4 3	4 4	4 5	4 6	4 7	4 8	4 9	5 0	5 1	5 2	5 3	5 4	5 5	5 6	5 7	5 8	5 9	6 0	6 1	6 2	6 3	6 4	6 5	6 6	6 7	6 8			6 9	7 0	
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P	0 7	0 7	0 7	0 1	0 7	0 7	0 9	0 7	0 8	0 1	0 7	0 7	0 7	0 7	0 7	0 1	0 8	0 7	0 7	0 7	0 7	0 2	0 7	0 7	0 7	0 6	0 8	0 7	0 1			0 1	
Q	0 3	0 3	0 3	0 9	0 9	0 3	0 3	0 1	0 3	0 2	0 9	0 3	0 3	0 3	0 3	0 9	0 2	0 3	0 3	0 3	0 3	0 8	0 3	0 3	0 3	0 4	0 2	0 3	0 9			0 9	

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

Item 1 $r_{pbi} = \frac{M_p - M_t}{SD_t} \sqrt{\frac{p}{q}}$
 $r_{pbi} = \frac{46.46 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$
 $r = \frac{2.03}{5.89} \sqrt{2.33}$
 $r = 0.334 \times 1.52 = 0.522$

Item 2 $r_{pbi} = \frac{46.62 - 44.43}{5.28} \sqrt{\frac{0.6}{0.4}}$
 $r = \frac{2.19}{5.89} \sqrt{1.5}$
 $r = 0.38 \times 1.2 = 0.456$

Item 3 $r_{pbi} = \frac{46.29 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$
 $r = \frac{1.86}{5.89} \sqrt{2.33}$
 $r = 0.32 \times 1.52 = 0.486$

Item 4 $r_{pbi} = \frac{46.43 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$
 $r = \frac{2}{5.89} \sqrt{2.33}$
 $r = 0.34 \times 1.52 = 0.516$

Item 5 $r_{pbi} = \frac{46.29 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$
 $r = \frac{1.86}{5.89} \sqrt{2.33}$
 $r = 0.32 \times 1.52 = 0.486$

Item 6 $r_{pbi} = \frac{46.13 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$
 $r = \frac{1.7}{5.89} \sqrt{2.33}$
 $r = 0.288 \times 1.52 = 0.437$

Item 7 $r_{pbi} = \frac{46.25 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$
 $r = \frac{1.82}{5.89} \sqrt{2.33}$

$$r = 0.31 \times 1.52 = 0.471$$

$$\begin{aligned}\textbf{Item 8 } r_{\text{pbi}} &= \frac{45.83-44.43}{5.89} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.4}{5.89} \sqrt{4} \\ r &= 0.24 \times 2 = 0.48\end{aligned}$$

$$\begin{aligned}\textbf{Item 9 } r_{\text{pbi}} &= \frac{48.66-44.43}{5.89} \sqrt{\frac{0.2}{0.8}} \\ r &= \frac{4.23}{5.89} \sqrt{0.25} \\ r &= 0.71 \times 0.5 = 0.355\end{aligned}$$

$$\begin{aligned}\textbf{Item 10 } r_{\text{pbi}} &= \frac{45.78-44.43}{5.89} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.35}{5.89} \sqrt{4} \\ r &= 0.229 \times 2 = 0.458\end{aligned}$$

$$\begin{aligned}\textbf{Item 11 } r_{\text{pbi}} &= \frac{49.5-44.43}{5.89} \sqrt{\frac{0.1}{0.9}} \\ r &= \frac{5.07}{5.89} \sqrt{0.1} \\ r &= 0.86 \times 0.3 = 0.258\end{aligned}$$

$$\begin{aligned}\textbf{Item 12 } r_{\text{pbi}} &= \frac{49.29-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{4.86}{5.89} \sqrt{2.33} \\ r &= 0.825 \times 1.52 = 0.542\end{aligned}$$

$$\begin{aligned}\textbf{Item 13 } r_{\text{pbi}} &= \frac{46.29-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.86}{5.28} \sqrt{2.33} \\ r &= 0.315 \times 1.52 = 0.4788\end{aligned}$$

$$\begin{aligned}\textbf{Item 14 } r_{\text{pbi}} &= \frac{46.22-44.43}{5.89} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.79}{5.89} \sqrt{4} \\ r &= 0.303 \times 2 = 0.606\end{aligned}$$

$$\begin{aligned}\text{Item 15 } r_{\text{pbi}} &= \frac{48.33-44.43}{5.89} \sqrt{\frac{0.1}{0.9}} \\ r &= \frac{3.9}{5.89} \sqrt{0.11} \\ r &= 0.662 \times 0.33 = 0.2184\end{aligned}$$

$$\begin{aligned}\text{Item 16 } r_{\text{pbi}} &= \frac{46.6-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.17}{5.89} \sqrt{2.33} \\ r &= 0.368 \times 1.52 = 0.5593\end{aligned}$$

$$\begin{aligned}\text{Item 17 } r_{\text{pbi}} &= \frac{46.4-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.97}{5.83} \sqrt{2.33} \\ r &= 0.334 \times 1.52 = 0.507\end{aligned}$$

$$\begin{aligned}\text{Item 18 } r_{\text{pbi}} &= \frac{45.09-44.43}{5.89} \sqrt{\frac{0.9}{0.1}} \\ r &= \frac{0.66}{5.89} \sqrt{9} \\ r &= 0.112 \times 3 = 0.336\end{aligned}$$

$$\begin{aligned}\text{Item 19 } r_{\text{pbi}} &= \frac{46.6-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.17}{5.89} \sqrt{2.33} \\ r &= 0.368 \times 1.52 = 0.5593\end{aligned}$$

$$\begin{aligned}\text{Item 20 } r_{\text{pbi}} &= \frac{46.5-44.43}{5.89} \sqrt{\frac{0.6}{0.4}} \\ r &= \frac{2.07}{5.89} \sqrt{1.5} \\ r &= 0.351 \times 1.22 = 0.428\end{aligned}$$

$$\begin{aligned}\text{Item 21 } r_{\text{pbi}} &= \frac{46.2-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.77}{5.89} \sqrt{2.33} \\ r &= 0.300 \times 1.52 = 0.456\end{aligned}$$

$$\begin{aligned}\text{Item 22 } r_{\text{pbi}} &= \frac{46.05-44.43}{5.89} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.62}{5.89} \sqrt{4} \\ r &= 0.275 \times 2 = 0.55\end{aligned}$$

$$\begin{aligned}\text{Item 23 } r_{\text{pbi}} &= \frac{46-44.43}{5.89} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.57}{5.89} \sqrt{4} \\ r &= 0.266 \times 2 = 0.532\end{aligned}$$

$$\begin{aligned}\text{Item 24 } r_{\text{pbi}} &= \frac{45.53-44.43}{5.89} \sqrt{\frac{0.9}{0.1}} \\ r &= \frac{1.1}{5.89} \sqrt{9} \\ r &= 0.187 \times 3 = 0.561\end{aligned}$$

$$\begin{aligned}\text{Item 25 } r_{\text{pbi}} &= \frac{42.4-44.43}{5.89} \sqrt{\frac{0.1}{0.9}} \\ r &= \frac{-2.03}{5.89} \sqrt{0.1} \\ r &= -0.344 \times 0.3 = -0.103\end{aligned}$$

$$\begin{aligned}\text{Item 26 } r_{\text{pbi}} &= \frac{49.5-44.43}{5.89} \sqrt{\frac{0.1}{0.9}} \\ r &= \frac{5.07}{5.89} \sqrt{0.1} \\ r &= 0.86 \times 0.3 = 0.258\end{aligned}$$

$$\begin{aligned}\text{Item 27 } r_{\text{pbi}} &= \frac{46-44.43}{5.89} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.57}{5.89} \sqrt{4} \\ r &= 0.266 \times 2 = 0.532\end{aligned}$$

$$\begin{aligned}\text{Item 28 } r_{\text{pbi}} &= \frac{48.66-44.43}{5.89} \sqrt{\frac{0.2}{0.8}} \\ r &= \frac{4.23}{5.89} \sqrt{0.25} \\ r &= 0.718 \times 0.5 = 0.359\end{aligned}$$

$$\begin{aligned}\text{Item 29 } r_{\text{pbi}} &= \frac{46-44.43}{5.89} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.57}{5.89} \sqrt{4} \\ r &= 0.266 \times 2 = 0.532\end{aligned}$$

$$\begin{aligned}\text{Item 30 } r_{\text{pbi}} &= \frac{46.33-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.9}{5.89} \sqrt{2.33} \\ r &= 0.322 \times 1.52 = 0.4894\end{aligned}$$

$$\begin{aligned}\textbf{Item 31 } r_{\text{pbi}} &= \frac{44.23 - 44.43}{5.89} \sqrt{\frac{0.9}{0.1}} \\ r &= \frac{-0.2}{5.89} \sqrt{9} \\ r &= -0.033 \times 3 = -0.1018\end{aligned}$$

$$\begin{aligned}\textbf{Item 32 } r_{\text{pbi}} &= \frac{46 - 44.43}{5.89} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.57}{5.89} \sqrt{4} \\ r &= 0.266 \times 2 = 0.532\end{aligned}$$

$$\begin{aligned}\textbf{Item 33 } r_{\text{pbi}} &= \frac{45.53-44.43}{5.89} \sqrt{\frac{0.9}{0.3}} \\ r &= \frac{1.1}{5.89} \sqrt{9} \\ r &= 0.186 \times 3 = 0.5093\end{aligned}$$

$$\begin{aligned}\textbf{Item 34 } r_{\text{pbi}} &= \frac{46.66-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.23}{5.89} \sqrt{2.33} \\ r &= 0.378 \times 1.52 = 0.5745\end{aligned}$$

$$\begin{aligned}\textbf{Item 35 } r_{\text{pbi}} &= \frac{46.25-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.82}{5.89} \sqrt{2.33} \\ r &= 0.308 \times 1.52 = 0.4681\end{aligned}$$

$$\begin{aligned}\textbf{Item 36 } r_{\text{pbi}} &= \frac{44.45-44.43}{5.89} \sqrt{\frac{0.9}{0.1}} \\ r &= \frac{0.02}{5.89} \sqrt{9} \\ r &= 0.0034 \times 3 = 0.0102\end{aligned}$$

$$\begin{aligned}\textbf{Item 37 } r_{\text{pbi}} &= \frac{45.8-44.43}{5.89} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.37}{5.89} \sqrt{4} \\ r &= 0.232 \times 2 = 0.465\end{aligned}$$

$$\begin{aligned}\textbf{Item 38 } r_{\text{pbi}} &= \frac{47.26-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.83}{5.89} \sqrt{2.33} \\ r &= 0.480 \times 1.52 = 0.7296\end{aligned}$$

$$\begin{aligned}\textbf{Item 39 } r_{\text{pbi}} &= \frac{45.88-44.43}{5.89} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.45}{5.89} \sqrt{4} \\ r &= 0.246 \times 2 = 0.492\end{aligned}$$

$$\begin{aligned}\textbf{Item 40 } r_{\text{pbi}} &= \frac{46.31-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.88}{5.89} \sqrt{2.33} \\ r &= 0.319 \times 1.52 = 0.4848\end{aligned}$$

$$\begin{aligned}\text{Item 41 } r_{\text{pbi}} &= \frac{47-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.57}{5.89} \sqrt{2.33} \\ r &= 0.436 \times 1.52 = 0.662\end{aligned}$$

$$\begin{aligned}\text{Item 42 } r_{\text{pbi}} &= \frac{46.06-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.63}{5.89} \sqrt{2.33} \\ r &= 0.276 \times 1.52 = 0.4206\end{aligned}$$

$$\begin{aligned}\text{Item 43 } r_{\text{pbi}} &= \frac{46.6-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.17}{5.89} \sqrt{2.33} \\ r &= 0.368 \times 1.52 = 0.559\end{aligned}$$

$$\begin{aligned}\text{Item 44 } r_{\text{pbi}} &= \frac{38-44.43}{5.89} \sqrt{\frac{0.1}{0.9}} \\ r &= \frac{-6.43}{5.89} \sqrt{0.11} \\ r &= -1.09 \times 0.33 = -0.359\end{aligned}$$

$$\begin{aligned}\text{Item 45 } r_{\text{pbi}} &= \frac{49.5-44.43}{5.89} \sqrt{\frac{0.1}{0.9}} \\ r &= \frac{5.07}{5.89} \sqrt{0.11} \\ r &= 0.860 \times 0.33 = 0.2838\end{aligned}$$

$$\begin{aligned}\text{Item 46 } r_{\text{pbi}} &= \frac{46.29-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.86}{5.89} \sqrt{2.33} \\ r &= 0.315 \times 1.52 = 0.4788\end{aligned}$$

$$\begin{aligned}\text{Item 47 } r_{\text{pbi}} &= \frac{46.62-44.43}{5.89} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.19}{5.89} \sqrt{2.33} \\ r &= 0.371 \times 1.52 = 0.5639\end{aligned}$$

$$\begin{aligned}\text{Item 48 } r_{\text{pbi}} &= \frac{44.23-44.43}{5.89} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{-0.2}{5.89} \sqrt{9} \\ r &= -0.033 \times 3 = -0.099\end{aligned}$$

$$\text{Item 49 } r_{\text{pbi}} = \frac{47-44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.57}{5.89} \sqrt{2.33}$$

$$r = 0.436 \times 1.52 = 0.6627$$

Item 50 $r_{\text{pbi}} = \frac{46.33-44.43}{5.89} \sqrt{\frac{0.8}{0.2}}$

$$r = \frac{1.9}{5.89} \sqrt{4}$$

$$r = 0.322 \times 2 = 0.644$$

Item 51 $r_{\text{pbi}} = \frac{49.5-44.43}{5.89} \sqrt{\frac{0.1}{0.9}}$

$$r = \frac{5.07}{5.89} \sqrt{0.25}$$

$$r = 0.860 \times 0.5 = 0.532$$

Item 52 $r_{\text{pbi}} = \frac{46-44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$

$$r = \frac{1.6}{5.89} \sqrt{2.33}$$

$$r = 0.276 \times 1.52 = 0.419$$

Item 53 $r_{\text{pbi}} = \frac{47.26-44.43}{5.89} \sqrt{\frac{0.6}{0.4}}$

$$r = \frac{2.83}{5.89} \sqrt{1.5}$$

$$r = 0.480 \times 1.2 = 0.576$$

Item 54 $r_{\text{pbi}} = \frac{46.4-44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$

$$r = \frac{1.97}{5.89} \sqrt{2.33}$$

$$r = 0.334 \times 1.52 = 0.507$$

Item 55 $r_{\text{pbi}} = \frac{46.31-44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$

$$r = \frac{1.88}{5.89} \sqrt{2.33}$$

$$r = 0.319 \times 1.52 = 0.4848$$

Item 56 $r_{\text{pbi}} = \frac{48.33-44.43}{5.89} \sqrt{\frac{0.1}{0.9}}$

$$r = \frac{3.9}{5.89} \sqrt{0.11}$$

$$r = 0.662 \times 0.33 = 0.218$$

Item 57 $r_{\text{pbi}} = \frac{45.83-44.43}{5.89} \sqrt{\frac{0.8}{0.2}}$

$$r = \frac{1.4}{5.89} \sqrt{4}$$

$$r = 0.237 \times 2 = 0.474$$

Item 58 $r_{\text{pbi}} = \frac{47-44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$

$$r = \frac{2.57}{5.89} \sqrt{2.33}$$

$$r = 0.436 \times 1.52 = 0.662$$

$$\text{Item 59 } r_{\text{pbi}} = \frac{46 - 44.43}{5.89} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{1.57}{5.89} \sqrt{4}$$

$$r = 0.266 \times 2 = 0.532$$

$$\text{Item 60 } r_{\text{pbi}} = \frac{46.4 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{1.97}{5.89} \sqrt{2.33}$$

$$r = 0.334 \times 1.52 = 0.5076$$

$$\text{Item 61 } r_{\text{pbi}} = \frac{45.93 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{1.53}{5.89} \sqrt{2.33}$$

$$r = 0.27 \times 1.52 = 0.414$$

$$\text{Item 62 } r_{\text{pbi}} = \frac{46.6 - 44.43}{5.89} \sqrt{\frac{0.2}{0.8}}$$

$$r = \frac{2.17}{5.89} \sqrt{0.25}$$

$$r = 0.368 \times 0.5 = 0.184$$

$$\text{Item 63 } r_{\text{pbi}} = \frac{46.56 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.13}{5.89} \sqrt{2.33}$$

$$r = 0.361 \times 1.52 = 0.548$$

$$\text{Item 64 } r_{\text{pbi}} = \frac{46.46 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.03}{5.89} \sqrt{2.33}$$

$$r = 0.344 \times 1.52 = 0.522$$

$$\text{Item 65 } r_{\text{pbi}} = \frac{46.12 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{1.7}{5.89} \sqrt{2.33}$$

$$r = 0.293 \times 1.52 = 0.445$$

$$\text{Item 66 } r_{\text{pbi}} = \frac{46.78 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.35}{5.89} \sqrt{2.33}$$

$$r = 0.398 \times 1.52 = 0.6049$$

$$\text{Item 67 } r_{\text{pbi}} = \frac{46.05 - 44.43}{5.89} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{1.62}{5.89} \sqrt{4}$$

$$r = 0.275 \times 2 = 0.55$$

$$\textbf{Item 68 } r_{\text{pbi}} = \frac{46.2 - 44.43}{5.89} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{1.77}{5.89} \sqrt{2.33}$$

$$r = 0.3005 \times 1.52 = 0.4567$$

$$\textbf{Item 69 } r_{\text{pbi}} = \frac{42.66 - 44.43}{5.89} \sqrt{\frac{0.1}{0.9}}$$

$$r = \frac{-1.77}{5.89} \sqrt{0.11}$$

$$r = -0.300 \times 0.33 = -0.099$$

$$\textbf{Item 70 } r_{\text{pbi}} = \frac{45.25 - 44.43}{5.89} \sqrt{\frac{0.2}{0.8}}$$

$$r = \frac{0.82}{5.89} \sqrt{0.25}$$

$$r = 0.139 \times 0.5 = 0.0695$$

Appendix 8

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)

