



**THE EFFECT OF USING ANIMATION VIDEOS
TO VOCABULARY MASTERY AT GRADE XI
STUDENTS OF SMA NEGERI 1 SIABU**

A THESIS

Submitted to the State Institute for Islamic Studies Padangsidimpuan
(IAIN) as a partial Fulfillment of the Requirement for the Graduate
Degree of Islamic Education (S Pd) in English Program

Written By

NUR KHOFIFAH RIZKY RIDWAN

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ENGLISH EDUCATIONAL DEPARTMENT

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

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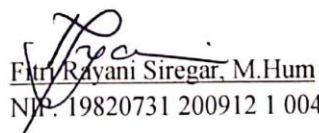
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2020

Term : Thesis
Item : 7 (seven) exemplars

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a.n. **Nur Khofifah Rizky Ridwan**
To: **Dean**
Tarbiyah and Teacher Training Faculty
In-
Padangsidempuan

Assalamu 'alaikum wr.wb.

After reading, studying and giving advice for necessary revision on the thesis belongs to **Nur Khofifah Rizky Ridwan**, entitled "**The Effect of Using Animation Videos to Vocabulary Mastery at Grade XI Students of SMA N 1 Siabu**". We assumed that the thesis has been acceptable to complete the assignments and fulfill the requirements for graduate degree of Education (S.Pd) in English Education Department, Tarbiyah and Teacher Training Faculty in IAIN Padangsidempuan.

Therefore, we hope that the thesis will soon be examined by the Thesis examiner team of English Education Department of Tarbiyah and Teacher Training Faculty IAIN Padangsidempuan. Thank you.

Wassalam 'alaikum wr.wb.

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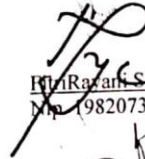


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Result/Mark : 81.5 (B+)
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LEGALIZATION

Thesis : THE EFFECT OF USING
ANIMATION VIDEOS TO
VOCABULARY MASTERY AT
GRADE XI STUDENTS OF SMA N 1
SIABU

Written By : NUR KHOFIFAH RIZKY RIDWAN

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Mastery at Grade XI Students of SMAN 1 Siabu
Year : 2020

ABSTRACT

This research described about students' problems in vocabulary mastery. The researcher identified many problems that there were many factors influence vocabulary mastery such as the students was lazy to bring the dictionary and open the dictionary, they prefer to wait the teacher to translate the vocabulary than learn with their own self. They also tend to forget the meaning of the world which have been taught or practice before. Finally, the researcher interested to research the effect of using animation video to vocabulary mastery at grade XI students of SMAN 1 Siabu. In this research, the researcher wanted to find out about how significant the effect of animation video to vocabulary mastery is.

The method that is used in this research was experimental research. Two classes were chosen randomly as the sample. They were XI IPS 1 as experimental class that consisted of 21 students and XI IPS 3 as control class that consisted of 21 students. It were conducting normality and homogeneity test. The data was derived from pre-test and post-test. To analyze the data the researcher used t-test formula.

After analyzing the data, the researcher found that the mean score of experimental class after using media Animation Video was higher than control class. Mean score of control class in Pre-test was 82 and the mean score of control class in Post-test was 88, the proof was 6. Mean score of experimental class before using media Animation Video was 82 and mean score after using animation video was 88, the proof was 6. The effect of using animation video to vocabulary mastery at grade XI SMAN 1 Siabu was 0.058 with t_{count} was lower than t_{table} ($0.058 < 1.72074$) it meant that H_a was rejected and H_0 was rejected. There was no effect of using animation video to vocabulary mastery at grade XI SMAN 1 Siabu.

Key words: Animation Video, Vocabulary Mastery

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Title of Thesis : The Effect of Using Animation Video to Vocabulary
Mastery at Grade XI Students of SMAN 1 Siabu
Year : 2020

ABSTRACT

Penelitian ini menjelaskan tentang masalah siswa dalam penguasaan kosakata. Peneliti mengidentifikasi banyak masalah bahwa ada banyak faktor yang mempengaruhi penguasaan kosa kata seperti siswa malas membawa kamus dan membuka kamus, mereka lebih suka menunggu guru menerjemahkan kosa kata daripada belajar dengan diri mereka sendiri. Mereka juga cenderung melupakan makna dunia yang telah diajarkan atau dipraktikkan sebelumnya. Akhirnya, peneliti tertarik untuk meneliti pengaruh penggunaan video animasi terhadap penguasaan kosakata pada siswa kelas XI SMAN 1 Siabu. Dalam penelitian ini, peneliti ingin mengetahui seberapa besar pengaruh video animasi terhadap penguasaan kosakata.

Metode yang digunakan dalam penelitian ini adalah penelitian eksperimental. Dua kelas dipilih secara acak sebagai sampel. Mereka adalah XI IPS 1 sebagai kelas eksperimen yang terdiri dari 21 siswa dan XI IPS 3 sebagai kelas kontrol yang terdiri dari 21 siswa. Itu melakukan uji normalitas dan homogenitas. Data berasal dari pre-test dan post-test. Untuk menganalisis data, peneliti menggunakan rumus uji-t.

Setelah menganalisis data, peneliti menemukan bahwa skor rata-rata kelas eksperimen setelah menggunakan media Video Animasi lebih tinggi daripada kelas kontrol. Nilai rata-rata kelas kontrol di Pra-tes adalah 82 dan skor rata-rata kelas kontrol di Post-test adalah 88, peningkatannya adalah 6. Skor rata-rata kelas eksperimen sebelum menggunakan media Video Animasi adalah 82 dan skor rata-rata setelah menggunakan video animasi adalah 88, peningkatannya adalah 6. Pengaruh penggunaan video animasi untuk penguasaan kosa kata di kelas XI SMAN 1 Siabu adalah 0,058 dengan thitung lebih rendah dari ttabel (0,058 < 1,72074) itu berarti bahwa H_a ditolak dan H_0 ditolak. Tidak ada efek menggunakan video animasi untuk penguasaan kosakata di kelas XI SMAN 1 Siabu.

Kata kunci: Video Animasi, Penguasaan Kosa Kata

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Padangsidimpuan, April 2020

Researcher

Nur Khofifah Rizky Ridwan
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CHAPTER I

INTRODUCTION

A. Background of the Problem

In general, English is a language that use as international language. It is a tool of communication among nations. Without English someone will be old fashion because they cannot communicate with people around the world, they cannot use the technology media and they will be lack of information in science world because many scientific book are printed in English. English has mushroomed in every part of the world and become a universal language because it is used by almost all countries, even in some countries have become the primary language or has become the standard language used in everyday life whether in government, social and other formal institution.

Based on English curriculum 2013, English is one of important position in all levels of school in Indonesia. So, it becomes a compulsory subject in the school. English has been taught from elementary school, junior high school, senior high school up to university.

According to syllabus in SMA Negeri 1 Siabu, there are many materials of English teaching. They are listening skill, speaking skill, reading skill and writing skill. Beside that another aspect in material of English teaching they are grammar and vocabulary.

Vocabulary refers to the collection of word. Vocabulary is important not merely in educational world but in daily activities. Vocabulary is recognized as the perfect instrument of language and language is recognized as the perfect instrument communication, because it is one important matter in

language. When doing communication, the people will understand each other because they use vocabulary. So, getting much vocabulary is better because they will have stronger base in learning and simple vocabulary is the best choice for the students.

Many efforts have done by the teacher to increase students' vocabulary, begin from prepare the good facilities and tool for studying specially studying in English, manage the classroom comfortable so students can be focus in learning English, giving task about new words that they have not learned yet, until use the various media in teaching English for fun class. All this done is focus to improve students interest in learning vocabulary.

Based on interviewed with English teacher in SMA Negeri 1 Siabu the vocabulary mastery at the grade eleventh students was still low. Mrs. Y. as one of English teacher in SMA Negeri 1 Siabu, she said that "Most of students in eleventh grade, they are lazy to bring and open dictionary. They also wait me to translate vocabulary".¹ It is mean that the students was lazy to bring the dictionary and open the dictionary, they prefer to wait the teacher to translate the vocabulary than learn with their own self. They also tend to forget the meaning of the word which have been taught or practice before. In brief, students' vocabulary does not fulfill the expectation.

Thus it can increase the interest and motivation easily. A video sequence used in class makes students more ready to communicate in target language.

¹*Private Interviewed*, Mrs Y. as one of English Teacher in SMA Negeri 1 Siabu, (Siabu, July 25th 2019, at: 09.30 a.m)

Animation is the rapid display of sequence of image to create an illusion movement. Sajid Musa said “The animation is a form of pictural presentation that become the most prominent feature of technology based learning environment”.² The researcher conclude animation is moving image created from drawings and models that are photographed or created by a computer. It can also help the students in learning a new language.

The role of animation video in vocabulary mastery is to make more enjoyable way to review students’ vocabulary. Using animation video also make students interested in learning because it can make study more real, interest, focus, and varies. Using animation video also can make encourage students to build their vocabulary.

Based on the above explanation, the researcher wanted to know how the effect of audio visual using animation video to vocabulary mastery. The researcher hopes the result of this investigation will give the answer of the problem above. The researcher is interested in discussing about **“The Effect of Using Animation Videos to Vocabulary Mastery at Grade XI Students of SMA Negeri 1 Siabu”**.

B. Identification of the Problem

As stated in the background of the study, the students’ vocabulary mastery was still low. There are some factors related to the students’ vocabulary mastery which encompass problems related to students, materials

²Sajid Musa, Rushan Ziatdinov, and Carol Griffiths, *Introduction to Computer Animation and Its Possible Educational Applications, New Challenges in Education. Retrospection of History of Education to the Future in the Interdisciplinary Dialogue among Didactics of Various School Subjects*(Turkey:FaithUniversity,2013),p.1<<http://arxiv.org/ftp/arxiv/papers/1312/1312.1824.pdf>>.

and learning activity. The problem related to the students' vocabulary at grade eleventh was poor.

C. Limitation of the Problem

The researcher limits the problem like, the effect of animation video to vocabulary mastery. The researcher discuss about definition of vocabulary, purposes of vocabulary, kinds of vocabulary, material of vocabulary, definition of animation video, purposes of animation video, kinds of animation video, procedures of using animation video, advantages and disadvantages of using animation video and teaching vocabulary by using animation video.

D. Formulation of the Problem

To make the problem clear, the researcher formulates the problem based on identification above as follows:

1. How is the students' vocabulary mastery before using animation video at grade XI students of SMA Negeri 1 Siabu Kabupaten Mandailing Natal?
2. How is the students' vocabulary mastery after using Animation Video at grade XI students of SMA Negeri 1 Siabu Kabupaten Mandailing Natal?
3. Is there the effect of using media Animation Video on students' vocabulary mastery at grade XI students of SMA Negeri 1 Siabu Kabupaten Mandailing Natal?

E. The purposes of the Problem

The purposes of the research is to examine the formulation of the problem. Based on the formulation above the researcher determines the purposes, were:

1. To describe the students' vocabulary mastery before using animation video at grade XI students of SMA Negeri 1 Siabu Kabupaten Mandailing Natal.
2. To describe the students' vocabulary mastery after using Animation Video at grade XI students SMA Negeri 1 Siabu Kabupaten Mandailing Natal.
3. To describe whether there is significant effect of using Animation Video on students' vocabulary mastery at grade XI students of SMA Negeri 1 Siabu Kabupaten Mandailing Natal.

F. Significances of the Problem

By conducting the research about the effect of using animation videos to vocabulary learning interest, the writer hope that the result of the research will be useful to give some contributions to English language teaching and learning:

1. For English teacher as the information about the students' vocabulary mastery.
2. For head master as an information.
3. For a reader, it could inform them about the effect of using Animation Video to students' vocabulary mastery.

G. Outline of the Thesis

The researcher is going to organized this research paper in order to make the reader easier to understand:

The first chapter consists of background of the problem, identification of the problem, limitation of the problem, formulations of the problem, purposes of the research, significances of the research and the systematic of the thesis.

The second chapter, it consisted of the theoretical description. It was divided into subchapters which consist of description definition of animation videos and vocabulary mastery. This chapter also consisted of related findings, conceptual framework and hypothesis.

The third chapter, it consisted of research methodology which was divided into sub chapter; time and place of the research, research methodology, population and sample, instrument of research, procedure of data collection, techniques of analyzing data.

The fourth chapter, it consisted of the result of the research talking about the analysis of data. This chapter it is consist of description of data, hypothesis testing, discussion.

The fifth chapter, it is consisted of conclusion that is giving about the result of the research and suggestion that given to the students and teacher by researcher

CHAPTER II

LITERATURE REVIEW

A. Theoretical Description

1. Vocabulary

a. Definition of Vocabulary

Vocabulary is one aspect which own by every students to make them understand and master English language. Vocabulary is acquired incidentally through indirect exposure to words and intentionally through explicit instruction in specific words and word-learning strategies. There are some expert who define vocabulary Richards and Renandya state that: “Vocabulary is a core component of language proficiency and provides much of the basis to how well learners speak, listen, read, and write.”³ In other hand Richards states that “vocabulary is one of the most obvious components of language and one of the first things applied linguistics turned their attention to.”⁴

So, vocabulary is one of the basic components in language. In other hand Hornby in *Advance Learners Dictionary of Current English* says that vocabulary is

- (1) All the words that a person knows or uses
- (2) All the words in a particular language
- (3) The words that people use when they are talking
- (4) A list of words with their meanings, especially in a book

³Jack C. Richard and Willy A. Renandya, *Methodology in Language Teaching and Anthology of Current Practice*, ed. by Jack C. Richard and Willy A. Renandya, Second Edi (New York: Cambridge University Press, 2008).

⁴Jack C. Richards, *Curriculum Developmentin Language Teaching*, First Edit (United States of America: The Press Syndicate Of The University of Cambridge The Piu Building, Trumpington Street, Cambridge, United Kingdom, 2001),p.4 <<http://www.cambridge.org>>.

for learning a foreign language.⁵

So, vocabulary is the words that person uses, particular language, uses for talking and have meaning. As Logan and Nichols in Tahmasebi and Ghaedrahmat said that:

Vocabulary is the glue that holds stories, ideas and content together, making comprehension accessible for children. Students' word knowledge is largely related to academic success because students who have large vocabulary knowledge can understand ideas and concept more quickly than students with limited vocabulary knowledge.⁶

In other hand according to Nation says that:

Vocabulary is central to language. The quotations mean that vocabulary is the main element of language. Language is the expression which is constructed by words or vocabulary. Words are the tools which used to think, to express idea and feeling, and to learn about world. In language learning vocabulary is an essential component. It links to four skills of listening, speaking, reading, and writing.⁷

So, vocabulary can use in all skills in English language.

