THE EFFECT OF MIND MAPPING TECHNIQUE TOWARD READING COMPREHENSION MASTERY AT THE ELEVENTH GRADE STUDENTS OF SMK NEGERI 2 KOTANOPAN

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

By:

JUNI AIDA
Reg. No. 12 340 0057

ENGLISH EDUCATION DEPARTMENT

**TARBIYAH AND TEACHER TRAINING FACULTY
STATE INSTITUTE FOR ISLAMIC STUDIES
PADANGSIDIMPUAN
2017**

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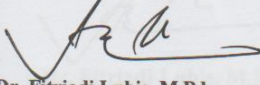# OF SMK NEGERI 2 KOTANOPAN

A THESIS

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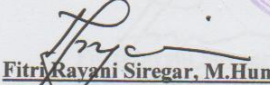Education (S.Pd.) in English*

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ENGLISH EDUCATION DEPARTMENT

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PADANGSIDIMPUAN
2017

Term   : Munaqosyah
    a.n. **Juni Aida**
Item   : 7 (seven) examplars

Padangsidimpuan, 31 Mei 2017
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Teacher Training Faculty
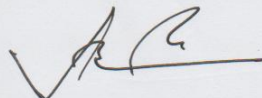In-
Padangsidimpuan

Assalamu'alaikum Wr.Wb.

After reading, studying and giving advice for necessary revision on thesis belongs to **Juni Aida**, entitled *"The Effect of Mind Mapping Technique Toward Reading Comprehension Mastery at the Eleventh Grade Students of SMK Negeri 2 Kotanopan "*, we approved that the thesis has been acceptable to complete the requirement to fulfill for the degree of Graduate of Education (S.Pd.) in English.

Therefore, we hope that the thesis will soon be examined in front of the Thesis Examiner Team of English Department of Tarbiyah and Teacher Training Faculty IAIN Padangsidimpuan. Thank you.
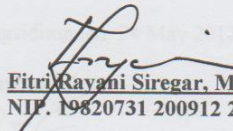
Wassalamu'alaikum Wr.Wb.

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DECLARATION OF SELF THESIS COMPLETION

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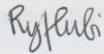
EXAMINERS

SCHOLAR MUNAQOSYAH EXAMINATION

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THESIS   : THE EFFECT OF MIND MAPPING TECHNIQUE TOWARD READING COMPREHENSION MASTERY AT THE ELEVENTH GRADE STUDENTS OF SMK NEGERI 2 KOTANOPAN

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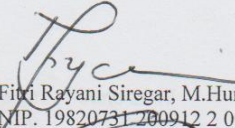
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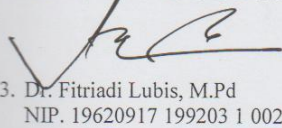
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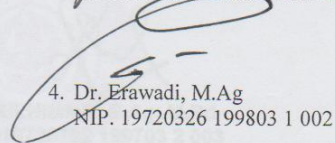
1. Rayendriani Fahmei Lubis, M.Ag   2. Fitri Rayani Siregar, M.Hum
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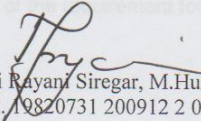## LEGALIZATION

Thesis : THE EFFECT OF MIND MAPPING TECHNIQUE TOWARD READING COMPREHENSION MASTERY AT THE ELEVENTH GRADE STUDENTS OF SMK NEGERI 2 KOTANOPAN

Written By : JUNI AIDA

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

Padangsidimpuan,   June 2017
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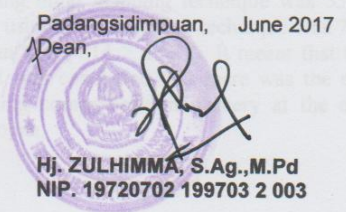
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Title of Thesis : **The Effect of Mind Mapping Technique Toward Reading Comprehension Mastery at the Eleventh Grade Students of SMK Negeri 2 Kotanopan**
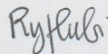
ABSTRACT

This research focused on the effect mind mapping technique toward reading comprehension mastery at the eleventh grade students of SMK negeri 2 Kotanopan. The problems of this research were: 1)Most of the students still get low grade with 60 grades meanwhile the standard of English competency in the school 70, 2) Most of students did not understand the text that the students read. They just read the text without comprehending the text. Beside the students' problem, teacher's technique also became a problem in learning English. The teacher still used the conventional technique and did not had variation in teaching reading. The purpose of this research was to examine the significant effect of using mind mapping toward reading comprehension mastery at the eleventh grade students of SMK negeri 2 Kotanopan.

The method was used in this research was experimental research. Two classes were chosen randomly as the sample. They were XI TO-1 as the experimental class that consisted of 25 students and XI TO-2 as the control class that consisted of 25 students. It was taken after conducting normality and homogeneity test. The data was derived from pre-test and post-test. To analyze the data, the researcher used t-test formula.

After analyzing the data, the researcher found that mean score of experimental class after using mind mapping technique was higher than control class. Mean score of experimental class before using mind mapping technique was 55.64 and mean score of experimental class after using mind mapping technique was 73.84. Besides, the score of t_{count} was higher than t_{table} (4.14 > 2.021). It meant that the hypothesis alternative (H_a) was accepted. It was concluded that there was the effect of mind mapping technique toward reading comprehension mastery at the eleventh grade students of SMK Negeri 2 Kotanopan.

ACKNOWLEDGEMENT

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Firstly, the researcher would like to convey her grateful to Allah SWT. the most Creator and Merciful who has given her the health, time and chance for finishing the thesis entitled "The Effect of Mind Mapping Technique Toward Reading Comprehension Mastery at the Eleventh Grade Students of SMK Negeri 2 Kotanopan ". 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:

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The writer realizes that this thesis cannot be considered perfectly without critiques and suggestions from the readers. Therefore, it is such a pleasure for her to get critiques and suggestions from the readers to make this thesis better.

May Allah always bless all of you.

Padangsidimpuan, 24 May 2017

The Researcher,

JUNI AIDA
Reg. No . 12 340 0057

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CHAPTER I

INTRODUTION

A. Background of the Research

English is an important language. It is widely used by most countries in the world as medium of communication for international relation. It is also widely used as the language of the printed information. A great of the world scientific, economic and technology were written and published in English.

In Indonesia, English is one of the major lesson in national curriculum. It is known that, a curriculum is a plan for action or a written document, which includes strategies for achieving desired goals or ends. It can learned in schools and universities. Then, English is also lasson in national examintaion.

It is clearly stated in the curricullum that the object of teaching English is improving students in the four skills of language namely: listening, speaking, reading and writing. In teaching process, especially in teaching reading the students must be able to read and to understand the content of reading. Because, it is item obligatory base on their curricullum was the students were able to read and understand reading text.

Rahayu said, "reading comprehension include understand simple defenition, understood simple significance, evaluated the content of reading and speed reading flexible. To achieve this skill reading needed silent reading

activity".[1] Therefore, it can be concluded that reading comprehension is complex process of a reading activity which the aim to get information from the reading text.

Reading comprehension is very essential because reading comprehension help students get informations from the text, when students wants to know about something in the book, the students must firts read a book. Next, reading comprehension help students to get much knowledge from their read. So, reading comprehenson is very important for students, if students can not read, students can not get informations. Then, if students can read, students get much knowledge and imformation from what the read.

The efforts of teachers in improving students' reading comprehension mastery are teachers take material from other sources such as; from internet, take material about breaking news, famous news, and famous story. So, students will be interested to read and comprehen the material or text. Then, teachers make lesson plan. Because lesson plan is guided for teacher when teacher teach.

In fact, the condition of students' reading comprehension mastery in SMK Negeri 2 Kotanopan is still poor. Based on the interview with an English teacher SMK Negeri 2 Kotanopan " The students' reading comprehension mastery can not be established and the students did not understand the text that the students read. They just read the text without comprehen the text. Then, reveals the avarage of

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[1]Minto Rahayu, *Bahasa Indonesia di Perguruan Tinggi* (Jakarta: Grasindo, 2007), p. 112-113.

students reading achievement of eleventh grade is 60. Whereas, standar of minimum completeness of mastery learning for senior high school in SMK Negeri 2 Kotanopan was 70."[2] In brief, students' reading comprehension achievement did not fulfill the expectation. It was also found based on the researcher observation and information from the interview teacher that the reading achievement of students were low.

There are some factors affect students' reading comprehension mastery. The factors are motivation, class room interaction, learning style, and technique. By using the technique, the process of teaching reading comprehension is easier.

A technique is one of the important components in teaching and learning process. The technique is important because it can make a learning process easier. Generally, technique is a way done by someone to reach a goal. So, the teachers can use some techniques in teaching reading to reach a reading goal. The teachers can use the different techniques in teaching reading comprehension to give variety in learning process. This way will make students easier in reading activity.

There are many kinds of techniques to teach reading comprehension those are story mapping technique, semantic mapping technique, following instruction technique, mind mapping technique.

Polson said, "mind mapping technique is note taking, to improve memory and problem solving, to promote creativity, to organize thinking, and to develop

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[2] Interview with Mrs Erna Sari, English teacher at Eleventh grade SMK Negeri 2 Kotanopan, (Kotanopan: SMK Negeri 2 Kotanopan), Saturday, 23 April 2016.

ideas and concepts".[3] By using Mind Mapping, the students can see the way that pieces of information fit together, as well as recording he raw fact contained in normal notes. Mind Mapping encourages creative problem solving, as they hold information in a format that the students' mind finds easy to remember and quick to review.

The role of mind mapping technique are it is a good way to make the students understand more about what they read. As a said above that mind mapping, promote effective and enjoyment in the classroom, the writer assumes that this technique will be good also to be implemented in teaching English.

Based on the descreption above, the researches believes the importance of conducting and experimental research of which purpose to insvestigate " The Effect of Mind Mapping Technique Toward Reading Comprehension Mastery at the Eleventh Grade Students of SMK Negeri 2 Kotanopan".

B. Identification of the Problem

Reading comprehension is highest process from reading activity. According to Brown, "reading comprehension is primarily matter of developing appropriate, efficient comprehension strategies".[4] Further, Otto said "reading comprehension was interaction between though and language and based evaluation

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[3] Keith Polson, Mind Mapping in Learning and Teaching Pupil and Teacher Perspectives. Available at *http://www.gtcs.org.uk/web/FILES/FormUploads/mind-mapping-in-learning-and-teaching1781_342.pdf*.(Accessed on May, 2, 2016 at 2:47 pm).

[4]H. Douglas Brown, *Teaching by Principles an Interactive Approach to Language Paedagog* (New Jersey: Prentice Hall, Inc Englewoods Cliffs, 1994), p. 291.

of succes in comprehension on the extent to which the reader's reconstructed messages agrees with the writers and emphasis words."[5]

Based on the background there are many kinds of techniques to teach reading comprehension those are story mapping technique, semantic mapping technique, following instruction technique, mind mapping technique.

C. **Limitation of the Problem**

There are many kinds of techniques to teach reading comprehension those are story mapping technique, semantic mapping technique, following instruction technique, mind mapping technique.

The researcher did not discuss all kinds of the techniques. The reseacher just choice one kind, that is mind mapping technique.

According to researher in addition of all, the mind mapping technique is the better technique to improve students' reading comprehension because it is easier for students to comprehend the text.

D. **Formulation of the Problem**

Based on the background and identification of the problem above, the problem in this research can be formulated as follow: "Is there significan effect of mind mapping technique toward reading comprehension mastery at the eleventh grade students of SMK Negeri 2 Kotanopan?

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[5]Wayne Otto, *How to Teach Reading* (America: Addison Wesley Publishing, 1979), p. 161

E. Aim of the Research

Based on the formulation of the problem above, the objective of study is to find out the effect of mind mapping technique toward reading comprehension mastery at the eleventh grade students of SMK Negeri 2 Kotanopan.

F. Significances of the Research

This research has significances to the following are:

1. To the headmaster, the researcher hopes the result of this research can be used as imfortant refrence in making decision on learning prosess.

2. For English teacher as a tool to compare and improve the science especially about using technique in reading comprehension.

3. For other researcher, the result of this research is hopes to help the other researcher who will conduct further research in the some topic.

G. Outline of the Thesis

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

In the chapter one, it is consist of background of the problem. where are the problem of this thesis is the students low in reading comprehension. Identification of the problem, where the researcher identified many problems of students in reading. Therefore, researcher focused to solve their problem about students are difficulct to comprehend the text. Limitation of the problem, where researcher limited the technique that used to solve the problem and researcher use

mind mapping technique. Formulation of the problem, aim of the research, the significances of the research.

In the chapter two, it is consist of the theoretical description, review of related finding, conceptual framework, and hypothesis.

In the chapter three, it is consist of research methodology and in research methodology consist of time and place of the research, research methodology, population and sample, instrumentation collecting data, low in reading comprehension of validity , defenitions of operatinal variable, technique of collecting data and the last the technique of data analysis.

In the four consists of the findings and discussion. which research present about the result of the research. Second, result of the hypothesis what the researcher found in the research.

And the finally, in the chapter five consist of conclusion and suggestion which researcher answer formulation of the problem and hypothesis. Second, suggestion about problem solving which researcher found in this research.

CHAPTER II

LITERATURE REVIEW

A. Theoritical Descriptions

1. Reading Comprehension

a. Definitions of Reading Comprehension

Reading comprehension is highest process from reading activity. According to Brown "reading comprehension is primarily matter of developing appropriate, efficient comprehension strategies."[1] Further, Otto said "reading comprehension was interaction between though and language and based evaluation of succes in comprehension on the extent to which the reader's reconstructed messages agrees with the writers and emphasis word."[2]

In additions, Rahayu said, "reading comprehension is include understand simple defenition, understood simple significance, evaluated the content of reading and speed reading flexible. To achieve this skill reading needed silent reading activity."[3] Therefore, it can be concluded that reading comprehension is complex process of a reading activity which the aim to get information from the reading text.

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[1]H. Douglas Brown, *Teaching by Principles an Interactive Approach to Language Paedagog* (New Jersey: Prentice Hall, Inc Englewoods Cliffs, 1994), p. 291.

[2]Wayne Otto, *How to Teach Reading* (America: Addison Wesley Publishing, 1979), p. 161

[3]Minto Rahayu, *Bahasa Indonesia di Perguruan Tinggi* (Jakarta: Grasindo, 2007), p. 112-113.

b. The Purposes of Reading Comprehension

Every lesson has purpose; it is used to know where the direction of the lesson is. Reading also has many purposes; it is used to get involved in reading assignment. The purposes are as follow:

1) Reading for Pleasure

Reading is not for pressure. For instance, if the readers read recipes for pleasure, indirectly the readers are as unusual as the guy who reads about molecules for pleasure. Most people read recipes with the purpose of using or applying the information the readers read.

2) Reading for Practical Application

Another purpose for reading is to gain the information which the reader can apply to or use in a particular situation. For example, when a reader reads directions in order to put a model airplane together, or a reader reads a shop manual to learn how to run a piece of equipment.

3) Reading for General Ideas

If the purpose of reading is to get a general idea of the material being read, then the reader can read at faster speed, skipping sections and looking only for main ideas reading bold print headings and sub-headings and summary statements usually presented at the end of the material.

4) Reading to Locate Specific Information

One of purpose in reading is to locate specific information. When the readers know what they are looking for. The readers can skim and skip over material at very rapid rates.

5) Reading to Critically Evaluate

Reading critically is the process of being aware of an author's intent or the point of writing, his use of facts, his attitude and bias toward his subject matter.[4]

According to Cahyono .the purpose of reading comprehension as follows:

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[4] W. Royce Adams, *Reading Skills A Guide for Better Reading* (London: Cambridge University, 1998), p. 8-11.

a. Readers are able to discriminate among events as they have been presented.
b. They recognize the order of presentation in the stated sequence.
c. The reader identifies the main idea of a paragraph.
d. They must have knowledge of prescribed of denotative meaning.
e. They understand form of figurative language.[5]

Based on explanation above, the researcher can be concluded that the purposes of readingc omprehension; the reader can read everything, not only read the journal, textbook, magazine, thesis and, reading with the purpose of gaining information which they can apply or use, Critical evaluate requires that the readers talk back to the author rather than merely accept what the readers read, descriminate events, identifies main idea of paragraf, get knowladge, and understand figurative language.

c. The Processes of Reading Comprehension

There are some processes of reading comprehension, according to Nunan the reading comprehension process there are five categories that are: bottom-up models, phonich approach, intensive reading, top-down models, extensive reading:

1) Bottom-up models typically consist of lower-level reading process student start with the fundamental basics of letter and sound recognition.
2) Phonics approach to teaching reading supports a bottom-up model. The approach is used i many reading seies.
3) Intensive reading involves a short reading passage followed by textbook activities to developed comprehension and/or particular reading skill.
4) Top-down models, on the other hand begin with the idea that comprehension resides in the reader.

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[5] Cahyono, Mukminatien, *Teaching and Strategies to Enhance English Language Learning*. (Malang: University of Malang Press, 2011), p. 68.

5) Extensive reading plays a key role in top-down approaches to reading.[6]

Based on explanation above, it can be concluded that there are five stage of processes of reading comprehension that are: bottom-up models is the proses of reading start from basic of letter until large text, phonics approach teaching reading support bottom-up, intensive reading to developed comprehension and/or particular reading skill, top-down models is the process of reading star from the background knowledge until word by word, and extensive plays a key role in top-down.

d. Types of Reading Comprehension

The reading comprehension has types. According to Harris there are three types of reading comprehension as follow:

1. Developmental Reading
   a. Skill in the mechanics of reading; developing of large sight vocabulary, development of skill in identifying unfamiliar words, development of good eye movement habits, development of proper habits of posture, holding books, and soon, development of speed and fluency in silent reading, development of oral reading skill, phrasing, expression, pitch, volume, pronunciation.
   b. Skill in reading comprehension; acquisition of a rich, extensive, and accurate vocabulary, ability to grasp the meaning of units of increasing size; phrase, sentence, paragraph, whole selection, ability to find answers to specific questions, ability to select and understand a sequence of events, ability to note and recall details, ability to grasp the organization of the author's plan, ability to follow directions accurately, ability to evaluate what one reads, ability to remember what one has read.
2. Functional Reading

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[6] David Nunan, *Practical English Language Teaching*, (New York: McGraw-Hill Companies, 2003). p. 70-72

a. Ability to locate needed reading material; use of index, use table of contents, use of dictionary, use of encyclopedia, use of skimming in reach for information.

b. Ability to comprehend informational material, development of specific skills needed by special subject matter e.g; reading of arithmetic problems, reading of maps, charts, and graphs, ability to select the material needed, ability to organize what is read; ability to summarize, ability to out line.

3. Reactional Reading

a. Development of interest; enjoyment of reading as a voluntary leisure time activity, skill in selecting appropriate reading matter for one self, satisfaction of present interests and tastes through reading.

b. Improvement and refinement of reading interest; development of more varied reading interest, development of more nature reading interest, achievement of personal development through reading.

c. Refinement of literary judgment and taste; establishment of differential criteria for fiction and nonfiction prose, and poetry and drama, development of appreciation for style and beauty of language, learning to seck for deeper symbolic massages [7]

According to Brown the types of reading comprehension can be classified into four activity:

1) Perspective

Perspective reading tasks involve attending to the components of larger stretches of discourse: letter, words, punctuation, and other grapheme symbols.

2) Selective

This category is largely an artifact of assessment formats. In order to ascertain one's reading recognition of lexical, grammatical, or discourse features of language within a very short stretch of language, certain typical tasks are used: picture-cued tasks, matching, true-false, multiple-choice, etc.

3) Interactive

Included among interactive reading types are stretches of language of several paragraphs to one page or more in which the reader must, in a psycholinguistics sense, interact with the text.

4) Extensive

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[7]Albert J. Harris, *How to Increase Reading Ability* (New York: David Mckay Company, 1969), p. 3.

Extensive reading is applies to texts of more than a page, up to and including professional articles, essays, technical reports, short stories, and books.[8]

From the explanation above, it can be concluded that the types of reading comprehension based curriculum in the vocatilonal school and the technique is used by researcher, the researcher focus to fuctional reading because fuctional reading is type of reading comprehension can to identify ability to located needed reading material and ability to comprehend information material.

e. Reading Assessments

Assessment is a tool to measure how far the students ability and comprehension of the material. In assessing reading comprehension, there are some indicators, the indicators of reading comprehensions are identify the topic from the text, identify vocabulary from the text, identify information thet needed from the text, grammar and conclussion. [9]

The following will explain the indicators of reading comprehension, they are:

1. Topic Sentence

   Every good paragraph has a topic sentence. Topic is what is being talked about. Then, a paragraph consits of some of sentences. Every sentence in a paragraph in some way discusses or explains the topic.

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[8]H. Douglas Brown, *Language Assesment Principles & Classroom Practices,* (San Francoise State University. 2004), p. 198.

[9] Brown H. Douglas, *Language Assesment Principles and Classroom Practices*, (San Francoise State University.2004), p. 206.

2. Main Idea

   A main idea sentence is the most general statement the author makes about the topic or subject of the paragraph. The main idea generally describes or "covers" the details in the paragraph.[10] So, the main idea of paragraph is what the author wants you to know about the topic.

3. Important Information

   Important informationdevelop the main idea in paragraph. Important information also explain about main idea and also give explanation about the topic sentence. Important information can bestateas supporting sentence.

4. Vocabulary

   According to Oxford learners pocket "Vocabulary is all the words that a person knows or uses".[11] So, vocabulary is pattern of letter is forming word and also vocabulary can form language.

5. Concluding Sentence

   According to Oxford learners pocket "Conclude is a result of what you have heard or seen.[12]Concluding sentence is stated at the end of the paragraph. It is the conclusion of paragraph. Thus concluding

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[10]*Ibid*, p. 10.
[11]A.S. Hornby, *Oxford Advanced Learner's Dictionary*, (Oxford University Press, 1995), p. 219 p. 495
[12]Alice Oshima and Ann Hogue, *Op. Cit,* p. 8.

sentence signals the end of the paragraph and leaves the reader with important points to remember.

f. The Material of Reading Comprehension in the SMK Negeri 2 Kotanopan

Reading is one of the English skills. It is taungh in vocational school with diffrent materials. The materials of reading at XI vocational school are refort text, recount text, new reading text, procedure text and short story text.[13].