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

$$M_t = \frac{1022}{23} = 44.43$$

2. Standard Deviation (SD_t)

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

$$SD_t = \sqrt{\frac{46202}{23} - \left(\frac{1022}{23}\right)^2}$$

$$SD_t = \sqrt{2008.78 - 44.43^2}$$

$$SD_t = \sqrt{2008.78 - 1974.02} = \sqrt{34.76} = 5.89$$

3. Means Score (M_p)

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

$$M_{p1} = \frac{50+40+52+47+49+54+42+51+45+47+44+51+38+43+44}{15}$$

$$M_{p1} = \frac{697}{15} = 46.46$$

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

$$M_{p2} = \frac{50+40+52+47+49+42+44+51+45+47+44+51+44}{13}$$

$$M_{p2} = \frac{646}{14} = 46.62$$

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

$$M_{p3} = \frac{50+40+51+52+33+47+54+42+44+51+44+45+47+44+42+51+40}{17}$$

$$M_{p3} = \frac{787}{17} = 46.29$$

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

$$M_{p4} = \frac{50+40+51+49+54+42+51+44+45+47+41+44+42+51+38+44}{16}$$

$$M_{p4} = \frac{743}{16} = 46.43$$

$$\begin{aligned}\text{Item 5 } M_{p5} &= \frac{\text{the total of students score that answer true item}}{n5} \\ M_{p5} &= \frac{50+40+51+52+47+49+54+42+51+44+47+41+44+38+43+44+40}{17} \\ &= \frac{787}{17} = 46.29\end{aligned}$$

$$\begin{aligned}\text{Item 6 } M_{p6} &= \frac{\text{the total of students score that answer true item}}{n6} \\ M_{p6} &= \frac{50+40+51+52+47+49+42+44+51+44+47+42+51+38+44}{15} \\ &= \frac{692}{15} = 46.13\end{aligned}$$

$$\begin{aligned}\text{Item 7 } M_{p7} &= \frac{\text{the total of students score that answer true item}}{n7} \\ M_{p7} &= \frac{40+52+47+54+42+51+44+45+47+41+51+38+43+44+40}{15} \\ &= \frac{679}{15} = 46.25\end{aligned}$$

$$\begin{aligned}\text{Item 8 } M_{p8} &= \frac{\text{the total of students score that answer true item}}{n8} \\ M_{p8} &= \frac{50+40+51+52+33+47+49+54+42+44+51+44+47+41+42+51+43+44}{18} \\ M_{p8} &= \frac{825}{18} = 45.83\end{aligned}$$

$$\begin{aligned}\text{Item 9 } &= \frac{\text{the total of students score that answer true item}}{n9} \\ M_{p9} &= \frac{51+52+49+45+51+44}{6} \\ &= \frac{292}{6} = 48.66\end{aligned}$$

$$\begin{aligned}\text{Item 10 } M_{p10} &= \frac{\text{the total of students score that answer true item}}{n10} \\ M_{p10} &= \frac{50+40+51+52+33+47+49+54+42+44+51+45+47+41+51+43+44+40}{18} \\ M_{p10} &= \frac{824}{18} = 45.78\end{aligned}$$

$$\begin{aligned}\text{Item 11 } M_{p11} &= \frac{\text{the total of students score that answer true item}}{n11} \\ M_{p11} &= \frac{51+54+51+42}{4} \\ M_{p11} &= \frac{198}{4} = 49.5\end{aligned}$$

$$\begin{aligned}\text{Item 12 } M_{p12} &= \frac{50+51+52+47+49+54+44+51+44+45+47+44+42+51+43+44+40}{17}\end{aligned}$$

$$M_{p12} = \frac{838}{17} = 49.29$$

$$50+40+51+52+49+54+42+51+44+47+41+44$$

$$+44+51+43+44+40$$

Item 13 $M_{p13} = \frac{\quad}{17}$

$$M_{p1} = \frac{787}{17} = 46.29$$

Item 14 $M_{p14} = \frac{50+40+51+52+47+49+54+42+51}{18}$

$$+44+45+47+44+51+38+43+44+40$$

$$M_{p14} = \frac{832}{18} = 46.22$$

Item 15 $M_{p15} = \frac{50+44+51}{3}$

$$M_{p15} = \frac{145}{3} = 48.33$$

Item 16 $M_{p16} = \frac{50+51+52+47+49+42+44+51}{15}$

$$+45+47+44+42+51+44+40$$

$$M_{p16} = \frac{699}{15} = 46.6$$

Item 17 $M_{p17} = \frac{50+40+51+47+49+54+42+51}{15}$

$$+45+47+44+51+38+43+44$$

$$M_{p17} = \frac{696}{15} = 46.4$$

Item 18 $M_{p18} = \frac{50+40+51+52+33+47+49+54+42+44+51}{22}$

$$+44+45+47+41+44+42+51+38+43+44+40$$

$$M_{p18} = \frac{992}{22} = 45.09$$

Item 19 $M_{p19} = \frac{50+40+51+52+47+49+54+42+51}{15}$

$$+44+45+47+41+44+42$$

$$M_{p19} = \frac{699}{15} = 46.6$$

Item 20 $M_{p20} = \frac{51+52+47+54+44+51}{14}$

$$+44+47+41+44+51+38+43+44$$

$$M_{p20} = \frac{651}{14} = 46.5$$

Item 21 $M_{p21} = \frac{50+40+52+54+42+44+51}{15}$

$$+44+45+47+44+42+51+43+44$$

$$M_{p21} = \frac{693}{15} = 46.2$$

Item 22 $M_{p22} = \frac{50+40+51+52+47+49+54+42+44+51}{18}$

$$+44+45+41+44+42+51+38+44$$

$$M_{p22} = \frac{829}{18} = 46.05$$

$$\text{Item 23 } M_{p23} = \frac{\frac{50+40+52+47+49+54+42+44+51}{+45+47+41+42+51+43+44+40}}{17}$$

$$M_{p23} = \frac{782}{17} = 46$$

$$\text{Item 24 } M_{p24} = \frac{\frac{40+51+52+47+49+54+42+44+51+}{45+47+41+44+42+51+38+43+44+40}}{19}$$

$$M_{p24} = \frac{865}{19} = 45.53$$

$$\text{Item 25 } M_{p25} = \frac{33+44+41+51+43}{5}$$

$$M_{p25} = \frac{212}{5} = 42.4$$

$$\text{Item 26 } M_{p26} = \frac{51+54+51+42}{4}$$

$$M_{p26} = \frac{198}{4} = 49.5$$

$$\text{Item 27 } M_{p27} = \frac{\frac{50+40+51+52+33+47+49+54+42+44+51+44+}{45+47+44+42+51+43+40}}{19}$$

$$M_{p27} = \frac{874}{19} = 46$$

$$\text{Item 28 } M_{p28} = \frac{51+52+49+45+51+44}{6}$$

$$M_{p28} = \frac{292}{6} = 48.66$$

$$\text{Item 29 } M_{p29} = \frac{50+40+51+52+49+54+42+44+51+44+45+47+44+42+51+43+40}{17}$$

$$M_{p29} = \frac{789}{17} = 46.41$$

$$\text{Item 30 } M_{p30} = \frac{50+51+52+49+54+42+44+51+44+47+44+42+38+43+44}{15}$$

$$M_{p30} = \frac{695}{15} = 46.33$$

$$\text{Item 31 } M_{p31} = \frac{\frac{50+40+51+52+33+47+49+54+44+30+44+45+47}{+41+44+42+51+38+43+44+40}}{21}$$

$$M_{p31} = \frac{929}{21} = 44.23$$

$$\text{Item 32 } M_{p32} = \frac{\frac{50+40+51+52+33+47+49+54+42+44+51+44+}{45+47+44+42+51+43+40}}{19}$$

$$M_{p32} = \frac{874}{19} = 46$$

$$\text{Item 33 } M_{p33} = \frac{50+40+51+52+33+49+54+44+51+44+45+47}{19} = \frac{865}{19} = 45.53$$

$$\text{Item 34 } M_{p34} = \frac{50+51+52+54+42+44+51+44+45+47}{15} = \frac{700}{15} = 46.66$$

$$\text{Item 35 } M_{p35} = \frac{50+40+51+52+47+54+44+51+44+45}{16} = \frac{740}{16} = 46.25$$

$$\text{Item 36 } M_{p36} = \frac{50+40+51+52+33+47+49+54+42+44+30+51+44+45+47}{22} = \frac{978}{22} = 44.45$$

$$\text{Item 37 } M_{p37} = \frac{40+51+52+33+47+49+54+42+44+51+45+47}{17} = \frac{778}{17} = 45.8$$

$$\text{Item 38 } M_{p38} = \frac{50+51+52+47+49+54+44+51+44+45+44+51+43+44+40}{15} = \frac{709}{15} = 47.26$$

$$\text{Item 39 } M_{p39} = \frac{50+51+52+47+49+54+42+30+51+44+47+41+44+51+43+44+40}{17} = \frac{780}{17} = 45.88$$

$$\text{Item 40 } M_{p40} = \frac{50+51+52+33+47+49+54+44+51+45+47+41+44+51+38+44}{16} = \frac{741}{16} = 46.31$$

$$\text{Item 41 } M_{p41} = \frac{50+51+52+33+47+49+54+42+30+44+45+41+44+42+38+43+44}{16} = \frac{799}{16} = 49.94$$

$$\text{Item 42 } M_{p42} = \frac{40+52+47+49+54+42+51+44+45+47+44+51+38+43+44}{15} = \frac{691}{15} = 46.06$$

$$\text{Item 43 } M_{p43} = \frac{50+40+52+47+49+54+44+51+45+47+44+51+38+43+44}{15}$$

$$M_{p43} = \frac{699}{15} = 46.6$$

$$\text{Item 44 } M_{p44} = \frac{33+43}{2}$$

$$M_{p44} = \frac{76}{2} = 38$$

$$\text{Item 45 } M_{p45} = \frac{51+54+51+42}{4}$$

$$M_{p45} = \frac{198}{4} = 49.5$$

$$\text{Item 46 } M_{p46} = \frac{50+40+51+52+47+49+54+42+44+47+41+44+51+38+43+44+40}{17}$$

$$M_{p46} = \frac{787}{17} = 46.29$$

$$\text{Item 47 } M_{p47} = \frac{50+40+51+52+7+49+54+42+44+51+44+47+42+51+38+44}{16}$$

$$M_{p47} = \frac{746}{16} = 46.62$$

$$\text{Item 48 } M_{p48} = \frac{50+40+51+52+33+47+49+54+44+30+44+45+47+41+44+42+51+38+43+44+40}{21}$$

$$M_{p48} = \frac{929}{21} = 44.23$$

$$\text{Item 49 } M_{p49} = \frac{50+51+52+47+49+54+44+51+44+45+41+44+42+51+43+44}{16}$$

$$M_{p49} = \frac{752}{16} = 47$$

$$\text{Item 50 } M_{p50} = \frac{50+40+51+52+47+49+54+42+44+51+44+47+41+44+51+43+44+40}{18}$$

$$M_{p50} = \frac{834}{18} = 46.33$$

$$\text{Item 51 } M_{p51} = \frac{51+54+51+42}{4}$$

$$M_{p51} = \frac{198}{4} = 49.5$$

$$\text{Item 52 } M_{p52} = \frac{50+40+51+52+33+47+49+54+44+51+45+47+41+51+43+44+40}{17}$$

$$M_{p52} = \frac{782}{17} = 46$$

$$\text{Item 53 } M_{p53} = \frac{50+51+52+47+49+54+44+51+44+45+44+51+43+44+40}{15}$$

$$M_{p53} = \frac{709}{15} = 47.26$$

$$\text{Item 54 } M_{p54} = \frac{51+52+47+49+54+42+51+44+47+44+42+51+38+44+40}{15}$$

$$M_{p54} = \frac{696}{15} = 46.4$$

$$\text{Item 55 } M_{p55} = \frac{50+51+52+33+47+49+54+42+44+51+45+47+41+51+44+40}{16}$$

$$M_{p55} = \frac{741}{16} = 46.31$$

$$\text{Item 56 } M_{p56} = \frac{50+44+51}{3}$$

$$M_{p56} = \frac{145}{3} = 48.33$$

$$\text{Item 57 } M_{p57} = \frac{50+40+51+47+49+54+42+44+51+44+45+47+41+44+51+38+43+44}{18}$$

$$M_{p57} = \frac{825}{18} = 45.83$$

$$\text{Item 58 } M_{p58} = \frac{50+51+52+47+54+42+44+51+44+47+41+44+51+43+44}{15}$$

$$M_{p58} = \frac{705}{15} = 47$$

$$\text{Item 59 } M_{p59} = \frac{50+40+51+52+33+49+54+44+51+44+45+47+44+51+43+44+40}{17}$$

$$M_{p59} = \frac{782}{17} = 46$$

$$\text{Item 60 } M_{p60} = \frac{51+52+33+47+54+44+30+51+44+47+41+44+51+43+44}{15}$$

$$M_{p60} = \frac{696}{15} = 46.4$$

$$\text{Item 61 } M_{p61} = \frac{50+40+52+54+42+44+51+44+45+47+44+42+51+43+40}{15}$$

$$M_{p61} = \frac{689}{15} = 45.93$$

$$\text{Item 62 } M_{p62} = \frac{50+47+51+41+44}{5}$$

$$M_{p62} = \frac{233}{5} = 46.6$$

$$\text{Item 63 } M_{p63} = \frac{50+52+33+47+49+54+44+30+51+45+47+41+44+51+43+40}{16}$$

$$M_{p63} = \frac{745}{16} = 46.56$$

$$\text{Item 64 } M_{p64} = \frac{50+40+51+52+33+47+49+54+44+51+44+47+51+44+40}{15}$$

$$M_{p64} = \frac{697}{15} = 46.46$$

$$\textbf{Item 65 } M_{p65} = \frac{50+40+52+47+49+54+42+44+51+45+47+41+42+51+43+40}{16}$$

$$M_{p65} = \frac{738}{16} = 46.12$$

$$\textbf{Item 66 } M_{p66} = \frac{50+51+52+49+54+44+30+51+44+45+47+44+51+43}{14}$$

$$M_{p66} = \frac{655}{14} = 46.78$$

$$\textbf{Item 67 } M_{p67} = \frac{40+51+52+47+49+54+44+51+44+45+47+41+44+42+51+43+44+40}{18}$$

$$M_{p67} = \frac{829}{18} = 46.05$$

$$\textbf{Item 68 } M_{p68} = \frac{51+52+47+49+54+42+44+51+45+41+44+51+38+44+40}{15}$$

$$M_{p68} = \frac{693}{15} = 46.2$$

$$\textbf{Item 69 } M_{p69} = \frac{33+44+51}{3}$$

$$M_{p69} = \frac{128}{3} = 42.66$$

$$\textbf{Item 70 } M_{p70} = \frac{49+47+42+43}{4}$$

$$M_{p70} = \frac{181}{4} = 45.25$$

Appendix 9

Table of Pre Test Validity

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.	46.46	44.43	5.89	0.7	0.3	0.522	0.413	Valid
2.	46.62	44.43	5.89	0.6	0.4	0.456	0.413	Valid
3.	46.29	44.43	5.89	0.8	0.2	0.486	0.413	Valid
4.	46.43	44.43	5.89	0.6	0.4	0.516	0.413	Valid
5.	46.29	44.43	5.89	0.7	0.3	0.486	0.413	Valid
6.	46.13	44.43	5.89	0.7	0.3	0.437	0.413	Valid
7.	46.25	44.43	5.89	0.7	0.3	0.471	0.413	Valid
8.	45.83	44.43	5.89	0.8	0.2	0.48	0.413	Valid
9.	46.88	44.43	5.89	0.2	0.8	0.355	0.413	Invalid
10.	45.78	44.43	5.89	0.8	0.2	0.458	0.413	Valid
11.	49.5	44.43	5.89	0.2	0.8	0.258	0.413	Invalid
12.	49.29	44.43	5.89	0.8	0.2	0.542	0.413	Valid
13.	46.29	44.43	5.89	0.7	0.3	0.478	0.413	Valid
14.	46.22	44.43	5.89	0.8	0.2	0.606	0.413	Valid
15.	48.33	44.43	5.89	0.1	0.9	0.218	0.413	Invalid
16.	46.6	44.43	5.89	0.7	0.3	0.559	0.413	Valid
17.	46.4	44.43	5.89	0.7	0.3	0.507	0.413	Valid
18.	45.09	44.43	5.89	0.9	0.1	0.336	0.413	Invalid
19.	46.6	44.43	5.89	0.7	0.3	0.559	0.413	Valid
20.	46.5	44.43	5.89	0.6	0.4	0.428	0.413	Valid
21.	46.2	44.43	5.89	0.7	0.3	0.456	0.413	Valid
22.	46.05	44.43	5.89	0.8	0.2	0.55	0.413	Valid
23.	46	44.43	5.89	0.7	0.3	0.532	0.413	Valid
24.	45.53	44.43	5.89	0.8	0.2	0.561	0.413	Valid
25.	42.4	44.43	5.89	0.2	0.8	-0.103	0.413	Invalid
26.	49.5	44.43	5.89	0.2	0.8	0.258	0.413	Invalid
27.	46	44.43	5.89	0.8	0.2	0.532	0.413	Valid
28.	48.66	44.43	5.89	0.2	0.8	0.359	0.413	Invalid
29.	46.41	44.43	5.89	0.7	0.3	0.532	0.413	Valid
30.	46.33	44.43	5.89	0.7	0.3	0.489	0.413	Valid
31.	46.23	44.43	5.89	0.9	0.1	-0.101	0.413	Invalid
32.	46	44.43	5.89	0.8	0.2	0.532	0.413	Valid
33.	45.53	44.43	5.89	0.7	0.3	0.509	0.413	Valid
34.	46.66	44.43	5.89	0.7	0.3	0.574	0.413	Valid

35.	46.25	44.43	5.89	0.7	0.3	0.468	0.413	Valid
36.	44.45	44.43	5.89	0.9	0.1	0.010	0.413	Invalid
37.	45.8	44.43	5.89	0.7	0.3	0.465	0.413	Valid
38.	47.26	44.43	5.89	0.7	0.3	0.729	0.413	Valid
39.	45.88	44.43	5.89	0.7	0.3	0.492	0.413	Valid
40.	46.31	44.43	5.89	0.7	0.3	0.484	0.413	Valid
41.	47	44.43	5.89	0.7	0.3	0.662	0.413	Valid
42.	46.06	44.43	5.89	0.7	0.3	0.420	0.413	Valid
43.	46.6	44.43	5.89	0.7	0.3	0.559	0.413	Valid
44.	38	44.43	5.89	0.1	0.9	-0.359	0.413	Invalid
45.	49.5	44.43	5.89	0.1	0.9	0.283	0.413	Invalid
46.	46.29	44.43	5.89	0.7	0.3	0.478	0.413	Valid
47.	46.62	44.43	5.89	0.7	0.3	0.563	0.413	Valid
48.	44.23	44.43	5.89	0.9	0.1	-0.099	0.413	Invalid
49.	47	44.43	5.89	0.7	0.3	0.662	0.413	Valid
50.	46.33	44.43	5.89	0.8	0.2	0.644	0.413	Valid
51.	49.5	44.43	5.89	0.1	0.9	0.532	0.413	Valid
52.	46	44.43	5.89	0.7	0.3	0.419	0.413	Valid
53.	47.26	44.43	5.89	0.7	0.3	0.576	0.413	Valid
54.	46.4	44.43	5.89	0.7	0.3	0.507	0.413	Valid
55.	46.31	44.43	5.89	0.7	0.3	0.484	0.413	Valid
56.	48.33	44.43	5.89	0.1	0.9	0.218	0.413	Invalid
57.	45.83	44.43	5.89	0.8	0.2	0.474	0.413	Valid
58.	47	44.43	5.89	0.7	0.3	0.662	0.413	Valid
59.	46	44.43	5.89	0.7	0.3	0.532	0.413	Valid
60.	46.4	44.43	5.89	0.7	0.3	0.507	0.413	Valid
61.	45.93	44.43	5.89	0.7	0.3	0.414	0.413	Valid
62.	46.6	44.43	5.89	0.2	0.8	0.184	0.413	Invalid
63.	46.56	44.43	5.89	0.7	0.3	0.548	0.413	Valid
64.	46.46	44.43	5.89	0.7	0.3	0.522	0.413	Valid
65.	46.12	44.43	5.89	0.7	0.3	0.445	0.413	Valid
66.	46.78	44.43	5.89	0.6	0.4	0.604	0.413	Valid
67.	46.05	44.43	5.89	0.8	0.2	0.55	0.413	Valid
68.	46.2	44.43	5.89	0.7	0.3	0.456	0.413	Valid
69.	42.66	44.43	5.89	0.1	0.9	-0.099	0.413	Invalid
70.	45.25	44.43	5.89	0.1	0.9	0.069	0.413	Invalid

From the table above, it can be seen that 16 items was invalid and 54 items was valid. So, the researcher took 50 items for pre test.