The Hatch and Brown define "vocabulary as a list of target language words for particular language or a list of words that the individual speaker might be."⁸ So, vocabulary become target language and particular language for individual speaker.

⁵A.S Hornby, *Oxford Advanced Learner's Dictionary*, ed. by Sally Wehmeier, 6 Edition (New York: Oxford University Press, 2000),p.1506 <<https://www.amazon.com/Advanced-Learners-Dictionary-Current-English/dp/0194315649>>.

⁶Mehdi Ghaedrahmat and HamidrezaHqverdi Gholum-Ali Thamsebi, 'The Relationship Between Language Proficiency and Iranian EFL Learners' Knowledge Of Vocabulary Depth Versus Vocabulary Breadth', *Latin American Journal Of Content And Language Integrated Learning*, 6 (2013),p.97 <<https://doi.org/10.5294/lalcil.2013.6.2.5>>.

⁷I. S. P. Nation, 'Teaching Vocabulary and Technique', 42.3 (2001),p.78 <<https://doi.org/https://doi.org/10.1017/s0261444809005813>>.

⁸Penny Ur, *A Course in Language Teaching Practice and Theory*, ed. by Marion Williams and Tony Wright, First Edit (New York: Cambridge University Press, 1991),p.68 <www.cambridge.org/9780521449946>.

Then Ur Penny said “Vocabulary is the words we teach in foreign language. It means vocabulary is the list of words that work in language and it is taught by the teacher based on the students’ level.”⁹ Then, according to Jackson, “Vocabulary is a representative collection of the words that exist in the English language.”¹⁰ Vocabulary is the words that known and use by human. Vocabulary is so important for the students because it is the core part of the language and has the link to each skill in English.

Based on curriculum 2013, vocabulary in senior high school (SMA/MA) “is focus on transactional discourse, functional text and monologue or genre discourse.”¹¹ So, the researcher used this curriculum as a research guide.

The researcher conclude that vocabulary is a word or a list of words contained in a language and as a basic tool for communicate among those speakers and used by a group or individual. Vocabulary is so important for the students because it is the core part of the language and has the link to each skill in English.

⁹Penny Ur,p.60.

¹⁰Etienne Zé Amvela Howard Jackson, *Words, Meaning and Vocabulary: An Introduction to Modern English Lexicology*, Second Edi (London: Bloomsbury Publishing, 2007),p.118 <<http://semanticschoolaras.org>>.

¹¹Ning Setiawati, ‘Silabus Bahasa Inggris SMA Kelas XI Kurikulum 2013’ (Ning Setiawati, 2019)<<https://www.ilmubahasainggris.com/silabus-bahasa-inggris-sma-kelas-11-kurikulum-2013>>. Accessed on December 28th, 2019 retrieved on 09 a.m in Sihitang, Padangsidimpun Tenggara).

b. Purposes of Vocabulary

Vocabulary is important to students. In teaching practice handbook, there are several purpose of vocabulary:

- a) To express their opinion thinking
- b) To express idea in their society
- c) Particular in early stages when students are motivated
- d) To learn the basic words they need to get by in language
- e) To understand nuances of meaning
- f) To become more proficient in their own choose of words and expression.¹²

Purpose of vocabulary is to increase learners' ability in language and to have knowledge about words and its element. Julie Meltzer and Edmund quote from Alen as follows:

Teachers in each content are should implement purposeful vocabulary instruction to: 1) increase reading comprehension, 2) developed knowledge of new concepts, 3) improve range and specificity in writing, 4) help students communicate more effectively, and 5) developed deeper understanding of words and concepts with which students are only nominally familiar.¹³

The quotation shows that vocabulary relates to learners' activities in learning process. Additionally, John and Shane stated that:

One reason teachers are concerned about teaching vocabulary is to facilitate the comprehension of a text that students will be assigned to read. If the students don't know the meaning of the words that

¹²Diane Phillips Roger Gower, Steve Walters, *Teaching Practice Handbook* (Australia: Macmillan, 2005), p.124 <https://archive.org/stream/267688487RogerGowerSteveWaltersDianePhillipsTeachBookFiOrg1Pdf/267688487-Roger-Gower-Steve-Walters-Diane-Phillips-Teach-BookFi-org-1-pdf_djvu.txt>.

¹³Julie Meltzer and Edmund T. Hamman, *Hamman, Meeting the Literacy Development Needs of Adolescent English Language Learning Through Content Area Learning*, ed. by Sherri Miles and Elizabeth Devaney, Second Edi (UK: The Education Alliacient Brown university, 2005), p.5 <http://www.allice.brown.edu/db/ea_catalog.php>.

they will encounter in a text their comprehension of that selection is likely to be compromised.¹⁴

Based on curriculum 2013 the purpose of vocabulary in senior high school (SMA/ MA) “is to increase students’ vocabulary mastery every time they learn new chapter, to identifying words in dialog or text, to identifying a meaning of word.”¹⁵

It can be concluded that teaching vocabulary can develop the students’ understanding of words elements. Vocabulary relates to learners’ activities in learning process.

c. **Kinds of vocabulary**

There are two kinds of vocabulary, they are receptive vocabulary and productive vocabulary. According to Hatch and Brown in Susanto, there are two kinds of vocabulary, namely as receptive and productive vocabulary. The further explanation is:

- a) Receptive vocabulary
Receptive vocabulary means words that learners recognize and understand when they are used in context, but which they cannot produce.
- b) Productive vocabulary
Productive vocabulary is the words that the learners understand and are able to pronounce correctly and use constructively in speaking and writing. It consisted of what is needed for receptive vocabulary plus the ability to speak or write at the appropriate time. Productive vocabulary can be address as an active process, because the learners can produce the words to express their thoughts to others.¹⁶

¹⁴John J Pikulski and Shane Templeton, *Teaching and Developing Vocabulary: Key to Long- Term Reading Success* (U.S.A: Houghton Mifflin Company, 2004),p.5 <<https://doi.org/10338471>>.

¹⁵Ning Setiawati.retrieved on December 28th 2019, 10.11 a.m.

¹⁶Alpino Susanto, ‘The Teaching of Vocabulary: A Perspective’, *Journal KATA*, 1.2 (2017),p.189,<<http://ejournal.lldikti10.id/index.php/kata/article/download/2136/858>>.

Based on the above explanation, the researcher concluded that there are two kinds of vocabulary, they are receptive vocabulary and productive vocabulary. Receptive vocabulary means will be easy understand by using listening and reading to remember words or vocabularies and productive vocabulary means will be easy understand by using concentration patterns and grammatical word to get vocabularies.

Pikulski and Templeton in Jingjit say that English vocabulary can be classified into four kinds, namely meaning vocabulary or verbal vocabulary, literacy vocabulary or writing vocabulary, receptive vocabulary and productive vocabulary or expressive vocabulary.

- a) Meaning or verbal vocabulary
Meaning or verbal vocabulary is defined as the vocabulary that will be used by pupils when they are speaking or when they are listening to conversation.
- b) Literacy or writing vocabulary
Literacy or writing vocabulary is the vocabulary that will be used by pupils when they are reading or when they are writing a text.
- c) Receptive vocabulary
Receptive vocabulary is the vocabulary that pupils used when they are reading a text or when they are listening to conversation.
- d) Productive or expressive vocabulary
Productive or expressive vocabulary is the vocabulary pupils use when they are writing a text or when they are speaking a sentence.¹⁷

Based on the quotation above the researcher concluded that there are four kinds of vocabulary. Meaning or verbal vocabulary and productive or expressive vocabulary are same, vocabulary that will be used

¹⁷Matukorn Jingjit, 'The Effect of Multimedia Learning on Thai Primary Pupils' Achievement in Size and Depth of Vocabulary Knowledge', *Journal of Education and Practice* (Yala Rajabhat University, 2015),p. 6 <<http://iiste.org/Journals/index.php/JEP>>.

when they are speaking or when they are listening to conversation and when they are writing a text or when they are speaking a sentence. Literacy or writing vocabulary and receptive vocabulary are same, vocabulary that will be used by pupils when they are reading or when they are writing a text and when they are listening to conversations.

d. Choosing Vocabulary

Vocabulary consist of the words we understand when we hear or read the (receptive vocabulary) and words we speak or write (expressive vocabulary). We build vocabulary by picking up words that we read or hear a variety of words is important for language development and reading comprehension.

Richard in Kamilah Siswati stated that:

- a) Coverage or range of context where the word can be found.
- b) Convenience or how easy a word is learned
- c) Familiarity, meaning the word is often found, meaningful and concrete.

Hamer in Kamilah Siswati stated that:

- a) At senior high school, the word concrete is usually taught before the abstract word. Such as the word window, door, are taught first than abstract words like sad, happy and wind.
- b) Words that often appear or are often used according to students' need.
- c) The context in which the vocabulary emerges is also important to consider.
- d) Exercise related to words that have been learn proven to help students' memory and assignments such as changing the form from adjective to noun, adverb or vice versa will be highly recommended given to students.¹⁸

¹⁸Kamilah Siswati, 'Efektivitas Model Pembelajaran Penguasaan Kosakata (Kajian Eksperimental Terhadap Siswa Kelas V SD Negeri 4 Krandegan Kecamatan Banjarnegara Kabupaten Banjarnegara)' (Pasca Sarjana Universitas Muhammadiyah Purwokerto, 2012),p.19–21 <<http://repostroty.ump.ac.id/id/eprint/7265>>.

Based on explanation above the researcher conclude choosing vocabulary for senior high school is begin from the concrete words like apple, chair, table, and not begin from the abstract words like wind, air, sad and happy. After that, the students will be easy to learn the concrete word, because the students can touch and hold the thing.

e. Types of Vocabulary

There are four types of vocabulary. Children begin to acquire listening and speaking vocabularies many years before they start to build reading and writing vocabularies.

There are four types of vocabulary, they were:

- a) Listening vocabulary
The words we hear and understand. Starting in the womb, fetuses can detect sounds as early as 16 weeks. By the time we reach adulthood, most of us will recognize and understand close to 50.000 words. Children who are completely deaf do not exposed to a listening vocabulary.
- b) Speaking vocabulary
The words we use when we speak. Our speaking vocabulary is relatively limited. Most adults use a more 5.000 to 10.000 words for all their conversations and instructions. This number is much less than our listening vocabulary most likely due to ease of use.
- c) Reading vocabulary
The words we understand when we read text. We can read and understand many words that we do not use in our speaking vocabulary.
- d) Writing vocabulary
The words we can retrieve when we write to express ourselves. We generally find it easier to explain ourselves orally, using facial expression and intonation to help get our ideas across, then to find just the right words to communicate the same

ideas in writing. Our writing vocabulary is strongly influenced by the words we can spell.¹⁹

From the definition above, the researcher conclude that type of vocabulary is listening vocabulary, speaking vocabulary, reading vocabulary and writing vocabulary can use in junior high school. But, based on 2013 curriculum that senior high school used to speaking vocabulary more than another.

f. Material of Vocabulary

In syllabus of eleventh grade of senior high school in curriculum 2013 there is no specific materials for teaching vocabulary but the vocabulary only hitches on other lesson like, speaking, listening, writing and reading. The vocabulary materials mean here are the vocabulary that include in speaking lesson such vocabulary in the topic.

The book used in SMA Negeri 1 Siabu, Mandailing Natal is “*Stop Bullying Now (Stand Up and Speak Up)*”. It divided into eight chapters, chapter one is study about offers and suggestion, chapter two is study about opinions and thoughts, chapter three is study about party time, chapter four is study about national disaster-An exposition, chapter five is study about letter writing, chapter six is study about cause and effect, chapter seven is study about meaning through music and chapter eight is study about explain this!.

¹⁹Judy K. Montgomery, ‘The Bridge of Vocabulary: Evidence-Based Activities for Academic Success’, 2007,p.19–21.

In SMAN 1 Siabu, the material of teaching vocabulary is based on syllabus given by government who has the authority. “The topic of the vocabularies does not mention explicitly in the material. The topic does not explain specifically, but the vocabularies include in writing, speaking and reading material. There are some examples of material of teaching vocabulary in SMAN 1Siabu:

- 1) Words related to celebration²⁰

²⁰ Kementerian Pendidikan dan Kebudayaan Republik Indonesia, *Stop Bullying Now (Stand Up and Speak Up)*, ed. by Lina Mulyanti., Revision E (Jakarta: Pusat Kurikulum dan Perbukuan, Balitbang, Kemendikbud., 2017), p. 21.



VOCABULARY BUILDER

Write down the English words for the following Indonesian words. Compare your work to your classmate's.

ce _____ (verb)	= merayakan
_____ve_____ (noun)	= prestasi / pencapaian
_____t (noun)	= rokok
_____u_____ (noun)	= blus, kemeja wanita
_____er_____ (adjective)	= [informal] sangat bagus
_____nt_____ (noun)	= isi
en _____nt (noun)	= penyemangat
_____pp_____ (noun)	= penampakan, penampilan
app _____ (noun)	= penghargaan
_____us (adjective)	= [informal] indah, atraktif

2) Words related to family and friends²¹

²¹ Kementerian Pendidikan dan Kebudayaan Republik Indonesia, p.9.



VOCABULARY EXERCISES

Complete the following sentences using the words in the box. Remember to use the correct forms of verbs.

E-pal	sound
half sister	(be) into
mother tongue	attend
slip back	magnificent
run	

- Saidah has many favorite writers and books. She frequently saves her pocket money to buy best seller books. She _____ really _____ reading.
- In the next letter to Caroline, Alia wrote: "I like scuba diving. So if some day you visit Indonesia, I will take you to go scuba diving in Bunaken National Marine Park. The place is amazingly beautiful. Doesn't that _____ cool?"
- Hannah and her brothers learn how to manage their store every day. Later they want to _____ their own business.
- In her letter, Alia often introduces the beauty of Indonesia to her _____. In her emails, she describes many magnificent cultural events and amazing nature that can only be found in Indonesia.
- Alia in her letter wrote that her _____ is Batakese, but she can also speak other languages, like Madurese, Indonesian, and English.
- Unlike Saidah who _____ books, Hannah are more _____ animals. She has 3 dogs that need a lot of attention.
- Alia, Hanna, and Saidah become good friends. They hope that someday they can _____ a traditional or modern music concert together.
- Hannah told Alia that she was very happy when she got a _____, a baby girl from her mother's second marriage.
- Alia has many _____, those with whom she makes friends by writing them emails. They live in other countries, so she never meets them.
- Alia likes to try to speak in English with her classmates, but just like Saidah, she also sometimes _____ into Indonesian.

