ABSTRACT

Ali Fuad Hendra, English Department, Faculty of Tarbiyah and Teachers’ Training State Islamic University (UIN) Syarif Hidayatullah Jakarta, Title The Effects of Pre-questioning on the Reading Comprehension Achievement: This experimental in the MA Manaratul Islam Jakarta.

The objective of the study is to find out the information about the effect of using pre-questioning on the reading comprehension achievement. A quasi experimental method is applied in this research with pre test-post test Equivalent Group Design. This research has been executed at Madrasah Aliyah Manaratul Islam Jakarta with the total number of sample is 64 which divided into two classes: 32 samples for experimental class and 32 samples for control class. The technique of data collecting used pre-test and post-test. The multiple choice was the instrument test to get the result of the study. Analysis of the data used the t-test. In the significant level of reading comprehension achievement is 5% at dk = 61, with normality and homogeneity pre requirement test, with the statistical calculate result. It gets $t_{count}$ 2.52 value and $t_{tab}$ in the 5% significant level dk = 61 is 1.99 value. So, this research gets $t_{count}$ bigger than $t_{tab}$. It shows that $H_0$ hypotesis is rejected and hypotesis of research ($H_a$) is accepted.

Key words: Effects of Pre-questioning, Reading Comprehension, and Achievement.
ACKNOWLEDGMENT

In the name of Allah, the Beneficent and the Merciful, Praise be to Allah Lord of the world who has blessed the writer in completing this skripsi. Peace and blessing be upon the Prophet Muhammad, his companion, and his followers.

The writer is absolutely recognize that he could not carry out this work without helping of others either materially or spiritually. The writer would like to express his gratitude to his beloved father (Sumadi, S.Pd.I), his beloved mother (Siti Maryam), his beloved sister (Siti Nurfajriati and Seftriani Shais), and all his family who always give motivation and support in various endeavors and moral encouragement to finish his study.

His gratitude also goes to:

1. All lecturers of English Department who has taught the writer during his study.
2. Drs. Syauki, M.Pd. as the head of English Department.
3. Mrs. Neneng Sunengsih, M.Pd. as the secretary of English Department.
4. Prof. Dr. Dede Rosyada, MA. as the Dean of Tarbiyah and Teacher’s Training Faculty.
5. Dr. Alek, M.Pd. as the writer’s advisor from beginning to the end in finishing the skripsi.
6. All staff and officer of the library of UIN Jakarta who have given permission to use and copy their books for his skripsi.
7. All staff, officer and teachers of MA Manaratul Islam.
8. All his big family who always keep their pray for the writer.
9. His beloved friends (Amaliyah/Amel, S.Pd.I, Ade Yusman S.Pd and Tanenji M.Pd/ his neighbour), Aliyah,S.Pd.I, Maisaroh,S.Ag, M.Pd, Ma’sumi, S.Pd, Solahuddin, S.Pd.I, Uluk Azmi, Ahmad Zainuddin, Zainal Abidin,S.Pd.I, Febryan Sandhi who always help and give the writer inspiration and remind in accomplishing this “skripsi”.

iii
May Allah guide and give them all happiness throughout theirs lives. Amien.

Finally, the writer realizes that this “skripsi” is not perfect. Therefore, the writer would like to accept any constructive criticism and suggestion to make this “skripsi” better.

May Allah, the Almighty, Bless them all. Amien.

Jakarta, August 20, 2011

The writer,

Ali Fuad Hendra
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CHAPTER I

INTRODUCTION

This chapter presents and discusses background of the study, identification of the problem, limitation of the study, formulation of the problem, objective of the study, significance of the study, and definition of key terms.

A. Background of the Study

English has widely spread out all over the world; it is officially used in international communication, not only in oral but also in written communication. Most of all countries put English as an important subject in their school curriculum. In Indonesia, English becomes a compulsory subject in every school. It has become compulsory subject from the junior high school level up in the university levels. This is based on the issuance of the Decree of the Minister of Education and Culture No. 096 of 1967 about the Aims and Function of English Teaching at Senior High School Level. The decree stated that:

“(1) Bahasa Inggris adalah bahasa asing pertama yang diajarkan di sekolah lanjutan. (2) Tujuan pengajaran bahasa inggris tersebut adalah mengembangkan kemampuan komunikatif siswa. (3) Keterampilan berbahasa inggris yang dikembangkan meliputi keterampilan membaca, menyimak, menulis dan berbicara.”

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The objective of teaching English in the Senior High School/ Sekolah Menengah Atas are to develop the communication skills especially in oral and written skills, to grow the students’ interest and the most important of English language as the one of foreign language as a main tool to study, to develop students’ understanding the relationship between language and culture. ²

*Pusat Kurikulum* also states that the purpose of English teaching at the second grade of Senior High School/ Sekolah Menengah Atas its to encourage the student to communicate in oral or written and can use the language fluently and accurately in interactional or monologue concept which are concern in descriptive, narrative, recount, and procedure text with kind of interpersonal ideational and simple textual expresions.³

In English, there are four skills that should be mastered, they are: listening, speaking, reading, and writing. The reading skill became very importat because the success of their study depends on the greater part of their ability to read. If their reading skill is poor they are very likely to fail in their study or at least they will have difficulty in making progress. On the other hand, if they have a good ability in reading, they will have a better chance to succeed in their study.

Learning English as a foreign language is not a simple process. Asher Cashdan states in his book *“Language Reading and Learning”* that there are four basic skills for students to master English language; listening, speaking,
reading and writing. The skills are needed to be learnt integrated in learners’
development and they can not be taught in piece mental action.\textsuperscript{4}

Reading is one of the most essential skills to be mastered in language
learning. It is a wonderful habit and can bring many benefits. One of the habits of
wide reading is a broad store information. With a strengthened reading skill,
English as a Second Language (ESL) readers will make greater progress and
attain greater develop in all academic areas.

Being able to read English is essential, because there are so many kinds of
books written in English. Reading becomes essential for everyone in order to
increase his or her knowledge. This idea is supported by the fact that reading has
become a part of our daily life. We read many kinds of written materials from a
newspaper, magazine, included academic references using English.

One of the method in technique of teaching English especially in teaching
reading where the students are taught as a robot. The way of teaching such that is
called conservative. Another techniques’ method is one way communication
technique. It gives many tasks and do not involve students as well as the lack or
absence of motivation and build students interest by teachers is something that
affects students' understanding of a text passage.

In reading, to comprehend the text the readers should be able to manage
every part of the text, because it is easy to gain the comprehension in reading
when the readers are able to organize the text. Sometimes, they may find form of
pre-questioning and it is important for them to comprehend a reading text with

\textsuperscript{4} Asher Cashdan, \textit{Language Reading and Learning}, (USA: University Park Press, 1979),
p. 1.
having knowledge in general view of the text. Theoretically, pre-questioning itself can build the students’ interest and motivation before students read the whole text. Moreover, the students can predict what will be discussed on the text. In line with this study, students may improve their reading comprehension if they know about pre-questioning and it is very important to understand about pre-questioning in order to get good comprehension in reading.

Based on the explanation above, the writer is interested in finding out the effects of using pre-questioning on students’ reading comprehension achievement and concluded that the pre-questioning consist of some questions provided before the students read the whole text. It tends to build the students’ interest, motivation, easy to understand, and comprehend the text.

B. Identification of the Problem

Based on the background mentioned above, The problems can be identified as follows:

1. The teachers are still using one way communication technique in teaching learning espesially in reading.
2. The teachers is difficult in choosing the appropriate method.
3. Most teachers have not been able to create an atmosphere of learning interesting and fun, so students are less motivated and bored in learning reading.
4. Pre-questioning as a method in learning-teaching makes students more easily in comprehending the reading text.
C. Limitation of the Study

Based on the identification, in this study the writer focuses on the effects of using pre-questioning in comprehending the reading text. It is conducted at the second grade student of XI at MA Manaratul Islam Jakarta in academic year 2010/2011.

D. Formulation of the Problem

Based on the background of study above, the problem of the study is “is there any effect of using pre-questioning on the reading comprehension achievement of the second grade students of XI at MA Manaratul Islam Jakarta in academic year 2010/2011.”

E. The Objective of the Study

The objective of the study is to find out the effect of using pre-questioning on the reading comprehension achievement of the second grade student of XI at MA Manaratul Islam Jakarta.
CHAPTER II
THEORETICAL FRAMEWORK

In this chapter, the writer discusses theoretical framework which consists of two main topics. The first is Reading which comprises several sub-topics; definition of reading, purpose of reading, kinds of reading, reading comprehension, cognitive factors in reading, reading process and some factors that influence students’ reading. The second topic is pre-questioning. It covers the definition of pre-questioning, questioning strategies, kinds of pre-questioning and the advantages and disadvantages of pre-questioning.

A. Reading

1. Definition of Reading

Definition of Reading is according to Harmer in The Practice of English Language Testing “Reading is an exercise dominated by the eyes and the brain.”\(^1\) Specifically, Nunan in his book also said that “Reading is a process of decoding written symbols, working from smaller units (individual letters) to larger ones (words, clauses and sentences).”\(^2\)

According to Edward David Allen, reading is a development process. “The first stage is learning sound-symbol correspondences, either

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directly or by reading aloud sentences and words that have been mastered orally.”

Meanwhile, J. Charles Alderson, defined reading as an intersection between a reader and a text. It means that reading involves between the reader, the written materials and the interaction. Sandra Silberstein in book *Technique and Resource in Teaching Reading* gives the definition of reading as follows: “Reading is an active process. The student worked intensively, interactively with the text in order to create meaningful discourse.”

Based on explanation above, it shows the various definitions of reading. It means that a universally acceptable definition does not exist. But a simple conclusion can give us an easier understanding of what is reading; reading is an exercise dominated by the eyes and the brain. By reading, the reader will know what they read and challenged to response the ideas of the author. In order to make the messages or information that comes from the author can be understood and comprehended easily by the reader.

2. Purpose of Reading

Whatever what materials we read, we always read it on purpose. When we read anything like comic, novel, newspaper, magazine and others, it does not mean that our reading does not have a purpose.

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We read because we wanted to get something from the writing; facts, ideas, enjoyment even feelings of family community (from a letter): whatever it was, you wanted to get the message that the writer had expressed.\(^7\)

Even though our reading is just for spending time, it is still a purpose. In this case, the purpose is reading for pleasure. It is different when we read a textbook or a recipe. We read it because we need information. In this case, our reading is to get information.

Harmer divided the purpose of reading into two general purposes. First, reading for pleasure. People reading the material is interesting, such as comics, novels or magazines. Second, reading for usefulness of the text. People read because they need the information contained in the text, such as book, newspaper, encyclopedia, and so on.\(^8\)

3. Kinds of Reading Skill

There are identifiable skills in reading; skimming, scanning, intensive reading, and extensive reading.\(^9\)

a. Skimming; glancing rapidly through a text to determine its general content. e.g. quickly glancing through an article to see if it interest or not. Being able to look over material rapidly for given purposes without reading every phrase is great asset for a reader to possess. Skimming enables people to select content that they want to read and discard, which is inconsequential for their purposes. Skimming

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\(^8\) Jeremy Harmer, *The Practice of English* .........p. 182.

permits people to gain a general idea about material when that is their purposes rather than to read all material in detail.

b. Scanning; reading to locate specific information, e.g. locating telephone number in directory. Being able to search through material rapidly with given purpose to mind, in order to find a specific fact or an answer to particular question plays a large role in much of a youngster’s reading. Scanning ables people to locate specific information without reading all material around it.

c. Intensive Reading. In intensive reading, the reader tries to absorb all the information given by the author. E.g. reading dosage instruction for medicine.

d. Extensive Reading; the reader deals with longer text as a whole, which requires the ability to understand the component parts and their contribution to the overall meaning. E.g. reading a newspaper, article, short story, or novel.