These are some examples material reading comprehension in SMK negeri 2 Kotanopan:

Competitions

One the next holiday, my friens and I are going to have competition. Five people are going to part,Weda, Arya, Achmad, Jusuf and I.

The competitions requires a lot of thought. Someone is going to take us to Pelabuhan Ratu, about 100 kilometers rom here. One of us are going to have any money. The aim of competitions is to see who can get back to Bandung firts. The first one will be winner.

It's going to difficult. I know that the others already have some ideas. Weda is going to hitchike. He is hoping he is going to be lucky. Arya is going to go to an army barracks to ask for a ride. Jusuf says he's goin to get on train. Ahmad is also going to tray to board a train. They will have tobe careful because they're going to be traveling without ticket. I still don't know what I'm going to do. Perhaps I can find some trucks that go regulary fom Pelabuhan Ratu to Bandung carrying fish. I don't like traveling with fish, but what else I can do.

Answer the following questions based on the text

1. What are the writer and his friend taking parst in the competition?

   a. He want to get a lot of money.

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[13] Entin Sutinah and Friends, *Get Aling with English,* (Bandung: Englangga,, 2010), p.

b. The want to have a fun experience.

c. They wish they had a good luck
d. They want to spend their holiday time

2. They writer and his friend are ..

   a. Students   c. Teacher

   b. Soldiers   d. Hitchikers

3. Why will Jusuf and Ahmad be traveling on a train without ticket? Because they ......
   a. Are dishonest   c. Always do that
   b. Are to poor   d. Will have no money

4. What will Weda do ?
   a. He is going to hitchike
   b. He will ask fora ride to the army barrack
   c. He will board a train
   d. He will travel by truck

5. The writer ....
   a. Has an idea of what to do
   b. Does not know what to do
   c. Is sure about what he is going to do
   d. is going to do nothing[14]

Read the text and answer the following question!

Altough speech is the most advenced form of communication, there are many ways of communicating without using speech. Signals, signs, symbols, and gestures are found in every known culture. The basic fuction of a signal is to **impinge** upon the environment in such a way what **it** attracts attention, as for example, the dots and dashes of a telegraph circuit. Coded to refer to speech, the potential for communication is very great. Less adaptable the condifications of word, signs also cantain meaning in an of themselves. A stop sign or a barper pole conveys meaing quickly and conveniently. Symbols are more difficult to discribe than either signals or signs because of their inticate relationship with the receiver's cultural perpections. In some cultures, applauding in a theater provides performers with and auditory symbol of approval. Gestures such us as waving and handshaking also communicate certain culture messages.

Although signals, signs, symbols and gestures are very useful, they do have a major disadventage. They usually do not allow ideas to be shared without the sender being directly adjcent to the receiver. As a result, means of communication

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[14] *Ibid,* p. 69-70

intended to be used for a long distances and extended periods are based upon speech. Radio, television, and telephone are only a few.

1. What is the best title for the text?
2. Based on the text, waht is the basic fuctions of a signal?
3. "the basic fungsion of a signal is to <u>impinge</u> upon ...." (paragraph 1)
   What is the synonim of the underlined word?
4. " .... that it attracts attentions, ..." (paragraph 1)
   What does the word "<u>it</u>" refer to?
5. Why were the telephon, radio, and television invented?[15]

Read the text and Answer the following questions.

How to Make a Cake

A half kg of sugar
One kg of flour
250 kg of margarin
12 eggs
Two sponfuls baking fowder

First of all, mix the eggs and sugar well. Pour the baking powder into the mixture. Blend the angridents until they are well mixed. Then, put the flour into the mixture. Remember to the reduce the speed of the mixer. Add margarine into the blend. Next, pour the xiture into a baking pan. Put into a hated oven. After that, bake it for about 20 minutes. Then, take the bakingpan out of the oven. Finnaly, the cake is ready to served.

1. How much sugar is needed for making a cake?
2. What is the firts step?
3. How lng are the ingridents blended for ?
4. What should be done after putting the flour into the mixture?
5. How long should it be baked?[16]

Choose the right form of verb in the brackets.

1. Do you mind if I _____ (distrub/distrubing/distrube) you?
2. Would you mind not _____ (smoke/smoking/smoked) here?
3. Can you _____ (walk/walking/walks) a bit slower?
4. Can I _____ (borrow/borrowing/borrowed) your book?
5. Could you _____ (showing/show/shows) me the way?
6. I wonder if you are _____ (telling/told/tell) me the truth.
7. Can you _____ (telling/told/tell) me a story?

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[15] *Ibid,* p. 91
[16] *Ibid,* p. 108-109

8. Do you mind _____ (stopping/stop/stopped) here?
9. Could you _____ (turning/turn/turned) the light on? It's very dark here.
10. Would you mind if I _____ (stay/stayed/staying) here for a moment?[17]

Complete the following sentence with must, mustn't, have to, don't have to, and doesn't have to.

1. I _____ go to now. My boss told me to come to the office ritg now.
2. You _____ smoke here. It's a non-smoking area.
3. You _____ come to school because today is holiday.
4. Do I _____ take part in the meeting tonight?
5. He likes. Sunday because he _____ work.
6. Sorry, I'm late. I _____ send a letter this morning.
7. You _____ break school regulations.
8. I _____ finish my report tomorrow morning.
9. Before going to school, I _____ help my mother do the housework.
10. You _____ pass a test to get your driver's license.[18]

Based on the explanations above, reading comprehension are understanding the meaning of text, and consequence associated with the act of reading, students know that reading comprehension is very important, cause comprehension is the process by which a person understanding the meaning of written or spoken language. In conclussion, reading comprehension is the ability of the reader to understnding of the text and comprehend the meaning of the text.

2. **Mind Mapping Technique**

   a. **Definition of Mind Mapping Technique**

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[17] *Ibid,* p. 112
[18] *Ibid.,*p. 113

Mind maps are a diagrammatic way of recording information that's easy to use, adapt and recall. It's effective because it works the way your brain does. Mind mapping is good for both lecture and book notes. According to Polson "mind mapping is a visual tool developed by Tony Buzan to enhance note taking, to improve memoryand problem solving, to promote creativity, to organize thinking, and to develop ideas and concepts".[19]According to Brandner "A mind mapping is a diagram, a graphic organizer that helps students visualize what they're reading and detect connections between individual pieces of information[20]. Moreover, steted by Silvina, "Mind mapping is considered brainstorming technique out of which we obtain desired results or even extraordinary ones"[21].

In addition, Buzan also said "Mind mapping are a graphic, networked method of-storing,organizing and prioritizing information (usually on paper) using key or trigger words and images, each of which will 'snap on' specific memories and encourage new thoughts and ideas"[22].

Based on the explanation above, mind mapping technique is the creativity of student for make note taking, diagram, concept, organizing and proioriting information using key words and images. It is can make the students more creative

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[19] Keith Polson, Mind Mapping in Learning and Teaching Pupil and Teacher Perspectives. Available at *http://www.gtcs.org.uk/web/FILES/FormUploads/mind-mapping-in-learning-and-teaching1781_342.pdf*.(Accessed on May, 2, 2016 at 2:47 pm).

[20] Raphaela Brandner, How to Improve Reading Comprehension with Mind Maps, Avaiable at *http://blog.whooosreading.org/how-to-improve-reading-comprehension-with-mind-maps/, (*Accessed on Oktober, 19, 2016. 11.23 a.m).

[21] Silvina P. Haller, *Mind Mapping wiith Free Mind*. (Birmingham - Mumbai :Packt Publishing, 2012), p. 6

[22] Tony Buzan, *The Buzan Skills Handbook, The Short Cut To Success in Your Studies with Mind Mapping, Speed Reading and Winning Memory Tecniques,* (New York: BBC Life Style, 2006) p. 138

and easy to understand what they read. They have also interest to learn by using

mind mapping technique besause mind mapping technique using many colours.

b. The Purpose of Mind Mapping

Mind mapping have grade many purposes. According to Buzan and Barry

the purposes of mind mapping are:

a. To explore all the creative possibilities of a given subject.
b. To clear mind of previous assumptions about the subject, thus providing space for new creative thought.
c. To generate ideas that result in specific actions being taken, or physical realyta being created or chenged.
d. To encourage more consistent creative thingking.
e. To create new conceptual frameworks whitin which previous ideas can be reorganised.
f. To capture and develop "flashes" of insight when they occour.
g. To plan creatively[23].

Based on explanation above, the purpose of mind mapping technique are

help students to solve their subject with the explore all creative possibilities, clear

mind previous assumptions, ganerate ideas., encourage more consisten creative

thingking create new conceptual freme works capture and develop "flashes", and

to plene creatively.

c. The Procedure of Mind Mapping

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[23] Tony Buzan, Barry Buzan, *The Mind Mapping Book, How to Use Radiant Thingking to Miximize to Your Brain's Untapped Potential*, (New York: Hudson Street, 1994) p. 153-154

Mind mapping ostensibly encourages right-brain thinking(stream of consciousness, symbolic, big picture oriented). According to Rustler to make mind mapping in class reading, the students can follow this procedure:

1. Skim Reading
   a. Introduction
   b. Summaries
   c. Headings and subheadings
   d. Tables and illustrations
   As you read, transfer the material gleaned from these sections into your mind map.
2. Preview
   Depending on the book's layout, in this step you read the first and last paragraphs of each section of a chapter and add any extracted material to your mind map
3. Immersion
   If you still haven't achieved your reading targets, now read all paragraphs in detail and extend your mind map with new material you consider important.
4. Difficult Passage
   In the last step you focus your attention on the difficult passages you've already marked as such[24].

Next, Buzan said in *The Buzan Skills Handbook, The Short Cut To Success in Your Studies with Mind Mapping, Speed Reading and Winning Memory Technique* . The procedure of mind mapping are:

1. Focus on the core question, the precise topic. Be clear about what it is that you are aiming for or trying to resolve.
2. Turn your first sheet of paper sideways in front of you (landscape style), in order to start creating your mind mapping in the centre of the page.
3. Draw an image in the centre of the blank sheet of paper to represent your goal.
4. Use colour from the outset, for emphasis, structure, texture, creativity to stimulate visual flow and reinforce the image in your mind.

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[24] Florian Rustler, *Mind Mapping for Dummie*, (England: Wiley,2012) p. 155-156.

5. Now draw a series of thick lines, radiating out from the centre of the image.
6. Curve your lines because they are more interesting to your eye and more memorable to your brain than straight ones.
7. Write one key word on each branch, that you associate with the topic.
8. Add a few map branches to your mind map. Your brain will want to put something on them.
9. Create second and third level branches for your related Associated and secondary thoughts[25].

From explanation above the concept of mind mapping can develoved from traditional linier note taking method. To make the mind mapping first students skim reading, preview, immersion, difficult passage. Then you can be used lines, bullets, the layout, colors, and associatio. The the picture of mind mapping can make students see and remember and it can be make students easy comprehension text.

d. The Advantages and Disadvantages Mind Mapping

The technique, strategy, methode, approach have advantages and disadvantages. Same with another, mind mapping also have advantages and disadvantages:

There are some advantages mind mapping:
a. Adaptable, they can be used for lectures; note-making from books; essay plans, as well as less structured tasks.
b. Easy to add ideas later, at any time.
c. Help you focus on the links and relationships between ideas so you don't just have disconnected facts.
d. Can be personalised with pictures and symbols to make things more memorable.

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[25] Tony Buzan, *Op. Cit,* p. 165

e. Useful tool for condensing lots of information a whole topic into a mind map poster, to aid revision.[26]

Therefore , Buzan says there are advantages of mind mapping:

a. The central idea is more clearly defined.
b. The relative importance of each idea is clearly identified.
c. The more important ideas are immediately recognizable at the centre of the mind map.
d. The links between key concepts are immediately identifiable via Key words encouraging association of ideas and concepts and improving memory.
e.   Review of information is effective and rapid.
f. The structure of a mind map allows additional concepts to be added easily.
g. Each mind mapping is a unique creation which will in turn aid accurate recall[27].

From explanation above mind mapping make is a suitable technique to problem solving in learning, helps students focus on the links and relationship with idea, essay for students comprehending the text.

There are some disadvantages mind mapping:

a. Can't incorporate large chunks of text.
b. You have to stick to the rules of mind mapping to get the optimum benefit from the tool.
c. Creating the map may take time. However, this will help you to review or recall information and will check your understanding.
d. When you've personalised your map, it can be difficult for others to understand. [28]

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[26] University of Brigham, Mind Mapping. Avaiable at *https://intranet.birmingham.ac.uk/as/student services/disability/learning-support/effective-learning/skills/mind-mapping.aspx* (Accessed on April, 25, 2016. 08:30 p.m).

[27] Tony Buzan, *Op. Cit*.,p. 144-145
[28] University of Brigham, *Op. Cit*, (Accessed on April, 25, 2016. 08:30 pm).

In addition, according to Peter Russell there are some disatventages of mind mapping, those are:

a. Energy and time wasted writing down superfluous words.
b. Other information may be missed while noting down one idea.
c. Take longer to read and review.
d. Associations and connections between key words and ideas not readily apparent.
e. Attention wanders easily.
f. Lack of color and other visual qualities handicap memory.
g. Traditional notes aid forgetting not memory.[29]

So, there are many about disadvantages mind mapping not only advantages. That all of about disadvantages are make the students get a long time for creating the map, need much colours and the map it can be diffuclt for others to understand.

Based on the exlpanation above mind mapping is a diagram used to represent words, ideas, tasks, or other items linked to and around a central key word or idea. Mind mapping may also aid recall of exiting memories. The elements of a given mind mapping are arranged intuitively according to the importance of the concepts, and are classified into groupings, branches or areas, with the goal of representing semantic or other connections between portions of information. Mind mapping technique can make the students more creative and easy to understand what they read. They have also interest to learn by using mind mapping technique.

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[29] Peter Russel, Adventeges Mind Mapping, Avaiable at: *http://www.peterrussell.com/MindMaps/Advantages.php,* (Accessed on April, 20, 2016. 20:01 p.m).

3. Conventional Technique

    a. Definition of Conventional Technique

Conventional teaching is a traditional way that is used by a teacher in teaching and learning process. Conventional technique is the strategy or the way that usually used by the teachers to teach the text to students.[30] According to Hudson that conventional technique is the strategy used by the teachers based on mutual agreement in a school.[31]

Based on the explanation, conventional technique is uses traditional way in teaching and learning process where the teacher will use the lecture method in teaching and learning.

    b. The Procedure of Conventional Technique

To make conventional technique, there are some procedure. According to Andrean, there are some steps, those are:

1. Preparation
   a. To formulate the objectives to be achived.
   b. Determine the main points of the material will be explain.
   c. Preparing tools.
2. Implementation Phase
   a. Steps Opening
      i) Make sure that studends understand the objectives to be achieved.
      ii) Do apersepsi step, that is step lingking the subject metter and the subject matter that will be delivered.
   b. Steps Presentation
      i) Maintain continuous eye contact with students.

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[30]Jhon Deriden, Conventional Strategy, Avaiable at *http://www.britsnnis.com/EBchecked/topic/421797/nnucler-strategy /52993/conventional-strategy, (*Accessed on May 24, 2016 at 09.00 p.m).

[31] Hudson, The Meaning of Conventional Strategy *http://www.conventional-strategy/topic/54372-strategy* (accessed on May 15, 2016 at 09.00 p.m).

ii) The use of communicative language and easily digestible students.

iii) Present learning materials in systematic, no bounding to be eslily captured by the students.

iv) Respond to immediate students responses.

v) Keep the class conducive and exciting to learn.

c. Steps Ending or Closing

i) Guide students to draw conclusion or summarize the subject metter.

ii) Stimulate students to be able to respond or provide some sort of review of the learning materials that have been submitted.

iii) Conduct an evaluation to determine the students ability to master the learning material that had just delivered[32].

According to Kiki, the procedure of conventional technique are:

1. Preparation
   a. Pormulate goals to be achieved.
   b. Determine the main points of the material to be explain.
   c. Prepare tools

2. Implementing Phase
   a. Step opening

   Step opening of the lecture method is a step that determines success or failure in the implementation of a lecture. In practice there are things that must be considered. First, make sure the students to be able to understand what purpose will be achieved. Second, do the apersepsi ie combining the subject matter and the subject matter that will be delivered.

   b. Step presentation

   This stage is the core of the lecture method. Teachers must deliver learning materials by either using sentences easily understood.

   c. Step ending or closing

   Lecture method should be closed so that learning materials are already understood and mastered by the student does not fly everywhere[33].

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[32]Andrean Prime, Steps Implementing Teaching Method,Avaiable at *http://materiinside/2014/12 /langkah- zmelaksanakan -metode-ceramah.html,* (Accessed on January, 20, 2017 at 11.00 am)

[33] Kiki Amelia, Langkah-langkah Menggunakan Metode Ceramah, Avaiable at *http:// lagibelajargoblog./2015/01/langkah-langkah-menggunakan-metode.html*, (Accessed on, January, 15, 2017 at 10.00 a.m)

Based on the explanation above, the procedures of conventional technique can divided by two, those are : the first is preparations, in preparations teacher open class with formulate the objectives to be achived, determine the main points of the material will be explain, preparing tool. The second procedure is implamantation phase, the teacher gives and explain material, the teacher give the students exercises, the students answer the question, the teacher and the students discuss the answer of the question.

c. Advantages and Disadvantages of Conventional Technique

The are some advantages of conventional teching. According to Dodik the advantages of conventional teaching are:

1. Teacher easily master classes.
2. Easy to organize the seating /class
3. Can be followed by a large number of students.
4. Easy to prepare and implement them.
5. Master's easy to explain the lesson well.
6. More economical in terms of time.
7. Provide opportunities for teachers to use their experience, knowledge and wisdom.
8. Can use comprehensive teaching materials.
9. Helping students to hear accurately.
10. If used correctly it will be able to stimulate and increase student interest in the academic field.
11. Can strengthen students' reading and learning from some other source.[34]

According to Andrean, the advantages of conventional technique are:

1. Conventioanl is a method that is cheap and easy.
2. Conventional can present subject matter is broad.

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[34] Dodik Heru Setiawan, Defenition, Adventages and Disadventages Lecture Method, Avaiable at *http://zonainfosemua./2011/01/pengertian-kelebihan-dan-kekurangan.html* (Accessed on, January, 20, 2017 at 10.15 a.m)

3. Conventioanl can provide material points which need to be highlighted.
4. Through conventioan teachers can control the state of the class, because class is the responsibility of who teachers explian.
5. Class organization by using conventional can be set to be more simple.[35]

Based on the explanation above, the researcher can be concluded the advantages of conventioanl technique are eiser for tearcher master the class, the teacher can control the state of the class, the focus of students just for teacher, and helping students to hear accurately.

The disadvantage of conventioanl technique, Andrean said are:

1. Material held by students from the explanations will be limited to controlled teachers.
2. Conventional are not accompanied by demonstrations could lead to the occurrence of verbal;
3. Teachers who lack the ability to speak good, conventioanl 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.[36]

Based on the explantaion, the researcher conclude the disadvantages of conventional technique 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.

Based on the explanationa, conventional technique is a teaching without media, technique, strategy, approach. The tachers just explain the material with lecture method, then teacher gives material, the teacher give the students exercises,

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[35] Andrean Prime,Defenition, Adventages and Disadventages Lecture Method, avaiable at *http://materiinside.co.id/2014/12/pengertian-kelebihan-kekurangan-metode-ceramah.html* (Accessed on January, 20, 2017 at 11. 00 a.m)

[36] Andrean Prime, *Op. Cit*, (Accessed on January, 20, 2017 at 11. 00 a.m)

the students answer the question, and the last teacher and the students discuss the answer of the question.

2) **The Technique of Reading Comprehension**

a. **Teaching Reading Comprehension by Using Mind Mapping Technique**

The use of mind mapping in class is useful when working on all sorts of skill. For example, students can use a mind mapping to quickly jot down the gist of they read. This is the use mind mapping in class reading comprehension:

Table 1
Application Mind Mapping Technique in Class
Reading Comprehension

Example using mind mapping in reading comprehension:

Teacher	Steps	Students
1. Teacher give text to students and ask student search the topic with focus on the core questions.	1. Focus on the core question and topic	1. Students read the question and focus searh information appropriate to question
2. Teacher ask students skimming the text to solve the question and comprehen the text.	a. Skim reading	2. Studenst read the text with skimming text.
	b. Prepiew	

3. If students can't solving the questions and coprehen the text with skimming, teacher ask students prepiew text is read the first and last paragraf.		3. Students read the text with read the text in the first and last paragraf
4. If students still can't solving the question and comprehen the text with prepiew teacher ask students immersion is read all of the text and comprehen the text.	c. Immersion	4. Students read all of paragraf and comprehen the text
5. Teacher ask students search difficul word.	2. Dippicult passage	5. Student read the text and searh difficult word
6. Teacher ask students take a paper for make mind map.	3. Turn your first sheet of paper.	6. Students take the paper.
7. Teacher ask students to draw the mind maping, with write the main topic of the text in the centre of paper.	4. Draw image in the centre	7. Students start draw mind mapping in the centre and write main topic of the text.
	5. Use colour	8. Students use colour to create mind

8. Teacher ask students to use colour, appropriate with student's crativity.		mapping appropriate with student's ctreativity.
	6. Draw a series of thick lines, in the out of the centre	9. Students write the lines in the out of the cente.
9. Teacher ask students make the line in the out of the centre.	7. Curve your lines	10. Students write the curve lines, appropriate with what students want, and it can help students to remember what students read.
10. Teacher ask students curve the lines appropriate with what students want.		
	8. Write one key word on each branch	11. Students write one key word on braches have retation with main topic of the text.
11. Teacher ask students write one key word on braches have retation with main topic of the text.	9. Add a few map branches	12. students add the brench of the map to complete the answer of the text students read.
12. Teacher ask students add the brench of the map to complet the answer of the quentions of the text have read by students	10. Create second and thrird level brenches	13. student write branches until students complete the answer of the
13. Teacher ask student write		

branches until students complete the answer of the quentions of the text have read by students		quentions of the students read

How to Make a Cake

A half kg of sugar
One kg of flour
250 kg of margarin
12 eggs
Two sponfuls baking fowder

First of all, mix the eggs and sugar well. Pour the baking powder into the mixture. Blend the angridents until they are well mixed. Then, put the flour into the mixture. Remember to the reduce the speed of the mixer. Add margarine into the blend. Next, pour the xiture into a baking pan. Put into a hated oven. After that, bake it for about 20 minutes. Then, take the bakingpan out of the oven. Finnaly, the cake is ready to served.