2. Animation Video

a. Definition of animation video

Animation is the rapid display of sequence of image to create an illusion movement. Sajid Musa said "The animation is a form of pictorial presentation that became the most prominent feature of technology based

learning environment”.²² Furthermore addition, according to Heinich, Molenda, & Russell “Animation is a technique in which the film maker gives motion to otherwise inanimate objects.”²³ Animation is moving image created from drawings and models. That are photographed or created by a computer. Animation also the process by which animated movie, a cartoon, is made from drawings done by hand or by computer.²⁴ So animation is an media that operate digitally.

Video is the recording, reproducing or broadcasting of moving visual image made digitally or on video tape. Video is the media that used to deliver learning messages. Stempleski and Tomalin as cited in Rasouli and Shoari argued that “Video is the combination of moving picture and sound which can present language comprehensively.”²⁵ It can be concluded that video is:

- a) Technology of electronically catering, recording, processing, storing transmitting and reconstructing a sequence of picture and representing scenes in motion
- b) Recording of both the visual and audible components

²²Sajid Musa, Rushan Ziatdinov, and Carol Griffiths, *Introduction to Computer Animation and Its Possible Educational Applications, New Challenges in Education. Retrospection of History of Education to the Future in the Interdisciplinary Dialogue among Didactics of Various School Subjects*(Turkey:FaithUniversity,2013),p.3.<<http://arxiv.org/ftp/arxiv/papers/1312/1312.1824.pdf>.

²³Michael Molenda Sharon E. Smaldino, James D. Russell, Robert Heinich, *Introductory Technology and Media for Learning*, ed. by Debra A. Stollenwerk, Eighth Edi (Amazon, U.S: Pearson Education, Inc, 2005),p.193<<https://www.amazon.com/Instructional-Media-Technologies-Learning-7th/dp/0130305367>>.

²⁴Cambridge dictionary Access from <https://dictionary.cambridge.org/dictionary/english/animation>, retrieved on June, 30th 2019

²⁵Chyntia Rahayu, “Students’ Perception of Using Animation Video Faculty of Educational Sciences,” 2018,p.16, http://repository.uinjkt.ac.id/dspace/bitstream/123456789/39211/1/chyntia_rahayu-FITK.

The researcher conclude, animation video is described as a cartoon, films, images, puppets, that are photographed and shown in a way that makes them move and appear to be alive.

b. Purpose of Animation Video

The use of media in teaching and learning process give contributions to the learners. Students' achievement will increase if the student really understands the lesson being studied. One of the methods that affect the student's interest is learning with video. However, mastery of the material presented must be balanced with the technology used.

To convey the message of learning, teachers usually use teaching aids (teaching aids) in form of drawings, models, or other tools that can provide concrete experience, motivation to learn, as well as enhance absorption or what is known as visual aids. One of the computer based instructional media that has been developed is a video learning. Video as an audiovisual media that produces a moving image and natural or adjusted sound. Instructional video is able to present/display objects that are difficult to be taken directly to the classroom. Video lessons will greatly assist students in mimic, follow, imitate and understand the sequence of actions that must be mastered a lesson.

c. Kinds of Animation Video

Looking at the past and the present, animation has solved over time. It started with pieces of paper and rope in 1828 and is today 3D animation videos. There are some kinds of animation video, they are:

- a) Stop Motion Animation
Stop motion animation is used to animate things are smaller than life size. In this working technique have a hard level and need high patient.
- b) Computer Animation
Computer animation is a kind of animation refers to stimulated motion pictures showing movement of drawn object.
- c) Computer graphics 3D animation
It is used to replace physical models than create realistic intermixed elements with live action. 3D animation is today's animation. By using some sophisticated software looking at the principle of traditional animation applied to 3D animation concept, animations are able to produce outstanding and aesthetic animation such as, Toy Story, Madagascar and Mega mind.²⁶

Based on the above explanation, the researcher concluded that the ways to improve interest of students in learning English so many ways that can we do, so we only choose the best one way to improve that interesting in study English itself.

d. Procedures of Using Animation Video

The use of teaching media in the classroom should be prepared well by the teacher. Here are some procedures of using animation video by Sand and Brown et al in Hanifah Khalidiyah's thesis:

- a) Preparing yourself
The first thing to do before showing the video to students is previewing the video and make some notes about the content of the video. Teacher may invite some students to preview the video and see their point view about it.
- b) Preparing the environment
After preparing the video, the next thing to do is arranging the classroom to be as comfortable as possible. The technical equipment such as a speaker and laptop/computer should be located appropriately so that students can get good view while watching the video.
- c) Preparing the students

²⁶Musa, Ziatdinov, and Griffiths, p.19–21.

When students watch the video, teacher should help them to understand why they must watch the video and tell what they can get by watching it. Teacher also ask the students to discuss the content of video then relate to what they know and they do not know.

- d) Showing the video
While watching the video, make students comfortable and try to show the video without interruption such as giving a question in the middle of video.
- e) Carrying out the follow up
After showing the video, teacher asks the students about the content of the video to know their opinion about the video. They can also discuss the video with their classmate. The follow up is necessary to detect misunderstanding they may have. Teacher can give a repetition show if needed to clear up any confusion.²⁷

Meanwhile, the external condition is stimulation that comes from outside whice can lead to learning process. External condition in the learning process is influenced by the teacher. How the teacher design and provides special condition to enable students to succed in learning.

e. The Advantages and Disadvantages of Using Animation Video

There are some advantages and disadvantages of using media video animation in the process of teaching and learning. Ronald Anderson said that the advantages and disadvantages of using video animation are:

- a) Can used for classical of individual person
- b) Can be used directly (when we need it)
- c) Can be used many times over
- d) Can deliver a dangerous object which cannot be presented directly in the class
- e) Can deliver and object in sufficient detail
- f) Can be slow up and speed up

²⁷Hanifah Khalidiyah, The Use Of Animated Video In Improving Students Reading Skill (A Quasi-Experimental Study of Seventh Grade Student at A Junior High School in Jalan cagak, Subang), *Journal of English and Education*, 3.1(2015), pp.66–67 <<https://ejournal.upi.edu/index.php/L-E/article/view/4611>>.

g) Present the picture along with the sound²⁸

The disadvantages of using video animation based on Ronald Anderson are:

- a) Difficult to revise it
- b) Relative expensive
- c) Need a special ability to operate it²⁹

In other hand, according to Jeremy Harmer states that the advantages of using video in teaching vocabulary and learning process are:

- a) Seeing language in use
One of the main advantages of video is that students do not just hear language, they see it too.
- b) Cross cultural awareness
Video uniquely allows students a look at situation for beyond their classroom. This is especially useful if they want to see, for example, typical British 'Body Language' when inviting someone out or how American speak to waiters. Video also of great value in giving students a chance to see such things as what kinds of food people eat in other countries and what they wear.
- c) The power of creation
When students use video cameras themselves they are given the potential to create something memorable and enjoyable.
- d) Motivation
For all the reason so far mentioned, most students show an increased level of interest when they have a chance to see language in use as well as hear it and when this is coupled with interesting task.³⁰

Based on the above explanation, the researcher concluded that so many advantages and disadvantages in learning English using animation

²⁸Mahmuddin and Yusni Sinaga Ahmadin Azhar, 'The Effect of Using Media Vidio Dora Explorer to Students' Vocabulary Mastery', *English Education Journal* 1, 2 (2013),p.26–27.

²⁹Mahmuddin and Yusni Sinaga Ahmadin Azhar,p.26-27

³⁰Jeremy Harmer, *The Practice of English Language Teaching*, Eight Edit (Cambridge, UK: Tim Fox Evans, 2001),p.282<<https://www.amazon.com/Instructional-Media-Technologies-Learning-7th/dp/0130305367>>.

video, but we must do the best to make students easy to learn English, especially in learning vocabulary.

3. Teaching Vocabulary by Using Animation Video

The use of animation video in teaching vocabulary to help the teacher and the students in learning process. There are some activities in learning vocabulary with animation video which can be applied in the classroom. The teacher must be appropriate ways in delivering the material by using animation video, the teacher and the students must do pre-teaching, while-teaching and post-teaching to make clear in the teaching vocabulary process. There are some activities:

1) Pre-teaching

In pre-teaching activity the teacher coming to classroom and doing greeting, teacher ask the students to pray together, teacher check students' present list, teacher give motivation before continue the lesson and teacher ask the students to open the book.

2) While-teaching

In while-teaching activity teacher explain the material about how to teach and learning by using animation video, the teacher prepare the video in laptop and make the laptop connect to in focus, the teacher showing the video to students and the teacher ask students to find vocabulary about synonym in video that showing.

3) Post-teaching

In post-teaching activity the teacher and students conclude the lesson, teacher ask the students about learning material has been learned and teacher answer the question from the students and after that teacher close the class.

Table.1
Teaching Vocabulary By Using Animation Video

No	Learning activity	Teacher activities	Procedures	Student activities
1.	Pre-teaching	<ol style="list-style-type: none"> 1. Teacher come in to class and open the class. 2. Teacher prepare the media in learning process. 	<ol style="list-style-type: none"> 1. Prepare your self, in this case the teacher needs to master the learning process to use the media. To expedite doing in repeatedly even though is not directly in front of students prepare material and tools that may be need. 	<ol style="list-style-type: none"> 1. Students sit on chair 2. Pray based on their belief 3. Listen and pay attention 4. Students full attention to teacher
2.	While-teaching	<p><u>Observing</u></p> <ol style="list-style-type: none"> 1. Teacher 	<ol style="list-style-type: none"> 2. The right determination 	<ol style="list-style-type: none"> 1. The students

		prepare the animation video to show.	is to pay attention to the appearance position or in such a way that in can be seen both by all students in the classroom	pay attention to the teacher 2. The students make good position in order can be look the in focus
		<u>Associating</u> 1. The teacher ask students to find noun in video	3. Students arrangement for better result	1. The students listen the teache 2. The students do what the teacher say
		<u>Communicating</u> 1. The teacher explain the material 2. The teacher ask the students to write the noun based on the video	4. Introduce the subject matter, namely the material presented first introduce at the beggining of the lesson ways that can	1. Students listen teacher explanation 2. The students do what the teacher ask to them 3. The students

			be done	watching into video to find the noun
		<p><u>Exploring</u></p> <p>1. The teacher showing the video</p>	5. Present the video after entering the material. Use simple language that easy for students to understand	<p>1. Students pay attention to the teacher explanation</p> <p>2. The students write down the important from the explanation</p> <p>3. The students make another example about noun.</p>
		<p><u>Questioning</u></p> <p>1. Teacher give chance to the students to asking some question</p>	6. Give the students opportunity to ask, the teacher should be able to provide	1. Students ask the teacher about the material taht have not their comprehend

			stimulation so students want to ask question	<ol style="list-style-type: none"> 2. Students write down the conclusion based on the material 3. The students stand in front of their chair and tell the conclusion from the lesson
3.	Post-teaching	<ol style="list-style-type: none"> 1. Teacher give feedback 2. Teacher informs the next material 3. Theacher close the class 	<ol style="list-style-type: none"> 7. Concluding material that is conclusion not necessarily by the teacher but instead students must conclude the material reinforced by the teacher 	<ol style="list-style-type: none"> 1. Students listen to the teacher's explanation 2. Students response to the teacher command 3. The students listen to teacher 4. The students prepare to close the

				class
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B. Review of related finding

There were several researchers which have done the same research that related to this research, as follows:

The first, Kim and friends the present experiment examined effects on student learning and evaluation across four types of static and animated graphics teaching the operation of a bicycle tire pumps. Consistent with previous work on learning, animated graphics had essentially no advantage over static ones. There were effects of the type of presentation on students' evaluations, and these interacted with age and with cognitive characteristics of the students.³¹

The second, Ahsin Fahmi Mubarak and Siti Sundari Eka Wahjuningsih based on the results of the data analysis of t-test by using SPSS. It was indicated by the significant value in the independent sample t-test that was lower than 0.05.³²

The third, Azmi Yulistianing Arrida found that the use of animation video as teaching media significantly improve the vocabulary of the second grade students of SMP Negeri 6 Watampone after being given treatments. It is

³¹S Kim and others, 'The Effect of Animation on Comprehension and Interest', 2007, 260–70 <<https://doi.org/10.1111/j.1365-2729.2006.00219.x>>.

³²Ahsin Fahmi Mubarak and Siti Sundari Eka Wahjuningsih, "The Effect of Using Animation Video on the Eight Grade Students' Vocabulary Achievement," *International Seminar and Workshop on ELT* (2016):p.136

provides by the main score of post-test (84.50) is greater than the mean score of pre-test (52.90).³³

The fourth, Dian Purnama found there was an improvement of using animation movie as media teaching vocabulary. In the pre-test, the average score ($X_1 = 32.93$), while in the post-test the average score was ($X_2 = 65.5$). The result of teaching vocabulary by using animation movie was enough and the average score was 2030.5 ($X_2 = 65.5$).³⁴

The fifth, Evy Artanti found that the average score in pre-test showed that the lowest score was 47, the highest was 77 and the mean score 63.6. The post-test 1 showed that the lowest score was 57, the highest was 83, and the mean score of the post-test 1 was 71.7. There were also in post-test 2 showed the lowest score was 76, the highest score was 93 and the mean score was 79.55. The increasing of students' mean score also can be resumed into 63.6 in pre-test became 71.7 in post-test 1 and became 79.55 in the post-test 2.³⁵

In summary, from the above explanation, the researcher concludes that strategy or method can improve and make students enjoy in learning English, especially in vocabulary and this research will complete and contribute previous findings. Moreover, the researcher wants to research about "The Effect of Using animation video to vocabulary learning interest at grade XI students of SMA Negeri 1 Siabu".