4. Reading Comprehension

In comprehending a topic, the readers interacts with the text relates to the pre-questioning of the text to prior experiences of construct meaning which can be found in the text. Skimming and scanning are two very useful techniques that will help the reader become a better reader.

It is necessary for the students of Senior High School to master reading comprehension. Cooper stated that Comprehension is a process in which the reader may construct meaning by interacting with the text.\textsuperscript{10} In reading comprehension, a reader should have knowledge about understanding the reading passage. The common questions on the passages

\textsuperscript{10} J.D. Cooper, Improving Reading Comprehension. (Boston: Houghtonmifflin Company, 1986), p. 11.
are primarily about the main ideas, details, and an inference that can be
drawn from the passages.

According to Singer reading comprehension has been defined as an
interpretation of written symbols, the apprehending of meaning, the
assimilation of ideas presented by the written, and the process of thinking
while deciphering symbols. Further, reading comprehension is related
closely to the cognitive competence of the readers, because this will produce
comprehension.

5. Cognitive Factors in Reading

According to Albert J. Harris there are several cognitive factors in
reading such as perception, attention, and memory.

a. Perception

Perception starts with the stimulation of sense organs such as the
eyes and ears, but it is far more than simple sensing. In perceiving, the brain
selects, groups, organizes, and sequences the sensory data so that people
perceive meaningful experiences that can lead to appropriate responses.

b. Memory

Psychologists distinguish between iconic memory, the fraction of a
second that a sensory impression lasts before it fades out. Short term
memory, which lasts a view second and long term memory. A distinction is

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also made rote memory, in which the material may be without structure (as in a sequence of digits), and memory for meaningful material.

c. Attention

Attention based on the cognitive is the ability to attend and concentrate is basic to efficiency in perception, learning, and memory.

Related to this study, it means the person can maintain focus on particular stimuli and disregard or suppress other stimulation that reaches him at the same time, thus maintaining a stable figure in the focus of attention, against a non interfering background.

6. Reading as a Process of Predicting

Reading has been considered only as a visual activity, because we do with the eyes. But, in The Book of Study Skills for Students of English, Yorkey stated reading is not only a visual activity. It is more than just simply run your eyes accumulating information as each words, phrase, and sentences is progressively recognized. Reading is also an active process of predicting what is likely to come next. Our brain processes the visual information from our eyes, rapidly forming and revising hypotheses about the form and content of what you are reading. But sometimes we find some problems in reading process or understand the text about. J. Charles

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Alderson use metacognitive skills to reduce its problems. Among such metacognitive skills are:  

a. Recognising the more important information in text  
b. Adjusting reading rate  
c. Skimming  
d. Previewing  
e. Using context to resolve a misunderstanding  
f. Formulating questions about information  
g. Monitoring cognition, including recognising problems with information presented in text or an inability to understanding text.  

7. Some Factors that Influence Students’ Reading  

There are two factors that influence the students’ reading comprehension achievements and they are related one another, they are: internal factor and the external factor.  

a. The Internal Factor  

The internal factor means the factor which come from the reader himself. It is usually known as personal factor, because the factor has existed inside the reader. This factor dealt with self-motivation and interest.  

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1) Motivation

It is accepted for most fields of learning that motivation is essential to success that we have to want to do something to succeed at it. Without such motivation we will almost certainly fail to make the necessary effort. If motivation is so important, therefore, it makes sense to try and develop our understanding on it.

Motivation plays an important role in comprehending the text. The students will be motivated to read when they feel that they need something from the text. Brown divided the motivation theory into two kinds, they are: intrinsic and extrinsic motivation. \(^\text{16}\)

Brown defined intrinsic motivation is intrinsically motivated activities are ones from which there is no apparent reward except the activity itself. People seem to engage in the activities for their own sake and not because they lead to an extrinsic reward. It is aimed at bringing about curtailment internally rewarding consequences, namely, feelings of competence and self-determination. On the other one, extrinsic motivation defined by him as extrinsically motivated behaviors that carried out in anticipation of a reward from outside and beyond the self. Such as; money, prizes, grades, and even certain of positive feedback.\(^\text{17}\)

2) Interest

Interest is being one of the important factors in order to increasing the students’ comprehension achievement in reading. If one has interest to read, it means that he or she will get a good achievement. On the other side, if the reader has no any interest to read, it can influence his or her achievement. But it is not easy to increas the interest. We must know the ways to make it stay or increas with three stages: brainstorm, extending, assessing.\(^{18}\)

In line with the explanation of motivation and interest above, in this study the writer interested to use pre-questioning to build up the students’ motivation and interest, and also want to see the effect of using pre-questioning in relationship with the students’ reading comprehension achievements. Because, it is impossible for the students to understand the text if he or she has no interest and motivation to read. So, it can be concluded that the good interest and motivation result the good achievement of the students.

b. The External Factor

The external factor has a close relationship to reading material and teacher of reading. They are related one another.

1) Reading Material

The students’ achievements’ in reading depends on the level of the difficulty of the text. Thus, it can influence students’ achievement if the text given is not at the right level of the difficulty of the readers or the students.

2) Teacher

The teacher of reading should be careful in choosing the text and giving the tasks because they are related to the students’ reading comprehension achievements.

3) Questioning Strategies

The most important key to create an interactive learning is the initiation of interaction from the teacher by using question, Brown appropriate questioning can fulfill a number of different functions, such as:

a) Teacher questions give students the opportunity to produce language comfortably without having to risk initiating language themselves. It is very scary for the students to have to initiate conversation or topics for discussion.

b) Teacher question can serve to initiate a chain reaction of students interaction among themselves.

c) Teacher questions giving immediate feedback about students’ comprehension.

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d) Teacher questions provide students with opportunities to find out what they think. As they are nudged into responding to questions about, say, a reading, they can discover what their own opinions and reactions are. This self-discovery can be especially useful for a pre-reading activity.

Perhaps the simplest way to conceptualize the possibilities is to think of a range of questions, beginning with display questions that attempt to elicit information already known by the teacher and the students. In this study, the writer interested to use pre-questioning in order to make the general frame of the knowledge.

B. Pre-questioning

1. Definition of Pre-questioning

Based on Brown’s defined pre-questioning implicitly as some questions which are provided before the students read the whole text, in order to build the students’ interest and motivation, also their cognitive factors and pre-questioning is very useful to activate the schemata, thus the students can predict what will be faced by them in the reading text.  

2. Kinds of Pre-questioning

According to Harmer there are some kinds of pre-questioning, they are: pre-questioning before reading to confirm expectations; pre-questioning before reading to extract specific information; pre-questioning before

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reading for general comprehension; and pre-questioning before reading for detail comprehension.²¹

The explanations of the four kinds of pre-questioning are as follow:

a. **Pre-questioning before reading to confirm expectations**

The use of pre-questioning as a tool for placing great emphasis on the lead-in stage (where students are encouraged to become interested in the subject matter of the text), encourages students to predict the content of the text, and gives them an interesting and motivating purpose for reading. For examples: reading the fairy book, and comic.

b. **Pre-questioning before reading to extract specific information**

Pre-questioning as a tool to force the students to extract specific information from the text. They are going to answer before reading the text. If they do this it will be possible for them to read in the required way, they should seen the text only to extract the information the questions demand. For examples: reading the contents of vitamin in a supplement, reading the substance in book recipe.

c. **Pre-questioning before reading for general comprehension**

In this case pre-questioning used to build up the students’ prior knowledge. For example: reading the holy qur’an, reading the sport magazine.

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d. Pre-questioning before reading for detailed comprehension

This kind of pre-questioning intends to give the students some detailed information that should be found by themselves in the whole of the text. For example: reading the story book.

3. Kinds of Questions in Reading Comprehension

According to Anne Juwita,22 usually the questions in reading comprehension tests are about:

a. Main idea

The question about main idea asks the reader to determine the main idea or topic from a reading text, and commonly it is signed by words such as: main point; mainly discussed; main idea; best title; main purpose; mainly concerned; main topic.

Here are some examples of questions to ask about main idea:

- What is the main idea of the passage?
- With which of the following is the passage mainly concerned?
- What is the main part of the passage?
- Which of the following would be the best title?

b. Supporting details

The question about supporting details asks the reader to find detail information that is printed explicitly in the text. It is commonly signed by

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words such as: according to the author...; according to the passage...; who, what, when, where, why, how, which.

Here are some examples of questions to ask about supporting details:

- Which of the following question does the passage answer?
- According to the passage, which statement is true?
- When did ‘something’ happen?
- Who did ‘something’?

c. Implied Questions

In the test reading comprehension, there is a passage that shows facts or information. Based on it, we are asked to make a decision. It is signed by words such as: implied, probably.....

Here are some examples of questions to ask about implied questions:

- It is implied in the passage that ......?
- What probably happened in the passage ......?

d. Find the details of question

It is the question that need as careful as possible in the answer of questions. It is to find the answer that there is no in the passage or in the statement. It means that if there are four answers, it is three right answer but one wrong answer.

Here is the example of questions to ask about details of questions:

- All the following are stated in the line ........except?
e. Pronoun

It is to determine who or refers to pronoun itself. The first sequence is noun and after that pronoun.

Here is the example of questions to ask about pronoun:
- The pronoun ..... in the line ..... refers to ....

f. Passage organization

This is the question related to the passage or information in the paragraph. There is relationship between every paragraphs in answering the questions. It is commonly signed by words such as: ......passage organized?, differ...., is included ......related to the first paragraph......

Here are some examples of questions to ask about passage organization:
- How is the information in the passage organized?
- How is the information in the passage related to the first paragraph?
- How does the information in the second paragraph differ from the first paragraph?
- What type of information is included in the first paragraph?

g. Transition of the question

This question is usually to guess what is contents of previous or obvious passage in the paragraph. It is commonly signed by words such as: the preceeding paragraph....., the following paragraph....
Here are some examples of questions to ask about transition of the question:

- The preceding paragraph in the passage most probably discusses?
- The following paragraph in the passage most probably discusses?

4. Advantages and Disadvantages of Pre-questioning

a. Advantages of Pre-questioning :

1) Based on the purpose that pre-questioning greatly assist students in reading comprehension cognitive especially since students are challenged and feel aroused reading comprehension is a highly complex information processing that involves the interaction between reader and text.  

2) Pre-questioning can build the interest and motivation before the students read the text.

b. Disadvantages of Pre-questioning :

1) Need more time and power in the class for the teachers. If the teacher does not mastering the class, it can makes useless.

2) Students must be asked mastering the material whether their vocabularies are very poor and it will influence in comprehend the reading text.

---

23 Sandra Silberstein, Techniques and Resources ..........p. 12.
CHAPTER III
RESEARCH METHODOLOGY

A. Place and Time of the Study

1. Place of the study was at MA Manaratul Islam at Jl. Madrasah No.12 Gandaria Selatan, Cilandak, South Jakarta.

2. Time of the study was on June until July 2011.

B. Research Design

The method used in this study is the method of quasi-experimental or quasi-experimental research that is close to a real experiment which may not hold control or manipulate all relevant variables.\(^1\) Thus, research should be done conditionally with due regard to the factors that affect the validity of research results.