1. How much sugar is needed for making a cake?
2. What is the firts step?
3. How lng are the ingridents blended for ?
4. What should be done after putting the flour into the mixture?
5. How long should it be baked?

Steps
Mix the eggs and sugar
Put the flour
Add margarine
Pour the xiture into a baking pan

How to make cake

Ingridents
A half kg of sugar
One kg of flour
250 g of margarin
12 eggs
Baking fowder

Time——20 Minutes

a. **The Use Conventional technique in Reading Comprehension**

In teaching reading with conventional technique teacher usually gives all of explanatimof the material or it is a teacher centered. These are procedure conventional technique in reading comprehension:

Table 2
Application Conventional Technique in Class
Reading Comprehension

Teacher	Steps	Students
1. Teacher explain about formulate goals to be achieved, determine the main points of the material and Prepare tools.	1. Preperation	1. Students try to understand and follow the teacher explain.
2. Teacher make students know the purpose wiill achieve and combining the subject metter.	2. Implamenting phase a. Opening	2. Students listen the explaination by teacher
3. Teacher give the text and explain the material.	b. Presentations	3. Students to silent reading and start search the general information and difficult pessage then students listen the explaination by teacher
4. Teacher give the students exercise.	c. Closing	
		4. Students do exercise.

5. Teacher and the students discuss the answer of the question.		5. The teacher and the students discuss the answer of the question.

In teaching reading comprehension through mind mapping, teacher explains how to make mind mapping with the concept or procedure of mind mapping, after that teacher gives students reading comprehension. From the text, teacher asks students to make mind mapping based on the explanation before, finally teacher gives them some questions to be answer by them.

In teaching reading comprehension through conventional, teacher explain material, after that teacher give the text, students read the text with silent reading. from the text teacher give students exercise. The last, The teacher and the students discuss the answer of the question.

B. Review of the Related Findings

In this research, the researcher is related to some researchers. Ermina Seriwati Nainggolan,"The Effect of P2R (Preview, Read, Review) Strategy on Students' Reading Comprehension at Grade VIII SMP Negeri 2 Padangasidimpuan". The concluding of the research is Student's reading comprehension before learning using P2R at grade VIII SMP Negeri 2 Padangsidimpuan categorized still low and far from hope. It was provided from mean of control and experiment class was 65.06 and 68.36. Student's reading comprehension after P2R Strategy at grade VIII SMP Negeri 2 Padangsidimpuan

increased slowly up to high. It can be seen from mean of experiment class is bigger than control class were (80.21>69.62).[37]

The other research is from Nida Jumaliana "The Influence of Using Mind Mapping on the Students Understanding in Reading Ability at the Eight Grade Students of SMP N 1Kadipaten Majalengka". The result of comparison between the students' understanding in reading ability before and after using of mind mapping is using pre-tet and post-test, the score are 69.3 and 75.2. So there is significant influence of using of mind mapping on the students understanding in reading ability at the eighth grade students of SMP N 1 Kadipaten Majalengka[38].

The last, Muhammad Romli, he had done research in State Islamic University of Syarif Hidayatullah Jakarta through the title "Improving the Students' Reading Comprehension of Narrative Text Through Story Mapping (A Classroom Action Research of the second Grade of MTs Tarbiyatul Falah Bogor)". He also said that story mapping is good that has been applied in the classroom. Based on the data, the category of summarizing an English text in teaching reading comprehension through story mapping to the second grade of MTs Tarbiyatul

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[37]Ermina Seriwati Nainggolan,"The effect of P2R (Preview,read,review) strategy on students'Reading Comprehensionat grade viii smpnegeri 2 padangasidimpuan, 2010-2011 Academic Year" (*Unpublished Thesis*), (Padangsidimpuan : STAIN), p.57.

[38] Nida Jumaliana,"The Influence of Using Of Mind Mapping on the Students Understanding in Reading Ability at the Eight Grade Students of Smp N 1 Kadipaten Majalengka*" (Unpublished Thesis),* (Cirebon: Syekh NurjatiState Institute For Islamic Studies), p. 58

Falah Bogor is good category. It can be ported by the mean score result of the test. That is 82.57%[39].

C. Conceptual Framework

Reading Comprehension is one of skill is very important. Reading comprehension can help students to understand every material, especiaaly in English materaial. Technique is also infortant term. By using mind mapping will make students eiser to get information from the text. They will be devided into some teams, so that they can share their knowledge about the text each other. Thus the researcher assumes that with using of good technique students can understand about the text easily and quickly. So, the researcher conducts a researcher. Based on the framework bellow:

Students' reading comprehension still poor. Their the mastery to reading comprehension cannot be established because they are difficult to understand of the text

↓

Mind Mapping Technique to increase students' reading comprehension

↓

Pre-test

↓

Experiment class with mind mapping technique

Control class with coventional technique
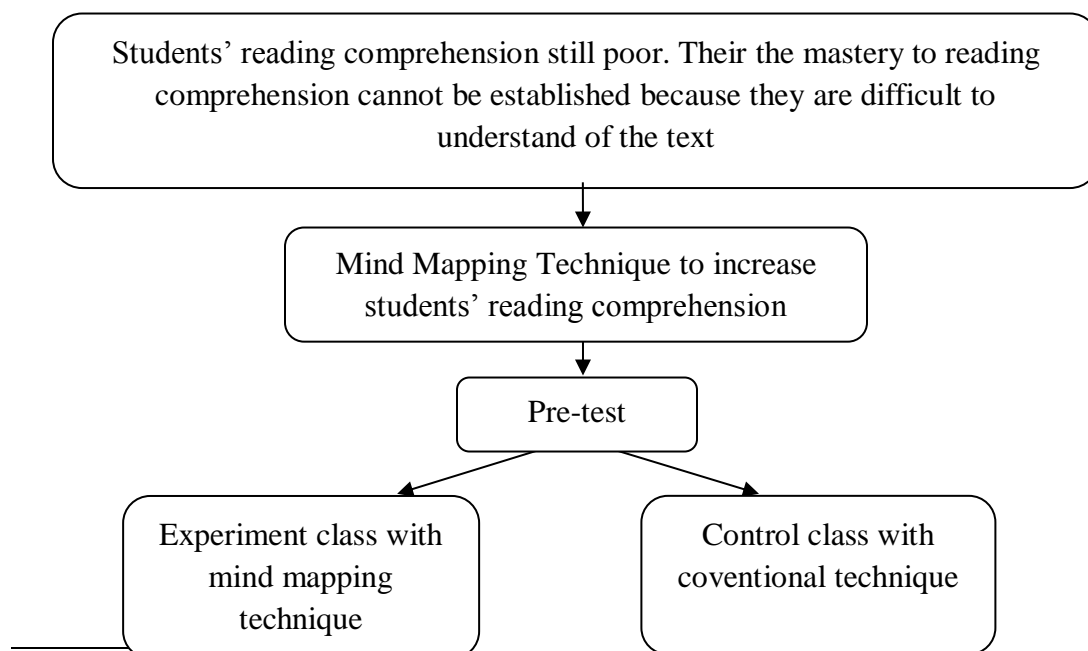
[39] Muhammad Romli, "Improving the Students' Reading Comprehension of Narrative Text Through Story Mapping (A Classroom Action Research of the Second Grade of MTs Tarbiyatul Falah Bogor)" *(Unpublished Thesis)*, (Jakarta: UI Syarif Hidayatullah), p. 57.
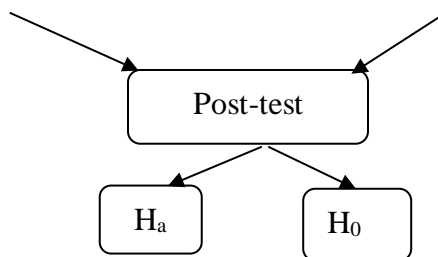
Researcher will explain about the conceptual framework above. Based on the information from the English teacher, researcher found the fact that students' reading comprehension still poor. This happen because the students are difficult to understand of the text. To solve the problem, the researcher tries to use a technique is a mind mapping. The first, before doing mind mapping technique, researcher will give pre test to experimental and control class. After that, researcher will teach reading comprehension using mind mapping technique to experimental class, and with conventional learning to control class. Then researcher gives post test to both of class. The last, the researcher will compare the students reading comprehension of pre-test and post-test between experimental and control class.

D. Hypotheses

Hypotheses are determined based on the formulation. It is the tentative answer for the research until get the right results of the research[40]. It is also

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[40] S. Nasution, *Metode Research* (Jakarta: Bumi Aksara, 2003), p. 38

supported by Creswell's statement, "hypothesis is predictions the researcher holds about the relationship among variables."[41]

Hypothesis is not a final answer, it still needs a test. A hypothesis is accepted if the result is suitable with the hypothesis while it is rejected if the result is lose from the hypothesis.

Based on the definition above, the hypothesis of this research stated as follows: There is significant effect of mind mapping technique toward reading comprehension mastery at the eleventh grade students of SMK Negeri 2 Kotanopan.

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[41] John W. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches 2nd Edition*, (USA: Sage Publication Inc., 2003), p. 108.

CHAPTER III

RESEARCH METODOLOGY

A. Place and Time of Research

The research was done at SMK Negeri 2 Kotanopan. It is located at Medan-Padang Street, Kotanopan. The subject of this research is eleventh grade of students in SMK Negeri 2 Kotanopan.

The time of this research is from April 2016 up to Maret 2017.

B. Research Design

Kind of this research is quantitatve with experimental method. According to L.R Gay and Peter Airisian, experimental research is the only type of research that can test hypothesis to established cause and effect relationship.[1]Ibnu Hajar stated that experimental research is research design scientific which more careful and appropriate to do research the effect of something variable and another variable.[2] In addition, Sugiyono stated that, experimental research is a research that is used to find the effect of treatment, different with the other research does not use treatment.[3]

From the quotation above, researcher concluded that the experimental research was a kind of research which had the aim to know causal effect

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[1]L. R. Gay and Peter Airasian, *Education Research*(New York: Merril, 2000) p. 367.
[2]IbnuHadjar, *Dasar-DasarMethodologiPenelitianQuantitatifDalamPendidikan* (Semarang: PT Raja GrafindoPersada, 1999) p. 321.
[3]Sugiyono, *Metodology Penelitian Pendidikan* (Bandung :Alfabeta, 2010) p. 107.

relationship between one variable and more to other variable. The experimental research controls the selection of participant for the study and divided the select participant into more groups having similar characteristic at the start of experiment the writer have done an experimental research as a technique of the effect mind mapping technique toward reading comprehension mastery at the eleventh grade students' of SMK Negeri 2 Kotanopan**.**

The design is used in this research is Pre test and Post test Control Group Design. It means there are two classes chosen randomly, then given pretest to know the basic condition of the two classes. Next, the both classes are given post test. The result of the test is compared to know the different effect of treatment to experimental class. The research design for pretest-posttest control group design by using one treatment can be seen below:

Table 3
Table of research design

E	O_1	X	O_2
P	O_1	-	O_2

Where:

E = Symbol for experimental class

P = Symbol for control class

X = Symbol for treatment[4]

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[4]Suharsimi Arikunto, *Manajemen Penelitian*, (Jakarta: Rineka Cipta, 2003), p. 276.

In this model, both of classes are given pre-test (O_1). Then, in experimental group is given a treatment (X) and control class is not given a treatment. After giving a treatment, both of classes are given post-test (O_2).

C. Population and Sample

1. Population

According to Gay and Airasian "Population is the group of interest to the researcher, the group to which she or he would like the results of the study to be generalizable".[5] The last,Ary said that population is all members of well defined class of people, event, or objects.[6]

Based on the explenations above, the research was done for the eleventh grade of SMK Negeri 2 kotanopan. The population of reseacrh consist of 4 classes with 114 students. It can be seen the table below:

Table 4

The Population of Eleventh Grade Student of SMK N 2 Kotanopan

No	Class	Male	Female	Total
1	XI TO$_1$	25		25
2	XI TO$_2$	25		25
3	XI TO$_3$	28		28
4	XI TB$_1$		37	37
	Total		115	

TO   = Teknologi Otomotif
TB   = Tata Busana

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[5] L.R. Gay and Peter Airasian. *Op. Cit*, p. 122.
[6] Sukardi. *Metodologi Penelitian Pendidikan* (Jakarta: Bumi Aksara, 2003), p. 53.

2. Sample

According to the John W. Cresswell sample is single or multistage (called clustering). A Single-stage sampling procedure is one in which the researcher has access to names in the population and can sample the people (or another elements) directly.[7] So, researcher concluded that sample is a part of population selected from its population.

In this research, the researcher used random sampling to choose a sample. According to Sugiyono, "simple random sampling is a technique to take sample from the population that is done randomly without paying attention to the strata in the population".[8] So, it can be concluded that sample is a part of population selected from its population. The sample of this research was two classes of SMK N 2 Kotanopan. One class was the experimental class, and another one was the control class

In this research, the researcher used random sampling. Before use random sampling, the researcher used normality and homogeneity test, as follow:

1) Normality Test

Normality test is used to know whether the data normal or not. The data can be tested by using Chi-quadrate, as follow:[9]

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[7] John W. Creswell, *Resesrch Design* (California, New Delhi: 2002) p. 156

[8] Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif, dan Kombinasi* (Mixed Methods), (Bandung: Alfabeta, 2014), p 122

[9] Mardalis, *Metode Penelitian: Suatu Pendekatan Proposal*, (Jakarta: Bumi Aksara, 2003), p.85.

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

Where;

x^2 = Chi-quadrate

f_0 = Frequency is gotten from sample/result of observation (questioner).

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

2) Homogeneity

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

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

Hypothesis is accepted if $F_{count} \leq F_{table}$

Hypothesis is rejected if $F_{count} \geq F_{table}$.

Based on the explanation above, the researcher had given pre-test to three classes (XI TO-1, XI TO-2 and XI TB), to know whether the samples are homogenous and normal or not. After calculating the data, the researcher had found that the three classes were homogenous and normal (see appendix 16 and 17). So, the researcher chose two classes as the sample. They were XI TO-1and XI TO-2. XI TO-1 class consisted of 25 students and XI TO-2 class consisted of 25 students. Here is the sample:

Table 5
Sample of the Research

Sample	Class	Total
Experimental Class	XI TO-1	25
Control class	XI TO-2	25
Total		50

D. Definition of the Operational Variable

The terms are used in this research are as follows:

1. Reading comprehension

Reading comprehension is the ability of the reader to understnding of the text and comprehend the meaning of the text.

2. Mind Mapping

Mind mapping is a diagram used to represent words, ideas, tasks, or other items linked to and around a central key word or idea.

E. Instrument of the Collecting Data

Instrument is very important to support every research. This research makes test as the instrument to collect the data of students' reading comprehension. The researcher used test multiple choice. According to Brown, multiple choice items, "which may on the surface appear to be simple items to construct"[10] It means that multiple choice test is suitable to test reading comprehension. In this research the test consisted of 50 questions. The test gives

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[10]H. Douglas Brown. *Language Assessment Practical and language Practice*, (San Francisco: Longman, 2003)p. 67

for each student to find out the scores of each students answer. The researcher

gives 2 scores for each items and maximum score of test is 100.

Table 6
Indicators of Reading Comprehension Pre-Test

No	Indicators	Items	Number of Items	Score	Total Score
1	Students are able to identify the topic from the text	3	1,11,26	2	6
2	Students are able to identify vocabulary from the text	12	6,7,14,20, 31,33,40, 42,43,44, 46,47	2	24
3	Students are able to identify information that needed	13	4,8,15,17, 18,19,30, 35,36,38, 45,48,49	2	26
4	Students are able to identify main idea from the text	11	2,5,12,13, 16,21,27, 28,29,34, 39	2	22
5	Students are able to identify gramar from the text	8	3,9,22,23, 24,32,41, 50	2	16
6	Students are able to identify conclusion from the text	3	10,25,37	2	6
Total					100

Table 7
Indicators of Reading Comprehension Post-Test

No	Indicators	Items	Number of Items	Score	Total Score
1	Students are able to identify the topic from the text	3	1,25,27	2	6
2	Students are able to identify vocabulary from the text	10	7,13,19,	2	20

			29,31,33, 39,40,42, 48		
3	Students are able to identify information that needed	16	5,8,10,11, 12,15,16, 17,20,26, 34,36,37, 38,44,49	2	32
4	Students are able to identify main idea from the text	8	2,9,22,23, 28,30,32, 41,	2	16
5	Students are able to identify gramar from the text	10	3,4,6,18, 24,35,43, 45,46,47,	2	20
6	Students are able to identify conclusion from the text	3	14,21,50	2	6
Total					100

F. Validity And Reliability Instrument

    a. Validity

          Gay and Airasian stated that validity is the most important characteristic a test or measuring instrument can possess.[11] Besides, Kumar stated that validity is the ability of an instrument to measure what it is designed to measure.[12]

          There are three types of validity in quantitative research:

    1) Face and content validity

    2) Concurrent and predictive validity

    3) Construct validity[13]

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[11]L.R. Gay and Peter Airasian, *Op., Cit.* p. 161
[12]Ranjit Kumar, *Research Methodology,* Third Edition, (London: SAGE Publication, Inc., 2011), p. 178
[13]*Ibid.,* 179

In this research, the researcher had used content and item validity to find out the validity of instrument. It is equally important that the items and questions cover the full range of the issue or attitude being measure.[14] Before validity, the test consisted of 140 questions. 70 questions were for pre-test and 70 questions were for post-test. This test had been given to experiment and control class. After validity the test had been consisted of 100 questions of multiple choice. It had been divided into two groups: 50 for pre-test and 50 for post-test.

To know the validity of each question will be refer to list *r*biserial with *r* $_t$*in 5% significant*: 0, 349 and 1% significant: 0, 449. So, if *r*$_{account}$> r $_{table}$the table is classified valid.

Toget the validity of test, the formula of *r pointbiserial*can be used 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 score

SD_t : Standard Deviation of the total score

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

q : presentation of the wrong answer of the item tested validity

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[14]*Ibid.,* p. 180

b. Reliability of the Test

An instrument of the research must be reliable. A reliable test is consistent and dependable.[15] To get the reliability of the test, SuharsimiArikunto said that to obtain the reliability of the test, the researcher uses formula K-R 20.[16]

The formula:

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

Where:

R_{11} : Reliability of the Instrument

N   :Total of Question

St^2 : Variants Total

p :Proporsition Subject who is right Answer(1)

                N
q : Proporsitio Subject who is Wrong Answer (0)

Reliability is a good character of the test that refers to the consistency of the measurement. The test is reliable if r $_{count}$ > r $_{table}$ by using formulation KR 20 with r $_{table}$0.70. (see appendix 14)

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[15]H. Douglas Brown, *Op. Cit,* p. 21.
[16]SuharsimiArikunto, *Op. Cit,*p.188.

G. Technique of Collecting Data

To get the data from the student, the researcher collected by giving pre test and post test by test to students.

a. Pre test

The pre-test is conducted to find out the homogeneity of the sample. Pre-test is important to be conducted. It has function to find the main score of conventional strategy before the research is given treatment. In this case, the researcher has some procedure. They were:

a) The researcher prepared 50 items of the multiple choices.

b) The researcher distributed the paper of test to experimental and control class.

c) The researcher explained the instruction to the students.

d) Gave the time

e) Collected the paper test.

f) The researcher checked the answer of students and finds the mean score of both of the class.

b. Treatment

After giving the pre-test, the students gave treatment. The experimental class had taught by using mind mapping technique.the researcher use some steps, they were:

Teacher	Steps	Students
1. Teacher give text to students and ask student search the topic with focus on the core questions.	1. Focus on the core question and topic	1. Students read the question and focus searh information appropriate to question
2. Teacher ask students skimming the text to solve the question and comprehen the text.	a. Skim reading	2. Studenst read the text with skimming text.
3. If students can't solving the questions and coprehen the text with skimming, teacher ask students prepiew text is read the first and last paragraf.	b. Prepiew	3. Students read the text with read the text in the first and last paragraf
4. If students still can't solving the question and comprehen the text with prepiew teacher ask students immersion is read all of the text and comprehen the text.	c. Immersion	4. Students read all of paragraf and comprehen the text
	2. Dippicult passage	

5. Teacher ask students search difficul word.	3. Turn your first sheet of paper.	5. Student read the text and searh difficult word
6. Teacher ask students take a paper for make mind map.	4. Draw image in the centre	6. Students take the paper.
7. Teacher ask students to draw the mind maping, with write the main topic of the text in the centre of paper.	5. Use colour	7. Students start draw mind mapping in the centre and write main topic of the text.
8. Teacher ask students to use colour, appropriate with student's crativity.	6. Draw a series of thick lines, in the out of the centre	8. Students use colour to create mind mapping appropriate with student's ctreativity.
9. Teacher ask students make the line in the out of the centre.	7. Curve your lines	9. Students write the lines in the out of the cente.
10. Teacher ask students curve the lines appropriate with what students want.		10. Students write the curve lines, appropriate with what students want, and it can help students to remember what students read.
	8. Write one key word on each branch	
11. Teacher ask students write one key word on		11. Students write one key word on braches have

braches have retation with main topic of the text.	9. Add a few map branches	retation with main topic of the text.
12. Teacher ask students add the brench of the map to complet the answer of the quentions of the text have read by students		12. students add the brench of the map to complete the answer of the text students read.
	10. Create second and thrird level brenches	
13. Teacher ask student write branches until students complete the answer of the quentions of the text have read by students		13. student write branches until students complete the answer of the quentions of the students read

c. Post-test

After giving treatment, the researcher conducts a post-test. It is different test with the pre-test. This post-test is the final test in the research, especially measuring the treatment, whether is an effect or not of mind mapping technique to Students' reading comprehension. After conducting the post-test, the researcher analyzes the data. The researcher has some procedure. They were:

a) The researcher prepared multiple choices test 50 items.

b) The researcher distributed the paper of the test to students of experimental class and control class.

c) The researcher explained instruction to answer the test

d) Gave the time.

e) The students answered the question.

f) Collected their paper test to researcher.

g) The researcher checked the answer of students and finds the mean score of control and experimental class.