³³AzmyYulistianing Aridha, "The Use of Animation Video in Improving Vocabulary of the Second Grade Students of SMP Negeri 6 Watampone", *Proceeding of the 65th TEFLIN International Conference, UniversitasNegeri Makassar, Indonesia 65 (1) (2018)*:p.45

³⁴Dian Purnama , "Improving Students' Vocabulary Mastery Through Animation Movie," *Thesis* (Banda Aceh Darussalam: UIN Ar-Raniry, 2018),p.62

³⁵Evy Artanti, "Improving Students' Vocabulary Mastery Using Animation Video" *Thesis* (Surakarta: Universitas Slamet Riyadi, 2015),p.16

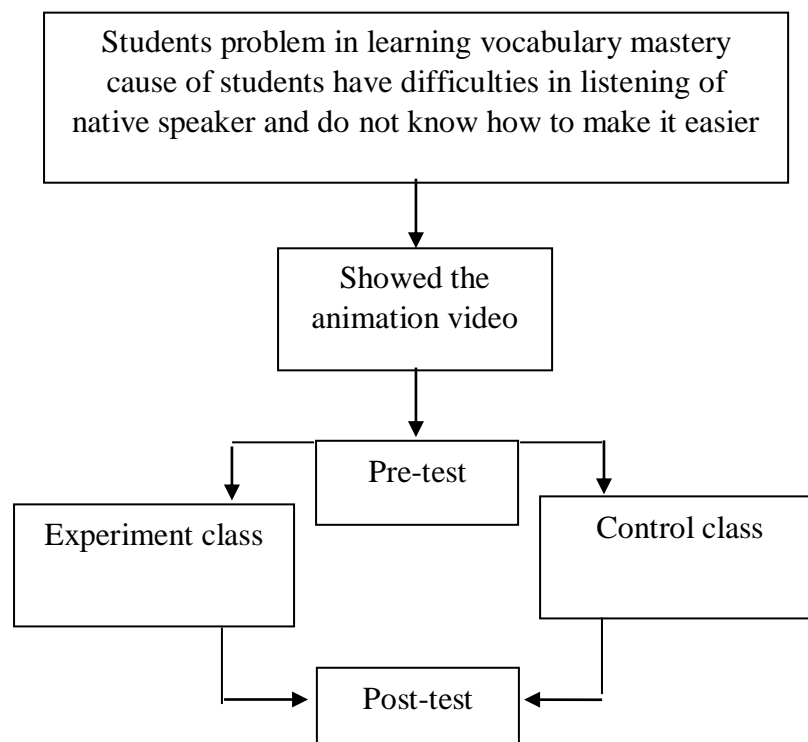
C. Conceptual Framework

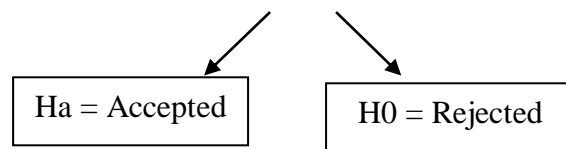
Vocabulary is collection of words that person know or use in language. Vocabulary is the basic that must be learn first by the learners. It is impossible to learn English without vocabulary. Moreover, the first lesson of human language is words.

Animation video is described as a cartoon, films, images, puppets, that are photographed and shown in a way that makes them move and appear to be alive. As said before, animation video and vocabulary learning interest are two skills that are very important in transferring the source language into the target language. This study will find out the correlation between using animation video to vocabulary learning interest. The researcher describes the conceptual framework as follow:

Table.2

Conceptual framework





D. Hypothesis

The hypothesis of this research are:

1. There is significant effect of using animation videos to vocabulary mastery at grade XI students of SMA Negeri 1 Siabu (H_a). $\mu_1 > \mu_2$.
2. There is no significant effect of using animation videos to vocabulary mastery at grade XI students of SMA Negeri 1 Siabu (H_0). $\mu_1 = \mu_2$

CHAPTER III

RESEARCH METHODOLOGY

A. Place and time of the Research

The researcher would conduct the research at SMA Negeri 1 Siabu. It is located at Jl. Aek Milas number 1 Siabu, Mandailing Natal, North Sumatera, Indonesia. It is about 48 KM from the central of Padangsidempuan. The researcher choose this school because it is one of quality school in Siabu district.

The time of the research has been done from 30th August 2019 up to 28th April 2020.

B. Research Design

The kind of this research is quantitative research with experimental method. The researcher divides this research into two variables, those are independent (animation video) and dependent (students' vocabulary mastery). The researcher used two classes in this research. One of the classes is taught with animation video and it called as experimental class or as a treatment. Meanwhile the other class is taught with conventional technique and called as control class.

Based on using control and experimental class, the research design that is used experimental design. The design which is pretest-posttest control group design requires at least two group., each of which is formed by random assignment. Both groups are administare a pre-test, each group receives a different treatment and both groups are post-test at the end of

the study. Posttest scores are compared to determine the effectiveness of the treatment.

Table.3
Pretest-Posttest Control Group Design

Class	Pre-test	Treatment	Post test
Experiment class	√	√	√
Control class	√	X	√

Where:

E: symbol for experimental class

P: symbol for control class

X: symbol for treatment³⁶

C. Population and Sample

1. Population

Population of this research is all of the XI class of Social Sciences it consisted of seven classes with 244 students. It can be seen in the following table:

Tabel.4
Population of Research

No	Class	Students
1	XI IPA-1	35
2	XI IPA-2	34
3	XI IPA-3	34
4	XI IPS-1	21
5	XI IPS-2	35
6	XI IPS-3	21

³⁶Suharsimi Arikunto, *Manajemen Penelitian* (Jakarta: Rineka Cipta, 2003),p.276.

7	XI IPS-4	35
Total		213

Source: School Administration Data of SMA Negeri 1 Siabu

2. Sample

Sample is the small group that is observed. It selected from a larger group which consist of the individuals, items or events and referred to as a population. A sample is a portion of population.³⁷ L. R. Gay and Airaisan figures sample is a number of individuals for a study in such a way that they represent the larger group from who they were selected.³⁸ So, sample is a portion of population that was selected as respondent in the research.

The researcher used random sampling technique to select the respondent from population. Random sampling is “The process of selecting a sample in such a way that all individuals in the defined population have an equal and independent change of selection for sample.”³⁹ The researcher used random sampling technique because the population is homogenous, which the population were at the same grade, has same lesson and they are closely has the same age.

Arikunto stated that “if the population less than 100, it is better to take all the sample, if the population more than 100 the sample can be take around 10-15% or 20%-25% from the population.”⁴⁰ The researcher

³⁷Donald Ary, et. al., *Introduction to Research in Education 8th Edition* (Canada: Wadsworth Cengage Learning, 2010).p.148. <<http://www.cambridge.org>>

³⁸L. R. Gay and Peter Airaisan, *Educational Research...*,p.121.

³⁹Gay, Mills and Airasian, *Educational Research: Competencies For Analysis*.p.131

⁴⁰Suharsimi Arikunto, *Prosedur Penelitian: Suatu Pendekatan dan Praktik*, 15th Ed. (Jakarta: Aneka Cipta, 2013),p.112.

decided to take 20% from population as the sample. The sample size is 71 students. It can be seen in the following table:

Tabel.5
Sample of Research

Sample	Class	Total
Experimental Class	XI IPS-4	21
Control class	XI IPS-1	21
Total		42

D. Definition of Operational Variable

Based on the title of the thesis, this research is consisted of two variables, so that the definitions of variables as follow:

1. Vocabulary mastery

Vocabulary is group of words that a person or a group of people know and regularly use in their language, which is commonly categorized in a few ways. It is the total number of words known in a particular language. Vocabulary mastery is a complete skill to understand the stock of words and consider to be important.

2. Animation video

Animation video is described as a cartoon, films, images, puppets, that are photographed and shown in a way that makes them move and appear to be alive.

E. Instrument of Research

Instrument is the important thing in a research. The quality of the instrument will establish the quality of the data. The instruments of this research to collect the data is multiple choice test. A test in simple terms is a method of measuring a person's ability, knowledge or performance in a given domain. The instrument will be explain below:

Table.6

Indicators of Vocabulary Mastery

No	Indicator	Topic	Number of Items	Item
1	Identifying the meaning of words	Celebration	54, 63, 64, 65, 66, 67, 68, 82	8
		Family	18, 21, 24, 85, 86, 87, 96, 97, 99	9
		Friendship	19, 20, 23, 83, 84, 88, 98	8
2	Identifying the use of words	Celebration	17, 51, 52, 53, 58, 69, 70, 77, 81, 89, 90, 91, 92, 95	14
		Family	1, 6, 8, 9, 11, 12, 26, 28, 29, 30, 32, 35, 37, 39, 40, 41, 44, 45, 46, 49, 50, 59, 60, 73, 75, 76, 100	27
		Friendship	2, 3, 4, 5, 7, 10, 13, 14, 15, 16, 25, 27, 31, 33, 34, 36, 38, 42, 43, 47, 48, 55, 56, 57, 61, 62, 71, 72, 74, 78, 79, 80, 93, 94,	34
Total				100

F. Technique of Collecting Data

To collect the data, the researcher used test. In give the test, it is divided into two kinds, they are: pre-test and post-test.

1. Pre-test

Pre-test is a test that given before doing the treatment to the students. The function is to know the students' mastery in experiment class. It also used to find out the homogeneity and normality level of the sample. The researcher used some step in give the pre-test. There are:

- a. The researcher prepared the multiple choice test.
- b. The researcher distributed the paper of the question to students of experimental class and control class.
- c. The researcher explained what students to did.
- d. Gave the time to the students to answered the test.
- e. The researcher collected the question paper.
- f. Then, the researcher founds the mean score of control class and experimental class.

2. Treatment

After gave the pre-test the researcher gave treatment to students. The experimental class received the treatment taught by used animation video and control class taught by conventional strategy.

3. Post-test

After gave the treatment, the researcher conducted a post-test which the different question with the pre-test. Also it used to

know the different score of experimental class and the effect of treatment, whether is an effect or not. Here, the researcher used some steps in gave post-test. There are:

- a. The researcher prepared the multiple choice test.
- b. The researcher distributed the paper of the students to students of experimental class and control class.
- c. The researcher explained what the students to do.
- d. Gave time to the students to answered the test.
- e. The researcher collected the test paper.
- f. The researcher checked the answered question of students.
- g. Then, the researcher found the mean score of control class and experimental class.

G. Technique of Analysing Data

Experimental research design is being done through experimental class and control class. After experimental process, two of classes are tested with using technique of data analysis as follow:

1. Requirement Test
 - a. Normality Test

The researcher has been used normality test with using *Chi – Quadrate* formula, as follow:

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

Where:

$\chi^2 =$ Chi-Quadrate

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

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

To calculate the result of chi-quadrate, it used significant level
5% (0, 05) and degree of freedom as big as total of frequency is
lessened 3 ($dk = k-3$).

b. Homogeneity Test

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

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

Where:

$n_1 =$ Total of the data that bigger variant

$n_2 =$ Total of the data that smaller variant

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

To test whether variants of both homogenous samples, variants equality test, that is:

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

Here, after comparing to the F_{table} , its criterion is: If F calculating $< F_{table}$, then both samples are homogeneous.

2. Hypothesis Test

The technique in analyzing the data is used by t-test, because it is aimed to examine the difference of two variables. Such examination performed both on pre-test and post-test score from the experimental class and control class. The hypothesis test will be stated as: there is a significant effect of using Animation video on students' vocabulary mastery ($\mu_1 > \mu_2$) and there is no significant effect of using Animation Video on students' vocabulary mastery ($\mu_1 = \mu_2$).

From explanation above, to test hypothesis researcher uses formula as follows:

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

Where:

Tt : The value which the statistical significance

M_1 : The average score of experimental class

M_2 : The average score of control class

X_1^2 : Deviation of experimental class

X_2^2 : Deviation of control class

n_1 : Number of experimental

n_2 : Number of control

But if the data is not normal and homogenous, the formula that must be used to test hypothesis is Chi-Quadrate. The formula is as follow:

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

Where:

x^2 =Chi-Quadrate

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

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

To calculate the result of *Chi-Quadrate*, it is used significant level 5% (0,05) and degree of freedom as big as total of frequency is lessened 3 ($dk = k-3$). If result $x^2_{count} < x^2_{table}$. So, it can be concluded that data is distributed normal.

CHAPTER IV

RESEARCH RESULT

To analyze the data, the researcher has collected data through pre-test and post-test in the both of classes, experimental class and control class. To find out The Effect of Animation Video to Vocabulary Mastery, the researcher has calculated the data by using quantitative analysis. Next, the researcher described the data as follow:

A. The Description of Data

1. The Description of Data before Using Animation Video

a. Score of Pre-test Experimental Class

As the experimental class, the researcher took class XI IPS 1. Based on students' answer in pre-test, the researcher has calculated the students' score in appendix 6 and 7. The score of pre-test experimental class can be seen in the following table:

Table.7

The Score of Experimental Class in Pre-test

Total	1747
Highest score	92
Lowest score	76
Mean	82
Median	79.5
Modus	83.02
Range	25
Interval	4.5

Standard deviation	17.618
Variants	616.44

Based on the above table the total score of experimental class in pre-test was 1747, mean was 82, standard deviation was 0.12, variants were 616.44, median was 79.5, range was 25, modus was 83.02, interval was 4.5. The researcher got the highest score was 92 and the lowest score was 76. It can be seen on appendix 6.