Research design in this research use the pre-test and post-test nonequivalent control group design with patterns as follows:

<table>
<thead>
<tr>
<th>Group</th>
<th>Pre-test</th>
<th>Treatment</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>E</td>
<td>O₁</td>
<td>Xₑ</td>
<td>O₁</td>
</tr>
<tr>
<td>C</td>
<td>O₂</td>
<td>Xₖ</td>
<td>O₂</td>
</tr>
</tbody>
</table>

Where:

E : Experimental Class  
C : Control Class  
O₁ : Achievement Experimental Class

---

O2: Achievement Control Class
XE: Treatment with Pre-questioning
XK: Treatment without Pre-questioning

C. Population and Sample

1. Population

The population of this study was all the second grade students of XI at MA Manaratul Islam year 2010/2011 that consists of 64 students.

2. Sample

In taking the sample, the writer used the cluster sampling technique. From the population above, there are two classes namely experiment class is 32 and control class is 32.

D. Technique of Data Collecting

The technique used in this study is the technique which consists of pre-test and post-test. Pre-test is a test arranged or designed to measure students' abilities before beginning a program of learning to do. Post-test is a test to determine how far the basic competencies or indicators presented in the learning has been mastered by learners. Post-test is to find out the differences that occur between tests conducted at the beginning of learning with tests after the lesson. Test instruments in the form of objective tests which is multiple choice test.
E. Technique of Data Analysis

The writer use the technique of data collecting by using the test requirement analysis. It consists of normality test and homogeneity test.

1. Normality Test

Normality test is to determine whether the data normally or not. Normality test used is the Chi-Square test, with steps as follows:

a. Finding the largest and smallest scores

b. Find the value range (R)

\[ R = \text{the biggest score} - \text{score the smallest} \]

c. Finding the number of classes (BK)

\[ BK = 1 + 3.3 \log N \] (Formula Sturgess)

d. Find the value of length class (i)

\[ i = \frac{R}{BK} \]

e. Create a table tabulating

<table>
<thead>
<tr>
<th>No</th>
<th>Interval Class</th>
<th>F</th>
<th>Middle Value (X₁)</th>
<th>X₁²</th>
<th>f X₁</th>
<th>f X₁²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jumlah</td>
<td>( \sum f = )</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>( \sum f X₁ = )</td>
<td>( \sum f X₁² = )</td>
</tr>
</tbody>
</table>

f. Finding the average value (mean)

\[ \bar{X} = \frac{\sum f X₁}{n} \]

---

g. Find the standard deviation (Standard Deviation)

\[ S = \sqrt{\frac{\sum fX_i^2 - \left( \frac{\sum fX_i}{n} \right)^2}{n-1}} \]

h. Make a list of the expected frequency by:

1) Determine the class boundaries, that is a first score of the left limit of the interval minus 0.5 and then figure score - score right class interval plus 0.5.

2) Find the value of Z-score for the class limit of the interval by the formula:

\[ Z = \frac{\text{Class Limit} - \bar{X}}{S} \]

3) Search area 0 - Z of the normal curve table from 0 - Z by using the figures for the class limits.

4) Search area each class interval by subtracting the numbers 0 - Z, ie: the first row number minus the second row, second row number minus the third row numbers and so on, except for the different figures in the middle row is added to the row numbers next.

5) Find the expected frequency \((fe)\) by multiplying the area of each interval by the number of respondents.

i. Seeking Chi - Square count \((\chi^2)\)

\[ \chi^2 = \sum \frac{(O_i - E_i)^2}{E_i} \]
j. Compare the $\chi^2_{\text{count}}$ with $\chi^2_{\text{table}}$ for $\alpha = 0.05$ with degrees of freedom (df) $= n - 1$, with the following criteria:

- If $\chi^2_{\text{count}} \geq \chi^2_{\text{table}}$, meaning that the data distribution is not normal and
- If $\chi^2_{\text{count}} \leq \chi^2_{\text{table}}$, meaning that the normal distribution of data

2. Homogeneity Test

Homogeneity test is to determine the similarity between two groups. Homogeneity test used in this study were the Fisher test, with steps as follows:³

a. Hypothesis
b. Divide the data into two groups
c. Find each group standard deviation values
d. Determine $F_{\text{count}}$ by the formula:

$$F = \frac{S_1^2}{S_2^2} = \frac{\text{smallest varians}}{\text{biggest varians}}$$

Where: $S^2 = \frac{n \sum X_1^2 - (\sum X_1)^2}{n(n-1)}$

e. Determine the test criteria:

- If $F_{\text{count}} \leq F_{\text{table}}$ then Ho is accepted, which means the variance both homogeneous populations.
- If $F_{\text{count}} \geq F_{\text{table}}$ then Ho is rejected, which means the variance both populations are not homogeneous.

³ Subana, Drs, Statistik Pendidikan,...............p. 171.
F. Research Hypothesis

Hypothesis test is used to determine the influence of pre-questioning model on the reading comprehension achievement. Hypothesis test in this study use the formula "t" test.

The steps in testing this hypothesis is as follows:

1. Statistical Hypothesis

a. Formulation of hypotheses

\[ H_0 : \mu_1 = \mu_2 \]
\[ H_a : \mu_1 > \mu_2 \]

Descriptions:

- \( H_0 \) : Null Hypothesis
- \( H_a \) : Alternative Hypothesis
- \( \mu_1 \) : Mio 1 (Experiment Class)
- \( \mu_2 \) : Mio 2 (Control Class)

b. Determine the statistical test.

\[
t = \frac{\bar{X}_1 - \bar{X}_2}{S_{d_e} \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}\]

With:

\[
S_{d_e} = \sqrt{\frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}}
\]

Descriptions:

- \( \bar{X}_1 \) = Average score of the experimental group
- \( \bar{X}_2 \) = Average score of the control group
$$S_g = \text{Average score of the control group}$$
$$S_1^2 = \text{variance of the experimental group}$$
$$S_2^2 = \text{variance of the control group}$$
$$n_1 = \text{number of samples of experimental groups}$$
$$n_2 = \text{number of samples of the control group}$$

c. Determine the test criteria

To determine the criteria for testing on data processing operations carried out by calculation, testing to see a comparison between \( t_{\text{count}} \) with \( t_{\text{table}} \).

d. Perform deduction

If the calculation operation on the previous steps were:

1) \( t_{\text{count}} < t_{\text{table}} \), so Ho accepted and Ha rejected
2) \( t_{\text{count}} > t_{\text{table}} \), so Ho rejected and Ha accepted

2. Theoretical Hypotesis

\( H_o \) : there is no difference on the students’ reading comprehension achievement between use pre-questioning and without pre-questioning

\( H_a \) : there is a difference on the students’ reading comprehension achievement between use pre-questioning and without pre-questioning
CHAPTER IV
FINDINGS AND DISCUSSIONS

In this chapter, the writer would like to present the description of Results of Pre-test in Experimental Class and Control Class of Analysis of the Data, Results of Post-test in Experimental Class and Control Class of Analysis of the Data, Recapitulation, and Data Analysis of Testing Requirement.

A. Findings

This part will discuss about the results of pre-test and post-test in experimental class and control class analysis of the data.

1. Results of Pre-test in Experimental Class and Class Control Analysis of the Data

The following is the score of experimental class and control class in pre-test.

<table>
<thead>
<tr>
<th>Students Number</th>
<th>Pre-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experimental</td>
</tr>
<tr>
<td>1</td>
<td>30</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>20</td>
</tr>
<tr>
<td>4</td>
<td>35</td>
</tr>
<tr>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>35</td>
</tr>
<tr>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>9</td>
<td>40</td>
</tr>
<tr>
<td>10</td>
<td>25</td>
</tr>
</tbody>
</table>
Based on the Table 4.1 above shows that the lowest value in the experimental class was 20, while the control class 15. The highest value in the experimental class and control class at the 40. The average value obtained by experiment for 42.6 class, students who scored above the average at 55%, students who scored below average as many as 45%. In the control class average values

<table>
<thead>
<tr>
<th>Students Number</th>
<th>Pre-test</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Experiment</td>
<td>Control</td>
</tr>
<tr>
<td>11</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>12</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>13</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>14</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>15</td>
<td>35</td>
<td>30</td>
</tr>
<tr>
<td>16</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>17</td>
<td>35</td>
<td>25</td>
</tr>
<tr>
<td>18</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>19</td>
<td>25</td>
<td>40</td>
</tr>
<tr>
<td>20</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>21</td>
<td>30</td>
<td>40</td>
</tr>
<tr>
<td>22</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>23</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>24</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>25</td>
<td>35</td>
<td>20</td>
</tr>
<tr>
<td>26</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>27</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>28</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>29</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>30</td>
<td>35</td>
<td>30</td>
</tr>
<tr>
<td>31</td>
<td>25</td>
<td>30</td>
</tr>
<tr>
<td>32</td>
<td>20</td>
<td>30</td>
</tr>
</tbody>
</table>
obtained at 42.7, students who scored above at average as much as 47.5%, of students who scored below the average of 52.5%.

2. Results of Post-test in Experimental Class and Control Class Analysis of the Data.

The following is the score of experimental class and control class in post-test.

**Table 4.2**

Experimental Results and Post-test of Control Class

<table>
<thead>
<tr>
<th>Students Number</th>
<th>Post-test Experimental</th>
<th>Post-test Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>45</td>
<td>55</td>
</tr>
<tr>
<td>2</td>
<td>70</td>
<td>50</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td>4</td>
<td>70</td>
<td>55</td>
</tr>
<tr>
<td>5</td>
<td>55</td>
<td>50</td>
</tr>
<tr>
<td>6</td>
<td>60</td>
<td>45</td>
</tr>
<tr>
<td>7</td>
<td>55</td>
<td>50</td>
</tr>
<tr>
<td>8</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>9</td>
<td>70</td>
<td>50</td>
</tr>
<tr>
<td>10</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>11</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>12</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>13</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>14</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td>15</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>16</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>17</td>
<td>55</td>
<td>60</td>
</tr>
<tr>
<td>18</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>19</td>
<td>55</td>
<td>70</td>
</tr>
<tr>
<td>20</td>
<td>65</td>
<td>50</td>
</tr>
</tbody>
</table>
Based on the Table 4.2 above shows that that the lowest value in the experimental class was 40, while the control class 35. The highest value in the experimental class in grade 75 and 70 controls. The average value obtained by the experimental class of 59, students who scored above the average is 50%, students who scored below at the average is 50%. In the control class average values obtained at 53.7, students who scored above average as much as 45.16%, of students who scored below the average of 54.84%.

Table 4.1 and 4.2 above shows that student learning outcomes both classes have increased. But the experimental class is more increase compared to the control class.
3. Recapitulation

The following is a summary table of pre-test and post-test:

**Table 4.3**

<table>
<thead>
<tr>
<th>Data</th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Eksperimental</td>
<td>Control</td>
</tr>
<tr>
<td>Score Max</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Score Min</td>
<td>20</td>
<td>15</td>
</tr>
<tr>
<td>Average</td>
<td>29.53</td>
<td>28.93</td>
</tr>
<tr>
<td>Median</td>
<td>30</td>
<td>29.25</td>
</tr>
<tr>
<td>Modus</td>
<td>25</td>
<td>30.75</td>
</tr>
<tr>
<td>SD</td>
<td>5.56</td>
<td>7.27</td>
</tr>
</tbody>
</table>

4. Data Analysis of Testing Requirement

a. Normality Test

Testing normality test performed on two pieces of data that is data value of the experimental group post-test and control group post-test. To test the normality of the data used formula Kai Squares Test (chi square test). The following are the results obtained from these calculations.