Appendix 10

Validity of Post Test

No	NO ITEMS																																										
	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							
1	1	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	1	1					
2	1	1	0	1	1	1	0	1	0	1	1	0	0	1	1	0	1	0	1	0	1	1	1	1	1	1	1	1	0	1	0	1	0	0	1	1	1	1	0	0	0		
3	0	0	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	0	1	1		
4	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	0	1	1	1	1	0	1	1	1	1	0	1	1		
5	1	1	0	1	0	1	0	1	1	1	0	1	0	1	0	1	0	0	0	0	1	0	0	1	1	1	0	1	0	0	0	1	1	1	0	0	1	1	0	0	1		
6	1	1	1	0	1	1	1	1	0	1	1	1	1	1	0	1	1	0	1	1	0	1	1	1	1	1	1	1	0	0	0	1	1	0	0	1	1	1	1	1	1		
7	1	1	0	1	1	1	0	1	1	1	0	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1	1		
8	1	0	1	1	1	0	1	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	
9	1	1	0	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	0	1	0	1	0	1	1	0	1	0		
10	0	1	1	0	0	1	0	1	1	1	0	1	0	0	1	1	0	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	1	1	0	1	
11	0	0	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	0	0	0	0	1	0	0	0	1	0	0	1	0		
12	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	0	1	1	1	1	0	1	1		
13	1	0	0	1	1	1	1	1	0	0	0	1	0	1	1	0	0	0	1	0	1	1	0	0	1	0	1	0	1	1	1	1	0	1	1	1	1	0	0	1	0	1	0
14	1	1	0	1	0	0	1	0	1	1	1	1	1	0	0	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	0	1	0	1	1	1	1	1	0	0	1		
15	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	0	1	1	1	1	1	1	0	1	1	0	1	1	
16	1	0	0	1	1	0	1	1	1	1	1	0	0	1	1	0	0	0	1	1	0	1	1	1	1	1	1	0	0	0	1	0	1	0	0	1	1	1	0	1	1		
17	1	1	0	1	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	0	1	1	0	1	0	1	1	0	1	1	0	1	1	1	1	1		
18	0	0	1	1	0	1	0	1	0	0	1	1	0	1	1	1	1	0	1	0	1	1	1	1	1	1	1	1	0	0	1	1	1	0	1	1	1	0	0	0	0		
19	1	1	0	1	0	1	1	1	1	1	1	1	1	0	1	0	0	1	0	1	0	1	1	1	0	1	1	0	1	1	0	0	1	1	0	1	0	0	1	1	1	1	
20	1	1	1	1	1	1	1	0	0	0	1	0	0	1	1	1	1	0	0	1	0	1	1	1	0	1	0	0	0	1	1	1	0	0	1	0	1	0	0	1			
21	1	1	0	0	1	0	1	1	0	1	1	1	0	1	1	1	1	0	0	1	1	0	1	1	1	1	1	0	1	1	0	1	0	1	0	1	1	0	1	0			
22	0	0	0	1	1	0	1	1	1	1	1	1	1	1	0	1	1	0	0	1	0	0	1	0	1	1	0	1	0	0	1	1	1	0	1	0	0	1	1	1			
23	0	0	1	0	0	0	0	0	0	1	0	1	1	1	0	0	0	1	0	0	1	1	0	1	1	0	1	1	0	0	0	0	0	1	1	1	0	0	1	0	0		
N=23	1 6	1 5	⁶ 8	1 8	1 6	1 6	1 5	1 8	1 5	1 8	1 8	1 8	⁸ 9	1 6	1 6	1 6	1 5	⁶ 6	1 6	1 6	1 5	1 8	1 6	1 8	1 8	1 8	⁵ 2	1 8	1 8	⁵ 2	1 3	1 4	1 7	1 9	⁷ 5	1 6	1 8	1 6	⁶ 6	1 6			
P	0 , 7	0 , 7	0 , 2	0 , 8	0 , 7	0 , 7	0 , 7	0 , 8	0 , 7	0 , 8	0 , 8	0 , 8	0 , 3	0 , 8	0 , 7	0 , 7	0 , 7	0 , 3	0 , 7	0 , 7	0 , 7	0 , 8	0 , 7	0 , 8	0 , 9	0 , 8	0 , 8	0 , 2	0 , 6	0 , 6	0 , 8	0 , 8	0 , 3	0 , 7	0 , 7	0 , 8	0 , 7	0 , 3	0 , 7				
Q	0 , 3	0 , 3	0 , 8	0 , 2	0 , 3	0 , 3	0 , 3	0 , 2	0 , 3	0 , 2	0 , 2	0 , 7	0 , 2	0 , 3	0 , 3	0 , 3	0 , 7	0 , 3	0 , 3	0 , 3	0 , 2	0 , 3	0 , 2	0 , 1	0 , 2	0 , 2	0 , 8	0 , 4	0 , 4	0 , 2	0 , 2	0 , 7	0 , 3	0 , 3	0 , 2	0 , 3	0 , 7	0 , 3					

Cont....

Validity of Post Test

No	NO ITEMS																														X t	Xt ²	
	4 1	4 2	4 3	4 4	4 5	4 6	4 7	4 8	4 9	5 0	5 1	5 2	5 3	5 4	5 5	5 6	5 7	5 8	5 9	6 0	6 1	6 2	6 3	6 4	6 5	6 6	6 7	6 8	6 9	7 0			
1	1	0	1	1	1	0	1	1	1	1	1	1	1	0	0	1	1	1	0	0	1	1	1	1	0	0	1	1	1	1	4 6	2116	
2	0	1	1	1	0	0	1	1	0	1	1	1	0	0	0	1	1	0	0	0	1	0	0	1	0	0	1	0	1	0	1	3 7	1369
3	1	0	0	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	0	1	0	1	1	1	1	1	4 5	2025	
4	1	1	1	0	1	0	1	1	1	1	0	1	1	1	0	1	0	1	0	0	1	0	1	1	1	1	0	1	1	1	4 7	2209	
5	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	1	1	0	0	0	0	1	1	3 0	900	
6	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	1	0	1	1	1	0	0	1	1	0	1	4 6	2116	
7	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	0	1	0	1	0	1	0	1	1	1	1	1	1	1	1	4 8	2304	
8	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	0	1	1	0	0	1	1	1	1	5 1	2601	
9	1	1	1	1	0	0	0	0	0	1	1	0	0	1	0	1	1	0	0	0	1	0	1	0	1	0	0	1	0	0	3 7	1369	
10	0	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	0	0	0	0	1	1	1	1	4 1	1681	
11	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	1	0	0	0	2 3	529	
12	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	0	0	1	1	1	4 8	2304	
13	1	0	0	0	0	0	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	0	0	1	0	0	1	0	0	1	3 7	1369	
14	1	1	1	1	1	0	0	1	1	0	1	1	1	0	1	1	1	0	0	0	1	0	1	1	1	1	0	1	1	0	4 2	1764	
15	0	1	1	0	0	0	1	1	0	1	1	1	0	1	0	0	1	1	0	0	1	0	1	1	0	0	1	0	1	1	3 4	1156	
16	1	0	0	0	1	0	0	1	1	1	1	1	0	0	0	1	1	1	0	0	0	1	1	0	1	0	1	0	1	1	3 7	1369	
17	1	1	1	1	1	0	1	1	1	1	0	0	1	1	0	1	1	1	0	0	1	0	0	0	0	0	0	1	1	0	4 2	1764	
18	1	0	0	1	1	0	0	1	1	0	1	0	0	1	0	0	1	1	0	0	1	0	1	0	0	0	0	1	0	1	3 6	1196	
19	0	1	1	0	0	0	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	1	0	1	1	1	0	1	1	1	4	1849	

[illegible]

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

$$\begin{aligned}\text{Item 1 } r_{pbi} &= \frac{41.31 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.1}{6.2} \sqrt{2.33} \\ r &= 0.338 \times 1.52 = 0.5137\end{aligned}$$

$$\begin{aligned}\text{Item 2 } r_{pbi} &= \frac{40.93 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.72}{6.2} \sqrt{2.33} \\ r &= 0.277 \times 1.52 = 0.421\end{aligned}$$

$$\begin{aligned}\text{Item 3 } r_{pbi} &= \frac{38.83 - 39.21}{6.2} \sqrt{\frac{0.2}{0.8}} \\ r &= \frac{-0.38}{6.2} \sqrt{0.25} \\ r &= -0.061 \times 0.5 = -0.0305\end{aligned}$$

$$\begin{aligned}\text{Item 4 } r_{pbi} &= \frac{40.72 - 39.21}{6.2} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.51}{6.2} \sqrt{4} \\ r &= 0.243 \times 2 = 0.486\end{aligned}$$

$$\begin{aligned}\text{Item 5 } r_{pbi} &= \frac{41.37 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.16}{6.2} \sqrt{2.33} \\ r &= 0.348 \times 1.52 = 0.528\end{aligned}$$

$$\begin{aligned}\text{Item 6 } r_{pbi} &= \frac{41.25 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.04}{6.2} \sqrt{2.33} \\ r &= 0.329 \times 1.52 = 0.500\end{aligned}$$

$$\begin{aligned}\text{Item 7 } r_{pbi} &= \frac{41.06 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.85}{6.2} \sqrt{2.33} \\ r &= 0.298 \times 1.52 = 0.452\end{aligned}$$

$$\textbf{Item 8 } r_{\text{pbi}} = \frac{40.88 - 39.21}{6.2} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{1.67}{6.2} \sqrt{4}$$

$$r = 0.269 \times 2 = 0.538$$

$$\textbf{Item 9 } r_{\text{pbi}} = \frac{41.66 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.45}{6.2} \sqrt{2.33}$$

$$r = 0.395 \times 1.52 = 0.6004$$

$$\textbf{Item 10 } r_{\text{pbi}} = \frac{40.56 - 39.21}{6.2} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{1.35}{6.2} \sqrt{4}$$

$$r = 0.217 \times 2 = 0.434$$

$$\textbf{Item 11 } r_{\text{pbi}} = \frac{41.05 - 39.21}{6.2} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{1.84}{6.2} \sqrt{4}$$

$$r = 0.296 \times 2 = 0.592$$

$$\textbf{Item 12 } r_{\text{pbi}} = \frac{40.77 - 39.21}{6.2} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{1.56}{6.2} \sqrt{4}$$

$$r = 0.251 \times 2 = 0.502$$

$$\textbf{Item 13 } r_{\text{pbi}} = \frac{39.62 - 39.21}{6.2} \sqrt{\frac{0.3}{0.7}}$$

$$r = \frac{0.41}{6.2} \sqrt{0.42}$$

$$r = 0.066 \times 0.64 = 0.042$$

$$\textbf{Item 14 } r_{\text{pbi}} = \frac{40.68 - 39.21}{6.2} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{1.47}{6.2} \sqrt{4}$$

$$r = 0.237 \times 2 = 0.474$$

$$\begin{aligned}\textbf{Item 15 } r_{\text{pbi}} &= \frac{41.56-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.35}{6.2} \sqrt{2.33} \\ r &= 0.379 \times 1.52 = 0.576\end{aligned}$$

$$\begin{aligned}\textbf{Item 16 } r_{\text{pbi}} &= \frac{41.43-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.22}{6.2} \sqrt{2.33} \\ r &= 0.358 \times 1.52 = 0.544\end{aligned}$$

$$\begin{aligned}\textbf{Item 17 } r_{\text{pbi}} &= \frac{41-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.79}{6.2} \sqrt{2.33} \\ r &= 0.288 \times 1.52 = 0.437\end{aligned}$$

$$\begin{aligned}\textbf{Item 18 } r_{\text{pbi}} &= \frac{37-39.21}{6.2} \sqrt{\frac{0.3}{0.7}} \\ r &= \frac{-2.21}{6.2} \sqrt{0.42} \\ r &= -0.356 \times 0.64 = -0.227\end{aligned}$$

$$\begin{aligned}\textbf{Item 19 } r_{\text{pbi}} &= \frac{41-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.79}{6.2} \sqrt{2.33} \\ r &= 0.288 \times 1.52 = 0.437\end{aligned}$$

$$\begin{aligned}\textbf{Item 20 } r_{\text{pbi}} &= \frac{41.31-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.1}{6.2} \sqrt{2.33} \\ r &= 0.338 \times 1.52 = 0.513\end{aligned}$$

$$\begin{aligned}\textbf{Item 21 } r_{\text{pbi}} &= \frac{41.33-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.12}{6.2} \sqrt{2.33} \\ r &= 0.341 \times 1.52 = 0.518\end{aligned}$$

$$\begin{aligned}\textbf{Item 22 } r_{\text{pbi}} &= \frac{41.27-39.21}{6.2} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{2.06}{6.2} \sqrt{4} \\ r &= 0.332 \times 2 = 0.664\end{aligned}$$

$$\begin{aligned}\text{Item 23 } r_{\text{pbi}} &= \frac{41.18-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.97}{6.2} \sqrt{2.33} \\ r &= 0.317 \times 1.52 = 0.4818\end{aligned}$$

$$\begin{aligned}\text{Item 24 } r_{\text{pbi}} &= \frac{40.94-39.21}{6.2} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.73}{6.2} \sqrt{4} \\ r &= 0.279 \times 2 = 0.558\end{aligned}$$

$$\begin{aligned}\text{Item 25 } r_{\text{pbi}} &= \frac{40.15-39.21}{6.2} \sqrt{\frac{0.9}{0.3}} \\ r &= \frac{0.94}{6.2} \sqrt{9} \\ r &= 0.151 \times 3 = 0.454\end{aligned}$$

$$\begin{aligned}\text{Item 26 } r_{\text{pbi}} &= \frac{40.72-39.21}{6.2} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.51}{6.2} \sqrt{4} \\ r &= 0.243 \times 2 = 0.487\end{aligned}$$

$$\begin{aligned}\text{Item 27 } r_{\text{pbi}} &= \frac{40.61-39.21}{6.2} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.4}{6.2} \sqrt{4} \\ r &= 0.225 \times 2 = 0.45\end{aligned}$$

$$\begin{aligned}\text{Item 28 } r_{\text{pbi}} &= \frac{38.4-39.21}{6.2} \sqrt{\frac{0.2}{0.8}} \\ r &= \frac{-0.81}{6.2} \sqrt{0.25} \\ r &= -0.1306 \times 0.5 = -0.065\end{aligned}$$

$$\begin{aligned}\text{Item 29 } r_{\text{pbi}} &= \frac{43.07-39.21}{6.2} \sqrt{\frac{0.6}{0.4}} \\ r &= \frac{3.86}{6.2} \sqrt{1.5} \\ r &= 0.622 \times 1.2 = 0.746\end{aligned}$$

$$\begin{aligned}\text{Item 30 } r_{\text{pbi}} &= \frac{42.42-39.21}{6.2} \sqrt{\frac{0.6}{0.4}} \\ r &= \frac{3.21}{6.2} \sqrt{1.5}\end{aligned}$$

$$r = 0.517 \times 1.2 = 0.621$$

$$\begin{aligned}\textbf{Item 31 } r_{\text{pbi}} &= \frac{41.11-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.9}{6.2} \sqrt{2.33} \\ r &= 0.306 \times 1.52 = 0.465\end{aligned}$$

$$\begin{aligned}\textbf{Item 32 } r_{\text{pbi}} &= \frac{40.31-39.21}{6.2} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.63}{6.2} \sqrt{4} \\ r &= 0.262 \times 2 = 0.524\end{aligned}$$

$$\begin{aligned}\textbf{Item 33 } r_{\text{pbi}} &= \frac{37.57-39.21}{6.2} \sqrt{\frac{0.3}{0.7}} \\ r &= \frac{-1.638}{6.2} \sqrt{0.42} \\ r &= -0.264 \times 0.64 = -0.168\end{aligned}$$

$$\begin{aligned}\textbf{Item 34 } r_{\text{pbi}} &= \frac{41-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.79}{6.2} \sqrt{2.33} \\ r &= 0.288 \times 1.52 = 0.4388\end{aligned}$$

$$\begin{aligned}\textbf{Item 35 } r_{\text{pbi}} &= \frac{41.37-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.16}{6.2} \sqrt{2.33} \\ r &= 0.348 \times 1.52 = 0.529\end{aligned}$$

$$\begin{aligned}\textbf{Item 36 } r_{\text{pbi}} &= \frac{40.5-39.21}{6.2} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.29}{6.2} \sqrt{4} \\ r &= 0.208 \times 2 = 0.416\end{aligned}$$

$$\begin{aligned}\textbf{Item 37 } r_{\text{pbi}} &= \frac{41.18-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.97}{6.2} \sqrt{2.33} \\ r &= 0.317 \times 1.52 = 0.4818\end{aligned}$$

$$\begin{aligned}\text{Item 38 } r_{\text{pbi}} &= \frac{38.5-39.21}{6.2} \sqrt{\frac{0.3}{0.7}} \\ r &= \frac{-0.71}{6.2} \sqrt{0.42} \\ r &= -0.114 \times 0.64 = -0.073\end{aligned}$$

$$\begin{aligned}\text{Item 39 } r_{\text{pbi}} &= \frac{41.06-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.85}{6.2} \sqrt{2.33} \\ r &= 0.298 \times 1.52 = 0.4529\end{aligned}$$

$$\begin{aligned}\text{Item 40 } r_{\text{pbi}} &= \frac{41.75-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.54}{6.2} \sqrt{2.33} \\ r &= 0.409 \times 1.52 = 0.621\end{aligned}$$

$$\begin{aligned}\text{Item 41 } r_{\text{pbi}} &= \frac{40.93-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.72}{6.2} \sqrt{2.33} \\ r &= 0.277 \times 1.52 = 0.421\end{aligned}$$

$$\begin{aligned}\text{Item 42 } r_{\text{pbi}} &= \frac{41.53-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.32}{6.2} \sqrt{2.33} \\ r &= 0.374 \times 1.52 = 0.568\end{aligned}$$

$$\begin{aligned}\text{Item 43 } r_{\text{pbi}} &= \frac{41.57-39.21}{6.2} \sqrt{\frac{0.6}{0.4}} \\ r &= \frac{3.36}{6.2} \sqrt{1.5} \\ r &= 0.380 \times 1.2 = 0.456\end{aligned}$$