Then, the calculation of the frequency distribution of the students' score as follow:

Table.8

**Frequency Distribution of Student's Score
Experimental class pre-test**

No	Interval	Mid-Point	Frequency	Percentages
1	70 – 74	72	3	14.28%
2	75 – 79	77	6	28.57%
3	80 – 84	82	6	28.57%
4	85 – 89	87	4	19.04%
5	90 – 95	92	2	9.52%
$i = 4.5$		-	21	99.98%

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

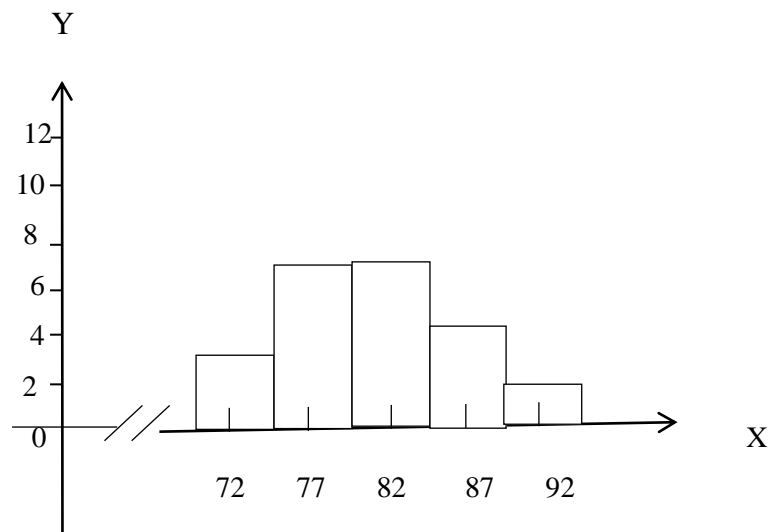


Figure 1: Description Data of Students' Vocabulary Mastery in Experimental Class (Pre-test)

From the table frequency distribution above shown that the students score is there in class interval between 70 – 74 was 3 students (14.28%), class interval 75 – 79 was 6 students (28.57%), class interval 80 – 84 was 6 students (28.57%), class interval 85 – 89 was 4 students (19.04%), and class interval 90 – 95 was 6 students (9.52%).

b. Score of Pre-Test Control Class

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

Table.9

The Score of Control Class in Pre-test

Total	1766
Highest score	97
Lowest score	74
Mean	88

Median	92.17
Modus	91.84
Range	23
Interval	11.5
Standard deviation	5.175
Variants	35.38

Based on the above table the total score of Control class in pre-test was 1766, mean was 88, standard deviation was 5.175, variants were 35.38, median was 92.17, range was 23, modus was 91.84, interval was 11.5. The researcher got the highest score was 97 and the lowest score was 74. It can be seen on appendix 6. Then, the calculation of the frequency distribution of the students' score of control class can be applied into table frequency distribution as follow:

Table.10

Frequency Distribution of Students' Score

Control Class Pre- test

No	Interval	Mid-Point	Frequency	Percentages
1	70 – 75	72	1	4.76%
2	76 – 79	78	1	4.76%
3	80 – 85	82	12	57.14%
4	86 – 90	88	2	9.52%
5	91 – 95	93	4	19.04%
6	96 – 100	98	1	4.76%
$i = 11.5$		-	21	100%

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

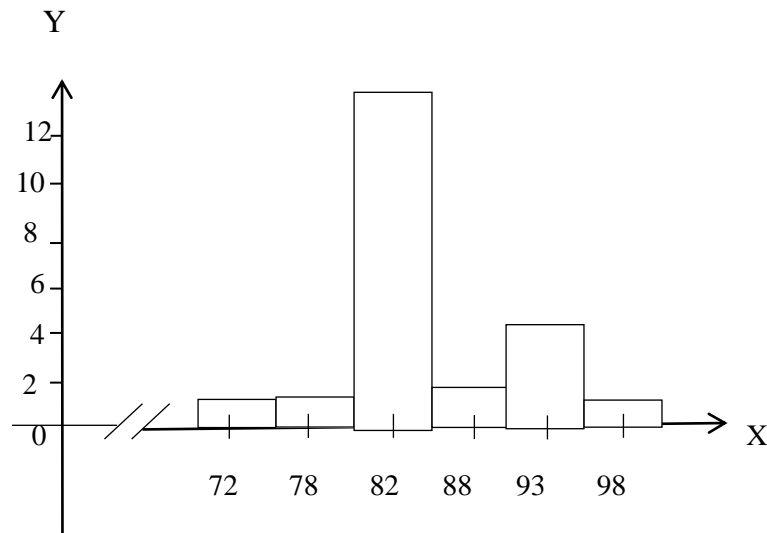


Figure 2 : Description Data of Students' Vocabulary Mastery in Control Class (Pre-test)

From the table frequency distribution above shown that the students score is there in class interval between 70 - 75 was 1 student (4.76%), class interval 76 - 79 was 1 student (4.76%), class interval 80 - 85 was 12 students (57.14%), class interval 86 - 90 was 2 students (9.52%), class interval 91 - 95 was 4 students (19.04%), the last class interval 96 - 100 was 1 student (4.76%).

2. The Description of Data After Using Animation Video

a. Score of Post-Test Experimental Class

The calculation of the result that had been gotten by the students in answering the test after the researcher did the treatment by using Animation Video Media can be seen in the following table:

Table.11**The Score of Experimental Class in Post-test**

Total	1788
Highest score	97
Lowest score	77
Mean	88
Median	89.5
Modus	85.5
Range	20
Interval	4
Standard deviation	5.19
Variants	31.27

Based on the above table the total score of experiment class in post-test was 1788, mean was 88, standard deviation was 5.9, variants were 31.27, median was 89.5, range was 20, modus was 85.5, interval was 4. The researcher got the highest score was 97 and the lowest score was 77. It can be seen on appendix 9. Then, the calculation of the frequency distribution of the students' score of experimental class can be applied into table frequency distribution as follow:

Table.12**Frequency Distribution of Students' Score Experimental Post-test**

No	Interval	Mid-Point	Frequency	Percentages
1	75 – 79	77	1	4.76%
2	80 – 85	82	13	61.90%
3	86 – 89	88	2	9.52%
4	90 – 95	92	4	19.04%

No	Interval	Mid-Point	Frequency	Percentages
5	96 – 100	98	1	4.76%
$i = 4$		-	21	99.98%

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

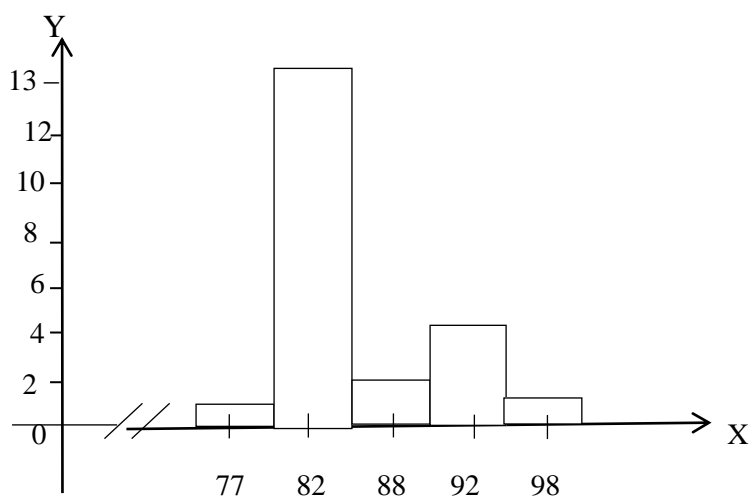


Figure 3 : Description Data of Students' Vocabulary Mastery in Experimental Class (Post-test)

From the table frequency distribution above shown that the students score is there in class interval between 75 – 79 was 1 student (4.76%), class interval 80 – 85 was 13 students (61.90%), class interval 86 – 89 was 2 students (9.52%), class interval 90 – 95 was 4 students (19.04%), and class interval 96 – 100 was 1 student (4.76%).

b. Score of Post-Test Control Class

As the control class, the researcher took class VIII-2. The result that had been gotten by the students in answering the test after the researcher taught the writing paragraph by using conventional method can be seen in the following table:

Table.13**The Score of Control class in Post-test**

Total	1863
Highest score	94
Lowest score	74
Mean	82
Median	62.5
Modus	57
Range	20
Interval	3
Standard deviation	4.14
Variants	64.80

Based on the above table the total score of control class in post-test was 1863, mean was 82, standard deviation was 4.14, variants was 64.80, median was 62.5, range was 20, modus was 57, interval was 3. The researcher got the highest score was 94 and the lowest score was 74 . It can be seen on appendix 9. Then, the calculation of the frequency distribution of the students' score of control class can be applied into table frequency distribution as follow:

Table.14**Frequency Distribution of Students' Score Control Class Post-test**

No	Interval	Mid-Point	Frequency	Percentages
1	70 – 74	72	1	4.76%
2	75 – 79	77	7	33.33%

No	Interval	Mid-Point	Frequency	Percentages
3	80 – 84	82	6	28.57%
4	85 – 89	87	4	19.04%
5	90 – 94	92	3	14.28%
$i = 3$		-	21	99.98%

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

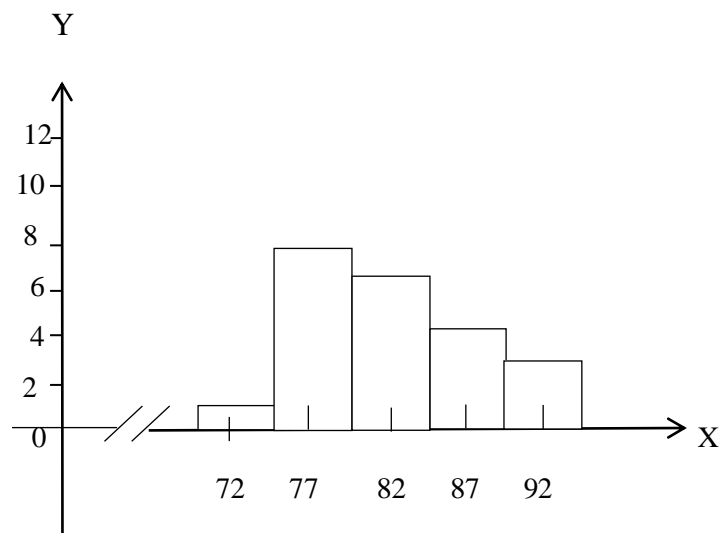


Figure 4: Description Data of Students' Vocabulary Mastery in Control Class (Post-test).

From the table frequency distribution above shown that the students score is there in class interval between 70 – 74 was 1 student (4.76%), class interval 75 – 79 was 7 students (33.33%), class interval 80 – 84 was 6 students (28.57%), class interval 85 – 89 was 4 students (19.04%), class interval 90 – 94 was 3 students (14.28%).

B. Hypothesis Test

After calculating the data of post-test, researcher found that post-test result of experimental class and control class is normal and homogenous. Based on the result, researcher used parametric test by using T-test to analyze the hypothesis. Hypothesis alternative (H_a) of the research was “Animation Video has no effect on students’ Vocabulary Mastery at grade XI SMAN 1 Siabu”. The calculation can be seen on the appendix 11 and 12. The result of t-test was as follow:

Table.15
Result of T-test from the Both Averages

Pre-test		Post-test	
t_{count}	t_{table}	t_{count}	t_{table}
-0.115	1.67356	0.058	1.67356

The test hypothesis had two criteria. First, if $t_{count} < t_{table}$, H_0 is rejected. Second, $t_{count} > t_{table}$, H_a is accepted. Based on researcher calculation in pre-test, researcher found t_{count} -0.115 while t_{table} 1.67356 with opportunity $(1 - \alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 21 + 21 - 2 = 40$. Cause $t_{count} < t_{table}$ (0.208 < 1.67155), it meant that hypothesis H_a was rejected and H_0 was accepted. So, in pre-test, two classes were same. There is no difference in the both classes. But, in post-test, researcher found that t_{count} 0.058 while t_{table} 1.67356 with opportunity $(1 - \alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 21 + 21 - 2 = 40$. Cause $t_{count} > t_{table}$ (0.0558 > 1.67356), it meant that hypothesis H_a was rejected and H_0 was rejected. The calculation can be seen on the appendix 12.

Based on the result of the data analysis, the researcher got the mean score of experimental in pre-test was 82 and in post-test was 88. Then, the mean score of control class in pre-test was 82 and in post-test was 88. The gain score was 20.42. The calculation can be seen on the appendix 14.

C. Discussion

The researcher discussed the result of this research. Based on the result of the data analysis, the researcher got the mean score of experimental in pre-test was 82 and in post-test was 86. The enhancement was 4. Then, the mean score of control class in pre-test was 82 and in post-test was 88. The enhancement was 6. So, based on its comparing can be concluded that the enhancement of experimental class was higher than control class. So, animation video had the effect on students' vocabulary mastery.

Related to the theory from Lin and Tseng also describes the advantages of using animation video to teach vocabulary by using different point of view.

The first, the use of animation video in teaching vocabulary make it easier for the students to comprehend difficult texts, which eventually make them more independent and autonomous learners. The second, learning vocabulary by watching animation video constructs stronger meaning representations for better vocabulary retention. While watching the video, the students use their visual and auditory senses which can help them remember the vocabularies much better than read a text from text books.⁴¹

So by using this media the students' vocabulary mastery can be facilitated effectively. It also discussed with the theory and compared with the related finding that has been stated by researcher.

⁴¹Ahsin Fahmi Mubarak, Siti Sundari, and Eka Wahjuningsih, 'The Effect of Using Animation Video on the Eight Grade Students' Vocabulary Achievement at SMPN 5 Jember', *International Seminar and Workshop On ELT*, 2013.p.132.

Based on the related findings, this research is relevant with the study undertaken by Ahsin Mubarak, he stated that the use media animation video is believed to be effective to improve the students' animation video. The students' vocabulary problems can be minimized by applying the media animation video. So, it was same with the result of this thesis that the implication of using animation video was suitable to teach students' vocabulary mastery and give a positive effect on students' vocabulary mastery.

It is also related with Dian Purnama, she found that the students' vocabulary mastery increased after being taught using animation video, they can solve their problems easily.

The students score better, it was known from the students' mean score increased in post-test especially in experimental class. It can be seen from the mean score in the pre-test, the average score ($X_1 = 32.93$), while in the post-test the average score was ($X_2 = 65.5$). The result of teaching vocabulary by using animation movie was enough and the average score was 2030.5 ($X_2 = 65.5$).⁴²

It was also same as this research that gives the gain score between experimental class and control class 20.42. It is mean that the animation video suitable to teach students' vocabulary mastery.

Then, the result of this research finding was also relevant with the study conducted by Evy Artanti, animation video showed better improvement in teaching vocabulary. "The improvement of animation video organizer to the students' vocabulary mastery indicated that animation video could be used to

⁴²Dian Purnama, 'Improving Students' Vocabulary Mastery Through Animation Movie' Thesis (UIN Ar-Raniry,p.2018).

improve students' vocabulary."⁴³ It meant this strategy can be considered to be an alternative technique in teaching vocabulary.

This proofs show that animation video media is appropriate in teaching vocabulary mastery and provide interest and motivation to students. So, animation video media has given the effect to the research that has been done by the researcher or the other researcher who mentioned in related findings.

D. The Threats of the Research

There were some aspects that could threat for this research as follow:

- a) The researcher was not sure whether all of students in the experimental class and control class did the test honestly. There was a possibility that some of them answered the test by copying or imitating their friends' answer.
- b) The students did not know the meaning. So, they did not answer the test seriously. It made noisy and distrubed others.
- c) The students also think that the score did not influence their score in the school. So, they talked each other and sometimes asked for permission.

⁴³Evy Artanti, 'Improving Students' Vocabulary Mastery Using Animation Video' *Thesis* (Surakarta: Universitas Slamet Riyadi, 2015),p.16.

CHAPTER V

CONCLUSION AND SUGGESTION

A. Conclusion

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

1. Students' vocabulary mastery at grade XI IPS SMAN1 Siabu before using media animation video were still low. It can be seen from the students' mean score of pre-test was 88 in experimental class.
2. The students' mastery of the grade XI IPS students at SMAN1 Siabu in vocabulary by using media animation video had higher score. It can be seen from the students' score of post-test, the higher score of post-test using Animation Video (experiment class) is 92 and the lowest score is 76.
3. It is found that t_{count} was higher than t_{table} $0.058 > 1.72074$ which means H_a was rejected. Hence, there was significant effect of using media animatin video to vocabulary mastery at grade XI students SMA Negeri 1 Siabu.