H. Technique of Data Analysis

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

a. Requirement test

1) Normality test

To know the normality, the researcher use *Chi-Quadrate* formula. The formula is as follow:

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

Where:

$x^2 =$ Chi-Quadrate

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

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

2) Homogeneity Test

To find the homogeneity, the researcher use *Harley test*. The formula is as follow:

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

Hypotheses is accepted if $F_{(count)} \leq F_{(table)}$

Hypotheses is rejected if $F_{(count)} \geq F_{(table)}$

Hypothesis is rejected if $F \leq F \frac{1}{2} a(n_1-1)\ (1= n_2-1)$, while if $F_{count} > F_{table}$ hypothesis is accepted. It determined with significant level 5% (0.05) and dk numerator was (n_1-1), while dk detominators is (n_2-1).

b. Hypothesis test

Hypothesis is the provisional result of the research. So, the researcher needs to analyze the data which have been divided into two groups: experiment class and control class.

Before analyze the data to find the hypothesis, the researcher had calculate the normality and homogeneity of the post-test. It is used to know whether the data is normal and homogenous or not. If the data is normal and homogenous, the formula that must be used to test hypothesis is t-test but if the data is not normal and homogenous, the formula that must be used to test hypothesis is Chi-Quadrate. Because the result of post-test in this

research was normal and homogenous, the data had been analyzed by using *t-test* formula. The formula is as follow:[177]

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

Where:

t : the value which the statistical significance

$\overline{X}_1$: the average score of the experimental class

$\overline{X}_2$: the average score of the control class

s_1^2 : deviation of the experimental class

s_2^2 : deviation of the control class

n_1 : number of experimental

n_2 : number of control class

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[17] Sugiyono, *Statistika untuk Penelitian*, (Bandung: ALFABETA, 2006), p. 135

CHAPTER IV

THE RESULT OF RESEARCH

A. **Description of Data**

1. **Description of Data before Mind Mapping Technique**

   a. **Pre-test Score of Experimental Class**

   Based on the students' answers in pre-test the researcher has calculated the students' score in appendix 15 and 16. Then, the researcher drawn the table sum in the following:

Table 8
The Score of Experimental Class in Pre-test

Total	1420
Highest score	78
Lowest score	34
Mean	55.64
Median	56
Modus	56.36
Range	44
Interval	9
Standard deviation	11.16
Variant	147

Based on the table above the total score of experimental class in pre-test was 1420, mean score was 55.64, median was 56, modus was 56.36, range was 44, interval was 9, standard deviation was 11.16, and variant was 147. The researcher got the highest score was 78 and the lowest score was 34. It can be seen on appendix 16. Then, the calculation of the frequency distribution of the students' score in experimental class can be applied into table frequency distribution as follow:

Table 9
Frequency Distribution of Experimental Class (Pre-test)

No	Interval Class	Mid Point	F	Percentages
1	34-42	38	3	12 %
2	43-51	47	6	24 %
3	52-60	56	7	28 %
4	61-69	65	5	20 %
5	70-78	74	4	16 %
			25	100 %

Based on the table above, it can be concluded that most of students are in interval 56 – 60 (7 students/28 %). The least of students is 34-43 (3 students/12 %). Clear description of the data is presented in histogram on the following figure:
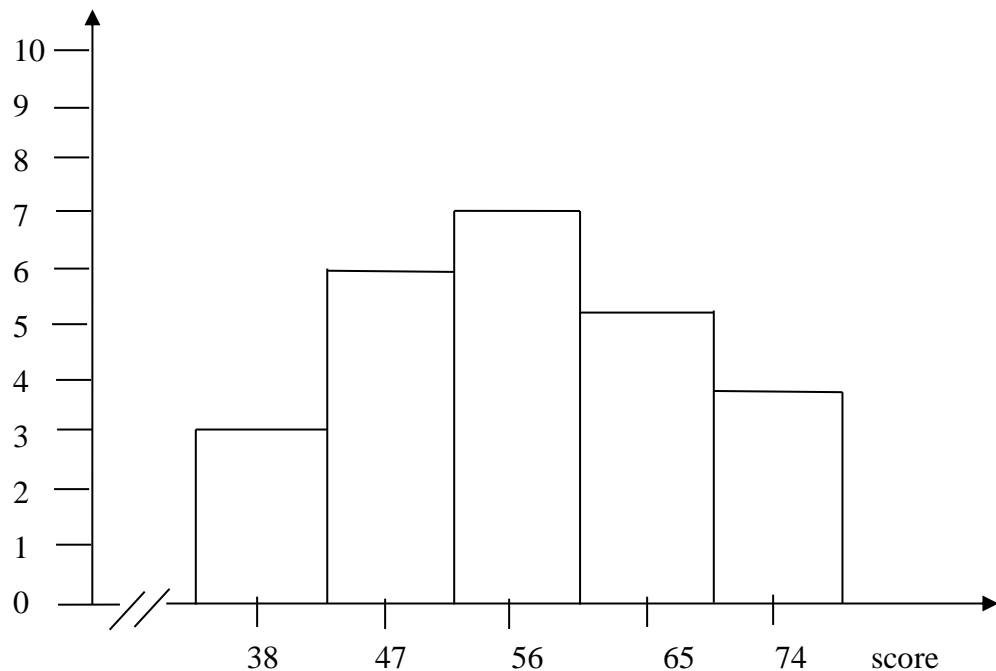
Figure 1: Description of Experimental Class (Pre Test)

Based on the histogram above, the frequency of students' score from 34 up to 42 was 3; 43 up to 51 was 6; 52 up to 60 was 7; 61 up to 69 was 5; 70 up to 78 was 4.

The figure shows that the highest interval (52-60) was 7 students, and the lowest interval (34-42) was 3 students.

b. Pre-test Score of Control Class

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

Table 10
The Score of Control Class in Pre-Test

Total	1324
Highest score	70
Lowest score	36
Mean	54.28
Median	53
Modus	52.58
Range	34
Interval	7
Standard deviation	9.31
Variant	106

Based on the table above the total score of control class in pre-test was 1323, mean score was 54.28, standard deviation was 9.31, variant was 106, range was 34, interval was 7, median was 53, and modus was 52.58. The researcher got the highest score was 70 and the lowest score was 36. It can be seen on appendix 16. Then, the computed of the frequency distribution of the students' score of control class can be applied into table frequency distribution as follow:

Table 11
Frequency Distribution of Control Class (Pre-Test)

No	Interval Class	Mid Point	F	Percentages
1	36 – 42	40	5	20 %
2	43 – 49	47	4	16 %
3	50 – 56	54	7	28 %
4	57 – 63	61	5	20 %
5	64 – 70	68	4	16 %
			25	100 %

From the table above, it can be concluded that the middle interval (50-56) had the biggest frequency (7 students/28 %). The highest interval (60-70) had 4 students and the lowest interval was (36-42) with 4 students.

In order to get description of the data clearly and completely, the researcher presents them in histogram on the following figure:
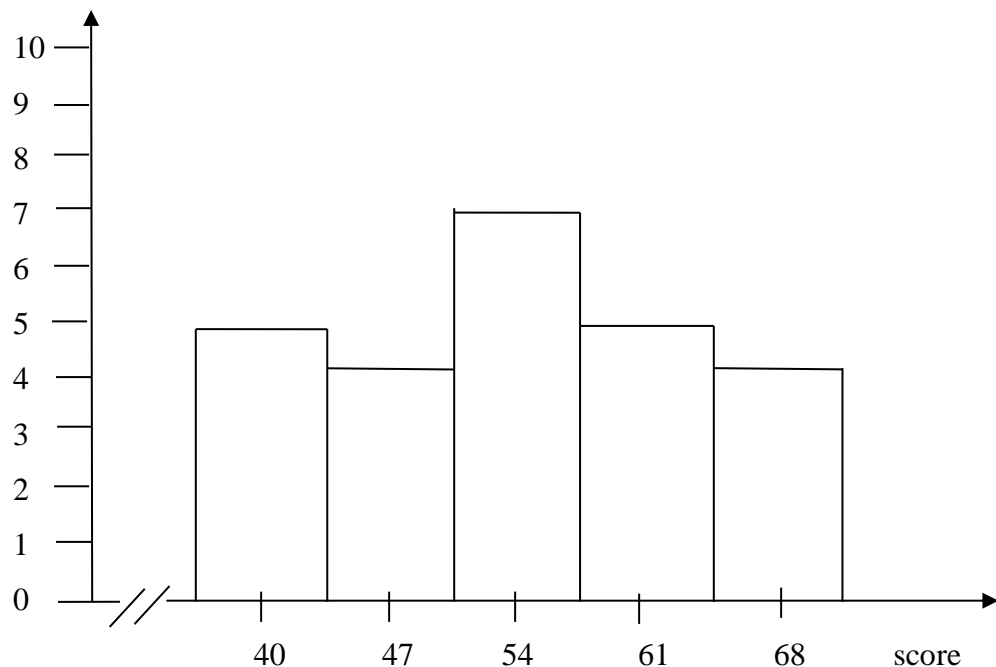
Figure 2: Description of Control Class (Pre-Test)

Based on the figure above, the frequency of students' score from 36 up to 42 was 5; 43 up to 49 was 4; 50 up to 56 was 7; 57 up to 63 was 5; 64 up to 70 was 4.

2. **Description of data after Using Mind Mapping Tecnique**

   a. **Post-test Score of Experimental Class**

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

Table 12
The Score of Experimental Class in Post Test

Total	1862
Highest score	90
Lowest score	56
Mean	73.84
Median	73.77
Modus	72.58
Range	34
Interval	7
Standard deviation	8.33
Variant	92.26

Based on the table above, total score of experiment class in post-test was 1862, mean score was 73.84, standard deviation was 8.33, variant was 92.26, median was 73.77, range was 34, modus was 72.58, and interval was 7. The students' highest score was 90 and the lowest score was 56.It can be seen on appendix 19. Then, the calculation of the frequency distribution of the students' score of experiment class can be applied into table frequency distribution as follow:

Table 13
Frequency Distribution of Students' Score

No	Interval	Mid Point	F	Percentages
1.	56 – 62	59	3	12 %
2.	63 – 69	66	4	16 %
3.	70 – 76	73	9	36 %
4.	77 – 83	80	5	20 %
5.	84 – 90	87	4	16 %
			25	100 %

In order to get description of the data clearly and completely, the researcher presents them in histogram on the following histogram:
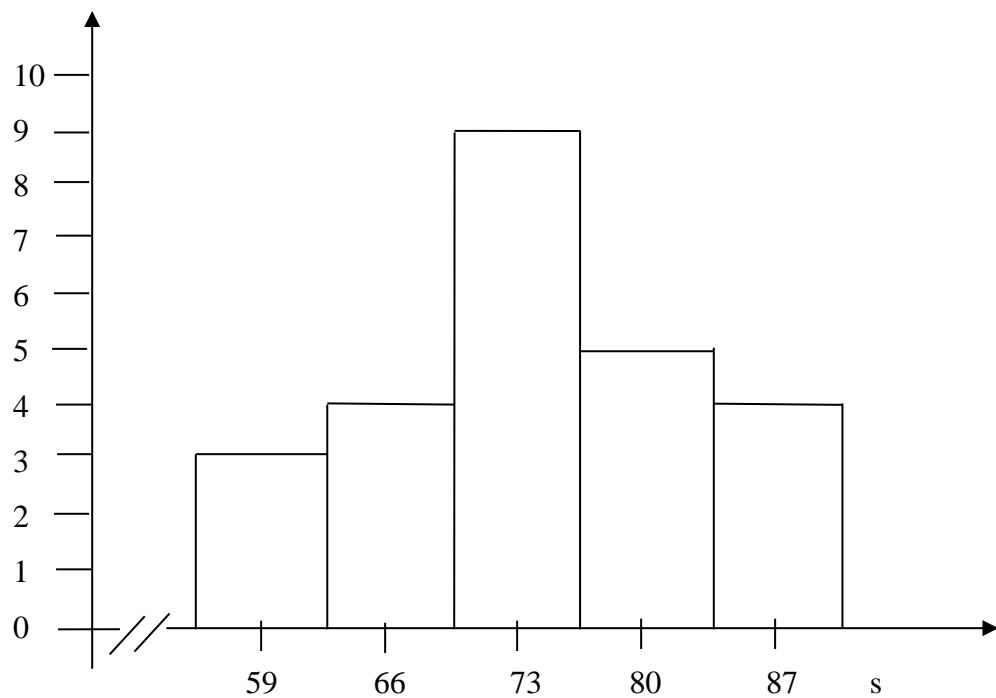
Figure 3: Description of Experimental Class (Post-Test)

Based on the figure above, the frequency of students' score from 56 up to 62 was 3; 63 up to 69 was 4; 70 up to 76 was 9; 77 up to 83 was 5; 84 up to 90 was 4. Then,

the interval which had highest frequency was 70-76 – and the lowest interval was 56-62 and highest interval was 84 – 90.

b. Post-test Score of Control Class

The result that had been gotten by the students in answering the question (test) after the researcher taught the reading by using conventional teaching can be seen in the following table:

Table 14
The Score of Control Class in Post-Test

Total	1559
Highest score	80
Lowest score	36
Mean	61.24
Median	60.79
Modus	57.46
Range	44
Interval	9
Standard deviation	11.25
Variant	150.40

Based on the above table the total score of control class in post-test was 1559, mean was 61.24, standard deviation was 11.25, variant was 150.40, median was 60.79, range was 44, modus was 57.46, and interval was 9. The researcher got the highest score was 80 and the lowest score was 36. It can be seen on appendix 19. Then, the computed of the frequency distribution of the students' score of control class can be applied into table frequency distribution as follow:

Table 15
Frequency Distribution of Students' Score

No	Interval	Mid Point	F	Percentages
1	36 – 44	40	2	8 %
2	45 – 53	49	4	16 %
3	54 – 62	58	8	32 %
4	63 – 71	67	5	20 %
5	72 – 80	76	6	24 %

For the clear description of the data, the researcher presents them in histogram

on the following figure:
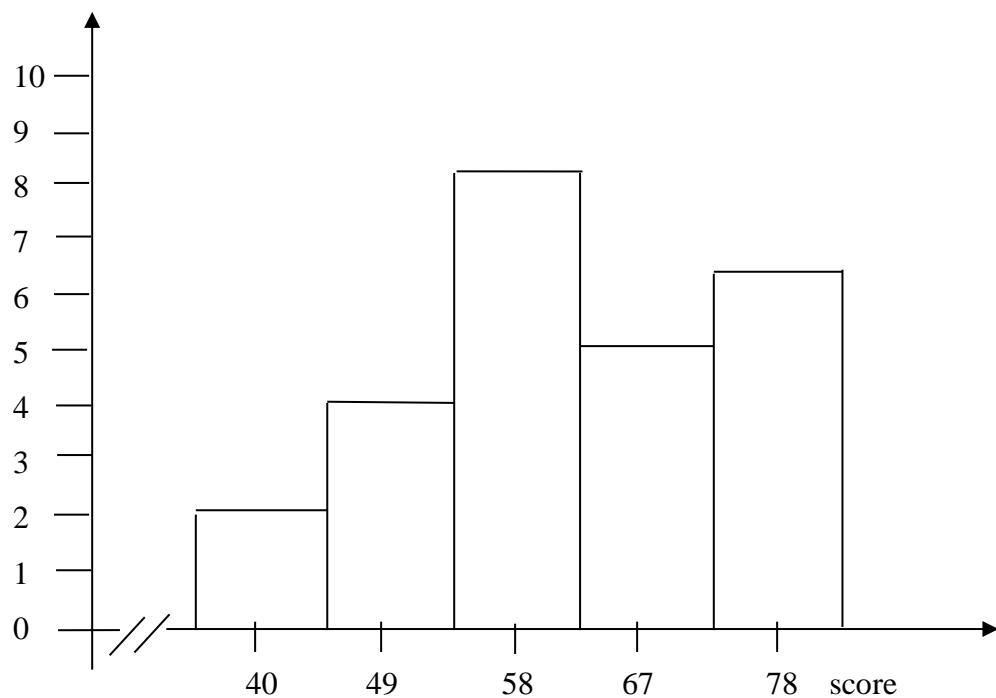
Figure 4: Description of Control Class (Post-Test)

Based on the figure above, the frequency of students' score from 36 up to 44

was 2; 45 up to 53 was 4; 54 up to 62 was 8 ; 63 up to 71 was 5; 72 up to 80 was 6.

Then, the interval which had highest frequency was 54 – 62(8 students) and the interval which had lowest frequency was 36 – 44 (2 students).

B. Testing of Hypothesis

1. Requirement Test

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

Table 16
Normality and Homogeneity in Pre-Test

Class	Normality Test		Homogeneity Test	
	t_{count}	t_{table}	f_{count}	f_{table}
Experimental Class	3.68	9.488	1.38<2.069	
Control Class	5.77	9.488		

Based on the table above, the score of experiment class Lo = 3.68 < Lt = 9.488 with n = 29 and control class Lo = 5.77 < Lt = 9.488 with n = 25, and real level α 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.It can be seen on appendix 16.

The coefficient of F_{count}= 1.38 was compared with F_{table}. Where F_{table} was determined at real α 0.05, and the different numerator dk = N-1 = 25-1 = 25 and denominator dk N-1 = 25–1 = 24. So, by using the list of critical value at F distribution is got F 0.05 = 2.064. It showed that F_{count}(1.38)<F_{table} (2.064). It showed that both experimental and control class were homogeneous. The calculation can be seen on appendix 17.

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

Table 17
Normality and Homogeneity in Post-Test

Class	Normality Test		Homogeneity Test	
	t_{count}	t_{table}	F_{count}	F_{table}
Experimental Class	7.63	9.488	1.63 <2.069	
Control Class	5.034	9.488		

The previous table shows that the score of experimental class Lo = 7.63 < Lt = 9.488 with n = 25 and control class Lo = 5.034 < Lt = 9.488 with n = 25, and real level α 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. It can be seen on appendix 19.

The coefficient of F_{count}= 1.63 was compared with F_{table}. Where F_{table} was determined at real α 0.05, and the different numerator dk = N-1 = 25-1 = 24 and denominator dk N-1 = 25-1 = 24. So, by using the list of critical value at F distribution is got $F_{0.05}$ = 2.069. It showed that F_{count}(1.63)<F_{table}(2.069). So, the researcher concluded that the variant from the data of the students' reading comprehension mastery at eleventh grade students of SMK negeri 2 Kotanopan in experimental and control class was homogenous. It can be seen on appendix 20.

2. **Hypothesis Test**

After calculating the data of post-test, researcher has found that post-test result of experimental and control class is normal and homogenous. The data would be analyzed toprove the hypothesis. It used formula of t-test follow:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt[5]{\frac{1}{n_1} + \frac{1}{n_2}}} \quad \text{with } S = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 2)S_2^2}{n_1 + n_2 - 2}}$$

So:

$$S = \sqrt{\frac{(25-1)\,92.26 + (25-2)150.40}{25+25-2}}$$

$$= \sqrt{\frac{24\,(92.26) + 23\,(150.40)}{48}}$$

$$= \sqrt{\frac{2214.24 + 3459.20}{48}}$$

$$= \sqrt{\frac{5673.44}{48}}$$

$$= \sqrt{118.19}$$

$$= 10.87$$

So:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt[s]{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$t = \frac{73.84 - 61.24}{10.87\sqrt{\frac{1}{25} + \frac{1}{25}}}$$

$$= \frac{12.6}{10.87\sqrt{0.04+0.04}}$$

$$= \frac{12.6}{10.87\,(0,28)}$$

$$= \frac{12.6}{3.04}$$

$$= 4.14$$

Hypothesis of the research was "there is the effect of mind mapping toward reading comprehension mastery at the eleventh grade students of SMK negeri 2 Kotanopan" The result of t-test was as follow:

Table 18
Result of T-test

Post-test	
t_{count}	t_{table}
4.14	2.021

The test hypothesis have two criteria. First, if $t_{count}<t_{table}$, H_0 is accepted. Second, $t_{count}>t_{table}$, H_a is accepted. Based on researcher calculation, researcher found that t_{count} 4.14 while t_{table} 2.021 with opportunity $(1-\alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 25 + 25 - 2 = 48$. Cause $t_{count}>t_{table}(4.14>2.012)$, it means that hypothesis H_a was accepted. So, there was the effect of mind mapping toward reading comprehension mastery at the eleventh grade students of SMK negeri 2 Kotanopan.

C. Discussion

In this research, researcher found that the students' reading comprehension mastery is low. Student's could't determine or understand about topic sentence, main idea, information, conclusion, meaning from the vocabulary, grammar. It is known when researcher asked them to find mean idea or information from the text directly, most of students can not answered it. From the problem, researcher tried to give the treatment by using mind mapping technique. The researcher had hypothesis that there is the significant effect mind mapping technique toward reading comprehension mastery. It was supported by Florian Rustler in *Mind Mapping for Dummies*, "a special procedure which combines mind mapping with reading so that you can understand and retain a lot of information in as short a time as possible".[1]

The researchers' hypothesis was related to some previous researchers' concluding. The first was Rissa San Risqiya with entitle"*Usıng Mınd Mappıng Strategy to Improve Readıng Comprehensıon Abılıty to ntermedıate Iranıan Student's*". She concluded that mind mapping can improve students' reading comprehension mastery. It can be seen from the increase of the mean score. In the first cycle, the mean score is 68.0 and 73.5 in the second cycle.[2] Next, Khairunnisa Lubis stated that the ability of the eight grade students of SMP Negeri 3 Depok in reading comprehension that many students were unable to identify topic sentence, the meaning of vocabulary. So, the

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[1]Florian Rustler, *Mind Mapping for Dummie*, (England: Wiley,2012) p. 151.