$$\begin{aligned}\text{Item 44 } r_{\text{pbi}} &= \frac{42-39.21}{6.2} \sqrt{\frac{0.5}{0.5}} \\ r &= \frac{2.79}{6.2} \sqrt{1} \\ r &= 0.45 \times 1 = 0.45\end{aligned}$$

$$\begin{aligned}\text{Item 45 } r_{\text{pbi}} &= \frac{42.33-39.21}{6.2} \sqrt{\frac{0.5}{0.5}} \\ r &= \frac{3.12}{6.2} \sqrt{1} \\ r &= 0.503 \times 1 = 0.503\end{aligned}$$

$$\begin{aligned}\text{Item 46 } r_{\text{pbi}} &= \frac{35.8-39.21}{6.2} \sqrt{\frac{0.2}{0.8}} \\ r &= \frac{-3.41}{6.2} \sqrt{0.25} \\ r &= -0.55 \times 0.5 = -0.275\end{aligned}$$

$$\begin{aligned}\text{Item 47 } r_{\text{pbi}} &= \frac{41-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.79}{6.2} \sqrt{2.33} \\ r &= 0.288 \times 1.52 = 0.437\end{aligned}$$

$$\begin{aligned}\text{Item 48 } r_{\text{pbi}} &= \frac{41.21-39.21}{6.2} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{2}{6.2} \sqrt{4} \\ r &= 0.322 \times 2 = 0.644\end{aligned}$$

$$\begin{aligned}\text{Item 49 } r_{\text{pbi}} &= \frac{42.62-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{3.41}{6.2} \sqrt{2.33} \\ r &= 0.55 \times 1.52 = 0.836\end{aligned}$$

$$\begin{aligned}\text{Item 50 } r_{\text{pbi}} &= \frac{41.88-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{2.67}{6.2} \sqrt{2.33} \\ r &= 0.430 \times 1.52 = 0.653\end{aligned}$$

$$\begin{aligned}\text{Item 51 } r_{\text{pbi}} &= \frac{41.12-39.21}{6.2} \sqrt{\frac{0.7}{0.3}} \\ r &= \frac{1.91}{6.2} \sqrt{2.33} \\ r &= 0.308 \times 1.52 = 0.468\end{aligned}$$

$$\begin{aligned}\text{Item 52 } r_{\text{pbi}} &= \frac{41.05-39.21}{6.2} \sqrt{\frac{0.8}{0.2}} \\ r &= \frac{1.84}{6.2} \sqrt{4} \\ r &= 0.296 \times 2 = 0.592\end{aligned}$$

$$\begin{aligned}\text{Item 53 } r_{\text{pbi}} &= \frac{43.5-39.21}{6.2} \sqrt{\frac{0.6}{0.4}} \\ r &= \frac{4.29}{6.2} \sqrt{1.5} \\ r &= 0.691 \times 1.2 = 0.829\end{aligned}$$

$$\text{Item 54 } r_{\text{pbi}} = \frac{41.53-39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.32}{6.2} \sqrt{2.33}$$

$$r = 0.374 \times 1.52 = 0.568$$

$$\text{Item 55 } r_{\text{pbi}} = \frac{42.5-39.21}{6.2} \sqrt{\frac{0.2}{0.8}}$$

$$r = \frac{3.29}{6.2} \sqrt{0.25}$$

$$r = 0.530 \times 0.5 = 0.265$$

$$\text{Item 56 } r_{\text{pbi}} = \frac{41-39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{1.79}{6.2} \sqrt{2.33}$$

$$r = 0.288 \times 1.52 = 0.437$$

$$\text{Item 57 } r_{\text{pbi}} = \frac{40.77-39.21}{6.2} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{1.56}{6.2} \sqrt{4}$$

$$r = 0.251 \times 2 = 0.502$$

$$\text{Item 58 } r_{\text{pbi}} = \frac{41.13-39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{1.92}{6.2} \sqrt{2.33}$$

$$r = 0.309 \times 1.52 = 0.469$$

$$\text{Item 59 } r_{\text{pbi}} = \frac{40.5-39.21}{6.2} \sqrt{\frac{0.2}{0.8}}$$

$$r = \frac{1.29}{6.2} \sqrt{0.25}$$

$$r = 0.208 \times 0.5 = 0.104$$

$$\text{Item 60 } r_{\text{pbi}} = \frac{39.75-39.21}{6.2} \sqrt{\frac{0.2}{0.8}}$$

$$r = \frac{0.54}{6.2} \sqrt{0.25}$$

$$r = 0.087 \times 0.5 = 0.0435$$

$$\text{Item 61 } r_{\text{pbi}} = \frac{42.07-39.21}{6.2} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{2.86}{6.2} \sqrt{1.5}$$

$$r = 0.461 \times 1.2 = 0.553$$

$$\text{Item 62 } r_{\text{pbi}} = \frac{39.33-39.21}{6.2} \sqrt{\frac{0.3}{0.7}}$$

$$r = \frac{0.12}{6.2} \sqrt{0.42}$$

$$r = 0.0193 \times 0.64 = 0.0123$$

$$\text{Item 63 } r_{\text{pbi}} = \frac{41.66-39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.45}{6.2} \sqrt{2.33}$$

$$r = 0.395 \times 1.52 = 0.6004$$

$$\text{Item 64 } r_{\text{pbi}} = \frac{42.35 - 39.21}{6.2} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{3.14}{6.2} \sqrt{1.5}$$

$$r = 0.506 \times 1.2 = 0.6072$$

$$\text{Item 65 } r_{\text{pbi}} = \frac{39.85 - 39.21}{6.2} \sqrt{\frac{0.3}{0.7}}$$

$$r = \frac{0.64}{6.2} \sqrt{0.42}$$

$$r = 0.1032 \times 0.64 = 0.0660$$

$$\text{Item 66 } r_{\text{pbi}} = \frac{36 - 39.21}{6.2} \sqrt{\frac{0.3}{0.7}}$$

$$r = \frac{-0.321}{6.2} \sqrt{0.42}$$

$$r = -0.517 \times 0.64 = -0.3308$$

$$\text{Item 67 } r_{\text{pbi}} = \frac{40.55 - 39.21}{6.2} \sqrt{\frac{0.8}{0.2}}$$

$$r = \frac{1.34}{6.2} \sqrt{4}$$

$$r = 0.216 \times 2 = 0.432$$

$$\text{Item 68 } r_{\text{pbi}} = \frac{41.33 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{2.12}{6.2} \sqrt{2.33}$$

$$r = 0.341 \times 1.52 = 0.518$$

$$\text{Item 69 } r_{\text{pbi}} = \frac{41 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$$

$$r = \frac{1.79}{6.2} \sqrt{2.33}$$

$$r = 0.288 \times 1.52 = 0.437$$

$$\text{Item 70 } r_{\text{pbi}} = \frac{41.78 - 39.21}{6.2} \sqrt{\frac{0.6}{0.4}}$$

$$r = \frac{2.57}{6.2} \sqrt{1.5}$$

$$r = 0.414 \times 1.2 = 0.496$$

Appendix 11

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

A. Calculation of Post Test

1. Means score from score total (M_t)

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

$$M_t = \frac{902}{23} = 39.21$$

2. Standard Deviation (SD_t)

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

$$SD_t = \sqrt{\frac{36248}{23} - \left(\frac{902}{23}\right)^2}$$

$$SD_t = \sqrt{1576 - 39.21^2}$$

$$SD_t = \sqrt{1576 - 1537.42} = \sqrt{38.58} = 6.21$$

3. Means Score (M_p)

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

$$M_{p1} = \frac{46+37+47+30+46+48+51+37+48+42+34+37+42+43+34+39}{16}$$

$$M_{p1} = \frac{661}{16} = 41.31$$

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

$$M_{p2} = \frac{46+37+47+30+46+48+37+41+48+42+34+42+43+34+39}{15}$$

$$M_{p2} = \frac{614}{15} = 40.93$$

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

$$M_{p3} = \frac{46+51+41+36+34+25}{6}$$

$$M_{p3} = \frac{233}{6} = 38.83$$

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

$$M_{p4} = \frac{46+37+45+47+30+48+51+37+48+37+42+34+37+36+42+43+39+34}{18}$$

$$M_{p4} = \frac{733}{18} = 40.72$$

Item 5 $M_{p5} = \frac{\text{the total of students score that answer true item}}{n5}$

$$M_{p5} = \frac{46+37+45+47+46+48+51+37+48+37+34+37+42+34+39+34}{16}$$

$$M_{p5} = \frac{662}{16} = 41.37$$

Item 6 $M_{p6} = \frac{\text{the total of students score that answer true item}}{n6}$
 $M_{p6} = \frac{46+37+45+47+30+46+48+51+37+41+48+37+34+36+43+34}{16}$
 $M_{p6} = \frac{660}{16} = 41.25$

Item 7 $M_{p7} = \frac{\text{the total of students score that answer true item}}{n7}$
 $M_{p7} = \frac{45+47+46+51+37+48+37+42+34+37+42+43+34+39+34}{15}$
 $M_{p7} = \frac{616}{15} = 41.06$

Item 8 $M_{p8} = \frac{\text{the total of students score that answer true item}}{n8}$
 $M_{p8} = \frac{46+37+45+47+30+46+48+51+37+41+48+37+34+37+36+43+39+34}{18}$
 $M_{p8} = \frac{736}{18} = 40.88$

Item 9 $M_{p9} = \frac{\text{the total of students score that answer true item}}{n9}$
 $M_{p9} = \frac{46+45+47+30+48+51+37+41+48+42+34+37+42+43+34}{15}$
 $M_{p9} = \frac{625}{15} = 41.66$

Item 10 $M_{p10} = \frac{\text{the total of students score that answer true item}}{n10}$
 $M_{p10} = \frac{46+37+45+47+30+46+48+51+37+41+48+42+34+37+43+39+34+25}{18}$
 $M_{p10} = \frac{730}{18} = 40.56$

Item 11 $M_{p11} = \frac{\text{the total of students score that answer true item}}{n11}$
 $M_{p11} = \frac{46+37+45+47+46+51+37+41+48+42+34+37+42+36+43+34+39+34}{18}$
 $M_{p11} = \frac{739}{18} = 41.05$

Item 12 $M_{p12} = \frac{46+45+47+30+46+48+51+41+48+37+42+34+42+36+43+39+34+25}{18}$
 $M_{p12} = \frac{734}{18} = 40.77$

Item 13 $M_{p13} = \frac{46+37+48+42+42+43+34+25}{8}$
 $M_{p13} = \frac{317}{8} = 39.62$

$$\text{Item 14 } M_{p14} = \frac{46+37+45+47+30+46+48+51+37+48+37+34+37+42+36+34+39+34+25}{19}$$

$$M_{p14} = \frac{773}{19} = 40.68$$

$$\text{Item 15 } M_{p15} = \frac{46+37+45+47+48+51+41+48+37+34+37+42+36+43+34+39}{16}$$

$$M_{p15} = \frac{665}{16} = 41.56$$

$$\text{Item 16 } M_{p16} = \frac{46+45+47+30+46+48+51+41+48+42+34+42+36+34+39+34}{16}$$

$$M_{p16} = \frac{663}{16} = 41.43$$

$$\text{Item 17 } M_{p17} = \frac{46+37+45+47+46+48+37+48+42+34+42+36+34+39+34}{15}$$

$$M_{p17} = \frac{615}{15} = 41$$

$$\text{Item 18 } M_{p18} = \frac{37+41+34+42+43+25}{6}$$

$$M_{p18} = \frac{222}{6} = 37$$

$$\text{Item 19 } M_{p19} = \frac{46+37+45+47+46+48+51+37+23+48+37+42+34+37+42+36}{16}$$

$$M_{p19} = \frac{656}{16} = 41$$

$$\text{Item 20 } M_{p20} = \frac{45+47+30+46+48+51+41+48+42+34+37+42+43+34+39+34}{16}$$

$$M_{p20} = \frac{661}{16} = 41.31$$

$$\text{Item 21 } M_{p21} = \frac{46+37+47+51+37+41+48+37+42+34+42+36+43+39+25}{15}$$

$$M_{p21} = \frac{605}{15} = 41.33$$

$$\text{Item 22 } M_{p22} = \frac{46+37+45+47+46+48+51+37+41+48+37+42+37+42+36+43+34+25}{18}$$

$$M_{p22} = \frac{743}{18} = 41.27$$

$$\text{Item 23 } M_{p23} = \frac{46+45+47+30+46+48+37+41+48+42+34+37+42+43+39+34}{16}$$

$$M_{p23} = \frac{659}{16} = 41.18$$

$$\text{Item 24 } M_{p24} = \frac{37+45+47+30+46+48+51+37+41+48+42+34+37+42+36+43+34+39}{18}$$

$$M_{p24} = \frac{737}{18} = 40.94$$

$$\text{Item 25 } M_{p25} = \frac{46+37+45+47+30+46+48+51+37+41+48+37+42+34+37+36+43+39+34+25}{20}$$

$$M_{p25} = \frac{803}{20} = 40.15$$

$$\text{Item 26 } M_{p26} = \frac{46+37+45+47+46+48+51+37+41+23+48+42+37+42+36+34+39+34}{18}$$

$$M_{p26} = \frac{733}{18} = 40.72$$

$$\text{Item 27 } M_{p27} = \frac{46+37+45+47+30+46+48+51+37+23+48+37+42+34+42+36+43+39}{18}$$

$$M_{p27} = \frac{731}{18} = 40.61$$

$$\text{Item 28 } M_{p28} = \frac{48+42+43+34+25}{5}$$

$$M_{p28} = \frac{192}{5} = 38.4$$

$$\text{Item 29 } M_{p29} = \frac{46+37+45+47+48+51+37+41+48+37+42+42+39}{13}$$

$$M_{p29} = \frac{560}{13} = 43.07$$

$$\text{Item 30 } M_{p30} = \frac{46+45+47+48+51+37+41+48+37+34+37+42+42+39}{14}$$

$$M_{p30} = \frac{594}{14} = 42.42$$

$$\text{Item 31 } M_{p31} = \frac{46+37+45+47+30+46+48+51+41+48+37+34+42+36+43+34+34}{17}$$

$$M_{p31} = \frac{699}{17} = 41.11$$

$$\text{Item 32 } M_{p32} = \frac{46+45+47+30+46+48+51+41+23+48+42+34+37+42+36+43+34+39+34}{19}$$

$$M_{p32} = \frac{766}{19} = 40.84$$

$$\text{Item 33 } M_{p33} = \frac{30+48+51+41+34+34+25}{7}$$

$$M_{p33} = \frac{263}{7} = 37.57$$

$$\text{Item 34 } M_{p34} = \frac{46+37+47+51+37+41+48+37+42+34+42+36+43+39+25}{15}$$

$$M_{p34} = \frac{615}{15} = 41$$

$$\text{Item 35 } M_{p35} = \frac{46+37+45+47+46+51+41+48+37+42+37+42+36+43+39+25}{16}$$

$$M_{p35} = \frac{662}{16} = 41.37$$

$$\text{Item 36 } M_{p36} = \frac{46+37+45+47+30+46+48+51+41+23+48+37+42+34+37+42+36+39}{18}$$

$$M_{p36} = \frac{729}{18} = 40.5$$

$$\text{Item 37 } M_{p37} = \frac{37+45+47+30+46+48+51+37+41+48+42+34+37+43+34+39}{16}$$

$$M_{p37} = \frac{659}{16} = 41.18$$

$$\text{Item 38 } M_{p38} = \frac{46+41+42+43+34+25}{6}$$

$$M_{p38} = \frac{231}{6} = 38.5$$

$$\text{Item 39 } M_{p39} = \frac{46+45+47+46+48+51+37+23+48+37+34+37+42+43+39+34}{16}$$

$$M_{p39} = \frac{657}{16} = 41.06$$

$$\text{Item 40 } M_{p40} = \frac{46+45+47+30+46+48+51+41+48+42+34+37+42+43+34+34}{16}$$

$$M_{p40} = \frac{668}{16} = 41.75$$

$$\text{Item 41 } M_{p41} = \frac{46+45+47+46+48+51+37+23+48+42+37+42+36+34+39+34}{16}$$

$$M_{p41} = \frac{655}{16} = 40.93$$

$$\text{Item 42 } M_{p42} = \frac{37+47+46+48+51+37+41+48+42+34+42+43+34+39+34}{15}$$

$$M_{p42} = \frac{623}{15} = 41.53$$

$$\text{Item 43 } M_{p43} = \frac{46+37+47+46+48+51+41+23+48+42+34+42+43+34}{14}$$

$$M_{p43} = \frac{582}{14} = 41.57$$

$$\text{Item 44 } M_{p44} = \frac{46+37+45+48+51+37+41+48+42+42+36+34+39}{13}$$

$$M_{p44} = \frac{546}{13} = 42$$

$$\text{Item 45 } M_{p45} = \frac{46+45+47+51+41+48+42+37+42+36+34+39}{12}$$

$$M_{p45} = \frac{508}{12} = 42.33$$

$$\text{Item 46 } M_{p46} = \frac{46+51+23+34+25}{5}$$

$$M_{p46} = \frac{179}{5} = 35.8$$

$$\text{Item 47 } M_{p47} = \frac{46+37+45+47+46+48+51+41+23+48+37+34+42+43+34+34}{16}$$

$$M_{p47} = \frac{656}{16} = 41$$

$$\text{Item 48 } M_{p48} = \frac{46+37+45+47+30+46+48+51+41+48+37+42+34+37+42+36+43+34+39}{19}$$

$$M_{p48} = \frac{783}{19} = 41.21$$

$$\text{Item 49 } M_{p49} = \frac{46+45+47+46+48+51+41+48+37+42+37+42+36+43+39+34}{16}$$

$$M_{p49} = \frac{682}{16} = 42.62$$

$$\text{Item 50 } M_{p50} = \frac{46+37+45+47+46+48+51+37+41+48+37+34+37+42+43+39+34}{17}$$

$$M_{p50} = \frac{712}{17} = 41.88$$

$$\text{Item 51 } M_{p51} = \frac{46+37+45+30+48+51+37+41+48+42+34+37+36+43+34+39}{16}$$

$$M_{p51} = \frac{658}{16} = 41.12$$

$$\text{Item 52 } M_{p52} = \frac{46+37+45+47+30+46+48+51+41+48+37+42+34+37+43+34+39+34}{18}$$

$$M_{p52} = \frac{739}{18} = 41.05$$

$$\text{Item 53 } M_{p53} = \frac{46+45+47+46+48+51+41+48+37+42+42+43+39+34}{14}$$

$$M_{p53} = \frac{609}{14} = 43.5$$

$$\text{Item 54 } M_{p54} = \frac{45+47+46+48+51+37+41+48+37+34+42+36+43+34+34}{15}$$

$$M_{p54} = \frac{623}{15} = 41.53$$

$$\text{Item 55 } M_{p55} = \frac{46+48+42+34}{4}$$

$$M_{p55} = \frac{170}{4} = 42.5$$

$$\text{Item 56 } M_{p56} = \frac{46+37+45+47+30+51+37+41+48+37+42+37+42+43+34+39}{16}$$

$$M_{p56} = \frac{656}{16} = 41$$

$$\text{Item 57 } M_{p57} = \frac{46+37+45+46+48+51+37+41+48+37+42+34+37+42+36+34+39+34}{18}$$