**Table 4.4**

<table>
<thead>
<tr>
<th>No</th>
<th>Data</th>
<th>Value (X^2) (\text{count})</th>
<th>Value (X^2) (\text{table})</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Value of Post-test Class Eksperimental</td>
<td>7.8187</td>
<td>11.34</td>
<td>Normally distributed data</td>
</tr>
<tr>
<td>2</td>
<td>Value Post-test Class Control</td>
<td>4.1231</td>
<td>11.34</td>
<td>Normally distributed data</td>
</tr>
</tbody>
</table>
Based on the Table 4.4 above shows that value $X^2_{\text{table}}$ taken based on the
value of the square table kai consultation on 95% significance level. Columns
decisions are made based on testing the hypothesis of normality that is if $X^2_{\text{count}} \leq
X^2_{\text{table}}$ then expressed normally distributed data. Conversely, if $X^2_{\text{count}} > X^2_{\text{table}}$ then
the data is not normally distributed. On the Table 4.4 shows that the value of the
second $X^2_{\text{count}}$ data is smaller than the value $X^2_{\text{table}}$. So stated that both the data
normally distributed.

b. Homogeneity Test

Similarly, the normality test performed on, after both groups expressed
normally distributed sample, the homogeneity test is also required as a test of
statistical analysis pre-requirement for second post-test data values. Testing the
homogeneity of the second data using the Test F. Testing criteria that used
namely: the two groups were found when $F_{\text{count}} \leq F_{\text{table}}$ homogeneous in
measuring the significance level and the level of confidence. F Here is the result :

<table>
<thead>
<tr>
<th>No</th>
<th>Data</th>
<th>Value Variance</th>
<th>Value $F_{\text{count}}$</th>
<th>Value $F_{\text{table}}$</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rating post-test</td>
<td>95.2576</td>
<td>1.5537</td>
<td>1.8004</td>
<td>Both of the Data are homogen</td>
</tr>
<tr>
<td></td>
<td>Class Eksperimental</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Second post-test</td>
<td>61.3089</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Value Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Based on the Table 4.5 shows that the value of the second $F_{count}$ data is smaller than the value $F_{table}$. So stated that both homogeneous data.

c. Test Analysis

Based on the pre-requisite test statistical analysis, found that both the data normally distributed and homogeneous. Therefore, analytical testing or hypothesis testing can be done using the “$t$ test” formula.

Calculations to determine the value $t_{count}$ presented in Appendix 8. Based on these calculations, found that $t_{count}$ value is 2.5213. $T_{table}$ value at 95% significance level ($\alpha = 0.05$) $t_{table}$ value is 1.99986. Test results obtained show that in the reception area $t_{count}$ $H_a$, namely $t_{count} > t_{table}$. Thus $H_0$ rejected and $H_a$ is accepted, this shows that there is influence of the use of pre-questioning teaching method to the reading comprehension achievement.

B. Discussions

Based on the test of equality of two average post-test known that the students reading comprehension achievement both groups showed no significant differences. This is evidenced from the average value is greater than the experimental class the average grade controls. The average value of 59 experimental classes and control classes for 53. The results of hypothesis testing using t-test obtained $t_{count} > t_{table}$, namely $t_{count}$ value is 2.52. $T_{table}$ value at 95% significance level ($\alpha = 0.05$) is 1.98. So it can be concluded that there is influence of pre-questioning on the reading comprehension achievement.
Based on recapitulation above that experiment class is better than control class which based on the maximum, minimum score, average and standard deviation between experiment class and control class.

The maximum score for experiment class is 40 while pre-test and change 75 in post-test. The maximum score in control class is 40 while pre-test and change 70 in post-test. Then, the minimum score for experiment class is 20 in pre-test and change 40 in post-test. In control class, the minimum score is 15 in pre-test and change 35 in post-test.

For the average in both of experiment and control class is different. The average in experiment class while pre-test is 29,53 and change 59 in post-test. For control class, the average in pre-test is 28,93 and 53,37 in post-test. The standard deviation in experiment class is 5,56 in pre-test and after post-test is 9,79. The standard deviation for control class in pre-test is 7,27 and change 7,83 in post-test.

Based on the explanations above, experiment class is more excellence than control class which seen from the maximum score in after and before the test. And also in the average and in the standard deviation is different both of them. The experiment class is more excellence than control class. It shows that in the experiment class is more spread than control class in comprehension degree of the materials.

It is in line with the statement stated by Harmer:

- Pre-questioning before reading to confirm expectations

The use of pre-questioning as a tool for placing great emphasis on the lead-in stage (where students are encouraged to become interested in the
subject matter of the text), encourages students to predict the content of the

text, and gives them an interesting and motivating purpose for reading.

- Pre-questioning before reading for general comprehension

In this case pre-questioning used to build up the students’ prior knowledge

Related to this study, pre-questioning above can make the students easily
to predict and delimit the topic that is discussed or inform in the text after they
read and answer the pre-questioning. In the instruments, the writer used pre-
questioning with Indonesian version, thus, the students can predict easily what
will be discussed on the text, after they read and answer the pre-questioning.
CHAPTER V
CONCLUSIONS AND SUGGESTIONS

In this chapter, there are two parts that the writer wants to present, they are: conclusions and suggestions.

A. Conclusions

This study has objective to find out the information about using of pre-questioning on the students’ reading comprehension achievement. Especially, for the second grade students of MA Manaratul Islam Jakarta in academic year 2010/2011. So it is necessary to discuss and interpret of the result of the study.

Based on the hypothesis testing in chapter IV, found that $t_{\text{count}}$ value is 2.5213. $T_{\text{table}}$ value at 95% significance level ($\alpha = 0.05$) $t_{\text{table}}$ value is 1.99986. Test results obtained show that in the reception area $t_{\text{count}} H_0$, namely $t_{\text{count}} > t_{\text{table}}$. Thus $H_0$ rejected and $H_a$ is accepted, this shows that there is influence of the use of pre-questioning on the reading comprehension achievement.

This result gives description that the use of pre-questioning method in teaching reading can effect the students reading comprehension achievement.

B. Suggestions

Based on the conclusions above that the writer would like to give some suggestions. They are as follows:
1. It is important for the teacher to improve the students’ comprehension in reading text by giving any assignment, especially the question in form of main idea and supporting detail, which is regarded more difficult for the students.

2. Teacher should build a favorable atmosphere at times of teaching-learning process, because a conductive condition in teaching would become one access to carry the success of material to be taught.

3. For the teacher must have a time more because to make students focus on the subject especially on reading text.

4. The teacher must give attention the vocabulary and spelling more, and

5. The writer considers that this study still need revise by the other researchers not only in the same topic with this study but also in different topics and aspects which are closest related to this research topic.
REFERENCES

Allen, Edward David, Classroom Techniques: Foreign Language and English As a Second Language, Ohio: The Ohio State University, 1975.


Depdiknas 1996, Tes hari I UMPTN 1996, Jakarta: Departemen Pendidikan Nasional


———2005, Dokumen Negara. Jakarta: Departemen Pendidikan Nasional


Appendix 1

Test Instrument

Petunjuk pengerjaan:

1. Isilah nama dan kelas di lembar jawaban dengan benar
2. Jawablah pertanyaan essay (pre-questioning) yang ada di atas teks bacaan dengan singkat dan jelas.
3. Bacalah teks bacaan yang tersedia dengan seksama lalu jawablah pertanyaan pilihan ganda yang ada di bawah teks bacaan tersebut dengan memilih jawaban yang dianggap paling benar.
   Contoh :
   \[A \quad B \quad C \quad \text{X} \quad E\]
   D adalah jawaban yang benar
   Jika anda ingin meralat jawaban anda berilah tanda ‘=’ pada jawaban sebelumnya
   \[\text{X} \quad B \quad C \quad \text{E}\]
   A adalah jawaban yang benar
4. Jawablah soal tersebut dilembar jawaban yang telah disediakan
5. Alokasi waktu = 2 x 30 menit

Jumlah butir soal:
1. 10 soal untuk essay
2. 20 soal untuk pilihan ganda

Pertanyaan pembuka untuk teks pertama.
1. Pernahkah kamu pergi ke sebuah museum yang memamerkan koleksi fosil-fossil binatang purba? (ya/tidak) jika ya, dimana!
2. Menurutmu, binatang apakah yang paling besar yang pernah hidup didunia ini? Apa alasanmu!
3. Tuliskanlah 2 hal yang bisa kita lakukan untuk menjaga binatang-binatang yang masih hidup dari ancaman kepunahan?
Pertanyaan pembuka untuk teks kedua.
4. Ada banyak senjata biologi yang dibuat negara-negara maju untuk kepentingan militer negaranya. Menurutmu, senjata biologi manakah yang paling berbahaya bagi kehidupan manusia?
5. Negara-negara mana saja yang pernah membuatnya?
6. Tahukah kamu, keuntungan/manfaat yang bisa didapat jika senjata berbahaya tersebut jika digunakan untuk kepentingan perdamaian dan kemajuan teknologi? Sebutkan!

Pertanyaan pembuka untuk teks ketiga.
7. Setelah kamu menyelesaikan pendidikanmu, pekerjaan apa yang kira-kira akan kamu pilih?
8. Kemampuan atau kepandaian apa saja yang kamu perlukan untuk melakukan pekerjaan tersebut?

Pertanyaan pembuka untuk teks keempat.
9. Sebutkanlah macam-macam sinar yang biasa digunakan/diperlukan dalam kepentingan medis dan teknologi?
10. Vitamin D adalah salah satu vitamin yang sangat berguna untuk tubuh kita. Secara alami, bagaimanakah kita mendapatkannya?
Two new species of dinosaurs, one a quick-moving meat-eater and the other a giant-plant-eater, have been discovered in Antarctica. The 70 million-year-old fossil of the carnivore would have rested for millennia at the bottom of the Antistatic Sea, while the remains of the 30-meter-long plant-eater were found on the top of a mountain.

The little carnivore—about 1.8 meters tall—was found on James Ross Island, off the coast of the Antarctic Peninsula.

Not yet named, the animal probably floated out the sea after it died and settled to the bottom of what was then a shallow area of the Weddell Sea. Its bones and teeth suggest it may represent a population of two-legged carnivores that survived in the Antarctic long after other predators took over elsewhere on the globe. “For whatever reason, they were still hanging out on the Antarctic continent,” Case said in a statement.

A second team led by William Hammer of Augustana College in Rock Island, Illinois, found the 200 million-year-old plant-eater’s fossils on a mountaintop 13,000 feet (3,900 meters) high near the Beardmore Glacier. Now known as Mt. Kirk Patrick, the area was once a soft riverbed.