[2] Rissa San Risqiya ," Usıng Mınd Mappıng Strategy to Improve Readıng Comprehensıon Abılıty to ntermedıate Iranıan Student's*" (Unpublished Thesis),* (Cirebon: Syekh Nurjati State Institute For Islamic Studies), p. 58

students didn't know the meaning of vocabulary. It concluded that mind mapping had significant correlation with reading comprehension[3].

For supporting that, it was proved by hypothesis of this research, mind mapping technique had the significant effect toward reading comprehension mastery at the eleventh grade students of SMK Negeri 2 Kotanopan. As in this research, the mean score of experimental class was higher than control class (73.84>61.24)

D. Limitation of the Research

The research was limited in some situations. It was the problem in the class that appeared during doing the research, but the researcher couldn't hold or improve those things. The limitation of the research was as follow:

1. The researcher was not sure whether all of students in the experimental class and control class did the test honestly. There was a possibility that some of them answered the test by copying or imitating their friends' answer.

2. 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.

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[3] Khairunnnisa Lubis ," The Correlation Between Mind Maping Tecnique and Reading Comprehension Recount Text at the Eight Grade Students' SMP 3 Depok " (Unpublished Thesis), (Jakarta: UIN Syarif Hidayatullah), p. 50

CHAPTER V

CONCLUSION AND SUGGESTION

A. Conclusion

Based on the result of the research, the conclusions of this research is there was a significant effect mind mapping toward reading comprehesion mastery at the eleventh grade students of SMK Negeri 2 Kotanopan. The researcher found the result of t-test where t_0 was higher than t_t. t_0 was 4.14 and t_t was 2.021 (4.14> 2.021). It means that where H_a was accepted. Before using mind mapping tecnique the mean score of experimental class was 55.64 and the mean score of control class which was taught by conventional teaching was 54.28. After using mind mapping the mean score of experimental class was 73.84 and the mean score of control class which was taught by conventional teaching was 61.24.

B. Suggestion

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

1. The Headmaster of SMK Negeri 2 Kotanopan, it can be used to motivate the teachers to teach as well as possible to maximize learning writing process because through this research it was proven that this technique increased students reading comprehension mastery.

2. English teachers, from the research result it can be seen that the students' score were unsatisfied. So, the researcher hopes to English teachers of SMK Negeri 2 apply various innovative techniques in teaching English. It also can be supported by choosing right technique and good class management. Besides it, it is also

important for students to follow learning process seriously because the success of learning is in students' result.

3. Other researchers, the researcher hopes that the others researchers who want to conduct a research related to this research to find the others influence of these reading comprehension mastery in order to motivate readers more critics and consider whatever they read.

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CURRICULUM VITAE

A. Identity

Name   : Juni Aida

Reg. No   : 12 340 0057

Place/Birth   : Tamiang/Juni, 05th 1994

Sex   : Famale

Religion   : Islam

Address   : Tamiang, Kotanopan, Mandailing Natal

B. Parents

Father's Name   : Irsan Nasution

Mother's Name   : Murni

C. Educational Background

1. Elementary School   : SD Negeri 142658 Tamiang   (2006)

2. Junior High School   : SMP Muhammadiyah 40 Kotanopan   (2009)

3. Senior High School   : SMA Negeri 1 Kotanopan   (2012)

4. Institute   : IAIN Padangsidimpuan   (2017)

RENCANA PELAKSANAAN PEMBELAJARAN
(RPP)

Nama Sekolah   : SMK Negeri 2 Kotanopan

Kelas/Semester   : XI/2

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 esei 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 topin sentence

2. Siswa mampu menentukan mine idea 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

D. Tujuan Pembelajara

1. Siswa dapat lebih mudah memahami teks bacaan

2. Siswa dapat memprediksi apa yang akan dihadapi oleh mereka dalam teks bacaan

E. **Karakter siswa yang diharapkan:**   Dapat dipercaya (*Trustworthiness*)

    Rasa hormat dan perhatian (*Respect*)

    Tekun (*Diligence*)

F. Materi Pembelajaran

1. Text fungsional

G. Metode Pembelajaran

1. Mind Mapping Technique

H. Langkah-Langkah Kegiatan

1. KegiatanAwal

a. Guru membuka kelas dengan mengucapkan salam.

b. Mempersilahkan siswa untuk membaca do'a belajar sesuai agama dan kepercayaan masing-masing.

c. Guru menjelaskan tujuan pembelajaran yang akan dicapai

2. KegiatanInti

a. Fokus kepada pertanyaan dan topik

    i. Guru memberi text kepada siswa mencari topik dengan focus kepada pertanyaan

    ii. Siswa membaca pertantaanya dan focus mencari informasi dari teks sesuai dengan pertanyaan.

b. Skim reading

    i. Guru menyeruh siswa menskimming text untuk memecahkan pertanyaan dan memahami teks.

    ii. Siswa mencari informasi dengan cara menskimming teks.

c. Preview

     i. Apabila siswa belum dapat memecahkan pertanyaan dan memahami teks denga cara diskimming, guru menyuruh siswa mempriview text, yaitu membaca bagian pertama dan bagian terakhir paragraf.

    ii. Siswa membaca bagian pertama dan terakhir paragraf.

d. Immersion

     i. Apabila siswa belum dapat memecahkan pertanyaan dan memahami text dengan cara menskimming dan menpriview text, guru menyuruh siswa untuk melakukan immersion, yaitu membaca keseluruhan text dan memahami isi dari text tersebut.

    ii. Siswa membaca keseluruhan text dan memahami isi dari text tersebut.

e. Difficult pessage

     i. Guru menyuruh siswa mencari kata sulit yang ada dalam text.

    ii. Siswa mencari kata-kata sulit yang ada dalam text

f. Menyediakan selembar kertas

     i. Guru menyuruh siswa menyediakan selembar kertas.

    ii. Siswa menyediakan selembar kertas

g. Gambar dipusat kertas

     i. Guru menyuruh siswa menggambar mind mapping dengan cara menulis topik utama dibagian pusat kertas.

    ii. Siswa mulai menggambar mind mapping dengan menulis topik utama dibagian pusat kertas

h. Gunakan warna

     i. Guru menyuruh siswa menggunkan warna sesuai dengan kreativitas siswa

    ii. Siswa menggunakan warna sesuai dengan kreativitasanya.

i. Gambar garis diluar dari pusat gambar

     i. Guru menyuruh siswa membuat garis diluar dari gambar topik utama

    ii. Siswa membuat garis diluar dari gambar topik utama.

j. Bentuk garismu.

     i. Guru menyruh siswa membaut garis sesuai dengan apa yang mereka onginkan.

    ii. Siswa membuat garis sesuai dengan apa yang mereka inginkan.

k. Tuliskan kata kunci di cabang

      i. Guru menyuruh siswa membuat siswa menulis kata di cabang gambar, kata kunci yang memiliki hubungan dengan topik utama.

     ii. Siswa membuat kata kunci di cabang gambar, kata kunci yang berhubungan dengan topik utama.

  l. Tambahi cabang di peta

      i. Guru menyuruh siswa menambahi cabang di mind mappingnya untuk melengkapi jawaban pertanyaan dari teks yang sudah dibaca.

     ii. Siswa menambahi cabang di mind mapping,untuk melengkapi jawaban dari text yang suedah dibaca.

  m. Buatlah tingkat kedua dan ketiga

      i. Guru menyuruh siswa membuat dua atau tiga tingkat cabang dari ming mapping untuk memlengkapi seluruh jawaban pertanyaan dari teks yang sudah dibaca siswa.

3. KegiatanPenutup

a. Siswa diberi umpan balik atas kegiatan hari ini.

b. Guru mengumpulkan tugas yang telah dikerjakan siswa.

I. Media dan Sumber Belajar

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

J. Penilaian

Indikator Pencapaian Kompetensi	Teknik Penilaian	Bentuk Instrumen	Instrumen Soal
1. The topic of the text 2. The main idea 3. Vocabulary 4. Grammar	Tes Tulis	Multiple Choice	*Read the text Then answer*

5. Finding The Information 6. Deciding The conclusion			*the* *question!*

Kotanopan, 21 Maret 2017

Guru Bahasa Inggris　　　　　**Researcher**

Erna Sari, S. Pd　　　　　　**Juni Aida**
NIP.　　　　　　　　　　　 **Nim. 12 340 57**

RENCANA PELAKSANAAN PEMBELAJARAN
(RPP)

Nama Sekolah   : SMK NEGERI 2 KOTANOPAN

Kelas/Semester   : XI/2

Subjek   : Bahasa Inggris

Jenis Teks   : Text Fungsional

Aspek/Skill   : Membaca / *Reading*

Alokasi Waktu   : 4 x 45 menit (2x pertemuan)

K. Standar Kompetensi

2. Memahami makna dalam esei pendek sederhana untuk berinteraksi dengan lingkungan sekitar

L. Kompetensi Dasar

1.1 Merespon makna dan langkah retorika dalam esei pendek sederhana secara akurat, lancar.

dan berterima yang berkaitan dengan lingkungan sekitar.

M. Tujuan Pembelajaran

3. Pada akhir pembelajaran siswa dapat memahami makna cerita/paragraph yang dibaca.

N. Karakter siswa yang diharapkan: Dapat dipercaya (*Trustworthiness*)

Rasa hormat dan perhatian (*Respect*)

Tekun (*Diligence*)

O. Materi Pembelajaran

1. Text Fungsional

P. Strategipembelajaran

1. Conventional Teaching

Q. Langkah-Langkah Kegiatan

Pertemuan Pertama dan kedua

1. Kegiatan Awal

a. Menjelaskan pentingnya materi yang akan dipelajari berikut kompetensi yang harus diketahui siswa dan mempersiapkan alat yang ingin digunakan.

2. Kegiatan Inti

a. Opening

i. Guru menjelaskan pentingnya tujuan yang akan mereka capai dan mengkombinasikan bahan pelajaran.

ii. Siswa mendengarkan penjelasan dari guru.

b. Presentation

i. Guru meberikan teks bacaan dan menjelaskan meteri pembelajaran.

ii. Siswa mulain membaca dalam hati dan mendengarkan penjelasan dari guru.

c. Closing

i. Guru memberikan tugas kepada siswa.

ii. Siswa mengerjakan tugas

3. Kegiatan Penutup

a. Guru dan siswa mendiskusikan jawaban dari pertanyaan.

b. Guru menyimpulkan pelajaran

c. Guru menutup pelajaran dan Siswa memberi salam kepada guru

R. Sumber Belajar

6. Teks yang berkaitan dengan bahan ajar

7. Kamus

S. Penilaian

Indikator Pencapaian Kompetensi	Teknik Penilaian	Bentuk Instrumen	Instrumen Soal
1. The topic of the text 2. The main idea 3. Vocabulary 4. Grammar 5. Finding The Information **6.** Deciding The conclusion	Tes Tulis	Multiple Choice	*Read the text Then answer the question!*

Kotanopan, 21 Maret 2017

Mengetahui,

English Teacher   Researcher

Erna Sari, S. Pd   Juni Aida
NIP.   Nim. 12 340 0057

Appendix 3

Instrument Pre-Test

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

Text 1

      One the next holiday, my friends and I are going to have competition. Five people are going to part,Weda, Arya, Achmad, Jusuf and I.

      The competitions requires a lot of thought. Someone is going to take us to Pelabuhan Ratu, about 100 kilometers from here. One of us are going to have any money. The aim of competitions is to see who can get back to Bandung firts. The first one will be winner.

      It's going to difficult. I know that the others already have some ideas. Weda is going to hitchike. He is hoping he is going to be lucky. Arya is going to go to an army barracks to ask for a ride. Jusuf says he's goin to get on train. Ahmad is also going to tray to board a train. They will have tobe careful because they're going to be traveling without ticket. I still don't know what I'm going to do. Perhaps I can find some trucks that go regulary fom Pelabuhan Ratu to Bandung carrying fish. I don't like traveling with fish, but what else I can do.

Answer the following questions based on the text

1. The topic of the text is ....
   a. Going to competitions
   b. One the next holiday
   c. Some is going to take us Pelabuhan Ratu
   d. It's going to difficult

2. The main idea paragraph one is ....
   a. Weda, Arya, Ahmad   c. One the next holiday
   b. Five peolpe   d. Holiday

3. Five people .... going to part,Weda, Arya, Achmad, Jusuf and I.
   a. Is   c. Am
   b. They   d. Are

4. What are the writer and his friend taking parst in the competition?
   a. He want to get a lot of money.
   b. The want to have a fun experience.
   c. They wish they had a good luck
   d. They want to spend their holiday time

5. The paragraph two tell us about ....
   a. Someone going   c. about 100 kilometres
   b. The competitions requires a lot of thought   d. Will the winner

6. "The first one will be <u>winner</u>". The antonym of underline word is ...
   a. Looser   c. Bad
   b. Kind   d. Nice

7. <u>They</u> will have tobe careful. Who is they in the underline word?
   a. I and Jusuf   c. Weda
   b. Ahmad and Jusuf   d. Weda and Ahmad

8. What will Weda do ?

a. He is going to hitchike
b. He will ask fora ride to the army barrack
c. He will board a train
d. He will travel by truck

9. I ..... like traveling with fish, but what else I can do.
   a. Do   c. Was
   b. Don't   d. were

10. The conclussion of the text is ...
    a. My friends and I are going to have competition
    b. The first one will winner
    c. Going holiday
    d. Has an idea of what to do

Text 2

There is a new hotel in my city. It is a four star hotel. It is located downtown. The hotel is not very big, but the architecture is very beatiful. It looks likes a classic castle Europe. According to the brochure, it has 100 rooms, a fancy restaurant, complit spors pacilities including a swimming pool, tennis court, gym and sauna. There are also a coffee shop and karaoke room.

The picture of the room in the brouchure are very nice. The rooms looks very confortable. It they contain a big spring bed wuth pillows, a nice sofa, awardobe and a television a system with programmes from all over the world. The bathroom is very beautiful althoug is not very big. It has a bath-tub with hot and cold water so guests can bath in it confortably.

The brochure says"hospitality is our tradmark". The staff of that hotel, from the receptionist, hous keepers, and belboys are trained to be polite and to help guests in any way they can. The Grand Mega Hotel is very beautiful.

Answer the following questions based on the text

11. What is the topic of the text?
    a. Grand Mega Hotel
    b. My city
    c. Interest place
    d. My life and my best friend

12. What is main idea of the first paragraph?
    a. A new hotel in my city
    b. The picture of the room
    c. The bathroom is very beautiful
    d. The bathroom is very dirty

13. The main idea in the second paragraph is ....
    a. The hotel is not very big
    b. The hotel is not very wide
    c. The hotel is very big
    d. The hotel is not very beautiful

14. The similar meaning of "castle" in the second paragraph is ....
    a. Place   c. Hotel
    b. Palace   d. Apartement

15. From the text, how many star in Grand Mega Hotel?
    a. It's consist four star
    b. It's consist five star
    c. It's consist nine star
    d. It's consist ten star
16. The main idea in the third paragraph is ....
    a. The picture of the rooms
    b. The picture of the swimming pool
    c. The picture of the park
    d. The picture of the hotel
17. How many rooms in the grand omega hotel?
    a. It's consists 100 rooms   c. It's consists 300 rooms
    b. It's consists 200 rooms   d. It's consists 400 rooms
18. Where is the located grand omega hotel?
    a. It is located in downtown
    b. It is located in Medan
    c. It is located in Jakarta
    d. It is located in Surabaya
19. Hou the architechture in grand omega hotel?
    a. It's very beatiful
    b. It's very bed
    c. It's very dirty
    d. It's very dark
20. The hotel is very <u>big</u>. The antonym underline word is ....
    a. Small   c. Little
    b. Good   d. Much
21. The main idea in the last paragraph is ...
    a. A new hotel in my city
    b. A new hotel
    c. Hospitality is our tradmark
    d. In my city
22. It .... 100 rooms and fancy restaurant.
    a. Consist   c. There
    b. Musch   d. have
23. The picture if teh rooms in the brochure ... very nice
    a. Is   c. Has
    b. Was   d. Aren't
24. Is there swimming pool in the grand omega hotel?
    a. Yes   c. May be
    b. No   d. Yet
25. The conclussion of the text is ...
    a. Grand Mega Hotel
    b. A new hotel in my city, it is a four stars
    c. Four stars
    d. My city

Text 3

Rainforests are one of the most complicated environments on Earth. They are recognized worldwide as containing the richest source of plants and animals and believed to contain nearly three-quarters of all the varieties of life on Earth. This is remarkable because rainforests cover only about six per cent of Earth's land surface.

Rainforest are the oldest major ecosystem, having survived climate changes for more than one million years. They provide habitats for more species of plants, animals, insects and birds than any other environment found on our planet. Scientists estimate that between 60 and 90 per cent of all species of life are to be found in rain forests. Unfortunately, the widespread destruction of many of the world's rainforests has caused a significant decline in the number of plant and animal species on earth.

Rainforests in influence both our local and global climates. For example between 50 and 80 per cent of the moisture in the air above rainforests comes from the rainforests trees. If large areas of these lush rainforest are cleared, the avarange rainfall in the area will drop. Eventually, the area's climate will get hotter and dier. This process could converts rainforests into a sparse grassland or desert.

Rainforests are also able to absorb over 90 per cent of the rainfall in their leaves and mosses. By doing this, they are able to slow down water run-off by gradually releasing the water over time into streams and drivers. This helps to control soil erosion and flooding.

Rainforests are vital to the Earth in helping to recycle carbon and oxygen. Carbon dioxide (CO2) is the gas put into the air globally by humans, mainly by the burning of fossil fuels (for example in cars and factories). Rainforests are able to remove carbon dioxide from the air and return oxygen in its place. This is why our global rainforests are often called the Earth's lungs'.

Rainforests are major producers of the Earth's oxygen. In fact, scientists believe that nearly 50 per cent of the Earth's oxygen is produced by rainforests in the Amazon region alone. Nearly 40 per cent of the world's carbon is contained in the trees of the rainforests. As rainforests are cut down and burned, carbon dioxide is released into the Earth's atmosphere. Eventually, as this gas builds up the atmosphere, leading to what scientists call the enhanced greenhouse effect.

To sum up, the role of the rainforest is essential for human life. It creates equilibrium in our environment and its resources are significant for human beings survival.

Answer the following questions based on the text

26. What does the text tell us about?
   a. Rainforests   c. The adventages of rainforest
   b. Rainforests in the Earth   d. Habitats in the rainforests

27. The first paragraph tells us that….
   a. The most complicated environments on Earth is rainforests
   b. The richest source of plans and animals
   c. Rainforest cover only six percent of Earth's land surface
   d. Varieties of life on Earth

28. What is the main idea of paragraph two?
   a. Rain forests' habitats   c. Rain forests' ecosystem
   b. Rain forests' species   d. Rain forests' climates

29. The thirth paragraph tells about…
    a.   Rainforests in influence both our local and global climates.

b. If large areas of these lush rainforest are cleared, the avarange rainfall in the area will drop

c. Eventually, the area's climate will get hotter and dier

d. This process could converts rainforests into a sparse grassland or desert.

30. What are the disadvantage of rainforests based on the text….

a. Helping to recycle carbon and oxygen

b. Rainforests are major producers of the Earth's oxygen

c. Rainforests are essential for human life

d. Rainforests aren't the oldest major ecosystem

31. 'This' paragraph 1 line 3 refers to…

a. Rainforests   c. Contain nearly three-quarters of all the varieties of life

b. Earth   d. Containing the richest source of plants and animals

32. Scientists … that nearly 50 per cent of the Earth's oxygen is produced by rainforests in the Amazon region alone.

a. Inform   c. Believe

b. Informs   d. Believes

33. Scientists estimate that between 60 and 90 per cent of all species of life are to be found in rain forests. The underline word means that scientist ….

a. Helps the human in the world

b. Thinking about much of species in the world

c. Give opinion about how percent of all species of life

d. Inform human to keep species

34. The fifth paragraph tells about…

a. Rainforests are one of the most complicated environments on Earth.

b. Scientists estimate that between 60 and 90 per cent of all species of life are to be found in rain forests.

c. Rainforests are also able to absorb over 90 per cent of the rainfall in their leaves and mosses.

d. Rainforests are vital to the Earth in helping to recycle carbon and oxygen.

35. We can learn from the text that…

a. Keep the world from the pollution

b. The bad do can make flood and erosion

c. Only rainforest will give lifeless to the human

d. Rainforests resources are significant for human beings survival

36. From the text above we know that the area of rainforest is…

a. Still the same as some years ago   c. Wider than before

b. Getting smaller   d. Clearer than usual

37. By reading the text, we can conclude that Rainforest is…

a. recognized worldwide as containing the richest source of plants and animals

b. essential for human life

c. helping to recycle carbon and oxygen

d. able to absorb over 90 per cent of the rainfall in their leaves and mosses.

38. What is the definition from carbon dioxide ?

a. The gas put into the air globally by humans
b. The air and return oxygen in the place
c. The gas to help human in the life
d. The air put in the Amazon region alone

39. The sixth paragraph tell about ...
a. Rainforests are major producers of the Earth's oxygen
b. In fact, scientists believe that nearly 50 per cent of the Earth's oxygen is produced by rainforests in the Amazon region alone
c. Nearly 40 per cent of the world's carbon is contained in the trees of the rainforests
d. As rainforests are cut down and burned, carbon dioxide is released into the Earth's atmosphere.