$$M_{p57} = \frac{734}{18} = 40.77$$

$$\text{Item 58 } M_{p58} = \frac{46+45+47+46+51+41+48+37+34+37+42+36+34+39+34}{15}$$

$$M_{p58} = \frac{617}{15} = 41.13$$

$$\text{Item 59 } M_{p59} = \frac{48+41+48+25}{4}$$

$$M_{p59} = \frac{162}{4} = 40.5$$

$$\text{Item 60 } M_{p60} = \frac{46+51+37+25}{4}$$

$$M_{p60} = \frac{159}{4} = 39.75$$

$$\text{Item 61 } M_{p61} = \frac{46+37+47+48+51+37+41+48+37+42+34+42+36+43}{14}$$

$$M_{p61} = \frac{589}{14} = 42.07$$

$$\text{Item 62 } M_{p62} = \frac{46+46+48+37+34+25}{6}$$

$$M_{p62} = \frac{236}{6} = 39.33$$

$$\text{Item 63 } M_{p63} = \frac{46+47+30+46+48+51+37+41+48+42+34+37+36+43+39}{15}$$

$$M_{p63} = \frac{625}{15} = 41.66$$

$$\text{Item 64 } M_{p64} = \frac{46+37+45+47+30+46+48+51+48+37+42+34+43+39}{14}$$

$$M_{p64} = \frac{593}{14} = 42.35$$

$$\text{Item 65 } M_{p65} = \frac{47+48+37+42+37+43+25}{7}$$

$$M_{p65} = \frac{279}{7} = 39.85$$

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$$\text{Item 66 } M_{p66} = \frac{45+48+41+23+34+25}{6}$$

$$M_{p66} = \frac{216}{6} = 36$$

$$\textbf{Item 67 } M_{p67} = \frac{37+45+47+46+48+51+41+23+48+37+42+34+37+42+36+43+39+34}{18}$$

$$M_{p67} = \frac{730}{18} = 40.55$$

$$\textbf{Item 68 } M_{p68} = \frac{45+47+46+48+51+37+41+48+42+37+42+43+34+34+25}{15}$$

$$M_{p68} = \frac{620}{15} = 41.33$$

$$\textbf{Item 69 } M_{p69} = \frac{46+37+45+47+30+48+51+37+41+48+37+34+37+36+43+39}{16}$$

$$M_{p69} = \frac{656}{16} = 41$$

$$\textbf{Item 70 } M_{p70} = \frac{46+37+45+47+30+46+48+51+41+48+37+34+36+39}{14}$$

$$M_{p70} = \frac{585}{14} = 41.78$$

Appendix 12

Table of Post Test Validity

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.	41.31	39.21	6.21	0.7	0.3	0.513	0.413	Valid
2.	40.93	39.21	6.21	0.7	0.3	0.421	0.413	Valid
3.	48.83	39.21	6.21	0.2	0.8	-0.0305	0.413	Invalid
4.	40.72	39.21	6.21	0.8	0.2	0.486	0.413	Valid
5.	41.37	39.21	6.21	0.7	0.3	0.528	0.413	Valid
6.	41.25	39.21	6.21	0.7	0.3	0.500	0.413	Valid
7.	41.06	39.21	6.21	0.7	0.3	0.452	0.413	Valid
8.	40.88	39.21	6.21	0.8	0.2	0.538	0.413	Valid
9.	41.66	39.21	6.21	0.7	0.3	0.6004	0.413	Valid
10.	40.56	39.21	6.21	0.8	0.2	0.434	0.413	Valid
11.	41.05	39.21	6.21	0.8	0.2	0.592	0.413	Valid
12.	40.77	39.21	6.21	0.8	0.2	0.502	0.413	Valid
13.	39.62	39.21	6.21	0.3	0.7	0.042	0.413	Invalid
14.	40.68	39.21	6.21	0.8	0.2	0.474	0.413	Valid
15.	41.56	39.21	6.21	0.7	0.3	0.576	0.413	Valid
16.	41.43	39.21	6.21	0.7	0.3	0.544	0.413	Valid
17.	41	39.21	6.21	0.7	0.3	0.437	0.413	Valid
18.	37	39.21	6.21	0.3	0.7	-0.227	0.413	Invalid
19.	41	39.21	6.21	0.7	0.3	0.437	0.413	Valid
20.	41.31	39.21	6.21	0.7	0.3	0.513	0.413	Valid
21.	41.33	39.21	6.21	0.7	0.3	0.518	0.413	Valid
22.	41.27	39.21	6.21	0.8	0.2	0.664	0.413	Valid
23.	41.18	39.21	6.21	0.7	0.3	0.481	0.413	Valid
24.	40.94	39.21	6.21	0.8	0.2	0.558	0.413	Valid
25.	40.15	39.21	6.21	0.9	0.1	0.454	0.413	Valid
26.	40.72	39.21	6.21	0.8	0.2	0.487	0.413	Valid
27.	40.61	39.21	6.21	0.8	0.2	0.45	0.413	Valid
28.	38.4	39.21	6.21	0.2	0.8	-0.065	0.413	Invalid
29.	43.07	39.21	6.21	0.6	0.4	0.746	0.413	Valid
30.	42.42	39.21	6.21	0.6	0.4	0.621	0.413	Valid
31.	41.11	39.21	6.21	0.8	0.2	0.465	0.413	Valid
32.	40.84	39.21	6.21	0.8	0.2	0.524	0.413	Valid
33.	37.57	39.21	6.21	0.3	0.7	-0.168	0.413	Invalid
34.	41	39.21	6.21	0.7	0.3	0.438	0.413	Valid

35.	41.37	39.21	6.21	0.7	0.3	0.529	0.413	Valid
36.	40.5	39.21	6.21	0.8	0.2	0.416	0.413	Valid
37.	41.18	39.21	6.21	0.7	0.3	0.481	0.413	Valid
38.	38.5	39.21	6.21	0.3	0.7	-0.073	0.413	Invalid
39.	41.06	39.21	6.21	0.7	0.3	0.452	0.413	Valid
40.	41.75	39.21	6.21	0.7	0.3	0.621	0.413	Valid
41.	40.93	39.21	6.21	0.7	0.3	0.421	0.413	Valid
42.	41.53	39.21	6.21	0.7	0.3	0.568	0.413	Valid
43.	41.57	39.21	6.21	0.6	0.4	0.456	0.413	Valid
44.	42	39.21	6.21	0.6	0.4	0.45	0.413	Valid
45.	42.33	39.21	6.21	0.5	0.5	0.503	0.413	Valid
46.	35.8	39.21	6.21	0.2	0.8	-0.275	0.413	Invalid
47.	41	39.21	6.21	0.7	0.3	0.437	0.413	Valid
48.	41.21	39.21	6.21	0.8	0.2	0.644	0.413	Valid
49.	42.62	39.21	6.21	0.7	0.3	0.836	0.413	Valid
50.	41.88	39.21	6.21	0.7	0.3	0.653	0.413	Valid
51.	41.12	39.21	6.21	0.7	0.3	0.468	0.413	Valid
52.	41.05	39.21	6.21	0.8	0.2	0.592	0.413	Valid
53.	43.5	39.21	6.21	0.6	0.4	0.829	0.413	Valid
54.	41.53	39.21	6.21	0.7	0.3	0.568	0.413	Valid
55.	42.5	39.21	6.21	0.2	0.8	0.265	0.413	Invalid
56.	41	39.21	6.21	0.7	0.3	0.437	0.413	Valid
57.	40.77	39.21	6.21	0.8	0.2	0.502	0.413	Valid
58.	41.13	39.21	6.21	0.7	0.3	0.469	0.413	Valid
59.	40.5	39.21	6.21	0.2	0.8	0.104	0.413	Invalid
60.	39.75	39.21	6.21	0.2	0.8	0.043	0.413	Invalid
61.	42.07	39.21	6.21	0.6	0.4	0.553	0.413	Valid
62.	39.33	39.21	6.21	0.3	0.7	0.012	0.413	Invalid
63.	41.66	39.21	6.21	0.7	0.3	0.600	0.413	Valid
64.	42.35	39.21	6.21	0.6	0.4	0.607	0.413	Valid
65.	39.85	39.21	6.21	0.3	0.7	0.066	0.413	Invalid
66.	36	39.21	6.21	0.3	0.7	-0.330	0.413	Invalid
67.	40.55	39.21	6.21	0.8	0.2	0.432	0.413	Valid
68.	41.33	39.21	6.21	0.7	0.3	0.518	0.413	Valid
69.	41	39.21	6.21	0.7	0.3	0.437	0.413	Valid
70.	41.78	39.21	6.21	0.6	0.4	0.496	0.413	Valid

From the table above, it can be seen that 12 items was invalid and 58 items was valid. So, the researcher took 50 items for post test.

Appendix 13

Reliability of Pre- Test

N o	NO ITEMS																																											
	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				
1	1	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1		
2	1	1	1	1	1	1	1	1	0	1	0	0	1	1	0	0	1	1	1	0	1	1	1	1	0	0	1	0	1	0	1	0	1	1	1	1	1	1	1	0	0	0	0	
3	0	0	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	
4	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	
5	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0	1	1	0	1	0	0	1	1	1	0	0	1	0	0	1	1	1	1	0	0	1	1	0	1	0	0	1	
6	1	1	1	0	1	1	1	1	0	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1	0	0	1	0	0	0	1	1	0	0	1	1	0	0	1	1	1	1	1	
7	1	1	0	1	1	1	0	1	1	1	0	1	1	1	0	1	1	1	1	1	0	0	1	1	1	0	0	1	1	1	1	1	1	0	1	0	0	1	1	1	1	1	1	
8	1	0	1	1	1	0	1	1	0	1	1	1	0	1	0	0	0	1	1	1	1	1	0	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
9	1	1	1	1	1	1	1	1	0	1	0	0	1	1	0	1	1	1	1	1	0	1	1	1	1	0	0	1	0	1	1	0	0	0	1	0	1	1	0	1	0	1	0	
10	0	1	1	0	0	1	0	1	0	1	0	1	1	0	1	1	0	1	0	1	1	1	1	1	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1
11	0	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	1	1	1	0	0	1	0	0	1	0	
12	1	1	1	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	0	0	1	1	1	1	1	1	1	1	1	1	1	
13	0	0	1	1	1	1	1	1	0	0	0	1	1	1	0	0	0	1	1	1	1	1	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	0	
14	1	1	0	1	0	0	1	0	1	1	0	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	
15	1	1	0	1	1	1	1	1	0	1	0	1	1	1	0	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	0	1	1	
16	0	0	1	1	1	0	1	1	0	1	0	0	0	1	0	0	0	1	1	1	0	1	1	1	1	0	0	0	0	1	1	1	1	1	0	1	1	1	0	1	1	0	1	1
17	1	1	1	1	1	0	0	0	0	0	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1	0	0	1	0	1	0	1	1	1	1	1	1	1	1	0	1	1	1	
18	0	0	1	1	0	1	0	1	0	0	1	1	0	1	0	1	1	1	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	
19	1	1	0	1	0	1	1	1	1	1	0	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	
20	1	1	1	1	1	1	1	0	0	0	0	0	1	1	0	1	1	1	0	1	0	1	0	1	0	0	0	0	0	0	1	1	1	0	0	1	1	1	0	0	1	0	1	
21	1	0	0	0	1	0	1	1	0	1	0	1	1	1	0	0	1	1	0	1	1	0	1	1	0	1	1	0	1	0	1	1	1	1	1	1	1	0	1	0	1	1	0	
22	1	0	0	1	1	1	1	1	1	1	0	1	1	1	0	1	1	1	0	1	0	1	1	0	0	0	0	1	0	1	1	1	0	0	1	0	1	1	1	1	1	1	1	
23	0	0	1	1	1	0	1	0	0	1	0	1	1	1	0	1	0	1	0	0	1	0	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	
N = 23	15	14	8	6	7	5	5	8	6	18	4	17	7	8	3	15	6	2	5	4	5	8	7	9	5	4	19	6	7	5	1	9	6	5	6	2	7	5	7	7	6			
P	0,7	0,6	0,8	0,7	0,7	0,7	0,7	0,8	0,2	0,8	0,2	0,7	0,7	0,8	0,1	0,7	0,7	0,9	0,7	0,6	0,7	0,8	0,7	0,8	0,2	0,2	0,8	0,2	0,7	0,7	0,9	0,8	0,7	0,7	0,7	0,7	0,9	0,7	0,7	0,7	0,7	0,7		
Q	0,3	0,4	0,2	0,3	0,3	0,3	0,3	0,2	0,8	0,2	0,8	0,3	0,3	0,2	0,9	0,3	0,3	0,1	0,3	0,4	0,3	0,2	0,3	0,2	0,8	0,8	0,2	0,8	0,3	0,3	0,1	0,2	0,3	0,3	0,3	0,3	0,1	0,3	0,3	0,3	0,3	0,3		
P-q	0,2	0,2	0,1	0,2	0,2	0,2	0,2	0,1	0,1	0,1	0,1	0,2	0,2	0,1	0	0,2	0,2	0	0,2	0,2	0,2	0,1	0,2	0,1	0,1	0,1	0,1	0,1	0,2	0,0	0,1	0,2	0,2	0,2	0,2	0,0	0,2	0,2	0,2	0,2	0,2			

Cont....

Reliability of Pre Test

No	NUMBER OF ITEMS																												Xt	Xt ²					
	4 1	4 2	4 3	4 4	4 5	4 6	4 7	4 8	4 9	5 0	5 1	5 2	5 3	5 4	5 5	5 6	5 7	5 8	5 9	6 0	6 1	6 2	6 3	6 4	6 5	6 6	6 7	6 8			6 9	7 0			
1	1	0	1	0	0	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	0	0	0	0	50	25 00		
2	0	1	1	0	0	1	1	1	1	0	1	0	1	0	0	0	0	1	0	1	0	1	0	0	1	1	0	1	0	0	0	40	16 00		
3	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	0	0	1	0	1	1	1	1	0	0	51	26 01	
4	1	1	1	0	0	1	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	1	0	1	1	1	1	1	1	1	0	0	52	27 04	
5	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	0	0	1	1	0	0	1	1	1	1	0	0	0	1	0	33	10 89		
6	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	1	0	1	1	1	1	0	0	1	1	0	0	47	22 09		
7	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	0	0	1	1	1	1	1	1	1	1	0	1	49	24 01	
8	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	0	54	29 16	
9	1	1	1	0	0	1	1	0	0	1	0	0	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	0	1	0	0	42	17 64	
10	0	0	1	0	0	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	0	0	0	0	1	1	1	1	0	0	44	19 36		
11	1	1	1	0	0	1	1	1	0	0	0	1	0	0	0	0	1	1	0	1	0	0	1	0	1	1	1	1	0	0	0	30	90 0		
12	0	1	1	0	1	0	1	0	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	1	0	0	51	26 01	
13	1	0	0	0	0	1	1	1	1	1	0	0	1	1	0	0	1	1	1	1	1	1	0	0	1	0	1	1	0	1	0	44	19 36		
14	1	1	1	0	0	0	0	1	1	0	0	1	1	0	1	0	1	0	1	0	1	0	1	0	1	1	1	1	1	1	0	0	45	20 25	
15	0	1	1	0	0	1	1	1	0	1	0	1	0	1	1	0	1	1	0	1	1	0	1	1	1	0	1	1	0	1	0	0	1	47	22 09
16	1	0	0	0	0	1	0	1	1	1	0	1	0	0	1	0	1	1	0	1	0	1	0	1	1	0	1	1	1	1	0	0	41	16 81	
17	1	1	1	0	0	1	0	1	1	1	0	0	1	1	0	0	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	0	44	19 36	
18	1	0	0	0	1	0	1	1	1	0	1	0	0	1	0	0	1	1	1	0	1	0	1	0	1	1	1	1	1	0	0	1	42	17 64	
19	0	1	1	0	0	0	1	1	1	1	0	1	1	1	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	1	0	51	26 01	
20	1	1	1	0	0	1	1	1	0	0	0	1	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	38	14 44	
21	1	1	0	1	0	1	0	1	1	1	0	0	1	0	0	0	1	1	1	1	1	0	1	1	1	1	1	1	0	0	1	43	18 49		

22	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	0	1	0	0	0	0	1	1	0	0	44	19 36
23	0	0	0	0	0	1	0	1	0	1	0	1	1	1	0	0	0	0	1	1	1	0	1	1	1	0	1	1	0	0	40	16 00
N= 23	1 7	1 5	1 5	2	4	1 7	1 6	2 1	1 6	1 8	4	1 7	1 5	1 5	1 6	3	1 8	1 5	1 7	1 5	1 5	5	1 6	1 7	1 6	1 4	1 8	1 5	3	4	Σx $t=$ 10 22	Σx t^2 $=$ 46 20 2
P	0 , 7	0 , 7	0 , 7	0 , 1	0 , 1	0 , 7	0 , 7	0 , 9	0 , 7	0 , 8	0 , 1	0 , 7	0 , 7	0 , 7	0 , 7	0 , 1	0 , 8	0 , 7	0 , 7	0 , 7	0 , 7	0 , 2	0 , 7	0 , 7	0 , 7	0 , 6	0 , 8	0 , 7	0 , 1	0 , 1		
Q	0 , 3	0 , 3	0 , 3	0 , 9	0 , 9	0 , 3	0 , 3	0 , 1	0 , 3	0 , 2	0 , 9	0 , 3	0 , 3	0 , 3	0 , 3	0 , 9	0 , 2	0 , 3	0 , 3	0 , 3	0 , 3	0 , 8	0 , 3	0 , 3	0 , 3	0 , 4	0 , 2	0 , 3	0 , 9	0 , 9		
p.q	0 , 2 1	0 , 2 1	0 , 2 1	0 , 0	0 , 0	0 , 2 1	0 , 2 1	0 , 0 2	0 , 1 6	0 , 0 9	0 , 1	0 , 1	0 , 1	0 , 1	0 , 1	0 , 1	0 , 1	0 , 2	0 , 2	0 , 2	0 , 2	0 , 1	0 , 2	0 , 2	0 , 2	0 , 2	0 , 1	0 , 2	0 , 0	0 , 0	Σp $.q=$ 8.4 1	

Appendix 14

Calculation Reliability Pre Test

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

$$N = 23$$

$$\sum X_t = 1022$$

$$\sum X_t^2 = 46202$$

$$\sum pq = 8.41$$

$$\begin{aligned} \sum X^2 &= \sum X_t^2 - \left(\frac{\sum X_t}{N} \right)^2 \\ &= 46202 - \left(\frac{1022}{23} \right)^2 = 46202 - \frac{1044484}{23} = 46202 - 45412.34 = 789.66 \end{aligned}$$

$$S_t^2 = \frac{\sum X^2}{N} = \frac{789.66}{23}$$

$$S_t^2 = 27.66$$

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

$$R_{11} = \left(\frac{70}{70-1} \right) \left(\frac{34.33-8.41}{34.33} \right) = \left(\frac{70}{69} \right) \left(\frac{25.92}{34.33} \right)$$

$$= (1.014) (0.75)$$

$$= 0.76 \text{ (} r_{11} > 0.70 = \text{reliable)}$$

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

Cont....