**Jawablah pertanyaan 1-7, berdasarkan teks bacaan diatas!**

1. Which of the following would be the best title ……….
   a. the earth and its history
   b. the real giant
   c. the fossil of dinosaurs
   d. the dinosaurs
   e. the secret of Antarctic Sea
2. The article above informs us about…………
   a. two species of dinosaurs
   b. the newest discovery in Antarctica
   c. the two kinds of new dinosaurs
   d. the discovery of two species of dinosaurs in Antarctica
   e. a team of researchers was funded by the National Science Foundation

3. Which of the following statement is TRUE according to the text?
   a. a hundred years ago a real giant was discovered in Antarctic land
   b. few people even knew that fossils are the remains of ancient living things
   c. hundred years ago some people ever saw dinosaurs in Antarctic sea
   d. the little dinosaurs was found on James Ross Island
   e. the two species of dinosaurs still alive in the Antarctic sea

4. The main idea (ide pokok) of the first paragraph is ………
   a. the two species of dinosaurs are carnivores and herbivores
   b. the two species were founded by the National Science Foundation
   c. the two species are a quick moving meat-eater and a giant plant-eater
   d. the two species of dinosaurs were floating at the bottom of the Weddell sea
   e. two species of dinosaurs have been discovered in Antarctica

5. The following information is about the giant plant-eater dinosaurs, except………
   a. it is 30 meters long
   b. it is 200 million years old
   c. it is 1.8 meters tall
   d. it is found on the top of a mountain
   e. it is found by William hammer
6. Which of the following tones represents for the way the writer put his idea in the text ……
   a. sarcastic
   b. inform
   c. humorous
   d. serious
   e. sympathetic

7. What is the name of the animal probably floated out the sea after it died and settled to the bottom in the shallow area of Weddel Sea ………
   a. Hadrosaurus
   b. Haddonfield giant
   c. Predator
   d. a, b, c are true
   e. not yet named
Reading text II

There are three separate sources of hazard in the process of supplying energy by nuclear power. The radioactive material must travel from its place of manufacture at the power station. Although the power stations themselves are solidly built, the containers used for the transport of the materials are not. There are normally only two methods of transport available, namely road or rail. Unfortunately, both of these involve close contact with the general public, since the routes are sure to pass near, or even thought, heavily populated areas.

Next, there is the problem of waste. All nuclear power stations produce wastes that in most cases will remain radioactive for thousands of years. It is impossible to make these wastes non radioactive, and so they must be stored in one of the inconvenient ways that scientist have invented. For example they may be buried under the ground, or dropped into abandoned mines, or sunk in the sea. However, these methods do not solve the problem, since an earthquake could easily crack the containers open.

Finally, there is the problem of accidental exposure due to a leak or an explosion at the power station. As with the other two hazards, this is not every likely, so it does not provide a serious objection to the nuclear program. Nevertheless, it can happen.

Separately, these there types of risks are not a great cause for concern. On the whole though, the probability of disaster is still high.

Jawablah pertanyaan 8-12, berdasarkan teks bacaan yang ada diatas!

8. The whole text tells us about ............
   a. the danger of transporting radioactive materials
   b. the way to make radioactive wastes not dangerous for people
   c. the potential dangers in supplying energy by nuclear power
   d. the accidents caused by nuclear power stations
   e. people’s objections to the establishment of nuclear stations
9. What makes the transported of radioactive materials dangerously for people’s lives?
   a. the road
   b. the containers
   c. the rail
   d. the power station
   e. the heavily populated

10. Which of the following statement is TRUE about radioactive wastes?
    a. there will be no more danger when radioactive wastes
    b. there is no chance of saving people’s lives from radioactive wastes
    c. radioactive wastes become nonradioactive when they are sunk in the sea
    d. only earthquake can change radioactive wastes
    e. natural disasters may cause very serious leaks in buried containers of radioactive wastes

11. In spite of the problems which are likely at occur in supplying energy by nuclear, the writer thinks that ...........
    a. people will strongly object to it
    b. the probability of disaster is high
    c. hazards should be rigidly controlled
    d. it’s worth conducting nuclear programs
    e. there is a great cause for concern

12. We may conclude from the third paragraph that the problem of accidental exposure is caused by……
    a. human error
    b. an earthquake
    c. radioactive wastes
    d. hazards
    e. bad design of nuclear station
Reading text III

Ultraviolet light means the invisible part of the spectrum beyond violet. This light has always been regarded as very useful because it is used to cure certain skin diseases, kill bacteria, detect counterfeit money, from vitamins, etc.

Along with the increasingly extensive use of computers in financial activities, ultraviolet light has been widely applied by banks to identify the signatures of the costumers in passbook. When the card is removed, the trace of his signature will be left; this can be used to compare with the signature on the customer’s withdrawal slip under ultraviolet light.

Ultraviolet light certainly has many practical applications, but it may also be harmful to human being on some occasions. To everyone’s knowledge, the direct impact of the light on the yes for an excessive length of time may blind a person.

Even though it can cure certain skin disease, it is also very harmful to the skin. A study just completed in the United States says that the light may cause skin cancer. The ultraviolet rays of the sun have been ranked as the third most dangerous cancer-causing agent after alcohol and tobacco.

It is high time to warn sun-worshippers in the quest for a bronzed look to be careful of excessive and uncontrolled exposure to the sun.

Jawablah pertanyaan 13-17, berdasarkan teks bacaan yang ada diatas!

13. We may conclude that the main information of the text is about ............
   a. the advantages and disadvantages of ultraviolet light
   b. the use of ultraviolet light in business
   c. the application of ultraviolet light in people’s lives
   d. the effect of ultraviolet rays on human beings
   e. the danger of ultraviolet light to people’s health
14. Which of the following statements about ultraviolet light is TRUE according to the text?
   a. ultraviolet is used by banks for computers
   b. the position of ultraviolet rays is above the spectrum
   c. skin disease can only be caused by ultraviolet rays
   d. ultraviolet light, which is part of the spectrum, cannot be seen
   e. ultraviolet light is one of the exciting vitamins

15. We benefit from ultraviolet rays as they can ...........
   a. sign customers’ passbook
   b. detect false signatures
   c. cure a particular kind of cancer
   d. check customers’ deposits
   e. be a component in medicines

16. Ultraviolet rays may endanger people who ........
   a. take vitamins regularly
   b. stay indoors
   c. have skin cancer
   d. consume alcohol and tobacco
   e. like sunbathing

17. We may conclude that the writer’s main purpose in writing the text is to ......
   a. encourage people to get the best advantage of ultraviolet rays
   b. explain that sunrise consist of violet and ultraviolet rays
   c. introduce the effective use of ultraviolet light in banks
   d. warn people against the alarming dangers caused by sunrise
   e. ask people to avoid the use of ultraviolet light as much as possible
**Reading text IV**

If you want to advance your career, you will have to make some careful decisions about which jobs you take. Consider a job offered for the value it has to your career. It may mean sacrifices at first. You may have to move to a different region or country to get a job that is right for you. You may have to work late hours, at least temporarily. You might even have to take a lower salary for a job that offers you the experience that you need. But you should never accept a job if it is not related to your career goals.

Accepting a job that is not within your career path will not give you the skill or experience you need or want. You will find yourself frustrated in such a position and consequently will not perform your best. This will have an effect on the people around you, who will not feel as if you are being part of the team. The best advice is to think carefully before accepting any position and make sure that the job is one you have.

**Jawablah pertanyaan 18-20, berdasarkan teks bacaan yang ada diatas!**

18. What is mainly discussed in the text? ...........
   a. how to look for a job
   b. how to advance a career
   c. what to do to get a good job
   d. how to lessen your stress in your office
   e. how to make the people around happy

19. The main idea (ide pokok) of the second paragraph is that .......... 
   a. considering a job offered is necessary
   b. moving to a different region to get a job can help you
   c. relating your jobs to your career goals will be advantageous for your boss
   d. making a careful decision before accepting a job is important
   e. looking for a higher salary and experience will benefit you
20. According to the text, the author advice the reader about……..

a. how to increase the career
b. make a decision in a job
c. think carefully before accepting position in a job
d. how to get a good job
e. never accept a job if it is not related to your career
<table>
<thead>
<tr>
<th>No</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
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</tbody>
</table>
ESSAY

1. ...

2. ....

3. A. ....
   B. ...

4. ...

5. ...

6. ...

7. ...

8. ...

9. ...

10. ...
KEY ANSWER FOR MULTIPLE CHOICE QUESTIONS

1. D
2. D
3. D
4. C
5. C
6. B
7. E
8. C
9. B
10. E
11. B
12. B
13. C
14. D
15. B
16. E
17. C
18. B
19. D
20. C
Appendix 2

Pre-test Results of Experimental Class

Pre-test results of Experimental Class is as follows:

<table>
<thead>
<tr>
<th>30</th>
<th>35</th>
<th>30</th>
<th>25</th>
<th>30</th>
<th>25</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>25</td>
<td>30</td>
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<td>25</td>
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<td>20</td>
<td>35</td>
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<td></td>
</tr>
</tbody>
</table>

Based on the data above that the maximum score \(X_{\text{max}}\) is 50 and score minimum \(X_{\text{min}}\) is 30. So that it can be made of a frequency distribution table after first determining the value range (R), the number of classes (K), and length class (P). Three values obtained based on the following calculation.

a. Range (R)

\[
R = X_{\text{max}} - X_{\text{min}}
\]

\[
R = 40 - 20 = 20
\]

b. Number of Classes (K)

\[
K = 1 + 3,3 \log n
\]

\[
K = 1 + 3,3 \log 32
\]

\[
K = 1 + 3,3 \times 1,50
\]

\[
K = 1 + 4,97
\]

\[
K = 5,97
\]

\[
K \approx 6
\]

So the number of classes is 6

c. Class length (P)

\[
P = \frac{R}{K}
\]

\[
P = \frac{20}{6} = 3,33
\]

\[
P \approx 4
\]

So that the length class is 4.
Distribution table is as follows.

<table>
<thead>
<tr>
<th>Class Limit</th>
<th>Middle Class Values ($x_i$)</th>
<th>Frekuensi ($f_i$)</th>
<th>$f_i \cdot x_i$</th>
<th>$f_i \cdot x_i^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 - 23</td>
<td>19.5</td>
<td>21.5</td>
<td>4</td>
<td>86</td>
</tr>
<tr>
<td>24 - 27</td>
<td>23.5</td>
<td>25.5</td>
<td>9</td>
<td>229.5</td>
</tr>
<tr>
<td>28 - 31</td>
<td>27.5</td>
<td>29.5</td>
<td>8</td>
<td>236</td>
</tr>
<tr>
<td>32 - 35</td>
<td>31.5</td>
<td>33.5</td>
<td>8</td>
<td>268</td>
</tr>
<tr>
<td>36 - 39</td>
<td>35.5</td>
<td>37.5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>40 - 43</td>
<td>39.5</td>
<td>41.5</td>
<td>3</td>
<td>124.5</td>
</tr>
<tr>
<td>Jumlah ($\Sigma$)</td>
<td>177</td>
<td>189</td>
<td>32</td>
<td>944</td>
</tr>
</tbody>
</table>

Based on the frequency Distribution Table, it can be determined average value ($\bar{X}$), median (Me), mode (Mo), and standard deviation (S) value of this pre-test. Here is a calculation to determine those values.

a. **Average ($\bar{X}$)**

$$\bar{X} = \frac{\sum f_i \cdot x_i}{\sum f_i} = \frac{944}{32} = 29.5$$

b. **Median (Me)**

The median value is determined by the following statistical formula.

$$Me = b + P \left( \frac{1}{2} \frac{n - F}{f} \right)$$

Where:

- $b = \text{lower limit of the class median} = 23.5$
- $P = \text{length class} = 4$
- $n = \text{number of data} = 32$
- $F = \text{value of cumulative frequency before the median class} = 4$
- $f = \text{frequency of median class value} = 9$
Based on these data, the median value can be determined from the results of this pre-test are as follows.

\[
Me = 23.5 + 4 \left( \frac{\frac{1}{2} \times 32 - 4}{9} \right)
\]

\[
= 23.5 + (4 \times 1.33)
\]

\[
= 23.5 + 5.33
\]

\[
= 28.83
\]

c. **Modus (Mo)**

Mode value is determined using the following statistical formula.

\[
Mo = b + P \left( \frac{b_1}{b_1 + b_2} \right)
\]

Where:

- \( b \) = lower limit of the class median
  
  \( b = 23.5 \)