B. Suggestion

The researcher got much information in English teaching and learning after finishing this research. From this research, researcher saw some things need to be improved. It makes the researcher give some suggestions, as follow:

1. For the English teacher, it is hoped to use animation video in other ways in teaching vocabulary. This research and others proved that animation video was effective to be applied in the classroom.
2. For the next researcher, this research can help the other researcher who will conduct further research in the same topic. The other researcher can get the information from this experimental research, even do a comparison between this research and another with the similar variable. For the English lecturer, it is hoped to teach this technique so that the university students who will become teachers can apply this technique while they are teaching vocabulary.
3. For the English lecturer, it is hoped to teach this technique so that the university students who will become teachers can apply this technique while they are teaching English vocabulary.

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CURRICULUM VITAE



A. Identity

Name : Nur Khofifah Rizky Ridwan
Reg. Numb : 15 20 300083
Place/ Birth : Jakarta, 27th April 1998
Sex : Female
Religion : Islam
Address : Sibaruang Village, Siabu Sub-District,
Mandailing Natal District, Sumatera Utara,
Indonesia.

B. Parents

Father's Name : Ridwan Nasution
Mother's Name : Nur Aisyiyah Harahap, S.Pd

C. Educational Background

1. Elementary School : SD Muhammadiyah Sibaruang (2009)
2. Junior High School : Islamic Boarding School of K.H.A
Dahlan Sapirok (2012)
3. Senior high School : SMA Negeri 1 Siabu (2015)
4. Institute : IAIN Padangsidempuan (2020)

Appendix 1

INSTRUMENT FOR PRE TEST VOCABULARY MASTERY

1. Pengantar

- Instrument ini bertujuan untuk menjangking data siswa tentang pembelajaran vocabulary. Oleh karena itu jawablah sesuai kemampuan anda.
- Jawaban anda tidak mempengaruhi kedudukan anda di sekolah ini.
- Jawaban anda tidak mempengaruhi nilai bahas inggris anda di sekolah ini.

2. Petunjuk

- Bacalah pertanyaan-pertanyaan berikut dengan seksama
- Jawablah pertanyaan berikut dengan tepat
- Apabila pertanyaan kurang jelas tanyakan langsung kepada pengawas
- Waktu yang tersedia 45 menit

3. Soal

Choose the correct answer from the option A, B, C or D !

Table.5
Indicators of Vocabulary Mastery

No	Indicator	Topic	Number of Items	Item
1	Identifying the meaning of words	Celebration	54, 63, 64, 65, 66, 67, 68, 82	8
		Family	18, 21, 24, 85, 86, 87, 96, 97, 99	9
		Friendship	19, 20, 22, 23, 83, 84, 88, 98	8
2	Identifying the use of words	Celebration	17, 51, 52, 53, 58, 69, 70, 77, 81, 89, 90, 91, 92, 95	14
		Family	1, 6, 8, 9, 11, 12, 26, 28, 29, 30, 32, 35, 37, 39, 40, 41, 44, 45, 46, 49, 50, 59, 60, 73, 75, 76, 100	27
		Friendship	2, 3, 4, 5, 7, 10, 13, 14, 15, 16, 25, 27, 31, 33, 34, 36, 38, 42, 43, 47, 48, 55, 56, 57, 61, 62, 71, 72, 74, 78, 79, 80, 93, 94,	34
Total				100

The following is formula to score students' vocabulary mastery:

$$\text{Students' score} = \frac{\text{students score answer}}{\text{total items}} \times 100\%$$

Nama :
Kelas :

Choose the correct answer from the option a, b, c or d !

1. Indah ... me to come to her birthday.
 - a. Forbid
 - b. Forget
 - c. Doesn't ask
 - d. Invites
2. Then, I ... the cake.
 - a. Look
 - b. Want
 - c. Cut
 - d. Invites
3. Tania ... her birthday party.
 - a. Celebrates
 - b. Celebratory
 - c. Doesn't follow
 - d. Remain
4. 17 Agustus 1945 is ...
 - a. Independence day
 - b. Holiday
 - c. Birthday party
 - d. Wedding party
5. Arif, ... you deserved it, man.
 - a. You're lost
 - b. Congratulation
 - c. Don't forget
 - d. Happy Sunday
6. Dina: Hi Amel. What is your daughter doing these days?
Amel:oh, she is in collage. In fact, she plans to graduate this march.
Dina: that is ... ! you must be very proud of her.
 - a. Good luck
 - b. Impossible
 - c. Wonderful
 - d. Glad
7. Dito: Hi Eva. I won the math Olympic.
Eva : Congrats, Dito. I proud of your ...
 - a. Day
 - b. Math
 - c. Self
 - d. Proud
8. Tika: I must ... you on your birthday
Lia : Thank you
 - a. Appreciate
 - b. Congratulate
 - c. Know
 - d. Proud
9. Last month I ... my twenty two birthday
 - a. Appreciate
 - b. Proud
 - c. Know
 - d. Celebrate
10. My best friend came out ... a birthday cake.
 - a. Come
 - b. Bringing
 - c. Practice
 - d. Appreciate
11. He was a genius in many ways but somewhat ... when it came to his very poor choice of friends.
 - a. Misinterpreted
 - b. Misunderstood
 - c. Misguided
 - d. Mistrusted

12. Much as I liked the first candidate, I do have some ... about offering her the job.
- a. Misgiving
b. Misunderstandings
c. Misinterpretation
d. Misspellings
13. They live in a rather ... little grey house on the outskirts of town.
- a. Unassuming
b. Nondescript
c. Insipid
d. Nonchalant
14. Some of the participants' names had been ... in the conferences programme.
- a. Misspelt
b. Misunderstood
c. Misled
d. Misinterpreted
15. The student representatives were more than a little ... about the school director's refusal to see them.
- a. Disturbed
b. Disgruntled
c. Disillusioned
d. Disinclined
16. The idea that bread is fattening is a common ... that many people have.
- a. Misconception
b. Misinterpretation
c. Misprint
d. Misgiving
17. All people ... in my party.
- a. Enjoyed
b. Awesome
c. Look
d. Hope
18. Wina is my ... we are in the same class.
- a. Classmate
b. Brother
c. Kind friend
d. Soulmate
19. Rina is my ... she always be there for me.
- a. Best friend
b. Penpal
c. Nephew
d. Niece
20. I have my penpal. My ... is very kind.
- a. Roommate
b. Penpal
c. Classmate
d. Friends
21. I have 3 ... two brother and one sister.
- a. Sisters
b. Brothers
c. Friends
d. Siblings
22. The leader of family is ...
- a. Mother
b. Father
c. Brother
d. Son
23. A: who is she?
B: she is my ...
- a. Sister
b. Brothers
c. Nephew
d. Son
24. A: who is ... ?
B: he is my uncle.
- a. She
b. He
c. Her
d. Him
25. What is the meaning of performance?
- a. Perayaan
b. Pertunjukan
c. Acara
d. Upacara

26. What is the meaning of birthday song?
 a. Perayaan
 b. Pertunjukan
 c. Lagu ulangtahun
 d. Perayaan ulangtahun
27. Celebration. The meaning of the underline word is ...
 a. Upacara
 b. Perayaan
 c. Perpisahan
 d. Kebiasaan
28. Pesta in English is ...
 a. Competition
 b. Ceremony
 c. Wedding
 d. Party
29. Invite. The meaning of the underline word is ...
 a. Mengundang
 b. Meminta
 c. Menyuruh
 d. Undangan
30. I want birthday cake. The meaning of underline word is ...
 a. Kue saya
 b. Roti
 c. Kue ulangtahun
 d. Roti ulagtahun
31. Fun in Indonesia is ...
 a. Menyenangkan
 b. Luar biasa
 c. Meriah
 d. Lucu
32. Graduation celebration in Indonesia is ...
 a. Tamat sekolah
 b. Mulai sekolah
 c. Perayaan tamat sekolah
 d. Hari perayaan
33. Pen pal. The meaning of underline word is ...
 a. Sahabat sejati
 b. Sahabat pena
 c. Sahabat terbaik
 d. Teman
34. I have a best friend. The meaning of underline word is ...
 a. Sahabat jauh
 b. Teman sejati
 c. Kawan lama
 d. Teman terbaik
35. What is the meaning of half sister/brother ...
 a. Saudara tiri
 b. Saudar kanadung
 c. Ayah tiri
 d. Ibu tiri
36. Saudara perempuan in English is ...
 a. Brother
 b. Sister in law
 c. Sister
 d. brother in law
37. Saudara laki-laki in English is ...
 a. Brother
 b. Sister in law
 c. Sister
 d. brother in law
38. I have much friend. What the meaning of the underline word ...
 a. Saudara
 b. Teman
 c. Keluarga
 d. Sepupu
39. All people song ... for me.
 a. Birthday dance
 b. Birthday cake
 c. Birthday song
 d. birthday music
40. They came out ... a birthday cake.
 a. Bringing
 b. Taking
 c. Saving
 d. Enjoying

41. I ... the candle.
- | | |
|----------|---------|
| a. Take | c. Look |
| b. Bring | d. Blow |
42. Everybody ... their hands.
- | | |
|----------|---------|
| a. Hit | c. Hold |
| b. Claps | d. Hang |
43. We ... a game
- | | |
|-----------|---------|
| a. Played | c. Make |
| b. Won | d. Try |
44. Before going home they ... me once
- | | |
|---------------|-----------------|
| a. Claps hand | c. Congratulate |
| b. Invite | d. Shake hand |
45. The party was full of ...
- | | |
|------------|---------|
| a. Fun | c. Sad |
| b. Amazing | d. Cake |
46. Housewife. The meaning of the underline word is ...
- | | |
|-----------|---------------------|
| a. Petani | c. Ibu rumah Tangga |
| b. Bidan | d. Guru |
47. Farmer. The meaning of the underline word is ...
- | | |
|-----------|---------------------|
| a. Petani | c. Ibu rumah Tangga |
| b. Bidan | d. Guru |
48. Partner. The meaning of the underline word is ...
- | | |
|-------------|-------------|
| a. Saudara | c. Orangtua |
| b. Pasangan | d. Rekan |
49. Agama in English is ...
- | | |
|-------------|---------------|
| a. Believe | c. Confidence |
| b. Religion | d. Trust |
50. I ... drawing or painting. I like sport.
- | | |
|----------|----------------|
| a. Think | c. Don't like |
| b. Love | d. Don't think |
51. Closest. The meaning of the underline word is ...
- | | |
|-----------------|------------|
| a. Dekat | c. Jauh |
| b. Paling dekat | d. Terjauh |
52. Classmate. The meaning of the underline word is ...
- | | |
|---------------|------------------|
| a. Teman main | c. Teman sekelas |
| b. Teman jauh | d. Teman sejati |
53. What is in English companion?
- | | |
|------------|-------------|
| a. Teman | c. Rekan |
| b. Saudara | d. Keluarga |
54. What is the meaning of childhood?
- | | |
|-----------------|---------------|
| a. Masa remaja | c. Masa kecil |
| b. Masa sekolah | d. Anak-anak |
55. Her hobby is ... she likes to dance traditional and modern dancing.
- | | |
|------------|------------|
| a. Singing | c. Reading |
| b. Drawing | d. Dancing |

56. I learn many ... from my parent.
- | | |
|-----------|-----------------|
| a. Things | c. Mistake |
| b. Think | d. Difficulties |
57. Jessica's as tall ... her mother
- | | |
|---------|---------|
| a. Than | c. Like |
| b. More | d. As |
58. A : what is ... New York like?
B : it is really exciting
- | | |
|---------|--------|
| a. Does | c. Is |
| b. Was | d. Did |
59. Trains in London are more crowded ... in Paris
- | | |
|---------|---------|
| a. That | c. As |
| b. Than | d. Like |
60. Oxford is one of ... oldest university in Europe.
- | | |
|---------|---------|
| a. The | c. Many |
| b. Much | d. More |
61. He's ... older than he looks
- | | |
|---------|---------|
| a. Much | c. More |
| b. Many | d. The |
62. He is not as intelligent ... his sister
- | | |
|---------|------------|
| a. Like | c. As |
| b. Than | d. Nothing |
63. This is ... than I expected
- | | |
|----------------|-----------|
| a. More hard | c. Hard |
| b. The hardest | d. Harder |
64. Who is the ... man in the world?
- | | |
|------------|-----------------|
| a. Rich | c. Most richest |
| b. Richest | d. Most rich |
65. Every thing is ... in my country
- | | |
|-----------------|-------------|
| a. More cheaper | c. Cheaper |
| b. Cheap | d. Cheapest |
66. Rome was hotter ... I expected
- | | |
|------------|---------|
| a. Than | c. That |
| b. Nothing | d. As |
67. My dad's really ... he always buys presents for the everyone
- | | |
|-------------|--------------|
| a. Romantic | c. Fortunate |
| b. Generous | d. Depressed |
68. Before you can get a credit card, you have to provide a lot of ... details
- | | |
|--------------|-------------|
| a. Wealth | c. Person |
| b. Happiness | d. Personal |
69. I try to lead a ... life style, lots of exercises, fruit and no junk food
- | | |
|--------------|----------|
| a. Depressed | c. Dirty |
| b. Healthy | d. Mess |
70. Venice is a very ... city. A lot of people go there on honeymoon.
- | | |
|------------|-------------|
| a. Dirty | c. Polluted |
| b. Wealthy | d. Romantic |