Reliabilty of Post Test

No	NO ITEMS																														X t	Xt ²			
	4 1	4 2	4 3	4 4	4 5	4 6	4 7	4 8	4 9	5 0	5 1	5 2	5 3	5 4	5 5	5 6	5 7	5 8	5 9	6 0	6 1	6 2	6 3	6 4	6 5	6 6	6 7	6 8	6 9	7 0					
1	1	0	1	1	1	0	1	1	1	1	1	1	1	0	0	1	1	1	0	0	1	1	1	1	0	0	0	0	0	1	1	4 6	2116		
2	0	1	1	1	0	0	1	1	0	1	1	1	0	0	0	1	1	0	0	0	1	0	0	1	0	0	1	0	0	1	1	3 7	1369		
3	1	0	0	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	0	0	0	0	0	0	1	0	1	1	1	1	1	4 5	2025		
4	1	1	1	0	1	0	1	1	1	1	0	1	1	1	0	1	0	1	0	0	1	0	1	1	1	1	0	1	1	1	1	4 7	2209		
5	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	3 0	900		
6	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	0	1	0	1	1	1	1	0	0	1	1	0	1	4 6	2116		
7	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	0	1	0	1	0	1	0	1	1	1	1	1	1	1	1	1	4 8	2304		
8	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	0	1	1	0	1	1	1	0	0	1	1	1	1	5 1	2601		
9	1	1	1	1	0	0	0	0	0	1	1	0	0	1	0	1	1	0	0	0	1	0	1	0	1	0	1	0	0	1	1	0	3 7	1369	
10	0	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	0	0	0	0	0	1	1	1	1	1	4 1	1681		
11	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	0	0	1	1	0	0	2 3	529		
12	0	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	0	0	1	0	1	1	1	1	1	0	0	1	1	1	4 8	2304		
13	1	0	0	0	0	0	1	1	1	1	0	1	1	1	0	1	1	1	0	1	1	0	1	1	0	0	1	0	0	1	1	3 7	1369		
14	1	1	1	1	1	0	0	1	1	0	1	1	1	0	1	1	1	0	0	0	1	0	1	1	1	0	0	1	1	1	0	0	4 2	1764	
15	0	1	1	0	0	0	1	1	0	1	1	1	0	1	0	0	1	1	0	0	1	0	1	1	0	0	1	0	1	1	0	1	3 4	1156	
16	1	0	0	0	1	0	0	1	1	1	1	1	0	0	0	1	1	1	0	0	0	1	1	1	0	0	0	1	1	0	1	1	3 7	1369	
17	1	1	1	1	1	0	1	1	1	1	0	0	1	1	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	1	1	0	0	4 2	1764
18	1	0	0	1	1	0	0	1	1	0	1	0	0	1	0	0	1	1	0	0	1	0	1	0	0	0	0	1	0	1	1	3 6	1196		
19	0	1	1	0	0	0	1	1	1	1	1	1	1	1	0	1	0	0	0	0	1	0	1	1	1	1	0	1	1	1	0	4 3	1849		
20	1	1	1	1	1	1	1	1	0	0	1	1	0	1	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	3 4	1156	
21	1	1	0	1	1	0	0	1	1	1	1	1	1	0	0	1	1	1	0	0	0	0	0	1	1	0	0	1	0	1	1	3 9	1321		

22	1	1	0	0	0	0	1	0	1	1	0	1	1	1	1	0	1	1	0	0	0	1	0	0	0	1	1	1	0	0	$\frac{3}{4}$	1156
23	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	1	0	1	0	$\frac{2}{5}$	625
N= 23	1 6	1 5	1 4	1 3	1 2	5	1 6	1 9	1 6	1 7	1 6	1 8	1 4	1 5	4	1 6	1 8	1 5	4	4	1 4	6	1 5	1 4	7	6	1 8	1 5	1 6	1 4	\sum xt	= 902 $\sum xt^2$ = 36248
p	0 , 7	0 , 7	0 , 6	0 , 6	0 , 5	0 , 2	0 , 7	0 , 8	0 , 7	0 , 7	0 , 7	0 , 8	0 , 6	0 , 7	0 , 2	0 , 7	0 , 8	0 , 7	0 , 2	0 , 2	0 , 6	0 , 3	0 , 7	0 , 6	0 , 3	0 , 3	0 , 8	0 , 7	0 , 7	0 , 6		
q	0 , 3	0 , 3	0 , 4	0 , 4	0 , 5	0 , 8	0 , 3	0 , 2	0 , 3	0 , 3	0 , 3	0 , 2	0 , 4	0 , 3	0 , 8	0 , 3	0 , 2	0 , 3	0 , 8	0 , 8	0 , 4	0 , 7	0 , 3	0 , 4	0 , 7	0 , 7	0 , 2	0 , 3	0 , 3	0 , 4		
p.q	0 , 2 1	0 , 2 1	0 , 2 4	0 , 2 4	0 , 2 5	0 , 1 6	0 , 2 1	0 , 2 1	0 , 2 1	0 , 2 1	0 , 2 1	0 , 1 6	0 , 2 4	0 , 2 1	0 , 2 6	0 , 1 1	0 , 2 6	0 , 1 1	0 , 2 6	0 , 1 6	0 , 2 6	0 , 2 4	0 , 2 1	0 , 2 1	0 , 2 4	0 , 2 1	0 , 2 1	0 , 1 6	0 , 2 1	0 , 2 1	\sum p.q = 9.16	

Appendix 16

Reliability Post Test

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

$$R_{11} = \left(\frac{k}{k-1} \right) \left(\frac{s_{t^2} - \sum pq}{s_{t^2}} \right)$$
$$S_t^2 = \frac{\sum X^2}{N}$$

$$N = 23$$

$$\sum X_t = 902$$

$$\sum X_t^2 = 36248$$

$$\sum pq = 9.16$$

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

$$= 36248 - \left(\frac{902}{23} \right)^2 = 36248 - \frac{813604}{23} = 36248 - 35374.08 = 873.92$$

$$S_t^2 = \frac{\sum X^2}{N} = \frac{873.92}{23}$$

$$S_t^2 = 37.99$$

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

$$R_{11} = \left(\frac{70}{70-1} \right) \left(\frac{37.99-9.16}{37.99} \right) = \left(\frac{70}{69} \right) \left(\frac{28.83}{37.99} \right)$$

$$= (1.014) (0.758)$$

$$= .0.768 (r_{11} > 0.70 = \text{reliable})$$

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

Appendix 17

Score of Experimental Class and Control Class Pre Test

1. PRE TEST

a. Pre Test Score of Experimental Class

No	The Initial Name of Students(n)	Pre-Test
1	Ainun Hasanah	60
2	Anggi Tirta Anugrah	34
3	Bestari	50
4	Ari Wahyudi	68
5	Desi Halimah Sari	44
6	Desi Adewinda	38
7	Elvina	78
8	Fitra Hayati	68
9	Fitri Ayuni	40
10	Khoirunnisa Siregar	70
11	Kurnia Arfah Siregar	60
12	Lia Hartati	66
13	Mhd Alwi Nasution	60
14	M. Husein	48
15	Nurul Padilah	48
16	Sakinah	76
17	Risky Annisah	58
18	Risky wahyudi	72
19	Sahwida Batubara	64
20	Sandi Harapan Tua	66
21	Suleha	68
22	Yosnan Nst	56
23	Yudi Sakban	62
24	Zakki Hasan	74
Total		1428

b. Pre Test Score of Control Class

No	The Initial Name of Students(N)	Pre-Test
1	Abdul Aziz	56
2	Abriadi	62
3	Agitya Bintang Cahyadi	80
4	Almah Pulungan	38
5	Aisah Hannum Pulungan	62
6	Andhi	60
7	Anni Khairani	66
8	Ardhiansyah	54
9	Fauzi Alfarizi	62
10	Fitriani Adawiyah	70
11	Gilang Ramadhan	70
12	Haddad Alwi	64
13	Ibna Oktiana Sinamo	78
14	Indah Permata Sari	52
15	Maestro Inonoe	60
16	Marwah Rahayu	70
17	Muammar Ahmad	36
18	Nadiah	50
19	Nasaruddin Hrp	66
20	Nur Hasanah	62
21	Nur Khololah	62
22	Riska Widiana	52
23	Yulia Putri Pratama	76
24	Yuni Andriani	76
Total		1484

Appendix 18

RESULT OF NORMALITY TEST IN PRE TEST

RESULT OF THE NORMALITY TEST OF XI IPA-1 IN PRE-TEST

1. The score of XI IPA-1 class in pre test from low score to high score:

40	40	46	50	50	50	58	58	58	60
60	66	66	70	72	72	72	74	80	82
84	84								

2. High = 84

Low = 40

Range = High – Low

= 84 - 40

= 44

3. Total of Classes = $1 + 3,3 \log (n)$
 $= 1 + 3,3 \log (22)$
 $= 1 + 3,3 (1.34)$
 $= 1 + 4.42$
 $= 5.42$
 $= 5$

4. Length of Classes = $\frac{range}{totalofclass} = \frac{44}{5} = 8.8 = 9$

5. Mean

Interval Class	F	X	x	fx	x ²	fx ²
76 – 84	4	80	+2	8	4	16
67 – 75	5	71	+1	5	1	5
58 – 66	7	62	0	0	0	0
49 – 57	3	53	-1	-3	1	3
40 – 48	3	44	-2	-6	4	12
<i>i</i> = 9	22	-	-	4	-	36

$$\begin{aligned} Mx &= M^1 + i \frac{\Sigma fx^1}{N} \\ &= 62 + 9 \left(\frac{4}{22} \right) \\ &= 62 + 9 (0.182) \\ &= 62 + 1.63 \\ &= 63.63 \end{aligned}$$

$$\begin{aligned} \text{SD}_t &= i \sqrt{\frac{\sum f x'^2}{n} - \left(\frac{\sum f x'}{n}\right)^2} \\ &= 9 \sqrt{\frac{36}{22} - \left(\frac{4}{22}\right)^2} \\ &= 9 \sqrt{1.636 - (0.182)^2} \\ &= 9 \sqrt{1.636 - 0.033} \\ &= 9 \sqrt{1.603} \\ &= 9 \times 1.266 \\ &= 11.39 \end{aligned}$$

Table of Normality Data Test with Chi Kuadrat Formula

[illegible]

Based on the table above, the researcher found that $\chi^2_{\text{count}} = 4.802$ while $\chi^2_{\text{table}} = 11.077$. Because $\chi^2_{\text{count}} < \chi^2_{\text{table}}$ ($4.802 < 11.077$) with degree of freedom (dk) $= 5 - 1 = 4$ and significant level $\alpha = 5\%$, distribution of XI IPA-1 class (pre-test) is normal.

6. Median

No	Interval	F	Fk
1	40 – 48	3	3
2	49 – 57	3	6
3	58 – 66	7	13
4	67 – 75	5	18
5	76 – 84	4	22

Position of Me in the interval of classes is number 3, that:

$$Bb = 57.5$$

$$F = 6$$

$$fm = 7$$

$$i = 9$$

$$n = 22$$

$$1/2n = 11$$

So :

$$\begin{aligned}
 Me &= Bb + i \left(\frac{n/2 - F}{fm} \right) \\
 &= 57.5 + 9 \left(\frac{11 - 6}{7} \right) \\
 &= 57.5 + 9 (0.714) \\
 &= 57.5 + 6.42 \\
 &= 63.92
 \end{aligned}$$

7. Modus

No	Interval	F	Fk
1	40 – 48	3	3
2	49 – 57	3	6
3	58 – 66	7	13
4	67 – 75	5	18
5	76 – 84	4	22

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 57.5$$

$$d_1 = 4$$

$$d_2 = 2$$

$$i = 9$$

So,

$$\begin{aligned}
 M_o &= 57.5 + \frac{4}{4+2} 9 \\
 &= 57.5 + 0.66 (9) \\
 &= 57.5 + 5.94 \\
 &= 63.44
 \end{aligned}$$

RESULT OF NORMALITY TEST IN PRE TEST

RESULT OF THE NORMALITY TEST OF XI IPA-2 IN PRE-TEST

1. The score of XI IPA-2 class in pre test from low score to high score:

36	38	50	52	52	54	56	60	60	62
62	62	62	62	64	66	66	70	70	70
76	76	78	80						

$$2. \text{ High} = 80$$

$$\text{Low} = 36$$

$$\text{Range} = \text{High} - \text{Low}$$

$$= 80 - 36$$

$$= 44$$

$$3. \text{ Total of Classes} = 1 + 3,3 \log (n)$$

$$= 1 + 3,3 \log (24)$$

$$= 1 + 3,3 (1.38)$$

$$= 1 + 4.55$$

$$= 5.55$$

$$= 5$$

$$4. \text{ Length of Classes} = \frac{\text{range}}{\text{total of class}}$$

$$= \frac{44}{5}$$

$$= 8.8 = 9$$

5. Mean

Interval Class	F	X	x'	fx'	x' ²	fx' ²
72 – 80	4	76	+2	8	4	16
63 – 71	6	67	+1	6	1	6
54 – 62	9	58	0	0	0	0
45 – 53	3	49	-1	-3	1	3
36 – 44	2	40	-2	-4	4	8
<i>i</i> = 9	24	-	-	7	-	33

$$M_x = M^1 + i \frac{\sum f x^1}{N}$$

$$= 58 + 9 \left(\frac{7}{24} \right)$$

$$= 58 + 9(0.292)$$

$$= 58 + 2.62$$

$$= 60.62$$

$$\begin{aligned}
SD_t &= i \sqrt{\frac{\sum f x'^2}{n} - \left(\frac{\sum f x'}{n}\right)^2} \\
&= 9 \sqrt{\frac{33}{24} - \left(\frac{7}{24}\right)^2} \\
&= 9 \sqrt{1.375 - (0.292)^2} \\
&= 9 \sqrt{1.375 - 0.085} \\
&= 9 \sqrt{1.29} \\
&= 9 \times 1.135 \\
&= 10.21
\end{aligned}$$

Table of Normality Data Test with Chi Kuadrad Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f _h	f ₀	$\frac{(f_0-f_h)^2}{f_h}$
72 – 80	80.5	1.94	0.4738	0.11	2.64	4	0.696
63 – 71	71.5	1.06	0.3554	0.28	6.72	6	0.075
54 – 62	62.5	0.18	0.0714	0.17	4.08	9	5.93
45 – 53	53.5	-0.69	0.24510	0.18	4.32	3	0.402
36 – 44	44.5	-1.57	0.05821	0.05	1.2	2	0.533
	35.5	-2.46	0.00695				
X ²							7.636

Based on the table above, the reseracher found that $x^2_{\text{count}}=7.636$ while $x^2_{\text{table}}= 11.077$. Because $x^2_{\text{count}} < x^2_{\text{table}}$ ($7.636 < 11.077$) with degree of freedom (dk) = 5 – 1 = 4 and significant level $\alpha = 5\%$, distribution of XI IPA-2 class (pre-test) is normal.

6. Median

No	Interval	F	Fk
1	36 – 44	2	2
2	45 – 53	3	5
3	54 – 62	9	14
4	63 – 71	6	20
5	72 – 80	4	24

Position of Me in the interval of classes is number 4, that:

$$Bb = 53.5 \qquad i = 9$$

$$F = 5 \qquad n = 24$$

$$fm = 9 \qquad 1/2n = 12$$

So :

$$Me = Bb + i \left(\frac{n/2 - F}{fm} \right)$$

$$= 53.5 + 9 \left(\frac{12-5}{9} \right)$$

$$= 53.5 + 9 (0.777)$$

$$= 53.5 + 6.99$$

$$= 60.49$$

7. Modus

No	Interval	F	Fk
1	36 – 44	2	2
2	45 – 53	3	5
3	54 – 62	9	14
4	63 – 71	6	20
5	72 – 80	4	24

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 53.5$$

$$d_1 = 6$$

$$d_2 = 3$$

$$i = 9$$

So,

$$M_o = 53.5 + \frac{6}{6+3} 9$$

$$= 53.5 + \frac{6}{9} 9$$

$$= 53.5 + 0.66 (9)$$

$$= 53.5 + 5.94$$

$$= 59.44$$

RESULT OF NORMALITY TEST IN PRE TEST

RESULT OF THE NORMALITY TEST OF XI IPA-3 IN PRE-TEST

1. The score of XI IPA-3 class in pre test from low score to high score:

44	44	44	46	46	46	52	54	54	56
60	60	62	64	66	66	68	68	68	70
72	74	76	78						

$$\begin{aligned}
 2. \text{ High} &= 78 \\
 \text{Low} &= 44 \\
 \text{Range} &= \text{High} - \text{Low} \\
 &= 78 - 44 \\
 &= 34
 \end{aligned}$$

$$\begin{aligned}
 3. \text{ Total of Classes} &= 1 + 3,3 \log (n) \\
 &= 1 + 3,3 \log (24) \\
 &= 1 + 3,3 (1.38) \\
 &= 1 + 4.55 \\
 &= 5.55 / 5
 \end{aligned}$$

$$4. \text{ Length of Classes} = \frac{\text{range}}{\text{total of class}} = \frac{34}{5} = 6.8 = 7$$

5. Mean

Interval Class	F	X	x'	fx'	x' ²	fx' ²
44-50	6	49	+2	12	4	24
51-57	4	54	+1	4	1	4
58-64	4	61	0	0	0	0
65-71	6	70	-1	-6	1	6
72-78	4	75	-2	-8	4	16
<i>i</i> = 7	24	-	-	2	-	50

$$\begin{aligned}
 Mx &= M^1 + i \frac{\sum fx^1}{N} \\
 &= 61 + 7 \left(\frac{2}{24} \right) \\
 &= 61 + 7 (0.082) \\
 &= 61 + 0.574 \\
 &= 61.574 \\
 &= 61.6
 \end{aligned}$$

$$\begin{aligned}
SD_t &= i \sqrt{\frac{\sum f x'^2}{n} - \left(\frac{\sum f x'}{n}\right)^2} \\
&= 7 \sqrt{\frac{50}{24} - \left(\frac{2}{24}\right)^2} \\
&= 7 \sqrt{2.083 - (0.082)^2} \\
&= 7 \sqrt{2.083 - 0.006} \\
&= 7 \sqrt{2.077} \\
&= 7 \times 1.441 \\
&= 10.087 \\
&= 10.08 \\
&= 10.1
\end{aligned}$$

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	$\frac{(f_0-f_h)^2}{f_h}$
72-78	78.5	1.67	0.4525				
65-71	71.5	0.98	0.3365	0.11	2.64	4	-1.28
58-64	64.5	0.28	0.1103	0.22	5.28	6	0.13
51-57	57.5	-0.40	0.1554	-0.04	-0.96	4	3.16
44-50	50.5	-1.09	0.3621	-0.20	-4.8	4	-0.16
	33.5	-2.78	0.4973	-0.13	-3.12	6	0.92
X ²							2.77

Based on the table above, the researcher found that $x^2_{\text{count}} = 2.77$ while $x^2_{\text{table}} = 11.077$. Because $x^2_{\text{count}} < x^2_{\text{table}}$ ($2.77 < 11.077$) with degree of freedom (dk) = $5 - 1 = 4$ and significant level $\alpha = 5\%$, distribution of XI IPA-3 class (pre-test) is normal.