- \( P \) = length class
  
  \( P = 4 \)

- \( b_1 \) = class frequency mode frequency is reduced previous class
  
  \( b_1 = 9 - 4 = 5 \)

- \( b_2 \) = class frequency mode frequency is reduced subsequent class
  
  \( b_2 = 9 - 8 = 1 \)

Based on these data, it can be determined from the pre-test value of this mode is as follows.

\[
Mo = 23.5 + 4 \left( \frac{5}{5 + 1} \right)
\]

\[
= 23.5 + (4 \times 0.83)
\]

\[
= 23.5 + 3.33
\]

\[
= 26.83
\]
d. Standard Deviation ($S$)

Standard deviation value determined with the following statistical formula.

$$S = \sqrt{\frac{\sum f_i x_i^2 - \left(\frac{\sum f_i x_i}{\sum f_i}\right)^2}{\sum f_i - 1}}$$

$$= \sqrt{\frac{28808 - \frac{(944)^2}{32}}{32 - 1}}$$

$$= \sqrt{\frac{28808 - \frac{891136}{32}}{31}}$$

$$= \sqrt{\frac{28808 - 27848}{31}}$$

$$= \sqrt{\frac{960}{31}}$$

$$= \sqrt{30.97}$$

$$= 5.56$$
Pre-test Results of Control Class
Pre-test results of Control Class is as follows:

<table>
<thead>
<tr>
<th>30</th>
<th>40</th>
<th>25</th>
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<th>40</th>
<th>15</th>
<th>30</th>
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<tbody>
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</tbody>
</table>

From there it is obtained that the maximum value ($X_{\text{max}}$) is 40 and minimum value ($X_{\text{min}}$) is 15. So that it can be made of a frequency distribution table after first determining the value range ($R$), the number of classes ($K$), and length class ($P$). Three values obtained based on the following calculation.

a. Range ($R$)

$$R = X_{\text{max}} - X_{\text{min}}$$
$$= 40 - 15$$
$$= 25$$

b. The number of classes ($K$)

$$K = 1 + 3.3 \log n$$
$$= 1 + 3.3 \log 6$$
$$= 1 + 3.3 \times 1.77$$
$$= 1 + 5.92$$
$$= 6.92$$
$$\approx 7$$

So the number of classes is 6

c. Length class ($P$)

$$P = \frac{R}{K}$$
$$= \frac{25}{6}$$
$$= 4.16$$
$$\approx 5$$

So that the length class is 5
Distribution table is as follows:

<table>
<thead>
<tr>
<th>Class Limit</th>
<th>Middle Class Values ($x_i$)</th>
<th>Frekuensi ($f_i$)</th>
<th>$f_i \cdot x_i$</th>
<th>$f_i \cdot x_i^2$</th>
</tr>
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<tbody>
<tr>
<td>15 - 19</td>
<td>14.5</td>
<td>17</td>
<td>3</td>
<td>51</td>
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<tr>
<td>20 - 24</td>
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</tr>
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<td>25 - 29</td>
<td>24.5</td>
<td>27</td>
<td>7</td>
<td>189</td>
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<td>10</td>
<td>320</td>
</tr>
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<td>40 - 44</td>
<td>39.5</td>
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<td>4</td>
<td>168</td>
</tr>
<tr>
<td>Jumlah ($\Sigma$)</td>
<td>162</td>
<td>177</td>
<td>31</td>
<td>897</td>
</tr>
</tbody>
</table>

Based on the frequency distribution table, it can be determined average value ($\overline{X}$), median (Me), mode (Mo), and standard deviation (S) value of this pre-test. Here is a calculation to determine those values.

\[
\overline{X} = \frac{\sum f_i \cdot x_i}{\sum f_i}
\]

\[
= \frac{897}{31}
\]

\[
= 28.93
\]

a. Median (Me)

The median value is determined by the following statistical formula

\[
Me = b + P \left( \frac{\frac{1}{2}n - F}{f} \right)
\]

Where:

\[
b = \text{lower limit of the class median} = 29.5
\]

\[
P = \text{length class} = 5
\]

\[
n = \text{number of data} = 31
\]

\[
F = \text{value of cumulative frequency before the class median} = 3 + 6 + 7 = 16
\]

\[
f = \text{frequency of median class value} = 10
\]
Based on these data, the median value can be determined from the results of this pre-test are as follows.

\[ Me = 29,5 + 5 \left( \frac{1 \cdot 31 - 16}{10} \right) \]
\[ = 29,5 + (5 \times (-0,05)) \]
\[ = 29,5 - 0,25 \]
\[ = 29,25 \]

b. Modus (Mo)

Mode value is determined using the following statistical formula

\[ Mo = b + P \left( \frac{b_1}{b_1 + b_2} \right) \]

Where:

- \( b = \) lower limit of the class median \( = 29,5 \)
- \( P = \) length class \( = 5 \)
- \( b_1 = \) class frequency mode frequency is reduced
  previous class \( = 10 - 7 = 3 \)
- \( b_2 = \) class frequency mode frequency is reduced
  subsequent class \( = 10 - 1 = 9 \)

Based on these data, it can be determined from the pre test value of this mode is as follows.

\[ Mo = 29,5 + 5 \left( \frac{3}{3 + 9} \right) \]
\[ = 29,5 + (5 \times 0,25) \]
\[ = 29,5 + 1,25 \]
\[ = 30,75 \]
c. **Standard Deviation (S)**

Standard deviation value determined with the following statistical formula

\[
S = \sqrt{\frac{\sum f_i x_i^2 - (\sum f_i x_i)^2}{\sum f_i - 1}}
\]

\[
= \sqrt{\frac{27539 - (897)^2}{31}}
\]

\[
= \sqrt{\frac{27539 - 804609}{30}}
\]

\[
= \sqrt{\frac{27539 - 25955.13}{30}}
\]

\[
= \sqrt{52.79}
\]

\[
= 7.27
\]
Appendix 4

Post-test result of Experimental Class

Post-test results of Experimental Class is as follows.

<table>
<thead>
<tr>
<th>45</th>
<th>50</th>
<th>60</th>
<th>55</th>
<th>40</th>
<th>65</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>70</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>60</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>40</td>
<td>55</td>
<td>70</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>70</td>
<td>70</td>
<td>65</td>
<td>55</td>
<td>60</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>55</td>
<td>50</td>
<td>65</td>
<td>55</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>

Based on the table, it is obtained that the maximum value \( X_{\text{max}} \) is 75 and minimum value \( X_{\text{min}} \) is 40. So that it can be made of a frequency distribution table after first determining the value range \( R \), the number of classes \( K \), and length class \( P \). Nilai ketiganya diperoleh berdasarkan perhitungan berikut ini.

a. Range \( (R) \)
\[
R = X_{\text{max}} - X_{\text{min}}
\]
\[
= 75 - 40
\]
\[
= 35
\]

b. The number of classes \( (K) \)
\[
K = 1 + 3.3 \log n
\]
\[
= 1 + 3.3 \log 32
\]
\[
= 1 + 3.3 \times 1.50
\]
\[
= 1 + 4.97
\]
\[
= 5.97
\]
\[
\approx 6
\]

So the number of classes is 6.

c. Length class \( (P) \)
\[
P = \frac{R}{K}
\]
\[
= \frac{35}{6}
\]
\[
= 5.83
\]
\[
\approx 6
\]

So that the length class is 6.
Distribution table is as follows:

<table>
<thead>
<tr>
<th>Class</th>
<th>Class Limit</th>
<th>Middle Class Values ($x_i$)</th>
<th>Frekuensi ($f_i$)</th>
<th>$f_i \cdot x_i$</th>
<th>$f_i \cdot x_i^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>40 - 45</td>
<td>39.5</td>
<td>42.5</td>
<td>3</td>
<td>127.5</td>
<td>5418.75</td>
</tr>
<tr>
<td>46 - 51</td>
<td>45.5</td>
<td>48.5</td>
<td>4</td>
<td>194</td>
<td>9409</td>
</tr>
<tr>
<td>52 - 57</td>
<td>51.5</td>
<td>54.5</td>
<td>9</td>
<td>490.5</td>
<td>26732.3</td>
</tr>
<tr>
<td>58 - 63</td>
<td>57.5</td>
<td>60.5</td>
<td>5</td>
<td>302.5</td>
<td>18301.3</td>
</tr>
<tr>
<td>64 - 69</td>
<td>63.5</td>
<td>66.5</td>
<td>4</td>
<td>266</td>
<td>17689</td>
</tr>
<tr>
<td>70 - 75</td>
<td>69.5</td>
<td>72.5</td>
<td>7</td>
<td>507.5</td>
<td>36793.8</td>
</tr>
<tr>
<td>Jumlah ($\Sigma$)</td>
<td>327</td>
<td>345</td>
<td>32</td>
<td>1888</td>
<td>114344</td>
</tr>
</tbody>
</table>

Based on the frequency distribution table, it can be determined average value ($\overline{X}$), median (Me), mode (Mo), and standard deviation (S) value of this pre-test. Here is a calculation to determine those values.

a. **Average ($\overline{X}$)**

$$\overline{X} = \frac{\sum f_i \cdot x_i}{\sum f_i} = \frac{1888}{32} = 59$$

b. **Median (Me)**

The median value is determined by the following statistical formula.

$$Me = b + P \left( \frac{\frac{1}{2} n - F}{f} \right)$$

Where:

- $b = \text{lower limit of the class median} = 51.5$
- $P = \text{length class} = 6$
- $n = \text{number of data} = 32$
- $F = \text{value of cumulative frequency before the median class} = 4 + 3 = 7$
- $f = \text{frequency of median class value} = 9$
Based on these data, the median value can be determined from the results of this pre-test are as follows.

\[
Me = 51.5 + 6 \left( \frac{1}{2} \cdot \frac{32 - 7}{9} \right) \\
= 51.5 + 6 \times 1 \\
= 51.5 + 6 \\
= 57.5
\]

c. Modus (Mo)

Mode value is determined using the following statistical formula.

\[
Mo = b + P \left( \frac{b_1}{b_1 + b_2} \right)
\]

Where:

- \( b \) = lower limit of the class median = 51,5
- \( P \) = length class = 6
- \( b_1 \) = class frequency mode frequency is reduced previous class = 9 - 4 = 5
- \( b_2 \) = class frequency mode frequency is reduced subsequent class = 9 - 5 = 4

Based on these data, it can be determined from the pre-test value of this mode is as follows.

\[
Mo = 51.5 + 6 \left( \frac{5}{5 + 4} \right) \\
= 51.5 + 6 \times 0.56 \\
= 51.5 + 3.33 \\
= 54.83
\]
d. **Standard Deviation**

Standard deviation value determined with the following statistical formula.

\[
S = \sqrt{\frac{\sum f_i x_i^2 - (\sum f_i x_i)^2}{\sum f_i - 1}}
\]

\[
= \sqrt{\frac{114344 - (1888)^2}{32}\frac{32}{32 - 1}}
\]

\[
= \sqrt{\frac{114344 - 3564544}{32}}
\]

\[
= \sqrt{\frac{114344 - 111392}{31}}
\]

\[
= \sqrt{\frac{2952}{31}}
\]

\[
= \sqrt{95.22}
\]

\[= 9.76\]
Appendix 5

Post-test Results of Control Class

<table>
<thead>
<tr>
<th>55</th>
<th>45</th>
<th>70</th>
<th>55</th>
<th>50</th>
<th>50</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td>50</td>
<td>60</td>
<td>60</td>
<td>45</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>35</td>
<td>60</td>
<td>50</td>
<td>60</td>
<td>45</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>50</td>
<td>55</td>
<td>70</td>
<td>45</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>50</td>
<td>50</td>
<td>55</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