40. The meaning of 'They' in the line 2 paragraph 2 is…
a. insects and birds   c. Rainforests
b. habitats   d. species of plants

41. Between 50 and 80 per cent of the moisture in the … above rainforests comes from the rainforests trees.
a. Water   c. Earth
b. Gas   d. Air

42. 'It' in the seventh paragraph refers to…
a. Human   c. Environment
b. Rainforest   d. Greenhouse

43. 'This' in paragraph 4 line 3 refers to…
a. Releasing the water over time into streams and drivers
b. Leaves and mosses
c. Erosion and flooding
d. Rainforests

44. To sum up, the role of rainforest is essential for human life. (The last paragraph). What is the underline word mean?
a. Advantage   c. Importance
b. Disadvantage   d. Effect

45. The average rainfall in the area will drop. The sentence will found in…
a. Third paragraph   c. Fifth paragraph
b. Fourth paragraph   d. Sixth paragraph

46. 'This' in paragraph 4 line 2 refers to…
a. Leaves and mosses   c. Water
b. Rainfall   d. Rainforests

47. If large areas of these lush rainforests are cleared, the average rainfall in the area will drop. The synonym of the underlined word is…
a. Descend   c. Depression
b. Falling   d. Turn off

48. The text shows that rainforests…
a. Have many advantages for human life
b. Have producers of the Earth's all of gas

c. Helping to recycle of all the gas
d. Only helps to control soil erosion and flooding

49. Rainforests are….
    a. One of the most complicated environments on Earth
    b. The oldest major ecosystem
    c. Able to absorb over 90 per cent of the rainfall in their leaves and mosses
    d. All of them are true
50. More than … of all medicines sold in pharmacies originate from rainforests.
    a. 20 percent   c. 40 percent
    b. 30 percent   d. 50 percent

Kotanopan,   2017
Validator

Erna Sari. S. Pd

Appendix 4

<p align="center">Instrument Post-Test</p>

Nama :
Kelas :

<p align="center"><i>Instruction: choose the correct answer by crossing (X) a, b, c, or d!</i></p>

Text 1

Have you ever wondered how people make chocolate? In this article, we'll enter the amazing world of chocolate, so you can understantd exactly what you are eating.

Chocolate starts so with a tree called the cocoa tree. This tree grows in eutorial regions, especially in places such us Shouth America, Africa, and Indonesia. The cacao tree produces a fruit about the size of a small pineaple. Inside the fruit are the tree's seeds, also known as cocoa beans.

The beans are fermented for about a week, dried in the sun and then shipped to chocolate maker. The chocolate maker stars by roasting the beans to bring out the flavour. Diffrent beans from diffrent places have diffrent qualities and flavour, so they are often sorted and blended to produce a distinctive mix. Next, the roasted beands are winnowed. Winnowing removes the meat nib of the cocoa bean from its shell. Then, the nibs are blended. The blended nibs are ground to make it liqiud. Its tastes bitter. All seeds contain some amounts of fat, and cacao beans are not diffrent. However, cocoa beans are half-fat, which is why the ground nibs form liquid. It's pure bitter chocolate.

Answer the following questions based on the text
1. What does the text talk about?
   a. Cocoa tree   c. How to make chocolate
   b. Chocolate   d. Shouth America
2. The main idea of paragraph 1 is....
   a. The amazing wold of chocolate
   b. This article
   c. What are you eating
   d. How people make chocolate
3. "You are eating". The sentence use tenses ...
   a. Present tense   c. Past Tese
   b. Continuous tense   d. Future tense
4. "This tree .... in eutorial regions"
   a. Grows   c. Grow
   b. Tall   d. Small
5. Where do chocoa trees grow?
   a. Jakarta, Surabaya, Jambi
   b. America, Arab, Jerman
   c. South America, africa, and Indonesia
   d. California

6. The beans .... fermented for about a week.
   a. Am   c. Is
   b. Are   d. Was
7. <u>Inside</u> the fruit are the tree's seeds. The antonym of underline word is ...
   a. Outside   c. Outdoor
   b. Beside   d. Based
8. What are found inside the cacao fruit?
   a. Pineaple   c. Grape
   b. Coconut   d. Seed
9. The second paragraph tell us about ....
   a. Chocolate starts so with a tree called the cocoa trees
   b. This tree grows in eutorial regions
   c. The cacao tree produces a fruit about the size of a small pineaple.
   d. Inside the fruit are the tree's seeds, also known as cocoa beans.
10. Why does a chololate make start by roasting the beans?
   a. To make chocolate   c. To bring out the flavour
   b. Make the diffrent   d. Sorted and blended
11. What do cacao trees produce?
   a. Chess   c. Burger
   b. Chocolate   d. Cake
12. How long are the beans fermented?
   a. 1 year   c. A week
   b. Two weeks   d. Five week
13. ".....So the are often <u>sorted</u> and blended to prouce....."
    The underline word is closest in meaning to ....
   a. Selected   c. Audit
   b. Looked   d. Leave
14. What is the conclussion of the text?
   a. Choclate start from cocoa tree   c. Cocoa beans
   b. Roasting the cocoa tree   d. Make chocolate

Text 2

One day a lion slept in the jungle. A tiny mouse ran over the lions head and down his nose. The lion awoke with load roar. He was very angry. The lions opened his huge jaws the mouse.

"pardon me , O kind, i beg of you"cried the frightened mouse. "if you will only forgive me this time, I shall never fotget your kindness. I meant no harm and I certainly didn;t want to distrub your majesty. If you will spre ma live, perhaps I may be able odo you a good turn, too. "The Lion began to laugh, laugh, and laughed." How cold a tiny creature like you ever do anything t help me? And the shook with laughter. "Oh wel, " he shrugged, looking down at the frightened mouse, " you are not so much meal any way. "He took his paw off the poor liltle prisoner and the mouse quickly anything scampered away. Sometimes after this, some hunters, trying to capture the lion alive. They set up rope nets in the jungle. The tiny mouse heard the Lion's roars. "that my be who once freed me, "he said, remembering his promise. And he ran to see wheter he could help.

Discovering the sad state the Lion was in, the mouse said to him, "stop, stop! You must not roar. If you make so much noise, the hunters will come and cupture you. I'II get you out this trap.

With his sharp little teeth the mouse gnawed at the ropes until they broke. The lion was stepped out of the net and was free. Then the mouse said, " now, I was not right?". "Thank you, good mouse", said Lion gently. "You did help me even through I'm big and you so little I see now what kindness is always worth while".

Answer the following questions based on the text

15. The text tell the story of .....
    a. Lion   c. King of forest
    b. Mouse   d. Lion and Mouse
16. What is the moral lesson from this text
    a. Don't look someone because of his clothes
    b. It's best to prepare for the days of necessity
    c. Common people may prove great ones
    d. United we stand, devided we fall
17. "Pardon me, O king, I beg of you" cried the fridhtened Mouse. The word "king" refers to ....
    a. The Lion   c. The tree
    b. The king   d. The mouse
18. To tell the story, writer use....
    a. Simple past tense   c. Simple continouse tense
    b. Simple present tense   d. Perpect tense
19. "The Lions opened his <u>huge</u> jaws to the mouse" the underline word means?
    a. Tiny   c. Expensive
    b. Enermouse   d. Little
20. At the end of story, lion ....
    a. Say thanks to the mouse   c. Eat the mouse
    b. Killing by the hunter   d. Kill the hunter
21. From the text concluded that...
    a. Mouse help the Lion   c. Lion help the mouse
    b. Lion eat the hunter   d. Lion wasn't trap
22. The first paragraph tells us about ...
    a. A lion slept in the jungle   c. Lion eat the hunter
    b. Eat the mouse   d. A tiny mouse
23. The second paragrap tell us about....
    a. Lion   c. Mouse
    b. King of forest   d. Lion and Mouse
24. I'II get you out this trap. The sentence use tenses ...
    a. Present tense   c. Past Tese
    b. Continuous tense   d. Future tense
25. What is the topic of the text?
    a. A lion slept in the jungle
    b. The Lion opened his huge jaws to the mouse
    c. The Lion began to laugh, laugh and lauhged

    d.   The Lion awoke with load roar

26. What the mouse said to Lion?
    a.   Stop, stop! You must not roar
    b.   Now, I was not right
    c.   You did help me even though I'm big and you so little I see now what kindness is always worth while.
    d.   If you will only forgive me this time, I shell never forget your kindness

Text 3

I believe that a friend is an angel who lifts us off our feet when our wings have trouble remebering how to fly. It means that our friendsare people who will always be there for us any tine we need them. I'm so lucky because I have three best friend. They are Firsty, Ronald, Jonathan. We have known each other since we were four years old. We met in the kindergarten. We do everything together our motto is "united we stand, divided we fall" it neabs "together we are stronger". Now, let me introduce my friends one by one.

First, the youngest among us because she was born in December. We call her "the sweety firsty". Her father is French. She is tall and slim. She's about 171 cm. She has long straight hair. The seety Firsty" is a cheerful, confident, and determined girl. However, she is little bit careless and stubborn. She has many cat in her house. There are about nine cats. She love them all. One of her favorite is a little orange cat. She calls her "Shinny"

Ronald's nick name is Ron, most of girls in my school love and adore him. There's no doubt about his looking. We call him"the cherming Ron". His height is 176 cm. Ron has straight hair and perpect face. Next Jonathan's nick name is Jo. He is plum. He's about 168 cm tall. His weight 80 kg. That's why we cal him "The Big Jo". He has around face with brown eyes.

About me? Well. My name is Hana. I'm the shortest one among them. I'm about 160 cm tall. My friends call me "The Chubby Hana" because I also have a chubby check. Most people, even my parent say that I'm a careful, generous and diligent person. I love painting. I spend much time in my small studio just painting. That's all about me and my friend of mine. Even though we are quite diffrent, we love each other and will keep this relationship for good.

Answer the following questions based on the text
27. What is the topic of the text?
    a.   My very best friend
    b.   My best friend angel
    c.   My best forever
    d.   My life and my best friend
28. What is main idea of the first paragraph?
    a.   I bieleve that a friend is an angel
    b.   I bieleve that a friend is interest
    c.   I bieleve that a friend is beautiful
    d.   I bieleve that a friend is amazing
29. He is "<u>cherming</u>" (in the third paragrap). The underline word synonim with ....
    a.   Kind   c. Shines

    b. Lightning   d. Glamorizing

30. The main idea in the second paragrapg is ....
    a. The sweety Firsty is youngest
    b. Sweety Firsty is older
    c. Hana is best friend
    d. Ronald is very kind

31. The word"cheerful" the synonim underline word is ....
    a. Sadnes   c. Angry
    b. Happy   d. Lazy

32. The main idea in the third paragraph is ....
    a. Ronald's nickname is Ron
    b. Ronald's nickname is Jo
    c. Ronald's nickname is Hana
    d. Ronald's nickname is Jonathan

33. The meaning of born in the second paragraph same with...
    a. Birth   c. Small
    b. Big   d. Grow

34. What is Hana's hobby?
    a. Painting   c. Playing
    b. Shopping   d. Watching

35. Hana, Ronald, Jonathan .... best friend.
    a. Aren't   c. isn't
    b. Are   d. Is

36. Where is they meet?
    a. In the school   c. In the Kindergarten
    b. In the house   d. In the Library

37. Who is the youngest among them?
    a. Firsty   c. Jonathan
    b. Hana   d. Ronald

38. Who is the shorttest between them?
    a. Ronald   c. Jonathan
    b. Hana   d. Sweety Firsty

39. The word "cheerful" synonim with ...
    a. Sadness   c. Angry
    b. Happy   d. Lazy

40. They are best for me. The subject "they" repers to ...
    a. Sweety, Ronald, Jonathan
    b. Hana and Jo
    c. Hana
    d. Jonathan

41. The main idea in the last paragraph is ...
    a. I'm the shortone among them
    b. I'm the older one among them
    c. I'm is the best
    d. I'm the first

42. He is funny

the synonim of underline word is ...
a. Humorist
c. Crazy
b. Bad
d. Clever

43. She .... long straigh hair
a. Have
c. was
b. Has
d. Were

44. Who is the nickname of Jonathan?
a. Ron
c. Roi
b. Nald
d. Jo

45. We .... known each other since we were four years old
a. Has
c. haven't
b. Have
d. Could

46. Ron has straight hair. The sentence use tenses....
a. Simple present
c. Past tense
b. Future tense
d. Perpect tense

47. I think that friend is .... angel
a. An
c. the
b. A
d. There

48. Jonathan's nick name is Jo.
The mean of underline word is ...
a. Call name
c. First name
b. Last name
d. Complex name

49. What their motto from the text?
a. United we fall, devided we stand
b. United we stand, devided we fall
c. United we stand, devided we sad
d. United we stand, devided we happy

50. The conclusion of the text is ...
a. A friend is an angel
b. We love each other and will keep this realtionship for god
c. Dreams becoming a famous
d. A friend is enemy

Kotanopan,   2017
Validator

Erna Sari. S. Pd

Appendix 6

Validity of Post Test

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1	1	1	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	1	0	0	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	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	1	0	1	1	1	1	0	1	1	0	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	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	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	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	0	1	0	0	1	1	0	1	1
8	1	0	1	1	1	0	1	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	0	1
9	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	0	1	1	1	1	0	1	1	1	1	1	1	1	0	1	1	0	1	0	1	0	1	1	0	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	0	1	1	0
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
12	0	1	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	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	0	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	0	1	1	1	0	0	1	0	1	1	1	1	1	0	0	0	1
15	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	1	1	0	1	0	0	1	1	1	1	1	0	1	1	0	1	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	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	1	0	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	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	0	1	0	0	1	0	1	1	0	1	1	0	1	1	0	0	1	1	0	1	0	0	1	1	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	0	1	0	0	0	1	1	1	0	0	1	0	1	0	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	1	1	1	0	0	1	0	0
N=23	16	15	6	18	16	16	15	18	15	18	18	18	8	19	16	16	15	6	16	16	15	18	16	18	20	18	18	5	13	14	17	19	7	15	16	18	16	6	16	16
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	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	0,2	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	0,3

Cont....

Validity of Post Test

No	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	Xt	Xt^2

	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		
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	1	1	46	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	1	37	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	45	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	0	1	1	1	1	47	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	30	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	46	2116
7	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	0	0	1	0	1	0	1	0	1	1	1	1	1	1	1	48	2304
8	1	1	0	1	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	51	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	1	0	37	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	1	1	1	1	1	41	1681
11	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	1	0	0	23	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	0	0	1	1	1	1	48	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	1	1	37	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	1	1	0	0	42	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	34	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	1	1	0	37	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	1	1	0	0	42	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	1	0	1	1	36	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	0	1	1	1	0	43	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	1	0	0	34	1156
21	1	1	0	1	1	0	0	1	1	1	1	1	1	0	0	1	1	1	0	0	0	0	1	1	0	0	1	0	1	1	39	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	34	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	25	625
N =	16	15	14	13	12	5	16	19	16	17	16	18	14	15	4	16	18	15	4	4	14	6	15	14	7	6	18	15	16	14		

23																														$\sum xt = 902$	$\sum xt^2 = 36248$
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		

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
																					NO ITEMS																			
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	0	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	0	0	0
3	0	0	1	1	1	1	0	1	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	0	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	0	0	0	1	1	1	0	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	0	1	1	0	1	0	0	1	1	1	0	1	0	0	1	1	1	1	0	0	1	1	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	0	0	1	0	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	0	0	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
9	1	1	1	1	1	1	1	1	0	1	0	0	1	1	0	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
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	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	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	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	1	1	1	1	1	1	1	1
13	0	0	1	1	1	1	1	1	0	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	0	1	1	0
14	1	1	0	1	0	0	1	0	1	1	0	1	1	0	1	1	0	0	1	1	1	1	0	1	1	1	1	0	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	0	1	1	1	0	1	1	1	1	1	1	1	0	1	1	0	0	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	0	1	1	1	0	1	1
17	1	1	1	1	1	0	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	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	0	0	0	0
19	1	1	0	1	0	1	1	1	1	1	0	1	1	0	1	0	1	0	0	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1
20	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	1	1	1	0	1	0	1	0	1	0	0	0	0	0	1	1	0	0	1	1	1	0	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	1	0	1	1	1	1	1	0	1	0	1	1	0
22	1	0	0	1	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	0	0	1	0	1	1	1	1
23	0	0	1	1	1	0	1	0	0	1	0	1	1	1	0	1	0	1	0	1	0	0	1	0	1	1	0	0	1	0	1	1	1	1	1	1	1	1	1	0
N=	15	14	18	16	17	15	15	18	6	18	4	17	17	18	3	15	16	22	15	14	15	18	17	19	5	4	19	6	17	15	21	19	16	15	16	22	17	15	17	16

23																																								
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	0,9	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	0,1	0,3	0,3	0,3	0,3

Validity of Pre- Test

Cont....

Validity of Pre Test

No	NUMBER OF ITEMS																														Xt	Xt²
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70		
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	0	0	0	0	50	2500
2	0	1	1	0	0	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	1600
3	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	0	1	1	1	0	51	2601
4	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	1	0	1	1	1	1	1	1	0	0	52	2704
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	0	0	0	1	0	33	1089
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	0	47	2209
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	0	1	49	2401
8	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	0	0	54	2916
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	0	1	0	0	42	1764
10	0	0	1	0	0	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	1	0	0	0	0	1	1	1	0	44	1936
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	0	0	0	30	900
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	0	1	0	0	51	2601
13	1	0	0	0	0	1	1	1	1	1	0	0	1	1	0	0	1	1	1	1	1	0	0	1	0	1	1	0	1	0	44	1936
14	1	1	1	0	0	0	0	1	1	0	0	1	1	0	1	0	1	0	1	0	1	0	1	1	1	1	1	1	0	0	45	2025

	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		
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	0	0	1	47	2209
16	1	0	0	0	0	1	0	1	1	1	0	1	0	0	1	0	1	1	0	1	0	1	1	0	1	1	1	1	0	0	41	1681
17	1	1	1	0	0	1	0	1	1	1	0	0	1	1	0	0	1	1	1	1	1	0	0	0	0	0	1	1	0	0	44	1936
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	0	0	1	42	1764
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	0	51	2601
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	1	0	0	38	1444
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	0	0	1	43	1849
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	1936
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	1600
N = 23	17	15	15	2	4	17	16	21	16	18	4	17	15	15	16	3	18	15	17	15	15	5	16	17	16	14	18	15	3	4	∑xt= 1022	∑xt² = 46202
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		

Appendix 8

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	0	1	1	1	0	1	1	1	1	1	0	1	1	1	1	0	1	0	1	1	1	0	1	1	1	0	1	1	1	1	0	1	1	1	0	0	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	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	1	0	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
4	1	1	0	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	1	0	0	1	1	1	0	1	1	1	1	0	1	1	1	1	0
5	1	1	0	1	0	1	0	1	1	1	0	1	0	1	0	1	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	0	1	1	1	1	1	1	0	0	0	1	1	0	0	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	0	1	1	1	1	1	1	1	1	0	1	0	0	1	1	0	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	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	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	0	1	1	0	1
11	0	0	0	0	1	1	0	0	0	0	1	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	1	1	0	1	1	1	1	1	1	1	1	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	0	0	1	0
14	1	1	0	1	0	0	1	0	1	1	1	1	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	0	1	1	0	1	0	1	1	1	1	0	0	1
15	1	1	0	1	1	1	1	1	1	1	1	1	0	0	1	1	1	1	1	1	1	1	0	1	1	1	0	1	0	0	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	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	1	0	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	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	1	0	1	0	0	1	0	1	1	1	0	1	1	0	1	1	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	1	0	1	1	1	1	0	0	1	1	0	1	1	1	1	1	0	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	1	0	1	1	0	0	1	0	0	1	0	1	1	0	1	0	1	1	1	0	1	0	0	1	1	1
23	0	0	1	0	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	1	1	1	0	0	1	0	0
N =	16	15	6	18	16	16	15	18	15	18	18	18	8	19	16	16	15	6	16	16	15	18	16	18	20	18	18	5	13	14	17	19	7	15	16	18	6	6	16	16

	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70
23																														
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
Q	0,3	0,3	0,8	0,2	0,3	0,3	0,3	0,2	0,3	0,2	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

(continued)

	0,8	0,8	0,3	0,7	0,7	0,8	0,7	0,3	0,7	0,7
P	0,8	0,8	0,3	0,7	0,7	0,8	0,7	0,3	0,7	0,7
Q	0,2	0,2	0,7	0,3	0,3	0,2	0,3	0,7	0,3	0,3

Reliabilty of Pre Test

Cont....

Reliabilty of Pre Test

No	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	Xt	Xt²
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	1	1	46	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	1	37	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	45	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	0	1	1	1	1	47	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	1	1	30	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	46	2116
7	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	0	0	1	0	1	0	1	0	1	1	1	1	1	1	1	48	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	51	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	1	0	37	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	1	1	1	1	1	41	1681
11	1	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1	0	0	1	1	0	0	23	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	0	0	1	1	1	48	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	1	1	37	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	1	1	0	0	42	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	34	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	1	1	0	37	1369

	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		
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	1	1	0	0	42	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	1	0	1	1	36	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	0	1	1	1	0	43	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	1	0	0	34	1156
21	1	1	0	1	1	0	0	1	1	1	1	1	1	0	0	1	1	1	0	0	0	0	1	1	0	0	1	0	1	1	39	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	34	1156
23	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	1	0	1	0	0	25	625
N=23	16	15	14	13	12	5	16	19	16	17	16	18	14	15	4	16	18	15	4	4	14	6	15	14	7	6	18	15	16	14	∑xt = 902	∑xt² = 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		

Appendix 13

No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
																								NO ITEMS															
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	0	0	0	1	0	1	1	1	1	1	1	1	1	0	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	0	0
3	0	0	1	1	1	1	0	1	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	0	1	1	1	1	1
4	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	0	0	0	1	1	1	0	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	0	1	1	0	1	0	0	1	1	1	0	1	0	0	1	1	1	1	0	0	1	1	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	0	0	1	0	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	0	1	0	0	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
9	1	1	1	1	1	1	1	1	0	1	0	0	1	1	0	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
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	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	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	1	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	1	1	1	1	1	1	1	1
13	0	0	1	1	1	1	1	1	0	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	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	0	0	1	1	1	0	1	1	1	1	1	1	1	1	0	1
15	1	1	0	1	1	1	1	0	1	0	1	0	1	1	0	1	1	1	1	1	1	1	0	1	1	0	0	1	0	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	0	1	1	1	0	1	1
17	1	1	1	1	1	0	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	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	0	0	0	0
19	1	1	0	1	0	1	1	1	1	1	1	0	1	1	0	1	0	0	0	1	0	1	1	1	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	1
20	1	1	1	1	1	1	1	0	0	0	0	0	0	1	1	0	1	1	1	0	1	0	1	0	1	0	0	0	0	0	1	1	0	0	1	1	1	0	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	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
23	0	0	1	1	1	0	1	0	0	1	0	1	1	1	0	1	0	1	0	0	1	0	0	1	0	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0
N=	15	14	18	16	17	15	15	18	6	18	4	17	17	18	3	15	16	22	15	14	15	18	17	19	5	4	19	6	17	15	21	19	16	15	16	22	17	15	17	16

2 3																																								
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	0,9	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	0,1	0,3	0,3	0,3	0,3

Reliability of Post- Test

Cont....