6. Median

No	Interval	F	Fk
1	44-50	6	6
2	51-57	4	10
3	58-64	4	14
4	65-71	6	20
5	72 – 78	4	24

Position of Me in the interval of classes is number 3, that:

$$Bb = 57.5$$

$$F = 4$$

$$fm = 4$$

$$i = 7$$

$$n = 24$$

$$1/2n = 12$$

So :

$$Me = Bb + i \left(\frac{n/2 - F}{fm} \right)$$

$$= 57.5 + 7 \left(\frac{12 - 4}{4} \right)$$

$$= 57.5 + 7 (2)$$

$$= 57.5 + 14$$

$$= 71.5$$

7. Modus

No	Interval	F	Fk
1	44-50	6	6
2	51-57	4	10
3	58-64	4	14
4	65-71	6	20
5	72 – 78	4	24

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 64.5$$

$$d_1 = 0$$

$$d_2 = -2$$

$$i = 7$$

So,

$$M_o = 64.5 + \frac{0}{0+(-2)} 7$$

$$= 64.5 + 0 (7)$$

$$= 64.5 + 0$$

$$= 64.5$$

Appendix 19

HOMOGENEITY TEST (PRE-TEST)

Calculation of parameter to get variant of the first class as experimental class sample and variant of the second class as control class sample are used homogeneity test by using formula:

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

Hypotheses:

$$H_0 : \delta_1^2 = \delta_2^2$$

$$H_1 : \delta_1^2 \neq \delta_2^2$$

A. Variant of the XI IPA-1 class is:

NO	Xi	Xi ²
1	40	1600
2	40	1600
3	46	2116
4	50	2500
5	50	2500
6	50	2500
7	58	3364
8	58	3364
9	58	3364
10	60	3600
11	60	3600
12	66	4356
13	66	4356
14	70	4900
15	72	5184
16	72	5184
17	72	5184
18	74	5476
19	80	6400
20	82	6724
21	84	7056
22	84	7056

Total	1392	91984
--------------	-------------	--------------

$$N = 22$$

$$\sum xi = 1392$$

$$\sum xi^2 = 91984$$

So:

$$\begin{aligned}
 S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\
 &= \frac{22(91984) - (1392)^2}{22(22-1)} \\
 &= \frac{2023648 - 1937664}{22(21)} \\
 &= \frac{85984}{462}
 \end{aligned}$$

$$= 186.11$$

B. Variant of the XI IPA-2 class is:

NO	Xi	Xi²
1.	36	1296
2.	38	1444
3.	50	2500
4.	52	2704
5.	52	2704
6.	54	2916
7.	56	3136
8.	60	3600
9.	60	3600
10.	62	3844
11.	62	3844
12.	62	3844
13.	62	3844
14.	62	3844
15.	64	4096
16.	66	4356
17.	66	4356
18.	70	4900
19.	70	4900
20.	70	4900
21.	76	5776
22.	76	5776

23.	78	6084
24.	80	6400
Total	1484	94664

$$N = 24$$

$$\sum xi = 1484$$

$$\sum xi^2 = 94664$$

So:

$$\begin{aligned}
 S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\
 &= \frac{24(94664) - (1484)^2}{24(24-1)} \\
 &= \frac{2271936 - 2202256}{24(23)} \\
 &= \frac{69680}{552} \\
 &= 126.23
 \end{aligned}$$

C. Variant of the XI IPA-3 class is:

NO	Xi	Xi ²
1.	34	1156
2.	38	1444
3.	40	1600
4.	44	1936
5.	48	2304
6.	48	2304
7.	50	2500
8.	56	3136
9.	58	3364
10.	60	3600
11.	60	3600
12.	60	3600
13.	62	3844
14.	64	4096
15.	66	4356
16.	66	4356
17.	68	4624
18.	68	4624
19.	68	4624
20.	70	4900

21.	72	5184
22.	74	5476
23.	76	5776
24.	78	6084
Total	1428	88488

$$n = 24$$

$$\sum xi = 1428$$

$$\sum xi^2 = 88488$$

So:

$$\begin{aligned}
 S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\
 &= \frac{24(88488) - (1428)^2}{24(24-1)} \\
 &= \frac{2123712 - 2039184}{24(23)} \\
 &= \frac{84528}{552} \\
 &= 153.13
 \end{aligned}$$

The Formula was used to test hypothesis was:

1. IPA-1 and IPA-2 :

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

So:

$$\begin{aligned}
 F &= \frac{186.11}{126.23} \\
 &= 1.21
 \end{aligned}$$

After doing the calculation, researcher found that $F_{\text{count}} = 1.21$ with α 5% and dk = 21 and 23 from the distribution list F, researcher found that $F_{\text{table}} = 1.98$, cause $F_{\text{count}} < F_{\text{table}}$ ($1.21 < 1.98$). So, there is no difference in variant between the IPA-1 class and IPA-2 class. It means that the variant is homogenous.

2. IPA-1 and IPA-3 :

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

So:

$$F = \frac{186.11}{153.13} = 1.21$$

After doing the calculation, researcher found that $F_{\text{count}} = 1.21$ with α 5% and dk = 23 and 21 from the distribution list F, researcher found that $F_{\text{table}} = 1.98$, cause $F_{\text{count}} < F_{\text{table}}$ ($1.21 < 1.98$). So, there is no difference in variant between the IPA-1 class and IPA -3 class. It means that the variant is homogenous.

3. IPA-2 and IPA-3 :

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

So:

$$F = \frac{153.13}{126.23} \\ = 1.21$$

After doing the calculation, researcher found that $F_{\text{count}} = 1.21$ with α 5% and dk = 23 and 23 from the distribution list F, researcher found that $F_{\text{table}} = 1.98$, cause $F_{\text{count}} < F_{\text{table}}$ ($1.47 < 1.98$). So, there is no difference the variant between the IPA-2class and IPA-3 class. It means that the variant is homogenous.

Appendix 20

Score of Experimental Class and Control Class Post Test

2. POST TEST

a. Post Test Score of Experimental Class (after Using CRS)

No	The Initial Name of Students(n)	Post Test
1	Ainun Hasanah	74
2	Anggi Tirta Anugrah	62
3	Bestari	82
4	Ari Wahyudi	76
5	Desi Halimah Sari	82
6	Desi Adewinda	72
7	Elvina	96
8	Fitra Hayati	80
9	Fitri Ayuni	76
10	Khoirunnisa Siregar	86
11	Kurnia Arfah Siregar	70
12	Lia Hartati	92
13	Mhd Alwi Nasution	76
14	M. Husein	90
15	Nurul Padilah	86
16	Sakinah	80
17	Risky Annisah	80
18	Risky wahyudi	84
19	Sahwida Batubara	92
20	Sandi Harapan Tua	86
21	Suleha	88
22	Yosnan Nst	76
23	Yudi Sakban	86
24	Zakki Hasan	88
Total		1960

b. Post Test Score of Control Class (Using Conventional Strategy)

No	The Initial Name Of Students(N)	Post-Test
1	Abdul Aziz	80
2	Abriadi	62
3	Agitya Bintang Cahyadi	84
4	Almah Pulungan	74
5	Aisah Hannum Pulungan	62
6	Andhi	70
7	Anni Khairani	80
8	Ardhiansyah	74
9	Fauzi Alfarizi	68
10	Fitriani Adawiyah	70
11	Gilang Ramadhan	70
12	Haddad Alwi	88
13	Ibna Oktiana Sinamo	74
14	Indah Permata Sari	72
15	Maestro Inonoe	68
16	Marwah Rahayu	62
17	Muammar Ahmad	70
18	Nadiah	66
19	Nasaruddin Hrp	70
20	Nur Hasanah	68
21	Nur Khololah	54
22	Riska Widiانا	74
23	Yulia Putri Pratama	84
24	Yuni Andriani	80
Total		1724

Appendix 21

RESULT OF NORMALITY TEST IN POST TEST

RESULT OF THE NORMALITY TEST OF XI IPA-2 IN POST-TEST

1. The score of XI IPA-2 class in post test from low score to high score:

54	62	62	62	66	68	68	68	70	70
70	70	70	72	74	74	74	74	80	80
80	84	84	88						

2. High = 88

Low = 54

Range = High – Low

= 88 - 54

= 34

3. Total of Classes = $1 + 3,3 \log (n)$

= $1 + 3,3 \log (24)$

= $1 + 3,3 (1.38)$

= $1 + 4.55$

= $5.55 / 5$

4. Length of Classes = $\frac{range}{total\ of\ class} = \frac{34}{5} = 6.8 = 7$

5. Mean

Interval Class	F	X	x'	fx'	x' ²	fx' ²
82 – 88	3	85	+2	6	4	12
75 – 81	3	78	+1	3	1	3
68 – 74	13	71	0	0	0	0
61 – 67	4	64	-1	-4	1	4
54 – 60	1	57	-2	-2	4	4
<i>i</i> = 7	24	-	-	3	-	23

$$\begin{aligned} Mx &= M^1 + i \frac{\Sigma fx^1}{N} \\ &= 71 + 7 \left(\frac{3}{24} \right) \\ &= 71 + 7 (0.125) \\ &= 71 + 0.875 \\ &= 71.87 \end{aligned}$$

$$\begin{aligned} \text{SD}_t &= i \sqrt{\frac{\sum f x t^2}{n} - \left(\frac{\sum f x t}{n} \right)^2} \\ &= 7 \sqrt{\frac{23}{24} - \left(\frac{3}{24} \right)^2} \\ &= 7 \sqrt{0.958 - (0.125)^2} \\ &= 7 \sqrt{0.958 - 0.015} \\ &= 7 \sqrt{0.943} \\ &= 7 \times 0.971 \\ &= 6.79 \end{aligned}$$

Table of Normality Data Test with Chi Kuadrat Formula

[illegible]

Based on the table above, the reseracher found that $x^2_{\text{count}} = 7.042$ while $x^2_{\text{table}} = 11.077$, because $x^2_{\text{count}} < x^2_{\text{table}}$ ($7.042 < 11.077$) with degree of freedom (dk) $= 5 - 1 = 4$ and significant level $\alpha = 5\%$, so distribution of XI IPA-2 class (post-test) is normal.

6. Median

No	Interval	F	Fk
1	54 – 60	1	1
2	61 – 67	4	5
3	68 – 74	13	18
4	75 – 81	3	21
5	82 – 88	3	24

Position of Me in the interval of classes is number 3, that:

$$Bb = 67.5$$

$$F = 5$$

$$fm = 13$$

$$i = 7$$

$$n = 24$$

$$1/2n = 12$$

So :

$$\begin{aligned}
 Me &= Bb + i \left(\frac{n/2 - F}{fm} \right) \\
 &= 67.5 + 7 \left(\frac{12 - 5}{13} \right) \\
 &= 67.5 + 7 (0.538) \\
 &= 67.5 + 3.766 \\
 &= 71.26
 \end{aligned}$$

7. Modus

No	Interval	F	Fk
1	54 – 60	1	1
2	61 – 67	4	5
3	68 – 74	13	18
4	75 – 81	3	21
5	82 – 88	3	24

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 67.5$$

$$d_1 = 9$$

$$d_2 = 10$$

$$i = 7$$

So,

$$\begin{aligned}
 M_o &= 67.5 + \frac{9}{9+10} 7 \\
 &= 67.5 + 0.473 (7) \\
 &= 67.5 + 3.31 \\
 &= 70.81
 \end{aligned}$$

RESULT OF NORMALITY TEST IN POST TEST

RESULT OF THE NORMALITY TEST OF XI IPA-3 IN POST-TEST

1. The score of XI IPA-3 class in post test from low score to high score:

62	70	72	74	76	76	76	76	80	80
80	82	82	84	86	86	86	86	88	88
90	92	92	96						

$$2. \text{ High} = 96$$

$$\text{Low} = 62$$

$$\text{Range} = \text{High} - \text{Low}$$

$$= 96 - 62$$

$$= 34$$

$$\begin{aligned} 3. \text{ Total of Classes} &= 1 + 3,3 \log (n) \\ &= 1 + 3,3 \log (24) \\ &= 1 + 3,3 (1.38) \\ &= 1 + 4.55 \\ &= 5.55 / 5 \end{aligned}$$

$$4. \text{ Length of Classes} = \frac{\text{range}}{\text{total of class}} = \frac{34}{5} = 6.8 = 7$$

5. Mean

Interval Class	F	X	x'	fx'	x' ²	fx' ²
90 – 96	4	93	+2	8	4	16
83 – 89	7	86	+1	7	1	7
76 – 82	9	79	0	0	0	0
69 – 75	3	72	-1	-3	1	3
62 – 68	1	65	-2	-2	4	4
<i>i = 5</i>	24	-	-	10	-	30

$$Mx = M^1 + i \frac{\sum fx^1}{N}$$

$$= 79 + 7 \left(\frac{10}{24} \right)$$

$$= 79 + 7 (0.416)$$

$$= 79 + 2.912$$

$$= 81.91$$

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

$$= 7 \sqrt{\frac{30}{24} - \left(\frac{10}{24} \right)^2}$$

$$= 7 \sqrt{1.25 - (0.416)^2}$$

$$= 7 \sqrt{1.25 - 0.173}$$

$$= 7 \sqrt{1.077}$$

$$= 7 \times 1.037$$

$$= 7.259$$

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	$\frac{(f_0-f_h)}{f_h}$
90 - 96	96.5	2.01	0.4778	0.12	2.88	4	0.434
83- 89	89.5	1.04	0.3508	0.31	7.4	7	0.021
76 - 82	82.5	0.08	0.0319	0.15	3.6	9	8.1
69 - 75	75.5	-0.88	0.18943	0.15	3.6	3	0.1
62 - 68	68.5	-1.84	0.03288	0.03	0.72	1	0.108
	61..5	-2.81	0.00248				
X^2							8.763

Based on the table above, the researcher found that $x^2_{\text{count}} = 8.763$ while $x^2_{\text{table}} = 11.077$. Because $x^2_{\text{count}} < x^2_{\text{table}}$ ($8.763 < 11.077$) with degree of freedom (dk) = $5-1 = 4$ and significant level $\alpha = 5\%$, distribution of XI IPA-3 class (post-test) is normal.

8. Median

No	Interval	F	Fk
1	62 – 68	1	1
2	69 – 75	3	4
3	76 – 82	9	13
4	83 – 89	7	20
5	90 – 96	4	24

Position of Me in the interval of classes is number 3, that:

$$Bb = 75.5$$

$$F = 4$$

$$fm = 9$$

$$i = 7$$

$$n = 24$$

$$1/2n=12$$

So :

$$Me = Bb + i \left(\frac{\frac{n}{2} - F}{fm} \right)$$

$$= 75.5 + 7 \left(\frac{12-4}{9} \right)$$

$$= 75.5 + 7 (0.88)$$

$$= 75.5 + 6.16$$

$$= 81.66$$

9. Modus

No	Interval	F	Fk
1	62 – 68	1	1
2	69 – 75	3	4
3	76 – 82	9	13
4	83 – 89	7	20
5	90 – 96	4	24

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 75.5$$

$$d_1 = 6$$

$$d_2 = 2$$

$$i = 7$$

So,

$$M_o = 75.5 + \frac{6}{6+2} 7$$

$$= 75.5 + 0.75 (7)$$

$$= 77.5 + 5.25$$

$$= 80.75$$

Appendix 22

HOMOGENEITY TEST (POST-TEST)

Calculation of parameter of experimental class sample by using Critical Reading Strategies and variant of the control class sample by using conventional strategy used homogeneity test by using formula:

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

Hypotheses:

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

$$H_1 : \sigma_1^2 \neq \sigma_2^2$$

A. Variant of the IPA-2 class is:

NO	Xi	Xi ²
25.	54	2916
26.	62	3844
27.	62	3844
28.	62	3844
29.	66	4356
30.	68	4624
31.	68	4624
32.	68	4624
33.	70	4900
34.	70	4900
35.	70	4900
36.	70	4900
37.	70	4900
38.	72	5184
39.	74	5476
40.	74	5476
41.	74	5476
42.	74	5476
43.	80	6400
44.	80	6400
45.	80	6400

46.	84	7056
47.	84	7056
48.	88	7744
Total	1724	125320

$$N = 24$$

$$\sum xi = 1724$$

$$\sum_{xi}^2 = 125320$$

So:

$$\begin{aligned}
 S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\
 &= \frac{24(125320) - (1724)^2}{24(24-1)} \\
 &= \frac{3007680 - 2972176}{24(23)} \\
 &= \frac{35504}{552} \\
 &= 64.31
 \end{aligned}$$

B. Variant of the IPA-3class is:

NO	Xi	Xi ²
25.	62	3844
26.	70	4900
27.	72	5184
28.	74	5476
29.	76	5776
30.	76	5776
31.	76	5776
32.	76	5776
33.	80	6400
34.	80	6400
35.	80	6400
36.	82	6724
37.	82	6724
38.	84	7056
39.	86	7396
40.	86	7396
41.	86	7396
42.	86	7396
43.	88	7744

44.	88	7744
45.	90	8100
46.	92	8464
47.	92	8464
48.	96	9126
Total	1960	161438

$$\begin{aligned} n &= 24 \\ \sum x_i &= 1960 \\ \sum x_i^2 &= 161438 \end{aligned}$$

So:

$$\begin{aligned} S^2 &= \frac{n \sum xi^2 - (\sum xi)^2}{n(n-1)} \\ &= \frac{24(161438) - (1960)^2}{24(24-1)} \\ &= \frac{3874512 - 3841600}{24(23)} \\ &= \frac{32912}{552} \\ &= 59.62 \end{aligned}$$

Table of Normality Data Test with Chi Kuadrat Formula

[illegible]

Based on the table above, the researcher found that $x^2_{\text{count}} = 8.763$ while $x^2_{\text{table}} = 11.077$. Because $x^2_{\text{count}} < x^2_{\text{table}}$ ($8.763 < 11.077$) with degree of freedom (dk) = $5 - 1 = 4$ and significant level $\alpha = 5\%$, distribution of XI IPA-3 class (post-test) is normal.