Based on the table that maximum value ($X_{max}$) is 70 and minimum value ($X_{min}$) is 35. So that it can be made of a frequency distribution table after first determining the value range ($R$), the number of classes ($K$), and length class ($P$). Three values obtained based on the following calculation

a. **Range ($R$)**

\[ R = X_{max} - X_{min} \]
\[ = 70 - 35 \]
\[ = 35 \]

b. **The number of classes ($K$)**

\[ K = 1 + 3,3 \log n \]
\[ = 1 + 3,3 \log 31 \]
\[ = 1 + 3,3 \times 1,49 \]
\[ = 1 + 4,92 \]
\[ = 5,92 \]
\[ \approx 6 \]

So the number of classes is 6

c. **Length class ($P$)**

\[ P = \frac{R}{K} \]
\[ = \frac{35}{6} \]
\[ = 5,83 \]
\[ \approx 6 \]

So the length class is 6
Distribution table is as follows:

<table>
<thead>
<tr>
<th>Class</th>
<th>Class Limit</th>
<th>Middle Class Values (x_i)</th>
<th>Frekuensi (f_i)</th>
<th>f_i . x_i</th>
<th>f_i . x_i^2</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 - 40</td>
<td>34.5</td>
<td>37.5</td>
<td>1</td>
<td>37.50</td>
<td>1406.25</td>
</tr>
<tr>
<td>41 - 46</td>
<td>40.5</td>
<td>43.5</td>
<td>4</td>
<td>174.00</td>
<td>7569.00</td>
</tr>
<tr>
<td>47 - 52</td>
<td>46.5</td>
<td>49.5</td>
<td>12</td>
<td>594.00</td>
<td>29403.00</td>
</tr>
<tr>
<td>53 - 58</td>
<td>52.5</td>
<td>55.5</td>
<td>5</td>
<td>277.50</td>
<td>15401.25</td>
</tr>
<tr>
<td>59 - 64</td>
<td>58.5</td>
<td>61.5</td>
<td>6</td>
<td>369.00</td>
<td>22693.50</td>
</tr>
<tr>
<td>65 - 70</td>
<td>64.5</td>
<td>67.5</td>
<td>3</td>
<td>202.50</td>
<td>13668.75</td>
</tr>
<tr>
<td>Jumlah (Σ)</td>
<td>297</td>
<td>315</td>
<td>31</td>
<td>1654.50</td>
<td>90141.75</td>
</tr>
</tbody>
</table>

Based on the frequency distribution table, it can be determined average value (\( \bar{X} \)), median (Me), mode (Mo), and standard deviation (S) value of this pre-test. Here is a calculation to determine those values.

a. Average (\( \bar{X} \))

\[
\bar{X} = \frac{\sum f_i \cdot x_i}{\sum f_i} = \frac{1654.50}{31} = 53.37
\]

b. Median (Me)

The median value is determined by the following statistical formula.

\[
Me = b + P \left( \frac{\frac{1}{2} n - F}{f} \right)
\]

Where:

\( b = \) lower limit of the class median = 46.5

\( P = \) length class = 6

\( n = \) number of data = 31

\( F = \) value of cumulative frequency before the class median = 1 + 4 = 5

\( f = \) frequency of median class value = 12
Based on these data, the median value can be determined from the results of this post test is as follows.

\[ Me = 46.5 + 6 \left( \frac{1}{2} \cdot \frac{31 - 5}{12} \right) \]

\[ = 46.5 + (6 \times 0.87) \]

\[ = 46.5 + 5.25 \]

\[ = 51.75 \]

c. Modus (\( Mo \))

Mode value is determined using the following statistical formula.

\[ Mo = b + P \left( \frac{b_1}{b_1 + b_2} \right) \]

Dimana:

- \( b = \) lower limit of the class median = 46.5
- \( P = \) length class = 6
- \( b_1 = \) class frequency mode frequency is reduced previous class = 12 - 4 = 8
- \( b_2 = \) class frequency mode frequency is reduced subsequent class = 12 - 5 = 7

Based on these data, then the mode value can be determined from the results of this post-test is as follows.

\[ Mo = 46.5 + 6 \left( \frac{8}{8 + 7} \right) \]

\[ = 46.5 + (6 \times 0.53) \]

\[ = 46.5 + 3.2 \]

\[ = 49.7 \]
d. **Standard deviation ($S$)**

Standard deviation value determined with the following statistical formula.

\[
S = \sqrt{\frac{\sum f_i \cdot x_i^2 - \left(\frac{\sum f_i \cdot x_i}{\sum f_i}\right)^2}{\sum f_i - 1}}
\]

\[
= \sqrt{\frac{90141.75 - \frac{(1654.50)^2}{31}}{31 - 1}}
\]

\[
= \sqrt{\frac{90141.75 - \frac{2737370.25}{31}}{30}}
\]

\[
= \sqrt{\frac{90141.75 - 88302.27}{30}}
\]

\[
= \sqrt{1839.48}
\]

\[
= \sqrt{61.32}
\]

\[
= 7.83
\]
Appendix 6

Normality Test

Data is taken by post-test both of the class.

<table>
<thead>
<tr>
<th>Experimental Class</th>
<th>45</th>
<th>50</th>
<th>60</th>
<th>55</th>
<th>40</th>
<th>65</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>70</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>60</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>40</td>
<td>55</td>
<td>70</td>
<td>50</td>
<td>60</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td></td>
<td>70</td>
<td>70</td>
<td>65</td>
<td>55</td>
<td>60</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>55</td>
<td>50</td>
<td>65</td>
<td>55</td>
<td>65</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control Class</th>
<th>55</th>
<th>45</th>
<th>70</th>
<th>55</th>
<th>50</th>
<th>50</th>
<th>50</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>50</td>
<td>50</td>
<td>70</td>
<td>55</td>
<td>50</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>35</td>
<td>60</td>
<td>50</td>
<td>60</td>
<td>45</td>
<td>60</td>
<td></td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>50</td>
<td>55</td>
<td>70</td>
<td>45</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>50</td>
<td>55</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
</tbody>
</table>

Test Normality use the kai kuadrat (chi square) formula:

\[ X^2 = \sum \frac{(O_i - E_i)^2}{E_i} \]

Description: 
- \(O_i\) = observation frequency
- \(E_i\) = expectation frequency

The criteria of testing in kai kuadrat value are:
- if \(X^2_{\text{count}} < X^2_{\text{table}}\), so \(H_0\) accepted and \(H_a\) rejected (normal data)
- if \(X^2_{\text{count}} > X^2_{\text{table}}\), so \(H_0\) accepted and \(H_a\) rejected (abnormal data)
Based on the data obtained from post-test so we can make a help table to determine kai cuadrat value below:

**Experimental Class**

<table>
<thead>
<tr>
<th>Class</th>
<th>$f_i x_i$</th>
<th>$x_i$</th>
<th>$f_i x_i^2$</th>
<th>Class limit</th>
<th>$Z$ class limit</th>
<th>wide $Z$ table</th>
<th>$E_i$</th>
<th>$O_i$</th>
<th>$(O_i - E_i)^2/E_i$</th>
</tr>
</thead>
<tbody>
<tr>
<td>39.5</td>
<td>2.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.0</td>
<td>127.5</td>
<td>42.5</td>
<td>5418.75</td>
<td>0.061</td>
<td>1.952</td>
<td>3</td>
<td>0.5627</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.6</td>
<td>194</td>
<td>48.5</td>
<td>9409</td>
<td>0.136</td>
<td>4.377</td>
<td>4</td>
<td>0.0326</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2</td>
<td>490.5</td>
<td>54.5</td>
<td>26732.2</td>
<td>0.219</td>
<td>7.033</td>
<td>9</td>
<td>0.5498</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.8</td>
<td>302.5</td>
<td>60.5</td>
<td>18301.2</td>
<td>0.236</td>
<td>7.577</td>
<td>5</td>
<td>0.8768</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3</td>
<td>266</td>
<td>66.5</td>
<td>17689</td>
<td>0.182</td>
<td>5.846</td>
<td>4</td>
<td>0.5831</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.9</td>
<td>69.5</td>
<td>1.08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.0</td>
<td>507.5</td>
<td>72.5</td>
<td>36793.7</td>
<td>0.094</td>
<td>3.027</td>
<td>7</td>
<td>5.2138</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The steps to determine the values in the help table are:

1. Make a frequency distribution table.
2. Determine $z$ class limit with formula.
   
   $z = \frac{\text{Class Limit} - \bar{X}}{S}$

   Where $\bar{X}$ is the average value and $S$ is standard deviation.
3. Determine wide $z$ table.

<table>
<thead>
<tr>
<th>$z$ class limit</th>
<th>2.00</th>
<th>1.38</th>
<th>0.77</th>
<th>0.15</th>
<th>0.46</th>
<th>1.08</th>
<th>1.69</th>
</tr>
</thead>
<tbody>
<tr>
<td>wide $z$ table</td>
<td>0.4772</td>
<td>0.4162</td>
<td>0.2794</td>
<td>0.0596</td>
<td>0.1772</td>
<td>0.3599</td>
<td>0.4545</td>
</tr>
</tbody>
</table>

Each of wide $z$ table, each of the class are:

a. Class 40 – 45
   
   $z = 0.4772 - 0.4162 = 0.061$

b. Class 46 – 51
   
   $z = 0.4162 - 0.2794 = 0.1368$

c. Class 52 – 57
   
   $z = 0.2794 - 0.0596 = 0.2198$

d. Class 58 – 63
   
   $z = 0.0596 + 0.1772 = 0.2368$

e. Class 64 – 69
   
   $z = 0.3599 - 0.1772 = 0.1827$

f. Class 70 – 75
   
   $z = 0.4545 - 0.3599 = 0.0946$
4. Count the value $E_i$ (expectation frequency) use formula as follow.

$$E_i = \sum f_i \times \text{wide } z \text{ table}$$

5. Determine of the kai cuadrat value in each class based on the formula below:

$$X^2 = \frac{(O_i - E_i)^2}{E_i}$$

6. Determine the total of the kai kuadrat value in each class. This value is kai cuadrat value count ($X^2_{\text{count}}$) next will compared with $X^2_{\text{table}}$ value.