Reliability of Pre Test

No	NUMBER OF ITEMS																														Xt	Xt²
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70		
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	0	0	0	0	50	2500
2	0	1	1	0	0	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	1600
3	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	0	1	1	1	0	0	51	2601
4	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	1	0	1	1	1	1	1	1	0	0	52	2704
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	0	0	0	1	0	33	1089
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	0	47	2209
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	0	1	49	2401
8	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	0	0	54	2916
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	0	1	0	0	42	1764
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	0	0	44	1936
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	0	0	0	30	900
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	0	1	0	0	51	2601
13	1	0	0	0	0	1	1	1	1	1	0	0	1	1	0	0	1	1	1	1	1	0	0	1	0	1	1	0	1	0	44	1936
14	1	1	1	0	0	0	0	1	1	0	0	1	1	0	1	0	1	0	1	0	1	0	1	1	1	1	1	1	0	0	45	2025

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	0	0	1	47	2209
16	1	0	0	0	0	1	0	1	1	1	0	1	0	0	1	0	1	1	0	1	0	1	1	0	1	1	1	1	0	0	41	1681
17	1	1	1	0	0	1	0	1	1	1	0	0	1	1	0	0	1	1	1	1	1	0	0	0	0	0	1	1	0	0	44	1936
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	0	0	1	42	1764
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	0	51	2601
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	1	0	0	38	1444
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	0	0	1	43	1849
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	1936
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	1600
N = 23	17	15	15	2	4	17	16	21	16	18	4	17	15	15	16	3	18	15	17	15	15	5	16	17	16	14	18	15	3	4	$\sum x_t = 1022$	$\sum x_t^2 = 46202$
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		

Appendix 10

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

A. Calculation of Pre-Test

1. Means score from score total (M_t)

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

$$M_t = \frac{902}{23} = 39.21$$

2. Standard Deviation (SD_t)

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

$$SD_t = \sqrt{\frac{36248}{23} - \left(\frac{902}{23}\right)^2}$$

$$SD_t = \sqrt{1576 - 39.21^2}$$

$$SD_t = \sqrt{1576 - 1537.42} = \sqrt{38.58} = 6.21$$

3. Means Score (M_p)

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

$$M_{p1} = \frac{46+37+47+30+46+48+51+37+48+42+34+37+42+43+34+39}{16}$$

$$M_{p1} = \frac{661}{16} = 41.31$$

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

$$M_{p2} = \frac{46+37+47+30+46+48+37+41+48+42+34+42+43+34+39}{15}$$

$$M_{p2} = \frac{614}{15} = 40.93$$

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

$$M_{p3} = = \frac{46+51+41+36+34+25}{6}$$

$$M_{p3} = \frac{233}{6} = 38.83$$

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

$$M_{p4} = \frac{46+37+45+47+30+48+51+37+48+37+42+34+37+36+42+43+39+34}{18}$$

$$M_{p4} = \frac{733}{18} = 40.72$$

Item 5 $M_{p5} = \dfrac{\text{the total of students score that answer true item}}{n5}$

$$M_{p5} = \frac{46+37+45+47+46+48+51+37+48+37+34+37+42+34+39+34}{16}$$

$$M_{p5} = \frac{662}{16} = 41.37$$

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

$M_{p6} = \dfrac{46+37+45+47+30+46+48+51+37+41+48+37+34+36+43+34}{16}$

$M_{p6} = \dfrac{660}{16} = 41.25$

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

$M_{p7} = \dfrac{45+47+46+51+37+48+37+42+34+37+42+43+34+39+34}{15}$

$M_{p7} = \dfrac{616}{15} = 41.06$

Item 8 $M_{p8} = \dfrac{\text{the total of students score that answer true item}}{n8}$

$M_{p8} = \dfrac{46+37+45+47+30+46+48+51+37+41+48+37+34+37+36+43+39+34}{18}$

$M_{p8} = \dfrac{736}{18} = 40.88$

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

$M_{p9} = \dfrac{46+45+47+30+48+51+37+41+48+42+34+37+42+43+34}{15}$

$M_{p9} = \dfrac{625}{15} = 41.66$

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

$M_{p10} = \dfrac{46+37+45+47+30+46+48+51+37+41+48+42+34+37+43+39+34+25}{18}$

$M_{p10} = \dfrac{730}{18} = 40.56$

Item 11 $M_{p11} = \dfrac{\text{the total of students score that answer true item}}{n11}$

$M_{p11} = \dfrac{46+37+45+47+46+51+37+41+48+42+34+37+42+36+43+34+39+34}{18}$

$M_{p11} = \dfrac{739}{18} = 41.05$

Item 12 $M_{p12} = \dfrac{46+45+47+30+46+48+51+41+48+37+42+34+42+36+43+39+34+25}{18}$

$M_{p12} = \dfrac{734}{18} = 40.77$

Item 13 $M_{p13} = \dfrac{46+37+48+42+42+43+34+25}{8}$

$M_{p13} = \dfrac{317}{8} = 39.62$

Item 14 $M_{p14} = \dfrac{46+37+45+47+30+46+48+51+37+48+37+34+37+42+36+34+39+34+25}{19}$

$M_{p14} = \dfrac{773}{19} = 40.68$

Item 15 $M_{p15} = \dfrac{46+37+45+47+48+51+41+48+37+34+37+42+36+43+34+39}{16}$

$M_{p15} = \frac{665}{16} = 41.56$

Item 16 $M_{p16} = \frac{46+45+47+30+46+48+51+41+48+42+34+42+36+34+39+34}{16}$

$M_{p16} = \frac{663}{16} = 41.43$

Item 17 $M_{p17} = \frac{46+37+45+47+46+48+37+48+42+34+42+36+34+39+34}{15}$

$M_{p17} = \frac{615}{15} = 41$

Item 18 $M_{p18} = \frac{37+41+34+42+43+25}{6}$

$M_{p18} = \frac{222}{6} = 37$

Item 19 $M_{p19} = \frac{46+37+45+47+46+48+51+37+23+48+37+42+34+37+42+36}{16}$

$M_{p19} = \frac{656}{16} = 41$

Item 20 $M_{p20} = \frac{45+47+30+46+48+51+41+48+42+34+37+42+43+34+39+34}{16}$

$M_{p20} = \frac{661}{16} = 41.31$

Item 21 $M_{p21} = \frac{46+37+47+51+37+41+48+37+42+34+42+36+43+39+25}{15}$

$M_{p21} = \frac{605}{15} = 41.33$

Item 22 $M_{p22} = \frac{46+37+45+47+46+48+51+37+41+48+37+42+37+42+36+43+34+25}{18}$

$M_{p22} = \frac{743}{18} = 41.27$

Item 23 $M_{p23} = \frac{46+45+47+30+46+48+37+41+48+42+34+37+42+43+39+34}{16}$

$M_{p23} = \frac{659}{16} = 41.18$

Item 24 $M_{p24} = \frac{37+45+47+30+46+48+51+37+41+48+42+34+37+42+36+43+34+39}{18}$

$M_{p24} = \frac{737}{18} = 40.94$

Item 25 $M_{p25} = \frac{46+37+45+47+30+46+48+51+37+41+48+37+42+34+37+36+43+39+34+25}{20}$

$M_{p25} = \frac{803}{20} = 40.15$

Item 26 $M_{p26} = \frac{46+37+45+47+46+48+51+37+41+23+48+42+37+42+36+34+39+34}{18}$

$M_{p26} = \frac{733}{18} = 40.72$

Item 27 $M_{p27}=\dfrac{46+37+45+47+30+46+48+51+37+23+48+37+42+34+42+36+43+39}{18}$

$M_{p27}=\dfrac{731}{18}=40.61$

Item 28 $M_{p28}=\dfrac{48+42+43+34+25}{5}$

$M_{p28}=\dfrac{192}{5}=38.4$

Item 29 $M_{p29}=\dfrac{46+37+45+47+48+51+37+41+48+37+42+42+39}{13}$

$M_{p29}=\dfrac{560}{13}=43.07$

Item 30 $M_{p30}=\dfrac{46+45+47+48+51+37+41+48+37+34+37+42+42+39}{14}$

$M_{p30}=\dfrac{594}{14}=42.42$

Item 31 $M_{p31}=\dfrac{46+37+45+47+30+46+48+51+41+48+37+34+42+36+43+34+34}{17}$

$M_{p31}=\dfrac{699}{17}=41.11$

Item 32 $M_{p32}=\dfrac{46+45+47+30+46+48+51+41+23+48+42+34+37+42+36+43+34+39+34}{19}$

$M_{p32}=\dfrac{766}{19}=40.84$

Item 33 $M_{p33}=\dfrac{30+48+51+41+34+34+25}{7}$

$M_{p33}=\dfrac{263}{7}=37.57$

Item 34 $M_{p34}=\dfrac{46+37+47+51+37+41+48+37+42+34+42+36+43+39+25}{15}$

$M_{p34}=\dfrac{615}{15}=41$

Item 35 $M_{p35}=\dfrac{46+37+45+47+46+51+41+48+37+42+37+42+36+43+39+25}{16}$

$M_{p35}=\dfrac{662}{16}=41.37$

Item 36 $M_{p36}=\dfrac{46+37+45+47+30+46+48+51+41+23+48+37+42+34+37+42+36+39}{18}$

$M_{p36}=\dfrac{729}{18}=40.5$

Item 37 $M_{p37}=\dfrac{37+45+47+30+46+48+51+37+41+48+42+34+37+43+34+39}{16}$

$M_{p37}=\dfrac{659}{16}=41.18$

Item 38 $M_{p38}=\dfrac{46+41+42+43+34+25}{6}$

$M_{p38}=\dfrac{231}{6}=38.5$

Item 39 $M_{p39} = \dfrac{46+45+47+46+48+51+37+23+48+37+34+37+42+43+39+34}{16}$

$M_{p39} = \dfrac{657}{16} = 41.06$

Item 40 $M_{p40} = \dfrac{46+45+47+30+46+48+51+41+48+42+34+37+42+43+34+34}{16}$

$M_{p40} = \dfrac{668}{16} = 41.75$

Item 41 $M_{p41} = \dfrac{46+45+47+46+48+51+37+23+48+42+37+42+36+34+39+34}{16}$

$M_{p41} = \dfrac{655}{16} = 40.93$

Item 42 $M_{p42} = \dfrac{37+47+46+48+51+37+41+48+42+34+42+43+34+39+34}{15}$

$M_{p42} = \dfrac{623}{15} = 41.53$

Item 43 $M_{p43} = \dfrac{46+37+47+46+48+51+41+23+48+42+34+42+43+34}{14}$

$M_{p43} = \dfrac{582}{14} = 41.57$

Item 44 $M_{p44} = \dfrac{46+37+45+48+51+37+41+48+42+42+36+34+39}{13}$

$M_{p44} = \dfrac{546}{13} = 42$

Item 45 $M_{p45} = \dfrac{46+45+47+51+41+48+42+37+42+36+34+39}{12}$

$M_{p45} = \dfrac{508}{12} = 42.33$

Item 46 $M_{p46} = \dfrac{46+51+23+34+25}{5}$

$M_{p46} = \dfrac{179}{5} = 35.8$

Item 47 $M_{p47} = \dfrac{46+37+45+47+46+48+51+41+23+48+37+34+42+43+34+34}{16}$

$M_{p47} = \dfrac{656}{16} = 41$

Item 48 $M_{p48} = \dfrac{46+37+45+47+30+46+48+51+41+48+37+42+34+37+42+36+43+34+39}{19}$

$M_{p48} = \dfrac{783}{19} = 41.21$

Item 49 $M_{p49} = \dfrac{46+45+47+46+48+51+41+48+37+42+37+42+36+43+39+34}{16}$

$M_{p49} = \dfrac{682}{16} = 42.62$

Item 50 $M_{p50} = \dfrac{46+37+45+47+46+48+51+37+41+48+37+34+37+42+43+39+34}{17}$

$M_{p50} = \frac{712}{17} = 41.88$

Item 51 $M_{p51} = \frac{46+37+45+30+48+51+37+41+48+42+34+37+36+43+34+39}{16}$

$M_{p51} = \frac{658}{16} = 41.12$

Item 52 $M_{p52} = \frac{46+37+45+47+30+46+48+51+41+48+37+42+34+37+43+34+39+34}{18}$

$M_{p52} = \frac{739}{18} = 41.05$

Item 53 $M_{p53} = \frac{46+45+47+46+48+51+41+48+37+42+42+43+39+34}{14}$

$M_{p53} = \frac{609}{14} = 43.5$

Item 54 $M_{p54} = \frac{45+47+46+48+51+37+41+48+37+34+42+36+43+34+34}{15}$

$M_{p54} = \frac{623}{15} = 41.53$

Item 55 $M_{p55} = \frac{46+48+42+34}{4}$

$M_{p55} = \frac{170}{4} = 42.5$

Item 56 $M_{p56} = \frac{46+37+45+47+30+51+37+41+48+37+42+37+42+43+34+39}{16}$

$M_{p56} = \frac{656}{16} = 41$

Item 57 $M_{p57} = \frac{46+37+45+46+48+51+37+41+48+37+42+34+37+42+36+34+39+34}{18}$

$M_{p57} = \frac{734}{18} = 40.77$

Item 58 $M_{p58} = \frac{46+45+47+46+51+41+48+37+34+37+42+36+34+39+34}{15}$

$M_{p58} = \frac{617}{15} = 41.13$

Item 59 $M_{p59} = \frac{48+41+48+25}{4}$

$M_{p59} = \frac{162}{4} = 40.5$

Item 60 $M_{p60} = \frac{46+51+37+25}{4}$

$M_{p60} = \frac{159}{4} = 39.75$

Item 61 $M_{p61} = \frac{46+37+47+48+51+37+41+48+37+42+34+42+36+43}{14}$

$M_{p61} = \frac{589}{14} = 42.07$

Item 62 $M_{p62} = \dfrac{46+46+48+37+34+25}{6}$

$M_{p62} = \dfrac{236}{6} = 39.33$

Item 63 $M_{p63} = \dfrac{46+47+30+46+48+51+37+41+48+42+34+37+36+43+39}{15}$

$M_{p63} = \dfrac{625}{15} = 41.66$

Item 64 $M_{p64} = \dfrac{46+37+45+47+30+46+48+51+48+37+42+34+43+39}{14}$

$M_{p64} = \dfrac{593}{14} = 42.35$

Item 65 $M_{p65} = \dfrac{47+48+37+42+37+43+25}{7}$

$M_{p65} = \dfrac{279}{7} = 39.85$

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Item 66 $M_{p66} = \dfrac{45+48+41+23+34+25}{6}$

$M_{p66} = \dfrac{216}{6} = 36$

Item 67 $M_{p67} = \dfrac{37+45+47+46+48+51+41+23+48+37+42+34+37+42+36+43+39+34}{18}$

$M_{p67} = \dfrac{730}{18} = 40.55$

Item 68 $M_{p68} = \dfrac{45+47+46+48+51+37+41+48+42+37+42+43+34+34+25}{15}$

$M_{p68} = \dfrac{620}{15} = 41.33$

Item 69 $M_{p69} = \dfrac{46+37+45+47+30+48+51+37+41+48+37+34+37+36+43+39}{16}$

$M_{p69} = \dfrac{656}{16} = 41$

Item 70 $M_{p70} = \dfrac{46+37+45+47+30+46+48+51+41+48+37+34+36+39}{14}$

$M_{p70} = \dfrac{585}{14} = 41.78$

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

Item 1 $r_{pbi} = \frac{41.31 - 39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{2.1}{6.2}\sqrt{2.33}$

$r = 0.338 \text{ x } 1.52 = 0.5137$

Item 2 $r_{pbi} = \frac{40.93 - 39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{1.72}{6.2}\sqrt{2.33}$

$r = 0.277 \text{ x } 1.52 = 0.421$

Item 3 $r_{pbi} = \frac{38.83 - 39.21}{6.2}\sqrt{\frac{0.2}{0.8}}$

$r = \frac{-0.38}{6.2}\sqrt{0.25}$

$r = -0.061 \text{ x } 0.5 = -0.0305$

Item 4 $r_{pbi} = \frac{40.72 - 39.21}{6.2}\sqrt{\frac{0.8}{0.2}}$

$r = \frac{1.51}{6.2}\sqrt{4}$

$r = 0.243 \text{ x } 2 = 0.486$

Item 5 $r_{pbi} = \frac{41.37 - 39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{2.16}{6.2}\sqrt{2.33}$

$r = 0.348 \text{ x } 1.52 = 0.528$

Item 6 $r_{pbi} = \frac{41.25 - 39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{2.04}{6.2}\sqrt{2.33}$

$r = 0.329 \text{ x } 1.52 = 0.500$

Item 7 $r_{pbi} = \frac{41.06 - 39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{1.85}{6.2}\sqrt{2.33}$

$r = 0.298 \text{ x } 1.52 = 0.452$

Item 8 $r_{pbi} = \frac{40.88 - 39.21}{6.2}\sqrt{\frac{0.8}{0.2}}$

$r = \frac{1.67}{6.2}\sqrt{4}$

$r = 0.269 \text{ x } 2 = 0.538$

Item 9 $r_{pbi} = \dfrac{41.66-39.21}{6.2}\sqrt{\dfrac{0.7}{0.3}}$

$r = \dfrac{2.45}{6.2}\sqrt{2.33}$

$r = 0.395 \times 1.52 = 0.6004$

Item 10 $r_{pbi} = \dfrac{40.56-39.21}{6.2}\sqrt{\dfrac{0.8}{0.2}}$

$r = \dfrac{1.35}{6.2}\sqrt{4}$

$r = 0.217 \times 2 = 0.434$

Item 11 $r_{pbi} = \dfrac{41.05-39.21}{6.2}\sqrt{\dfrac{0.8}{0.2}}$

$r = \dfrac{1.84}{6.2}\sqrt{4}$

$r = 0.296 \times 2 = 0.592$

Item 12 $r_{pbi} = \dfrac{40.77-39.21}{6.2}\sqrt{\dfrac{0.8}{0.2}}$

$r = \dfrac{1.56}{6.2}\sqrt{4}$

$r = 0.251 \times 2 = 0.502$

Item 13 $r_{pbi} = \dfrac{39.62-39.21}{6.2}\sqrt{\dfrac{0.3}{0.7}}$

$r = \dfrac{0.41}{6.2}\sqrt{0.42}$

$r = 0.066 \times 0.64 = 0.042$

Item 14 $r_{pbi} = \dfrac{40.68-39.21}{6.2}\sqrt{\dfrac{0.8}{0.2}}$

$r = \dfrac{1.47}{6.2}\sqrt{4}$

$r = 0.237 \times 2 = 0.474$

Item 15 $r_{pbi} = \dfrac{41.56-39.21}{6.2}\sqrt{\dfrac{0.7}{0.3}}$

$r = \dfrac{2.35}{6.2}\sqrt{2.33}$

$r = 0.379 \times 1.52 = 0.576$

Item 16 $r_{pbi} = \dfrac{41.43-39.21}{6.2}\sqrt{\dfrac{0.7}{0.3}}$

$r = \dfrac{2.22}{6.2}\sqrt{2.33}$

$r = 0.358 \times 1.52 = 0.544$

Item 17 $r_{pbi} = \dfrac{41-39.21}{6.2}\sqrt{\dfrac{0.7}{0.3}}$

$r = \frac{1.79}{6.2}\sqrt{2.33}$

r = 0.288 x 1.52 = 0.437

Item 18 $r_{pbi} = \frac{37-39.21}{6.2}\sqrt{\frac{0.3}{0.7}}$

$r = \frac{-2.21}{6.2}\sqrt{0.42}$

r = -0.356 x 0.64 = -0.227

Item 19 $r_{pbi} = \frac{41-39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{1.79}{6.2}\sqrt{2.33}$

r = 0.288 x 1.52 = 0.437

Item 20 $r_{pbi} = \frac{41.31-39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{2.1}{6.2}\sqrt{2.33}$

r = 0.338 x 1.52 = 0.513

Item 21 $r_{pbi} = = \frac{41.33-39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{2.12}{6.2}\sqrt{2.33}$

r = 0.341 x 1.52 = 0.518

Item 22 $r_{pbi} = \frac{41.27-39.21}{6.2}\sqrt{\frac{0.8}{0.2}}$

$r = \frac{2.06}{6.2}\sqrt{4}$

r = 0.332 x 2 = 0.664

Item 23 $r_{pbi} = \frac{41.18-39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{1.97}{6.2}\sqrt{2.33}$

r = 0.317 x 1.52 = 0.4818

Item 24 $r_{pbi} = \frac{40.94-39.21}{6.2}\sqrt{\frac{0.8}{0.2}}$

$r = \frac{1.73}{6.2}\sqrt{4}$

r = 0.279 x 2 = 0.558

Item 25 $r_{pbi} = \frac{40.15-39.21}{6.2}\sqrt{\frac{0.9}{0.3}}$

$r = \frac{0.94}{6.2}\sqrt{9}$

r = 0.151 x 3 = 0.454

Item 26 $r_{pbi} = \dfrac{40.72-39.21}{6.2}\sqrt{\dfrac{0.8}{0.2}}$

$r = \dfrac{1.51}{6.2}\sqrt{4}$

r = 0.243 x 2 = 0.487

Item 27 $r_{pbi} = \dfrac{40.61-39.21}{6.2}\sqrt{\dfrac{0.8}{0.2}}$

$r = \dfrac{1.4}{6.2}\sqrt{4}$

r = 0.225 x 2 = 0.45

Item 28 $r_{pbi} = \dfrac{38.4-39.21}{6.2}\sqrt{\dfrac{0.2}{0.8}}$

$r = \dfrac{-0.81}{6.2}\sqrt{0.25}$

r = -0.1306 x 0.5 = -0.065

Item 29 $r_{pbi} = \dfrac{43.07-39.21}{6.2}\sqrt{\dfrac{0.6}{0.4}}$

$r = \dfrac{3.86}{6.2}\sqrt{1.5}$

r = 0.622 x 1.2 = 0.746

Item 30 $r_{pbi} = \dfrac{42.42-39.21}{6.2}\sqrt{\dfrac{0.6}{0.4}}$

$r = \dfrac{3.21}{6.2}\sqrt{1.5}$

r = 0.517 x 1.2 = 0.621

Item 31 $r_{pbi} = \dfrac{41.11-39.21}{6.2}\sqrt{\dfrac{0.7}{0.3}}$

$r = \dfrac{1.9}{6.2}\sqrt{2.33}$

r = 0.306 x 1.52 = 0.465

Item 32 $r_{pbi} = \dfrac{40.31-39.21}{6.2}\sqrt{\dfrac{0.8}{0.2}}$

$r = \dfrac{1.63}{6.2}\sqrt{4}$

r = 0.262 x 2 = 0.524

Item 33 $r_{pbi} = \dfrac{37.57-39.21}{6.2}\sqrt{\dfrac{0.3}{0.7}}$

$r = \dfrac{-1.638}{6.2}\sqrt{0.42}$

r = -0.264 x 0.64 = -0.168

Item 34 $r_{pbi} = \frac{41 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$