6. Median

No	Interval	F	Fk
1	62 – 68	1	1
2	69 – 75	3	4
3	76 – 82	9	13
4	83 – 89	7	20
5	90 – 96	4	24

Position of Me in the interval of classes is number 3, that:

$$Bb = 75.5$$

$$F = 4$$

$$fm = 9$$

$$i = 7$$

$$n = 24$$

$$1/2n = 12$$

So :

$$\begin{aligned}
 Me &= Bb + i \left(\frac{n/2 - F}{fm} \right) \\
 &= 75.5 + 7 \left(\frac{12 - 4}{9} \right) \\
 &= 75.5 + 7 (0.88) \\
 &= 75.5 + 6.16 \\
 &= 81.66
 \end{aligned}$$

7. Modus

No	Interval	F	Fk
1	62 – 68	1	1
2	69 – 75	3	4
3	76 – 82	9	13
4	83 – 89	7	20
5	90 – 96	4	24

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 75.5$$

$$d_1 = 6$$

$$d_2 = 2$$

$$i = 7$$

So,

$$\begin{aligned} M_o &= 75.5 + \frac{6}{6+2} 7 \\ &= 75.5 + 0.75 (7) \\ &= 77.5 + 5.25 \\ &= 80.75 \end{aligned}$$

Appendix 23

T_{test} OF THE BOTH AVERAGES IN PRE-TEST

The formula was used to analyze homogeneity test of the both averages was t-test, that:

So:

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

$$Tt = \frac{60.62 - 61.6}{\sqrt{\left(\frac{(24-1) 10.21 + (24-1) 10.1}{24+24-2}\right)\left(\frac{1}{24} + \frac{1}{24}\right)}}$$

$$Tt = \frac{-0.98}{\sqrt{\left(\frac{23(10.21) + 23(10.1)}{46}\right)(0.041 + 0.041)}}$$

$$Tt = \frac{-0.98}{\sqrt{\left(\frac{234.83 + 232.3}{46}\right)(0.082)}}$$

$$Tt = \frac{-0.98}{\sqrt{\left(\frac{467.13}{46}\right)(0.082)}}$$

$$Tt = \frac{-0.98}{\sqrt{10.15(0.082)}}$$

$$Tt = \frac{-0.98}{\sqrt{0.83}}$$

$$Tt = \frac{-0.98}{0.91}$$

$$Tt = -1.07$$

Based on researcher calculation result of the homogeneity test of the both averages, researcher found that $t_{\text{count}} = -1.07$ with opportunity $(1 - \alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 24 + 24 - 2 = 46$, researcher found that $t_{\text{table}} = 1.678$, because $t_{\text{count}} < t_{\text{table}} (-1.07 < 1.678)$. So, H_a is accepted, it means that there is no difference in average between experimental class and control class in pre test.

Appendix 24

T_{test} OF THE BOTH AVERAGES IN POST – TEST

The formula was used to analyse homogeneity test of the both averages in post test was t-test, as below:

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

$$Tt = \frac{81.91 - 71.87}{\sqrt{\left(\frac{(24-1) 7.259 + (24-1) 6.79}{24+24-2}\right)\left(\frac{1}{24} + \frac{1}{24}\right)}}$$

$$Tt = \frac{10.04}{\sqrt{\left(\frac{23(7.259) + 23 (6.79)}{46}\right)(0.041 + 0.041)}}$$

$$Tt = \frac{10.04}{\sqrt{\left(\frac{166.95 + 156.17}{46}\right)(0.082)}}$$

$$Tt = \frac{10.04}{\sqrt{\left(\frac{323.12}{46}\right)(0.082)}}$$

$$Tt = \frac{10.04}{\sqrt{(7.02)(0.082)}}$$

$$Tt = \frac{10.04}{\sqrt{0.57}}$$

$$Tt = \frac{10.04}{0.75}$$

$$Tt = 13.38$$

Based on calculation above, the result of the homogeneity test of the both averages, it was found that $t_{count} = 4.368$ with opportunity $(1 - \alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 24 + 24 - 2 = 46$, researcher found that $t_{table} = 1.678$, cause $t_{count} > t_{table}$ ($4.368 > 1.678$). It means that H_a is accepted, it means there was the difference average between experimental class and control class in post test. it can be concluded that there was the significant effect of Critical Reading Strategies on Reading Report Text at Grade XI SMAN 1 Siabu.

Appendix 25

Chi-Square Table

dk	Significant level					
	50%	30%	20%	10%	5%	1%
1	0,455	1,074	1,642	2,706	3,841	6,635
2	1,386	2,408	3,219	4,605	5,991	9,210
3	2,366	3,665	4,642	6,251	7,815	11,341
4	3,357	4,878	5,989	7,779	9,488	13,277
5	4,351	6,064	7,289	9,236	11,070	15,086
6	5,348	7,231	8,558	10,645	12,592	16,812
7	6,346	8,383	9,803	12,017	14,067	18,475
8	7,344	9,524	11,030	13,362	15,507	20,090
9	8,343	10,656	12,242	14,684	16,919	21,666
10	9,342	11,781	13,442	15,987	18,307	23,209
11	10,341	12,899	14,631	17,275	19,675	24,725
12	11,340	14,011	15,812	18,549	21,026	26,217
13	12,340	15,119	16,985	19,812	22,362	27,688
14	13,339	16,222	18,151	21,064	23,685	29,141
15	14,339	17,222	19,311	22,307	24,996	30,578
16	15,338	18,418	20,465	23,542	26,296	32,000
17	16,338	19,511	21,615	24,769	27,587	33,409
18	17,338	20,601	22,760	25,989	28,869	34,805
19	18,338	21,689	23,900	27,204	30,144	36,191
20	19,337	22,775	25,038	28,412	31,410	37,566
21	20,337	23,858	26,171	29,615	32,671	38,932
22	21,337	24,939	27,301	30,813	33,924	40,289
23	22,337	26,018	28,429	32,007	35,172	41,638
24	23,337	27,096	29,553	33,196	35,415	42,980
25	24,337	28,172	30,675	34,382	37,652	44,314
26	25,336	29,246	31,795	35,563	38,885	45,642
27	26,336	30,319	32,912	36,741	40,113	46,963
28	27,336	31,391	34,027	37,916	41,337	48,278
29	28,336	32,461	35,139	39,087	42,557	49,588
30	29,336	33,530	36,250	40,256	43,773	50,892

APPENDIX 26

Z-Table

Z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
-										
3.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
9	5	5	4	4	4	4	4	4	3	3
-										
3.	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
8	7	7	7	6	6	6	6	5	5	5
-										
3.	0.0001	0.0001	0.0001	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
7	1	0	0	0	9	9	8	8	8	8
-										
3.	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
6	6	5	5	4	4	3	3	2	2	1
-										
3.	0.0002	0.0002	0.0002	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001
5	3	2	2	1	0	9	9	8	7	7
-										
3.	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
4	4	2	1	0	9	8	7	6	5	4
-										
3.	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003	0.0003	0.0003	0.0003
3	8	7	5	3	2	0	9	8	6	5
-										
3.	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005	0.0005	0.0005
3.	9	6	4	2	0	8	6	4	2	0

2										
-										
3.	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0007	0.0007	0.0007	0.0007
1	7	4	0	7	4	2	9	6	4	1
-										
3.	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010	0.0010
0	5	1	6	2	8	4	1	7	4	0
-										
2.	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014	0.0013
9	7	1	5	9	4	9	4	9	4	9
-										
2.	0.0025	0.0024	0.0024	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019	0.0019
8	6	8	0	3	6	9	2	5	9	3
-										
2.	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0028	0.0027	0.0026
7	7	6	6	7	7	8	9	0	2	4
-										
2.	0.0046	0.0045	0.0044	0.0042	0.0041	0.0040	0.0039	0.0037	0.0036	0.0035
6	6	3	0	7	5	2	1	9	0	7
-										
2.	0.0062	0.0060	0.0058	0.0057	0.0055	0.0053	0.0052	0.0050	0.0049	0.0048
5	1	4	7	0	4	9	3	8	4	0
-										
2.	0.0082	0.0079	0.0077	0.0075	0.0073	0.0071	0.0069	0.0067	0.0065	0.0063
4	0	8	6	5	4	4	5	6	7	9

-										
2.	0.0107	0.0104	0.0101	0.0099	0.0096	0.0093	0.0091	0.0088	0.0086	0.0084
3	2	4	7	0	4	9	4	9	6	2
-										
2.	0.0139	0.0135	0.0132	0.0128	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
2	0	5	1	7	5	2	1	0	0	1
-										
2.	0.0178	0.0174	0.0170	0.0165	0.0161	0.0157	0.0153	0.0150	0.0146	0.0142
1	6	3	0	9	8	8	9	0	3	6
-										
2.	0.0227	0.0222	0.0216	0.0211	0.0206	0.0201	0.0197	0.0192	0.0187	0.0183
0	5	2	9	8	8	8	0	3	6	1
-										
1.	0.0287	0.0280	0.0274	0.0268	0.0261	0.0255	0.0250	0.0244	0.0238	0.0233
9	2	7	3	0	9	9	0	2	5	0
-										
1.	0.0359	0.0351	0.0343	0.0336	0.0328	0.0321	0.0314	0.0307	0.0300	0.0293
8	3	5	8	2	8	6	4	4	5	8
-										
1.	0.0445	0.0436	0.0427	0.0418	0.0409	0.0400	0.0392	0.0383	0.0375	0.0367
7	7	3	2	2	3	6	0	6	4	3
-										
1.	0.0548	0.0537	0.0526	0.0515	0.0505	0.0494	0.0484	0.0474	0.0464	0.0455
6	0	0	2	5	0	7	6	6	8	1
-										
	0.0668	0.0655	0.0642	0.0630	0.0617	0.0605	0.0593	0.0582	0.0570	0.0559

1. 5	1	2	6	1	8	7	8	1	5	2
- 1. 4	0.0807 6	0.0792 7	0.0778 0	0.0763 6	0.0749 3	0.0735 3	0.0721 5	0.0707 8	0.0694 4	0.0681 1
- 1. 3	0.0968 0	0.0951 0	0.0934 2	0.0917 6	0.0901 2	0.0885 1	0.0869 1	0.0853 4	0.0837 9	0.0822 6
- 1. 2	0.1150 7	0.1131 4	0.1112 3	0.1093 5	0.1074 9	0.1056 5	0.1038 3	0.1020 4	0.1002 7	0.0985 3
- 1. 1	0.1356 7	0.1335 0	0.1313 6	0.1292 4	0.1271 4	0.1250 7	0.1230 2	0.1210 0	0.1190 0	0.1170 2
- 1. 0	0.1586 6	0.1562 5	0.1538 6	0.1515 1	0.1491 7	0.1468 6	0.1445 7	0.1423 1	0.1400 7	0.1378 6
- 0. 9	0.1840 6	0.1814 1	0.1787 9	0.1761 9	0.1736 1	0.1710 6	0.1685 3	0.1660 2	0.1635 4	0.1610 9
- 0. 8	0.2118 6	0.2089 7	0.2061 1	0.2032 7	0.2004 5	0.1976 6	0.1948 9	0.1921 5	0.1894 3	0.1867 3
- 0.	0.2419 6	0.2388 5	0.2357 6	0.2327 0	0.2296 5	0.2266 3	0.2236 3	0.2206 5	0.2177 0	0.2147 6

7										
-										
0.	0.2742	0.2709	0.2676	0.2643	0.2610	0.2578	0.2546	0.2514	0.2482	0.2451
6	5	3	3	5	9	5	3	3	5	0
-										
0.	0.3085	0.3050	0.3015	0.2980	0.2946	0.2911	0.2877	0.2843	0.2809	0.2776
5	4	3	3	6	0	6	4	4	6	0
-										
0.	0.3445	0.3409	0.3372	0.3336	0.3299	0.3263	0.3227	0.3191	0.3156	0.3120
4	8	0	4	0	7	6	6	8	1	7
-										
0.	0.3820	0.3782	0.3744	0.3707	0.3669	0.3631	0.3594	0.3556	0.3519	0.3482
3	9	8	8	0	3	7	2	9	7	7
-										
0.	0.4207	0.4168	0.4129	0.4090	0.4051	0.4012	0.3974	0.3935	0.3897	0.3859
2	4	3	4	5	7	9	3	8	4	1
-										
0.	0.4601	0.4562	0.4522	0.4482	0.4443	0.4403	0.4364	0.4325	0.4285	0.4246
1	7	0	4	8	3	8	4	1	8	5
-										
0.	0.5000	0.4960	0.4920	0.4880	0.4840	0.4800	0.4760	0.4721	0.4681	0.4641
0	0	1	2	3	5	6	8	0	2	4

Z-Table

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952

[illegible]

APPENDIX 27**Percentage Points of the t Distribution**

Pr df	0.25	0.10	0.05	0.025	0.01	0.005	0.001
	0.50	0.20	0.10	0.050	0.02	0.010	0.002
1	1.00000	3.07768	6.31375	12.70620	31.82052	63.65674	318.30884
2	0.81650	1.88562	2.91999	4.30265	6.96456	9.92484	22.32712
3	0.76489	1.63774	2.35336	3.18245	4.54070	5.84091	10.21453
4	0.74070	1.53321	2.13185	2.77645	3.74695	4.60409	7.17318
5	0.72669	1.47588	2.01505	2.57058	3.36493	4.03214	5.89343
6	0.71756	1.43976	1.94318	2.44691	3.14267	3.70743	5.20763
7	0.71114	1.41492	1.89458	2.36462	2.99795	3.49948	4.78529
8	0.70639	1.39682	1.85955	2.30600	2.89646	3.35539	4.50079
9	0.70272	1.38303	1.83311	2.26216	2.82144	3.24984	4.29681
10	0.69981	1.37218	1.81246	2.22814	2.76377	3.16927	4.14370
11	0.69745	1.36343	1.79588	2.20099	2.71808	3.10581	4.02470
12	0.69548	1.35622	1.78229	2.17881	2.68100	3.05454	3.92963
13	0.69383	1.35017	1.77093	2.16037	2.65031	3.01228	3.85198
14	0.69242	1.34503	1.76131	2.14479	2.62449	2.97684	3.78739
15	0.69120	1.34061	1.75305	2.13145	2.60248	2.94671	3.73283
16	0.69013	1.33676	1.74588	2.11991	2.58349	2.92078	3.68615
17	0.68920	1.33338	1.73961	2.10982	2.56693	2.89823	3.64577
18	0.68836	1.33039	1.73406	2.10092	2.55238	2.87844	3.61048
19	0.68762	1.32773	1.72913	2.09302	2.53948	2.86093	3.57940
20	0.68695	1.32534	1.72472	2.08596	2.52798	2.84534	3.55181
21	0.68635	1.32319	1.72074	2.07961	2.51765	2.83136	3.52715
22	0.68581	1.32124	1.71714	2.07387	2.50832	2.81876	3.50499
23	0.68531	1.31946	1.71387	2.06866	2.49987	2.80734	3.48496

24	0.68485	1.31784	1.71088	2.06390	2.49216	2.79694	3.46678
25	0.68443	1.31635	1.70814	2.05954	2.48511	2.78744	3.45019
26	0.68404	1.31497	1.70562	2.05553	2.47863	2.77871	3.43500
27	0.68368	1.31370	1.70329	2.05183	2.47266	2.77068	3.42103
28	0.68335	1.31253	1.70113	2.04841	2.46714	2.76326	3.40816
29	0.68304	1.31143	1.69913	2.04523	2.46202	2.75639	3.39624
30	0.68276	1.31042	1.69726	2.04227	2.45726	2.75000	3.38518
31	0.68249	1.30946	1.69552	2.03951	2.45282	2.74404	3.37490
32	0.68223	1.30857	1.69389	2.03693	2.44868	2.73848	3.36531
33	0.68200	1.30774	1.69236	2.03452	2.44479	2.73328	3.35634
34	0.68177	1.30695	1.69092	2.03224	2.44115	2.72839	3.34793
35	0.68156	1.30621	1.68957	2.03011	2.43772	2.72381	3.34005
36	0.68137	1.30551	1.68830	2.02809	2.43449	2.71948	3.33262
37	0.68118	1.30485	1.68709	2.02619	2.43145	2.71541	3.32563
38	0.68100	1.30423	1.68595	2.02439	2.42857	2.71156	3.31903
39	0.68083	1.30364	1.68488	2.02269	2.42584	2.70791	3.31279
40	0.68067	1.30308	1.68385	2.02108	2.42326	2.70446	3.30688

Percentage Points of the t Distribution

Pr df	0.25	0.10	0.05	0.025	0.01	0.005	0.001
	0.50	0.20	0.10	0.050	0.02	0.010	0.002
41	0.68052	1.30254	1.68288	2.01954	2.42080	2.70118	3.30127
42	0.68038	1.30204	1.68195	2.01808	2.41847	2.69807	3.29595
43	0.68024	1.30155	1.68107	2.01669	2.41625	2.69510	3.29089
44	0.68011	1.30109	1.68023	2.01537	2.41413	2.69228	3.28607
45	0.67998	1.30065	1.67943	2.01410	2.41212	2.68959	3.28148
46	0.67986	1.30023	1.67866	2.01290	2.41019	2.68701	3.27710
47	0.67975	1.29982	1.67793	2.01174	2.40835	2.68456	3.27291
48	0.67964	1.29944	1.67722	2.01063	2.40658	2.68220	3.26891
49	0.67953	1.29907	1.67655	2.00958	2.40489	2.67995	3.26508
50	0.67943	1.29871	1.67591	2.00856	2.40327	2.67779	3.26141
51	0.67933	1.29837	1.67528	2.00758	2.40172	2.67572	3.25789
52	0.67924	1.29805	1.67469	2.00665	2.40022	2.67373	3.25451
53	0.67915	1.29773	1.67412	2.00575	2.39879	2.67182	3.25127
54	0.67906	1.29743	1.67356	2.00488	2.39741	2.66998	3.24815
55	0.67898	1.29713	1.67303	2.00404	2.39608	2.66822	3.24515
56	0.67890	1.29685	1.67252	2.00324	2.39480	2.66651	3.24226
57	0.67882	1.29658	1.67203	2.00247	2.39357	2.66487	3.23948
58	0.67874	1.29632	1.67155	2.00172	2.39238	2.66329	3.23680
59	0.67867	1.29607	1.67109	2.00100	2.39123	2.66176	3.23421
60	0.67860	1.29582	1.67065	2.00030	2.39012	2.66028	3.23171
61	0.67853	1.29558	1.67022	1.99962	2.38905	2.65886	3.22930
62	0.67847	1.29536	1.66980	1.99897	2.38801	2.65748	3.22696
63	0.67840	1.29513	1.66940	1.99834	2.38701	2.65615	3.22471

64	0.67834	1.29492	1.66901	1.99773	2.38604	2.65485	3.22253
65	0.67828	1.29471	1.66864	1.99714	2.38510	2.65360	3.22041
66	0.67823	1.29451	1.66827	1.99656	2.38419	2.65239	3.21837
67	0.67817	1.29432	1.66792	1.99601	2.38330	2.65122	3.21639
68	0.67811	1.29413	1.66757	1.99547	2.38245	2.65008	3.21446
69	0.67806	1.29394	1.66724	1.99495	2.38161	2.64898	3.21260
70	0.67801	1.29376	1.66691	1.99444	2.38081	2.64790	3.21079
71	0.67796	1.29359	1.66660	1.99394	2.38002	2.64686	3.20903
72	0.67791	1.29342	1.66629	1.99346	2.37926	2.64585	3.20733
73	0.67787	1.29326	1.66600	1.99300	2.37852	2.64487	3.20567
74	0.67782	1.29310	1.66571	1.99254	2.37780	2.64391	3.20406
75	0.67778	1.29294	1.66543	1.99210	2.37710	2.64298	3.20249
76	0.67773	1.29279	1.66515	1.99167	2.37642	2.64208	3.20096
77	0.67769	1.29264	1.66488	1.99125	2.37576	2.64120	3.19948
78	0.67765	1.29250	1.66462	1.99085	2.37511	2.64034	3.19804
79	0.67761	1.29236	1.66437	1.99045	2.37448	2.63950	3.19663
80	0.67757	1.29222	1.66412	1.99006	2.37387	2.63869	3.19526
∞							

Appendix 28

PHOTO RESEARCH