7. Testing the normality hipotesis.

The $X^2_{\text{table}}$ value with free degree (dk) = 3 is 11.34. To test the normality data, compared $X^2_{\text{count}}$ with $X^2_{\text{table}}$. We get that $X^2_{\text{count}} < X^2_{\text{table}}$. So, $H_a$ accepted and $H_0$ rejected (normality data).
<table>
<thead>
<tr>
<th>Class</th>
<th>$f_i x_i$</th>
<th>$x_i$</th>
<th>$f_i x_i^2$</th>
<th>Class limit</th>
<th>$Z$ class limit</th>
<th>wide Z table</th>
<th>$E_i$</th>
<th>$O_i$</th>
<th>$(O_i - E_i)^2/E_i$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>34.5</td>
<td>-</td>
<td>2.41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 5</td>
<td>4</td>
<td>0</td>
<td>37.5</td>
<td>37.5</td>
<td>1406.25</td>
<td>0.042</td>
<td>1.317</td>
<td>1</td>
<td>0.0765</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>40.5</td>
<td>-</td>
<td>1.64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 1</td>
<td>4</td>
<td>6</td>
<td>174</td>
<td>43.5</td>
<td>7569</td>
<td>0.138</td>
<td>4.305</td>
<td>4</td>
<td>0.0217</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>46.5</td>
<td>-</td>
<td>0.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 7</td>
<td>5</td>
<td>2</td>
<td>594</td>
<td>49.5</td>
<td>29403</td>
<td>0.266</td>
<td>8.270</td>
<td>1</td>
<td>1.6814</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>52.5</td>
<td>-</td>
<td>0.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 3</td>
<td>5</td>
<td>8</td>
<td>277.5</td>
<td>55.5</td>
<td>15401.2</td>
<td>0.289</td>
<td>8.965</td>
<td>5</td>
<td>1.7538</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>58.5</td>
<td>0.66</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 9</td>
<td>6</td>
<td>4</td>
<td>369</td>
<td>61.5</td>
<td>22693.5</td>
<td>0.176</td>
<td>5.480</td>
<td>6</td>
<td>0.0492</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>64.5</td>
<td>1.42</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 5</td>
<td>7</td>
<td>0</td>
<td>202.5</td>
<td>67.5</td>
<td>13668.7</td>
<td>0.063</td>
<td>1.968</td>
<td>3</td>
<td>0.5405</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>70.5</td>
<td>2.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. Make a frequency distribution table.

2. Determine $z$ class limit with formula below,

$$z = \frac{\text{Class limit} - \bar{X}}{S}$$

Where $\bar{X}$ is the average and $S$ is standard deviation.

3. Determine wide $z$ table.

<table>
<thead>
<tr>
<th>Class limit</th>
<th>2.41</th>
<th>1.64</th>
<th>0.88</th>
<th>0.11</th>
<th>0.66</th>
<th>1.42</th>
<th>2.19</th>
</tr>
</thead>
<tbody>
<tr>
<td>$z$</td>
<td>0.4920</td>
<td>0.4495</td>
<td>0.3106</td>
<td>0.0438</td>
<td>0.2454</td>
<td>0.4222</td>
<td>0.4857</td>
</tr>
</tbody>
</table>

Each os wide $z$ table, each of the class are:

a. Class 35 – 40
   
   $z = 0.4920 - 0.4495 = 0.0425$

b. Class 41 – 46
   
   $z = 0.4495 - 0.3106 = 0.1389$

c. Class 47 – 52
   
   $z = 0.3106 - 0.0438 = 0.2668$

d. Class 53 – 58
   
   $z = 0.0438 + 0.2454 = 0.2892$

e. Class 70 – 79
   
   $z = 0.4222 - 0.2454 = 0.1768$

f. Class 80 – 89
   
   $z = 0.4857 - 0.4222 = 0.0635$
4. count \( E_i \) value (expectation frequency) use the formula,
\[
E_i = \sum f_i \times \text{wide } z \text{ table}
\]

5. Determine kai cuadrat value in each class as formula below :
\[
X^2 = \frac{(O_i - E_i)^2}{E_i}
\]

6. Determine a total of kai cuadrat with totalize the kai kuadrat value in each class. This value is kai kuadrat count value (\( X^2_{\text{count}} \)) next will be compare by \( X^2_{\text{table}} \) value.

7. Testing the normality hipotesis.

The \( X^2_{\text{table}} \) value is with free degree (dk) = 3 is 11.34. To test the normality data compared \( X^2_{\text{count}} \) with \( X^2_{\text{table}} \). We get that \( X^2_{\text{count}} < X^2_{\text{table}} \). So, \( H_a \) accepted and \( H_o \) rejected (normality data).
Appendix 7

Homogenity Test

To test the homogenity both of two variants result data in post-test use F test with formula,

\[ F = \frac{V_1}{V_2} \]

Where:

- \( V_1 \) = big varians or value of standard deviation data which have bigger in the standard deviation.
- \( V_2 \) = small varians or value of standard deviation data which have smaller in the standard deviation.

Criteria in testing F test as follow:

- if \( F_{\text{count}} < F_{\text{table}} \), so \( H_0 \) accepted and \( H_a \) rejected (homogeneous varians data)
- if \( F_{\text{count}} > F_{\text{table}} \), so \( H_0 \) accepted and \( H_a \) rejected (inhomogenous varians data).

To determine both of varians data, we can make a table below:

<table>
<thead>
<tr>
<th>Experimental Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>40</td>
</tr>
<tr>
<td>46</td>
</tr>
<tr>
<td>52</td>
</tr>
<tr>
<td>58</td>
</tr>
<tr>
<td>64</td>
</tr>
<tr>
<td>70</td>
</tr>
</tbody>
</table>
\[
S = \sqrt{\frac{\sum f_i x_i^2 - \left( \sum f_i x_i \right)^2}{\sum f_i - 1}}
\]

\[
= \sqrt{\frac{114344 - (1888)^2}{32 - 1}}
\]

\[
= \sqrt{\frac{114344 - 3564544}{31}}
\]

\[
= \sqrt{\frac{114344 - 111392}{31}}
\]

\[
= \sqrt{\frac{2952}{31}}
\]

\[
= 9,76
\]
## Control Class

<table>
<thead>
<tr>
<th>Class</th>
<th>Class Limit</th>
<th>Midle Value ($x_i$)</th>
<th>Frekuensi ($f_i$)</th>
<th>$f_i \cdot x_i$</th>
<th>$f_i \cdot x_i^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 - 40</td>
<td>34.5</td>
<td>37.5</td>
<td>1</td>
<td>37.50</td>
<td>1406.25</td>
</tr>
<tr>
<td>41 - 46</td>
<td>40.5</td>
<td>43.5</td>
<td>4</td>
<td>174.00</td>
<td>7569.00</td>
</tr>
<tr>
<td>47 - 52</td>
<td>46.5</td>
<td>49.5</td>
<td>12</td>
<td>594.00</td>
<td>29403.00</td>
</tr>
<tr>
<td>53 - 58</td>
<td>52.5</td>
<td>55.5</td>
<td>5</td>
<td>277.50</td>
<td>15401.25</td>
</tr>
<tr>
<td>59 - 64</td>
<td>58.5</td>
<td>61.5</td>
<td>6</td>
<td>369.00</td>
<td>22693.50</td>
</tr>
<tr>
<td>65 - 70</td>
<td>64.5</td>
<td>67.5</td>
<td>3</td>
<td>202.50</td>
<td>13668.75</td>
</tr>
<tr>
<td>Total (Σ)</td>
<td>297</td>
<td>315</td>
<td>31</td>
<td>1654.50</td>
<td>90141.75</td>
</tr>
</tbody>
</table>

This standard deviation is explained with the formula below:

$$S = \sqrt{\frac{\sum f_i x_i^2 - (\sum f_i x_i)^2}{\sum f_i - 1}}$$

$$= \sqrt{\frac{90141.75 - (1654.50)^2}{31}}$$

$$= \sqrt{\frac{90141.75 - 2737370.25}{31}}$$

$$= \sqrt{\frac{90141.75 - 88302.27}{30}}$$

$$= \sqrt{\frac{1839.48}{30}}$$

$$= \sqrt{61.32}$$

$$= 7.83$$
So we can get $F_{count}$ value

$$F_{count} = \frac{V_1}{V_2} = \frac{(S_1)^2}{(S_2)^2}$$

$$= \frac{9,76^2}{7,83^2}$$

$$= \frac{95,2576}{61,3089}$$

$$= 1,5537$$

To test the homogeneity, we compare $F_{count}$ with $F_{table}$. We can get that freedom degree is $(30;31)$, so $F_{table}$ value = 1,835. It shows that $F_{count} < F_{table}$, so $H_a$ accepted and $H_o$ rejected (both of data has a homogenous variances data).
Appendix 8

Hypototesis Test

After testing the statistic pre-requisite contains normality test and homogeneity test, so to test the hypothesis test used t-test. This is based on the second prerequisite test that mentioned both of the data is found normality and homogeneity Hypothesis test use t test with formula below:

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

where:

\( \bar{X}_1 \) = average data in Experimental Class

\( \bar{X}_2 \) = average data in Control Class

\( dsg \) = composite of standard deviation data in both of class (experimental and control)

\( n_1 \) = total experimental class data

\( n_2 \) = total control class data

The criteria of t test are:

- if \( t_{\text{count}} > t_{\text{table}} \) so \( H_a \) accepted and \( H_o \) rejected
- if \( t_{\text{count}} < t_{\text{table}} \), so \( H_o \) accepted and \( H_a \) rejected.
Steps to determine the \( t_{count} \) value are:

1. Determine the values:

   From post-test value acquired:

   \[
   \begin{align*}
   \overline{X}_1 &= 59 \\
   \overline{X}_2 &= 53.37 \\
   V_1 &= SD_1^2 = (9.76)^2 = 95.257 \\
   V_2 &= SD_2^2 = (7.83)^2 = 61.308
   \end{align*}
   \]

2. Determine the composite of standard deviation (\( dsg \)) with formula below.

\[
\begin{align*}
    dsg &= \sqrt{\frac{(n_1 - 1)\overline{V}_1 + (n_2 - 1)\overline{V}_2}{n_1 + n_2 - 2}} \\
    &= \sqrt{\frac{(32 - 1)95.257 + (31 - 1)61.308}{32 + 31 - 2}} \\
    &= \sqrt{\frac{2953.06 + 1839.3}{61}} \\
    &= \sqrt{\frac{4792.36}{61}} \\
    &= \sqrt{78.56} \\
    &= 8.86
\end{align*}
\]
3. Determine $t_{count}$ value based on the formula that acquired.

\[
t_{count} = \frac{\bar{X}_1 - \bar{X}_2}{dsg \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}
\]

\[
d = 59 - 53.37
\]

\[
8.86 \frac{1}{32} + \frac{1}{31}
\]

\[
= 5.63
\]

\[
8.86 \sqrt{0.03125 + 0.03226}
\]

\[
= \frac{5.63}{8.86 \times 0.252}
\]

\[
= 2.233
\]

\[
= 2.5213
\]

4. Determine $t_{table}$

Free degree to find $t_{table}$ is:

\[
d_k = n_1 + n_2 - 2 = 32 + 31 - 2 = 61
\]

in the significance degree 5% $t_{table}$ value obtained with interpolation.

\[
t_{(0.95)(60)} = 2.000
\]

\[
t_{(0.95)(120)} = 1.980
\]

with interpolation we get $t_{table}$ value for $d_k=61$ as follows:

\[
t_{(0.95)(61)} = 2.000 - \frac{1}{60} (2.00 - 1.980)
\]

\[
= 2.000 - 0.00032
\]

\[
= 1.99968
\]
Use the same interpolation, so $t_{table}$ value in significance degree 1% are:

\[ t_{(0.99)(60)} = 2.660 \]
\[ t_{(0.99)(120)} = 2.617 \]

so $t_{table}$ value with $dk = 61$ acquired

\[ t_{(0.95)(61)} = 2.660 - \frac{1}{60} (2.660 - 2.617) \]
\[ = 2.660 - 0.0007 \]
\[ = 2.659 \]

5. Hypothesis Test

In the significance degree 1% $t_{count}$ value < $t_{table}$, so $H_0$ accepted and $H_a$ rejected. But in the significance degree 5% $t_{count}$ value > $t_{table}$, so $H_a$ accepted and $H_0$ rejected.

6. Giving interpretation

Based on the result of hypothesis test above, in the trusty 95%. There is a different between result of the study using Pre-questioning and using conventional method. But, in the trusty degree 99%, There is no a different between result of the study using pre-questioning and using conventional method. So that we can say that pre-questioning method can influence the result of the study 95%.