$r = \frac{1.79}{6.2} \sqrt{2.33}$

$r = 0.288 \times 1.52 = 0.4388$

Item 35 $r_{pbi} == \frac{41.37 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$

$r = \frac{2.16}{6.2} \sqrt{2.33}$

$r = 0.348 \times 1.52 = 0.529$

Item 36 $r_{pbi} == \frac{40.5 - 39.21}{6.2} \sqrt{\frac{0.8}{0.2}}$

$r = \frac{1.29}{6.2} \sqrt{4}$

$r = 0.208 \times 2 = 0.416$

Item 37 $r_{pbi} = \frac{41.18 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$

$r = \frac{1.97}{6.2} \sqrt{2.33}$

$r = 0.317 \times 1.52 = 0.4818$

Item 38 $r_{pbi} = \frac{38.5 - 39.21}{6.2} \sqrt{\frac{0.3}{0.7}}$

$r = \frac{-0.71}{6.2} \sqrt{0.42}$

$r = -0.114 \times 0.64 = -0.073$

Item 39 $r_{pbi} = \frac{41.06 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$

$r = \frac{1.85}{6.2} \sqrt{2.33}$

$r = 0.298 \times 1.52 = 0.4529$

Item 40 $r_{pbi} = \frac{41.75 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$

$r = \frac{2.54}{6.2} \sqrt{2.33}$

$r = 0.409 \times 1.52 = 0.621$

Item 41 $r_{pbi} = \frac{40.93 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$

$r = \frac{1.72}{6.2} \sqrt{2.33}$

$r = 0.277 \times 1.52 = 0.421$

Item 42 $r_{pbi} = \frac{41.53 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$

$r = \frac{2.32}{6.2} \sqrt{2.33}$

r = 0.374 x 1.52 = 0.568

Item 43 $r_{pbi} = \dfrac{41.57 - 39.21}{6.2} \sqrt{\dfrac{0.6}{0.4}}$

$r = \dfrac{3.36}{6.2} \sqrt{1.5}$

r = 0.380 x 1.2 = 0.456

Item 44 $r_{pbi} = \dfrac{42 - 39.21}{6.2} \sqrt{\dfrac{0.5}{0.5}}$

$r = \dfrac{2.79}{6.2} \sqrt{1}$

r = 0.45 x 1 = 0.45

Item 45 $r_{pbi} = \dfrac{42.33 - 39.21}{6.2} \sqrt{\dfrac{0.5}{0.5}}$

$r = \dfrac{3.12}{6.2} \sqrt{1}$

r = 0.503 x 1 = 0.503

Item 46 $r_{pbi} = \dfrac{35.8 - 39.21}{6.2} \sqrt{\dfrac{0.2}{0.8}}$

$r = \dfrac{-3.41}{6.2} \sqrt{0.25}$

r = -0.55 x 0.5 = -0.275

Item 47 $r_{pbi} = \dfrac{41 - 39.21}{6.2} \sqrt{\dfrac{0.7}{0.3}}$

$r = \dfrac{1.79}{6.2} \sqrt{2.33}$

r = 0.288 x 1.52 = 0.437

Item 48 $r_{pbi} = \dfrac{41.21 - 39.21}{6.2} \sqrt{\dfrac{0.8}{0.2}}$

$r = \dfrac{2}{6.2} \sqrt{4}$

r = 0.322 x 2 = 0.644

Item 49 $r_{pbi} = \dfrac{42.62 - 39.21}{6.2} \sqrt{\dfrac{0.7}{0.3}}$

$r = \dfrac{3.41}{6.2} \sqrt{2.33}$

r = 0.55 x 1.52 = 0.836

Item 50 $r_{pbi} = \dfrac{41.88 - 39.21}{6.2} \sqrt{\dfrac{0.7}{0.3}}$

$r = \dfrac{2.67}{6.2} \sqrt{2.33}$

r = 0.430 x 1.52 = 0.653

Item 51 $r_{pbi} = \dfrac{41.12 - 39.21}{6.2} \sqrt{\dfrac{0.7}{0.3}}$

$r = \frac{1.91}{6.2}\sqrt{2.33}$

r = 0.308 x 1.52 = 0.468

Item 52 $r_{pbi} = \frac{41.05-39.21}{6.2}\sqrt{\frac{0.8}{0.2}}$

$r = \frac{1.84}{6.2}\sqrt{4}$

r = 0.296 x 2 = 0.592

Item 53 $r_{pbi} = \frac{43.5-39.21}{6.2}\sqrt{\frac{0.6}{0.4}}$

$r = \frac{4.29}{6.2}\sqrt{1.5}$

r = 0.691 x 1.2 = 0.829

Item 54 $r_{pbi} = \frac{41.53-39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{2.32}{6.2}\sqrt{2.33}$

r = 0.374 x 1.52 = 0.568

Item 55 $r_{pbi} = \frac{42.5-39.21}{6.2}\sqrt{\frac{0.2}{0.8}}$

$r = \frac{3.29}{6.2}\sqrt{0.25}$

r = 0.530 x 0.5 = 0.265

Item 56 $r_{pbi} = \frac{41-39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{1.79}{6.2}\sqrt{2.33}$

r = 0.288 x 1.52 = 0.437

Item 57 $r_{pbi} = \frac{40.77-39.21}{6.2}\sqrt{\frac{0.8}{0.2}}$

$r = \frac{1.56}{6.2}\sqrt{4}$

r = 0.251 x 2 = 0.502

Item 58 $r_{pbi} = \frac{41.13-39.21}{6.2}\sqrt{\frac{0.7}{0.3}}$

$r = \frac{1.92}{6.2}\sqrt{2.33}$

r = 0.309 x 1.52 = 0.469

Item 59 $r_{pbi} = \frac{40.5-39.21}{6.2}\sqrt{\frac{0.2}{0.8}}$

$r = \frac{1.29}{6.2}\sqrt{0.25}$

r = 0.208 x 0.5 = 0.104

Item 60 $r_{pbi} = \frac{39.75-39.21}{6.2}\sqrt{\frac{0.2}{0.8}}$

$r = \frac{0.54}{6.2}\sqrt{0.25}$

r = 0.087 x 0.5 = 0.0435

Item 61 $r_{pbi} = \frac{42.07-39.21}{6.2}\sqrt{\frac{0.6}{0.4}}$

$r = \frac{2.86}{6.2} \sqrt{1.5}$

$r = 0.461 \times 1.2 = 0.553$

Item 62 $r_{pbi} = \frac{39.33 - 39.21}{6.2} \sqrt{\frac{0.3}{0.7}}$

$r = \frac{0.12}{6.2} \sqrt{0.42}$

$r = 0.0193 \times 0.64 = 0.0123$

Item 63 $r_{pbi} = \frac{41.66 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$

$r = \frac{2.45}{6.2} \sqrt{2.33}$

$r = 0.395 \times 1.52 = 0.6004$

Item 64 $r_{pbi} = \frac{42.35 - 39.21}{6.2} \sqrt{\frac{0.6}{0.4}}$

$r = \frac{3.14}{6.2} \sqrt{1.5}$

$r = 0.506 \times 1.2 = 0.6072$

Item 65 $r_{pbi} = \frac{39.85 - 39.21}{6.2} \sqrt{\frac{0.3}{0.7}}$

$r = \frac{0.64}{6.2} \sqrt{0.42}$

$r = 0.1032 \times 0.64 = 0.0660$

Item 66 $r_{pbi} = \frac{36 - 39.21}{6.2} \sqrt{\frac{0.3}{0.7}}$

$r = \frac{-0.321}{6.2} \sqrt{0.42}$

$r = -0.517 \times 0.64 = -0.3308$

Item 67 $r_{pbi} = \frac{40.55 - 39.21}{6.2} \sqrt{\frac{0.8}{0.2}}$

$r = \frac{1.34}{6.2} \sqrt{4}$

$r = 0.216 \times 2 = 0.432$

Item 68 $r_{pbi} = \frac{41.33 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$

$r = \frac{2.12}{6.2} \sqrt{2.33}$

$r = 0.341 \times 1.52 = 0.518$

Item 69 $r_{pbi} = \frac{41 - 39.21}{6.2} \sqrt{\frac{0.7}{0.3}}$

$r = \frac{1.79}{6.2} \sqrt{2.33}$

$r = 0.288 \times 1.52 = 0.437$

Item 70 $r_{pbi} = \frac{41.78 - 39.21}{6.2} \sqrt{\frac{0.6}{0.4}}$

$r = \frac{2.57}{6.2} \sqrt{1.5}$

$r = 0.414 \times 1.2 = 0.496$

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

B. Calculation of post-Test

4. Means score from score total (M_t)

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

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

5. Standard Deviation (SD_t)

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

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

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

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

6. Means Score (M_p)

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

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

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

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

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

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

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

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

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

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

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

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

Item 5 $M_{p5} = \dfrac{\text{the total of students score that answer true item}}{n5}$

$$M_{p5} = \frac{\begin{array}{c}50+40+51+52+47+49+54+42+51+44\\+47+41+44+38+43+44+40\end{array}}{17}$$

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

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

$M_{p6} = \dfrac{\begin{array}{c}50+40+51+52+47+49+42+44\\+51+44+47+42+51+38+44\end{array}}{15}$

$= \dfrac{692}{15} = 46.13$

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

$M_{p7} = \dfrac{\begin{array}{c}40+52+47+54+42+51+44+45\\+47+41+51+38+43+44+40\end{array}}{15}$

$= \dfrac{679}{15} = 46.25$

Item 8 $M_{p8} = \dfrac{\text{the total of students score that answer true item}}{n8}$

$M_{p8} = \dfrac{\begin{array}{c}50+40+51+52+33+47+49+54+42+44+51\\+44+47+41+42+51+43+44\end{array}}{18}$

$M_{p8} = \dfrac{825}{18} = 45.83$

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

$M_{p9} = \dfrac{51+52+49+45+51+44}{6}$

$= \dfrac{292}{6} = 48.66$

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

$M_{p10} = \dfrac{\begin{array}{c}50+40+51+52+33+47+49+54+42+44\\+51+45+47+41+51+43+44+40\end{array}}{18}$

$M_{p10} = \dfrac{824}{18} = 45.78$

Item 11 $M_{p11} = \dfrac{\text{the total of students score that answer true item}}{n11}$

$M_{p11} = \dfrac{51+54+51+42}{4}$

$M_{p11} = \dfrac{198}{4} = 49.5$

Item 12 $M_{p12} = \dfrac{\begin{array}{c}50+51+52+47+49+54+44+51\\+44+45+47+44+42+51+43+44+40\end{array}}{17}$

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

Item 13 $M_{p13} = \dfrac{\begin{array}{c}50+40+51+52+49+54+42+51+44+47+41+44\\+44+51+43+44+40\end{array}}{17}$

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

Item 14 $M_{p14} = \dfrac{\begin{array}{c}50+40+51+52+47+49+54+42+51\\+44+45+47+44+51+38+43+44+40\end{array}}{18}$

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

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

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

Item 16 $M_{p16} = \dfrac{50+51+52+47+49+42+44+51}{15}$
$\dfrac{+45+47+44+42+51+44+40}{15}$

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

Item 17 $M_{p17} = \dfrac{50+40+51+47+49+54+42+51}{15}$
$\dfrac{+45+47+44+51+38+43+44}{15}$

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

Item 18 $M_{p18} = \dfrac{50+40+51+52+33+47+49+54+42+44+51}{22}$
$\dfrac{+44+45+47+41+44+42+51+38+43+44+40}{22}$

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

Item 19 $M_{p19} = \dfrac{50+40+51+52+47+49+54+42+51}{15}$
$\dfrac{+44+45+47+41+44+42}{15}$

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

Item 20 $M_{p20} = \dfrac{51+52+47+54+44+51}{14}$
$\dfrac{+44+47+41+44+51+38+43+44}{14}$

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

Item 21 $M_{p21} = \dfrac{50+40+52+54+42+44+51}{15}$
$\dfrac{+44+45+47+44+42+51+43+44}{15}$

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

Item 22 $M_{p22} = \dfrac{50+40+51+52+47+49+54+42+44+51}{18}$
$\dfrac{+44+45+41+44+42+51+38+44}{18}$

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

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

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

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

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

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

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

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

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

Item 27 $M_{p27} = \dfrac{\begin{array}{c}50+40+51+52+33+47+49+54+42+44+51+44+\\45+47+44+42+51+43+40\end{array}}{19}$

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

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

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

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

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

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

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

Item 31 $M_{p31} = \dfrac{\begin{array}{c}50+40+51+52+33+47+49+54+44+30+44+45+47\\+41+44+42+51+38+43+44+40\end{array}}{21}$

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

Item 32 $M_{p32} = \dfrac{\begin{array}{c}50+40+51+52+33+47+49+54+42+44+51+44+\\45+47+44+42+51+43+40\end{array}}{19}$

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

Item 33 $M_{p33} = \dfrac{\begin{array}{c}50+40+51+52+33+49+54+44+51+44+45+47\\+41+44+42+51+43+44+40\end{array}}{19}$

$M_{p33} = \dfrac{865}{19} = 45.53$

Item 34 $M_{p34} = \dfrac{\begin{array}{c}50+51+52+54+42+44+51+44+45+47\\+44+42+51+43+40\end{array}}{15}$

$M_{p34} = \dfrac{700}{15} = 46.66$

Item 35 $M_{p35} = \dfrac{\begin{array}{c}50+40+51+52+47+54+44+51+44+45\\+41+44+42+51+44+40\end{array}}{16}$

$M_{p35} = \dfrac{740}{16} = 46.25$

Item 36 $M_{p36} = \dfrac{\begin{array}{c}50+40+51+52+33+47+49+54+42+44+30+51+44+45+47\\+41+44+42+51+38+43+40\end{array}}{22}$

$M_{p36} = \frac{978}{22} = 44.45$

Item 37 $M_{p37} = \dfrac{\begin{array}{c}40+51+52+33+47+49+54+42+44+51+45+47\\+44+51+43+44+40\end{array}}{17}$

$M_{p37} = \frac{778}{17} = 45.8$

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

$M_{p38} = \frac{709}{15} = 47.26$

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

$M_{p39} = \frac{780}{17} = 45.88$

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

$M_{p40} = \frac{741}{16} = 46.31$

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

$M_{p41} = \frac{799}{17} = 47$

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

$M_{p42} = \frac{691}{15} = 46.06$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$M_{p60} = \dfrac{696}{15} = 46.4$

Item 61 $M_{p61} = \dfrac{50+40+52+54+42+44+51+44+45+47+44+42+51+43+40}{15}$

$M_{p61} = \dfrac{689}{15} = 45.93$

Item 62 $M_{p62} = \dfrac{50+47+51+41+44}{5}$

$M_{p62} = \dfrac{233}{5} = 46.6$

Item 63 $M_{p63} = \dfrac{50+52+33+47+49+54+44+30+51+45+47+41+44+51+43+40}{16}$

$M_{p63} = \dfrac{745}{16} = 46.56$

Item 64 $M_{p64} = \dfrac{50+40+51+52+33+47+49+54+44+51+44+47+51+44+40}{15}$

$M_{p64} = \dfrac{697}{15} = 46.46$

Item 65 $M_{p65} = \dfrac{50+40+52+47+49+54+42+44+51+45+47+41+42+51+43+40}{16}$

$M_{p65} = \dfrac{738}{16} = 46.12$

Item 66 $M_{p66} = \dfrac{50+51+52+49+54+44+30+51+44+45+47+44+51+43}{14}$

$M_{p66} = \dfrac{655}{14} = 46.78$

Item 67 $M_{p67} = \dfrac{40+51+52+47+49+54+44+51+44+45+47+41+44+42+51+43+44+40}{18}$

$M_{p67} = \dfrac{829}{18} = 46.05$

Item 68 $M_{p68} = \dfrac{51+52+47+49+54+42+44+51+45+41+44+51+38+44+40}{15}$

$M_{p68} = \dfrac{693}{15} = 46.2$

Item 69 $M_{p69} = \dfrac{33+44+51}{3}$

$M_{p69} = \dfrac{128}{3} = 42.66$

Item 70 $M_{p70} = \dfrac{49+47+42+43}{4}$

$M_{p70} = \dfrac{181}{4} = 45.25$

Padangsidimpuan, 08 Desember 2015

: In.19/E.6a/PP.00.9/102/2015
: Biasa
: -
: Pengesahan Judul dan Pembimbing Skripsi

Kepada Yth Bapak/Ibu;
1. Dr. Fitriadi Lubis, M.Pd   (Pembimbing I)
2. Fitri Rayani Siregar, M.Hum   (Pembimbing II)

di-
Padangsidimpuan

Assalamu 'Alaikum Wr. Wb
    Dengan hormat, sehubungan dengan hasil sidang bersama tim pengkaji judul skripsi Jurusan Tadris Bahasa Inggris (TBI) Fakultas Tarbiyah dan Ilmu Keguruan IAIN Padangsidimpuan, maka dengan ini kami mohon kepada Bapak/Ibu agar dapat menjadi pembimbing skripsi, dan melakukan penyempurnaan judul bila mana perlu untuk mahasiswa dibawah ini dengan data sebagai berikut:
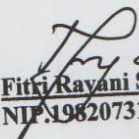
Nama/NIM   : **JUNI AIDA/ NIM. 12 340 0057**
Jurusan   : **Tadris Bahasa Inggris 2**
Judul Skripsi   : **THE EFFECT OF MIND MAPPING TECHNIQUE TOWARD READING COMPREHENSION MASTERY AT THE ELEVENTH GRADE STUDENTS OF SMK NEGERI 2 KOTANOPAN**

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

Ketua Jurusan Tadris Bahasa Inggris   Sekretaris Jurusan Tadris Bahasa Inggris

Rayendriani Fahmei Lubis, M.Ag   **Fitri Rayani Siregar, M.Hum**
NIP. 19710510 200003 2 001   NIP. 19820731 200912 2 004

Mengetahui
a.n. Dekan
Wakil Dekan Bidang Akademik

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

27 Februari 2017

Nomor : B - 183 /In.14/E.4c/TL.00/02/2017
Hal : Izin Penelitian
Penyelesaian Skripsi.

Yth. Kepala SMK Negeri 2 Kotanopan
Kabupaten Mandailing Natal

Dengan hormat, Dekan Fakultas Tarbiyah dan Ilmu Keguruan Institut Agama Islam Negeri

Padangsidimpuan menerangkan bahwa :

Nama : Juni Aida
NIM : 123400057
Fakultas/Jurusan : Tarbiyah dan Ilmu Keguruan/TBI
Alamat : Tamiang Kec. Kotanopan

adalah benar Mahasiswa IAIN Padangsidimpuan yang sedang menyelesaikan Skripsi

dengan Judul "The Effect Mind MappingTechnique Toward Reading Comprehension

Mastery at the Eleventh Grade Students of SMK Negeri 2 Kotanopan". 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

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

S U R A T   I Z I N   P E N E L I T I A N
NOMOR : 422 / 037 / SMKN.2/KN/2017

Saya yang bertanda tangan dibawah ini   :

Nama	: **Drs SABARUDIN AHMAD**
NIP	: **19631019 199903 1 001**
Pangkat/Gol.Ruang	: Pembina IV/a
Jabatan	: Kepala Sekolah
Unit Kerja	: SMK Negeri 2 Kotanopan

Memberikan Izin kepada   :

Nama	: **JUNI AIDA**
NPM	: 123400057
Jurusan	: Tadris Bahasa Inggris
Judul Penelitian	: **The Effect Mind Mapping Technique Toward Reading Comprehension Mastery at the Eleventh Grade Students of SMK Negeri 2 Kotanopan**
Universitas	: IAIN Padangsidimpuan

Benar telah melaksanakan Penelitian di SMK Negeri 2 Kotanopan. dimulai tanggal 22 Maret s/d 25 Maret 2017.

Demikian Surat Izin Penelitian ini dikeluarkan untuk dapat dipergunakan seperlunya.

Kotanopan, 25 Maret 2017
Kepala SMK Negeri 2 Kotanopan

Drs.SABARUDIN AHMAD
NIP. 19631019 199903 1 001