71. I did not like that city at all. The streets were so ... and the air was so ...
 a. Dirty/Messy
 b. Personal/Noisy
 c. Dirty/Polluted
 d. Messy/Polluting
72. There is a boy ... broke the window
 a. Which
 b. What
 c. Where
 d. Who
73. They are the policeman ... caught the thief
 a. Where
 b. Which
 c. Who
 d. When
74. That is the house ... I was born
 a. When
 b. Where
 c. That
 d. Which
75. The hotel ... we stayed was very comfortable
 a. Which
 b. Where
 c. That
 d. When
76. Are you as tall ... your brother?
 a. Like
 b. Than
 c. As
 d. More
77. A : Was not that film wonderful?
 B : Yes, it was ...
 a. Modern
 b. Brilliant
 c. Wealthy
 d. Depressed
78. A : I'm bored with this lesson !
 B : I know, I'm really ... with it, too !
 a. Generous
 b. Healthy
 c. Fed up
 d. Happy
79. A : Ani's bedroom is really untidy again !
 B : is it? I told her it was ... yesterday, and she promised to clean it
 a. Clean
 b. Modern
 c. Shining
 d. Messy
80. A : Rio's family is very rich
 B : Well, I knew her uncle was very...
 a. Finance
 b. Wealthy
 c. Polluted
 d. Windy
81. She is ... than her sister
 a. Much nicer
 b. Much more nicer
 c. More nicer
 d. More nicer
82. He is ... boy in the class
 a. The funnier
 b. Funnier
 c. Funniest
 d. The funniest
83. Barbara is ... than Sarah
 a. Intelligenter
 b. More intelligent
 c. Much intelligent
 d. intelligent
84. I ... the champion last week
 a. Saw
 b. See
 c. Have seen
 d. Are

85. I ... all their records since than
 a. Bought
 b. Buyed
 c. Buy
 d. Have bought
86. How long ... in Paris?
 a. Do you live
 b. Have you been living
 c. Are you lived
 d. You live
87. Anna ... a good job
 a. Finds
 b. Founded
 c. Has found
 d. Has been going out
88. The exam was ... difficult. I could not do any of it
 a. Fluently
 b. Exactly
 c. Seriously
 d. Real
89. A : are you going out?
 B : ... I don't know yet
 a. Carefully
 b. Mainly
 c. Possibly
 d. Nearly
90. A : how old are you?
 B : I'm ... eight. It is my birthday next week
 a. Possibly
 b. Nearly
 c. Fluently
 d. Exactly
91. I can see Amanda. Is waiting for the New York place
 a. I
 b. His
 c. She
 d. He
92. Which of the following words does not describe marital status?
 a. Single
 b. Divorced
 c. Lonely
 d. Married
93. Emily's very ... she understands how other people feel
 a. Relaxed
 b. Sensitive
 c. Sensible
 d. Reliable
94. Chris is quite ... he does not talk about his personal life much
 a. Gentle
 b. Polite
 c. Reserved
 d. Stubborn
95. I respect ... people. I think it is important to tell the truth
 a. Responsible
 b. Honest
 c. Patient
 d. Ambitious
96. I like Christ. He is got a great ... of humour
 a. Feeling
 b. Sense
 c. Understanding
 d. Feel
97. The party was full of ...
 a. Fun
 b. Amazing
 c. Sad
 d. Cake
98. Hukuman in English is ...
 a. Punished
 b. Punishment
 c. Agreement
 d. Prize

99. Wish in English is ...

- a. Harapan
- b. Do'a

- c. Tolakan
- d. Pesismis

100. Bingkisan/kado in English is ...

- a. Surprise
- b. Game

- c. Gift
- d. Prize

Validator

Researcher

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Appendix 2

KEY ANSWER INSTRUMENT PRE TEST

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

- 36. A
- 37. A
- 38. C
- 39. B
- 40. D
- 41. C
- 42. D
- 43. A
- 44. A
- 45. C
- 46. C
- 47. B
- 48. C
- 49. D
- 50. B
- 51. D
- 52. C
- 53. A
- 54. A
- 55. B
- 56. C
- 57. C
- 58. B
- 59. D
- 60. B
- 61. A
- 62. B
- 63. B
- 64. C
- 65. B
- 66. D
- 67. A
- 68. C
- 69. D
- 70. B

71. C
72. D
73. A
74. B
75. C
76. B
77. B
78. A
79. A
80. B
81. A
82. C
83. B
84. D
85. A
86. C
87. A
88. B
89. C
90. A
91. C
92. B
93. A
94. D
95. B
96. C
97. A
98. B
99. B
100. C

Appendix 3

INSTRUMENT FOR POST TEST VOCABULARY MASTERY

4. Pengantar

- d. Instrument ini bertujuan untuk menjangring data siswa tentang pembelajaran vocabulary. Oleh karena itu jawablah sesuai kemampuan anda.
- e. Jawaban anda tidak mempengaruhi kedudukan anda di sekolah ini.
- f. Jawaban anda tidak mempengaruhi nilai bahas inggris anda di sekolah ini.

5. Petunjuk

- e. Bacalah pertanyaan-pertanyaan berikut dengan seksama
- f. Jawablah pertanyaan berikut dengan tepat
- g. Apabila pertanyaan kurang jelas tanyakan langsung kepada pengawas
- h. Waktu yang tersedia 45 menit

6. Soal

Choose the correct answer from the option A, B, C or D !

Table.5
Indicators of Vocabulary Mastery

No	Indicator	Topic	Number of Items	Item
1	Identifying the meaning of words	Celebration	1,2,3,4,5,6,7,8,9,10,11,12,13 51,52,53,54,55,56,57,58,59, 60,61,62,63	26
		Family	27,28,29,32,33,34,,36,37,38, 76,77,78,79,80,81,82	16
		Friendship	25,26,30,31,35,39,40,89,90 91,92,93,94, 95	14
2	Identifying the use of words	Celebration	14,15,16,17,18,19,20,21,22, 23,24,64,65,66,67,68,69,70, 71,72,73,74,75	23
		Family	41,43,44,45,46,47,48,49,83, 84,85,86,87,88	14
		Friendship	42,50,96,97,98,99,100	7
Total				100

The following is formula to score students' vocabulary mastery:

$$\text{Students' score} = \frac{\text{students score answer}}{\text{total items}} \times 100\%$$

Name :

Class :

101. She is ... than her sister
c. Much nicer
d. Much more nicer
c. More nicer
d. More nicer
102. He is ... boy in the class
c. The funnier
d. Funnier
c. Funniest
d. The funniest
103. Barbara is ... than Sarah
c. Intelligenter
d. More intelligent
c. Much intelligent
d. intelligent
104. I ... the champion last week
c. Saw
d. See
c. Have seen
d. Are
105. I ... all their records since than
c. Bought
d. Buyed
c. Buy
d. Have buyed
106. How long ... in Paris?
c. Do you live
d. Have you been living
c. Are you lived
d. You live
107. Anna ... a good job
c. Finds
d. Founded
c. Has found
d. Has been going out
108. The exam was ... difficult. I could not do any of it
c. Fluently
d. Exactly
c. Seriously
d. Real
109. A : are you going out?
B : ... I don't know yet
c. Carefully
d. Mainly
c. Possibly
d. Nearly
110. A : how old are you?
B : I'm ... eight. It is my birthday next week
c. Possibly
d. Nearly
c. Fluently
d. Exactly
111. I can see Amanda. Is waiting for the New York place
c. I
d. His
c. She
d. He
112. Which of the following words does not describe marital status?
c. Single
d. Divorced
c. Lonely
d. Married
113. Emily's very ... she understands how other people feel
c. Relaxed
c. Sensible

- d. Sensitive
- d. Reliable
114. Chris is quite ... he does not talk about his personal life much
- c. Gentle
- d. Polite
- c. Reserved
- d. Stubborn
115. I respect ... people. I think it is important to tell the truth
- c. Responsible
- d. Honest
- c. Patient
- d. Ambitious
116. I like Christ. He is got a great ... of humour
- c. Feeling
- d. Sense
- c. Understanding
- d. Feel
117. The party was full of ...
- c. Fun
- d. Amazing
- c. Sad
- d. Cake
118. Hukuman in English is ...
- c. Punished
- d. Punishment
- c. Agreement
- d. Prize
119. Wish in English is ...
- c. Harapan
- d. Do'a
- c. Tolakan
- d. Pesismis
120. Bingkisan/kado in English is ...
- c. Surprise
- d. Game
- c. Gift
- d. Prize
121. Closest. The meaning of the underline word is ...
- c. Dekat
- d. Paling dekat
- c. Jauh
- d. Terjauh
122. Classmate. The meaning of the underline word is ...
- c. Teman main
- d. Teman jauh
- c. Teman sekelas
- d. Teman sejati
123. What is in English companion?
- c. Teman
- d. Saudara
- c. Rekan
- d. Keluarga
124. What is the meaning of childhood?
- c. Masa remaja
- d. Masa sekolah
- c. Masa kecil
- d. Anak-anak
125. Her hobby is ... she likes to dance traditional and modern dancing.
- c. Singing
- d. Drawing
- c. Reading
- d. Dancing
126. I learn many ... from my parent.
- c. Things
- d. Think
- c. Mistake
- d. Difficulties
127. Jessica's as tall ... her mother
- c. Than
- d. More
- c. Like
- d. As
128. A : what is ... New York like?
B : it is really exciting

- c. Does
d. Was
129. Trains in London are more crowded ... in Paris
c. That
d. Than
130. Oxford is one of ... oldest university in Europe.
c. The
d. Much
131. He's ... older than he looks
c. Much
d. Many
132. He is not as intelligent ... his sister
c. Like
d. Than
133. This is ... than I expected
c. More hard
d. The hardest
134. Who is the ... man in the world?
c. Rich
d. Richest
135. Every thing is ... in my country
c. More cheaper
d. Cheap
136. Rome was hotter ... I expected
c. Than
d. Nothing
137. My dad's really ... he always buys presents for the everyone
c. Romantic
d. Generous
138. Before you can get a credit card, you have to provide a lot of ... details
c. Wealth
d. Happiness
139. I try to lead a ... life style, lots of exercises, fruit and no junk food
c. Depressed
d. Healthy
140. Venice is a very ... city. A lot of people go there on honeymoon.
c. Dirty
d. Wealthy
141. I did not like that city at all. The streets were so ... and the air was so ...
c. Dirty/Messy
d. Personal/Noisy
142. There is a boy ... broke the window
c. Which
d. What
143. They are the policeman ... caught the thief
c. Where
- c. Is
d. Did
- c. As
d. Like
- c. Many
d. More
- c. More
d. The
- c. As
d. Nothing
- c. Hard
d. Harder
- c. Most richest
d. Most rich
- c. Cheaper
d. Cheapest
- c. That
d. As
- c. Fortunate
d. Depressed
- c. Person
d. Personal
- c. Dirty
d. Mess
- c. Polluted
d. Romantic
- c. Dirty/Polluted
d. Messy/Polluting
- c. Where
d. Who
- c. Who

- d. Which
- d. When
144. That is the house ... I was born
 c. When
 d. Where
- c. That
 d. Which
145. The hotel ... we stayed was very comfortable
 c. Which
 d. Where
- c. That
 d. When
146. Are you as tall ... your brother?
 c. Like
 d. Than
- c. As
 d. More
147. A : Was not that film wonderful?
 B : Yes, it was ...
 c. Modern
 d. Brilliant
- c. Wealthy
 d. Depressed
148. A : I'm bored with this lesson !
 B : I know, I'm really ... with it, too !
 c. Generous
 d. Healthy
- c. Fed up
 d. Happy
149. A : Ani's bedroom is really untidy again !
 B : is it? I told her it was ... yesterday, and she promised to clean it
 c. Clean
 d. Modern
- c. Shining
 d. Messy
150. A : Rio's family is very rich
 B : Well, I knew her uncle was very...
 c. Finance
 d. Wealthy
- c. Polluted
 d. Windy
151. Indah ... me to come to her birthday.
 c. Forbid
 d. Forget
- c. Doesn't ask
 d. Invites
152. Then, I ... the cake.
 c. Look
 d. Want
- c. Cut
 d. Invites
153. Tania ... her birthday party.
 c. Celebrates
 d. Celebratory
- c. Doesn't follow
 d. Remain
154. 17 Agustus 1945 is ...
 c. Independence day
 d. Holiday
- c. Birthday party
 d. Wedding party
155. Arif, ... you deserved it, man.
 c. You're lost
 d. Congratulation
- c. Don't forget
 d. Happy Sunday
156. Dina: Hi Amel. What is your daughter doing these days?
 Amel:oh, she is in collage. In fact, she plans to graduate this march.
 Dina: that is ... ! you must be very proud of her.
 c. Good luck
- c. Wonderful

- d. Impossible
- d. Glad
157. Dito: Hi Eva. I won the math Olympic.
Eva : Congrats, Dito. I proud of your ...
- c. Day c. Self
d. Math d. Proud
158. Tika: I must ... you on your birthday
Lia : Thank you
- c. Appreciate c. Know
d. Congratulate d. Proud
159. I have 3 ... two brother and one sister.
- c. Sisters c. Friends
d. Brothers d. Siblings
160. The leader of family is ...
- c. Mother c. Brother
d. Father d. Son
161. A: who is she?
B: she is my ...
- c. Sister c. Nephew
d. Brothers d. Son
162. A: who is ... ?
B: he is my uncle.
- c. She c. Her
d. He d. Him
163. What is the meaning of performance?
- c. Perayaan c. Acara
d. Pertunjukan d. Upacara
164. What is the meaning of birthday song?
- c. Perayaan c. Lagu ulangtahun
d. Pertunjukan d. Perayaan ulangtahun
165. Celebration. The meaning of the underline word is ...
- c. Upacara c. Perpisahan
d. Perayaan d. Kebiasaan
166. Pesta in English is ...
- c. Competition c. Wedding
d. Ceremony d. Party
167. Invite. The meaning of the underline word is ...
- c. Mengundang c. Menyuruh
d. Meminta d. Undangan
168. I want birthday cake. The meaning of underline word is ...
- c. Kue saya c. Kue ulangtahun
d. Roti d. Roti ulagtahun
169. Last month I ... my twenty two birthday
- c. Appreciate c. Know
d. Proud d. Celebrate

170. My best friend came out ... a birthday cake.
 c. Come c. Practice
 d. Bringing d. Appreciate
171. He was a genius in many ways but somewhat ... when it came to his very poor choice of friends.
 c. Misinterpreted c. Misguided
 d. Misunderstood d. Mistrusted
172. Much as I liked the first candidate, I do have some ... about offering her the job.
 c. Misgiving c. Misinterpretation
 d. Misunderstandings d. Misspellings
173. They live in a rather ... little grey house on the outskirts of town.
 c. Unassuming c. Insipid
 d. Nondescript d. Nonchalant
174. Some of the participants' names had been ... in the conferences programme.
 c. Misspelt c. Misled
 d. Misunderstood d. Misinterpreted
175. The student representatives were more than a little ... about the school director's refusal to see them.
 c. Disturbed c. Disillusioned
 d. Disgruntled d. Disinclined
176. The idea that bread is fattening is a common ... that many people have.
 c. Misconception c. Misprint
 d. Misinterpretation d. Misgiving
177. All people ... in my party.
 c. Enjoyed c. Look
 d. Awesome d. Hope
178. Wina is my ... we are in the same class.
 c. Classmate c. Kind friend
 d. Brother d. Soulmate
179. Rina is my ... she always be there for me.
 c. Best friend c. Nephew
 d. Penpal d. Niece
180. I have my penpal. My ... is very kind.
 c. Roommate c. Classmate
 d. Penpal d. Friends
181. Fun in Indonesia is ...
 c. Menyenangkan c. Meriah
 d. Luar biasa d. Lucu
182. Graduation celebration in Indonesia is ...
 c. Tamat sekolah c. Perayaan tamat sekolah
 d. Mulai sekolah d. Hari perayaan
183. Pen pal. The meaning of underline word is ...

- c. Sahabat sejati
d. Sahabat pena
- c. Sahabat terbaik
d. Teman
184. I have a best friend. The meaning of underline word is ...
c. Sahabat jauh
d. Teman sejati
- c. Kawan lama
d. Teman terbaik
185. What is the meaning of half sister/brother ...
c. Saudara tiri
d. Saudar kanadung
- c. Ayah tiri
d. Ibu tiri
186. Saudara perempuan in English is ...
c. Brother
d. Sister in law
- c. Sister
d. brother in law
187. Saudara laki-laki in English is ...
c. Brother
d. Sister in law
- c. Sister
d. brother in law
188. I have much friend. What the meaning of the underline word ...
c. Saudara
d. Teman
- c. Keluarga
d. Sepupu
189. All people song ... for me.
c. Birthday dance
d. Birthday cake
- c. Birthday song
d. birthday music
190. They came out ... a birthday cake.
c. Bringing
d. Taking
- c. Saving
d. Enjoying
191. I ... the candle.
c. Take
d. Bring
- c. Look
d. Blow
192. Everybody ... their hands.
c. Hit
d. Claps
- c. Hold
d. Hang
193. We ... a game
c. Played
d. Won
- c. Make
d. Try
194. Before going home they ... me once
c. Claps hand
d. Invite
- c. Congratulate
d. Shake hand
195. The party was full of ...
c. Fun
d. Amazing
- c. Sad
d. Cake
196. Housewife. The meaning of the underline word is ...
c. Petani
d. Bidan
- c. Ibu rumah Tangga
d. Guru
197. Farmer. The meaning of the underline word is ...
c. Petani
d. Bidan
- c. Ibu rumah Tangga
d. Guru
198. Partner. The meaning of the underline word is ...

- c. Saudara
- d. Pasangan

- c. Orangtua
- d. Rekan

199. Agama in English is ...

- c. Believe
- d. Religion

- c. Confidence
- d. Trust

200. I ... drawing or painting. I like sport.

- c. Think
- d. Love

- c. Don't like
- d. Don't think

Validator

Researcher

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Appendix 4

KEY ANSWER INSTRUMENT POST TEST

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

- 36. D
- 37. A
- 38. C
- 39. D
- 40. B
- 41. C
- 42. D
- 43. A
- 44. B
- 45. C
- 46. B
- 47. B
- 48. A
- 49. A
- 50. B
- 51. C
- 52. D
- 53. B
- 54. C
- 55. D
- 56. B
- 57. C
- 58. D
- 59. B
- 60. C
- 61. C
- 62. C
- 63. D
- 64. A
- 65. D
- 66. B
- 67. B
- 68. A
- 69. C
- 70. B

71. C
72. A
73. B
74. A
75. B
76. C
77. B
78. B
79. C
80. C
81. A
82. C
83. C
84. B
85. B
86. A
87. A
88. C
89. B
90. D
91. C
92. D
93. A
94. A
95. C
96. C
97. B
98. C
99. D
100. B

Appendix 9

Calculation of Pre-Test

1. Mean score from score total (M_t)

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

$$M_t = \frac{1839}{21} = 87.57$$

2. Standard Deviation (SD_t)

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

$$SD_t = \sqrt{\frac{16135}{21} - \left(\frac{1839}{21}\right)^2}$$

$$SD_t = \sqrt{7.682.6190 - 87.57^2}$$

$$SD_t = \sqrt{7.682.6190 - 7.668.5049}$$

$$SD_t = \sqrt{0.014} = 0.12$$

3. Mean Score (M_p)

Item 1

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n1}$$

$$M_{pl} = \frac{84+92+86+85+87+86+94+87+94+93+96+84}{12}$$

$$M_{pl} = \frac{1068}{12} = 89$$

Item 2

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n2}$$

$$M_{pl} = \frac{84+86+92+86+84+86+94+87+94+93+96+84}{14}$$

$$M_{pl} = \frac{1.237}{14} = 88.36$$

Item 3

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n3}$$

$$M_{pl} = \frac{85+92+86+86+84+85+86+87+94+93+96}{11}$$

$$M_{pl} = \frac{974}{11} = 88.55$$

Item 4

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n4}$$

$$M_{pl} = \frac{92+86+85+85+87+84+86+94+87+93+96}{11}$$

$$M_{pl} = \frac{975}{11} = 88.64$$

Item 5

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n5}$$
$$M_{pl} = \frac{92+85+86+84+85+84+86+86+94+87+94+93+86+96}{14}$$
$$M_{pl} = \frac{1.238}{14} = 88.45$$

Item 6

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n6}$$
$$M_{pl} = \frac{84+86+92+86+85+86+85+87+84+86+86+94+87+94+96}{15}$$
$$M_{pl} = \frac{1.318}{15} = 87.87$$

Item 7

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n7}$$
$$M_{pl} = \frac{85+84+86+86+85+87+84+86+86+94+87+94+93+96+86}{15}$$
$$M_{pl} = \frac{1.319}{15} = 87.93$$

Item 8

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n8}$$
$$M_{pl} = \frac{85+84+86+84+85+87+84+86+86+94+87+94+93+89+96+84}{16}$$
$$M_{pl} = \frac{1.404}{16} = 87.75$$

Item 9

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n9}$$
$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+84+86+86+94+87+94+93+96+84}{18}$$
$$M_{pl} = \frac{1.577}{18} = 87.61$$

Item 10

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n10}$$
$$M_{pl} = \frac{85+84+86+85+86+85+87+84+86+86+94+87+94+93+89+86+96+84}{17}$$
$$M_{pl} = \frac{1.577}{17} = 92.76$$

Item 11

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n11}$$
$$M_{pl} = \frac{85+84+86+92+86+85+86+87+86+86+94+87+93+89+86+96+84}{18}$$
$$M_{pl} = \frac{1.577}{18} = 87.61$$

Item 12

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n12}$$
$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+84+86+86+94+87+94+93+89+86+90+84}{20}$$
$$M_{pl} = \frac{1.752}{20} = 87.6$$

Item 13

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n13}$$
$$M_{pl} = \frac{85+84+86+92+86+85+86+85+87+84+86+86+94+87+94+93+89+96+84}{19}$$
$$M_{pl} = \frac{1.669}{19} = 87.84$$

Item 14

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n14}$$
$$M_{pl} = \frac{85+84+86+92+86+85+86+85+87+86+86+94+87+94+93+96+84}{17}$$
$$M_{pl} = \frac{1.496}{17} = 88$$

Item 15

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n15}$$
$$M_{pl} = \frac{84+86+92+86+85+87+84+86+86+94+87+94+93+89+96+84}{16}$$
$$M_{pl} = \frac{1.337}{16} = 83.56$$

Item 16

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n16}$$
$$M_{pl} = \frac{85+84+86+92+86+85+86+85+87+86+86+94+87+94+93+96+84}{17}$$
$$M_{pl} = \frac{1.496}{17} = 88$$

Item 17

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n17}$$
$$M_{pl} = \frac{85+92+86+85+86+85+87+84+86+94+94+89+96+98}{14}$$
$$M_{pl} = \frac{1.223}{14} = 87.35$$

Item 18

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n18}$$

$$M_{pl} = \frac{84+92+86+85+87+86+94+87+94+93+96+84}{12}$$

$$M_{pl} = \frac{1068}{12} = 89$$

Item 19

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n19}$$

$$M_{pl} = \frac{85+84+86+86+85+87+84+86+86+94+87+94+93+96+86}{15}$$

$$M_{pl} = \frac{1.3.19}{15} = 87.93$$

Item 20

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n20}$$

$$M_{pl} = \frac{85+84+86+86+85+86+87+84+94+87+93+89+96}{13}$$

$$M_{pl} = \frac{1.132}{13} = 87.08$$

Item 21

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n21}$$

$$M_{pl} = \frac{85+84+86+86+94+86+86+94+87+93+89+86+96}{13}$$

$$M_{pl} = \frac{1.152}{13} = 88.61$$

Item 22

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n22}$$

$$M_{pl} = \frac{85+84+86+86+94+86+86+94+87+93+89+86+96}{13}$$

$$M_{pl} = \frac{1.152}{13} = 88.16$$

Item 23

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n23}$$

$$M_{pl} = \frac{85+84+84+86+85+86+85+87+84+86+86+94+93+86+96+}{17}$$

$$M_{pl} = \frac{1488}{17} = 87,52$$

Item 24

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n24}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+85+87+84+86+86+94+87+94+93+89+96+84}{19}$$

$$M_{pl} = \frac{1.669}{19} = 87.84$$

Item 25

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n25}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+85+87+86+86+94+87+94+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1671}{19} = 87.94$$

Item 26

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n26}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+85+87+84+86+86+94+87+94+93+89+96+84}{19}$$

$$M_{pl} = \frac{1.999}{19} = 87.84$$

Item 27

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n27}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+85+87+84+86+94+87+94+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1669}{19} = 87.84$$

Item 28

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n28}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+87+84+86+86+94+94+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1667}{19} = 87.73$$

Item 29

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n29}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+87+84+86+94+87+94+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1668}{19} = 87.78$$

Item 30

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n30}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+86+94+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1752}{20} = 87.6$$

Item 31

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n31}$$

$$M_{pl} = \frac{85+84+86+92+86+85+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1753}{20} = 87.65$$

Item 32

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n32}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+94+87+94+93+89+86+96}{19}$$

$$M_{pl} = \frac{1669}{19} = 87.84$$

Item 33

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n33}$$

$$M_{pl} = \frac{84+86+92+86+86+86+84+85+87+86+94+87+94+93+89+86+96+84}{18}$$

$$M_{pl} = \frac{1585}{18} = 88.0$$

Item 34

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n34}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+86+94+94+93+89+86+84}{19}$$

$$M_{pl} = \frac{1656}{19} = 87.15$$

Item 35

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n35}$$

$$M_{pl} = \frac{85+84+86+92+85+86+84+85+84+86+94+87+94+93+89+86+96+84}{18}$$

$$M_{pl} = \frac{1580}{18} = 87.77$$

Item 36

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n30}$$

$$M_{pl} = \frac{84+86+92+86+86+86+84+85+87+86+94+87+94+93+89+86+96+84}{18}$$

$$M_{pl} = \frac{1585}{18} = 88.0$$

Item 37

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n37}$$

$$M_{pl} = \frac{85+92+86+85+84+85+87+84+86+94+87+94+93+89+86+96+84}{17}$$

$$M_{pl} = \frac{1497}{17} = 88.05$$

Item 38

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n38}$$

$$M_{pl} = \frac{85+92+85+86+84+87+84+86+94+87+94+93+89+86+96+84}{15}$$

$$M_{pl} = \frac{1412}{15} = 94.13$$

Item 39

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n39}$$

$$M_{pl} = \frac{85+84+86+92+86+85+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1753}{20} = 87.65$$

Item 40

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n40}$$

$$M_{pl} = \frac{84+86+92+86+85+86+84+87+84+86+94+87+94+93+89+86+96}{19}$$

$$M_{pl} = \frac{1666}{19} = 87.68$$

Item 41

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n41}$$

$$M_{pl} = \frac{85+84+86+92+86+85+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1753}{20} = 87.65$$

Item 42

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n42}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+87+84+86+94+87+94+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1668}{19} = 87.78$$

Item 43

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n43}$$

$$M_{pl} = \frac{84+86+92+86+84+86+94+87+94+93+96+84}{14}$$

$$M_{pl} = \frac{1237}{14} = 88.36$$

Item 44

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n44}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+87+84+86+94+87+94+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1668}{19} = 87.78$$

Item 45

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n45}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+86+94+87+94+93+89+86+96}{20}$$

$$M_{pl} = \frac{1755}{20} = 87.75$$

Item 46

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n46}$$

$$M_{pl} = \frac{84+86+92+86+85+86+84+87+84+86+94+87+94+93+89+86+96}{17}$$

$$M_{pl} = \frac{1499}{17} = 88.17$$

Item 47

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n47}$$

$$M_{pl} = \frac{84+86+92+86+85+86+84+87+84+86+94+87+94+93+89+86+96}{19}$$

$$M_{pl} = \frac{1666}{19} = 87.68$$

Item 48

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n48}$$

$$M_{pl} = \frac{85+92+86+85+84+87+84+86+86+94+94+93+89+86+96+84}{16}$$

$$M_{pl} = \frac{1411}{16} = 88.18$$

Item 49

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n49}$$

$$M_{pl} = \frac{85+84+86+92+86+85+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{17}$$

$$M_{pl} = \frac{1500}{17} = 88.23$$

Item 50

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n50}$$

$$M_{pl} = \frac{85+84+86+92+85+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1753}{20} = 87.65$$

Item 51

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n51}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+86+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1745}{20} = 87.25$$

Item 52

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n52}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+87+84+86+94+87+94+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1668}{19} = 87.78$$

Item 53

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n53}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1752}{20} = 87.6$$

Item 54

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n54}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{21}$$

$$M_{pl} = \frac{1839}{21} = 87.57$$

Item 55

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n55}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1754}{20} = 87.7$$

Item 56

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n56}$$

$$M_{pl} = \frac{84+86+92+86+84+85+84+86+86+87+94+93+89+86+96}{15}$$

$$M_{pl} = \frac{1318}{15} = 87.86$$

Item 57

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n57}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+94+87+94+93+89+86+96}{19}$$

$$M_{pl} = \frac{1669}{19} = 87.84$$

Item 58

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n58}$$

$$M_{pl} = \frac{85+84+86+92+85+86+84+85+84+86+86+94+87+94+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1666}{19} = 87.68$$

Item 59

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n59}$$

$$M_{pl} = \frac{92+85+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{17}$$

$$M_{pl} = \frac{1498}{17} = 88.11$$

Item 60

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n60}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+86+94+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1752}{20} = 87.6$$

Item 61

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n61}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+94+87+94+93+89+86+96}{19}$$

$$M_{pl} = \frac{1669}{19} = 87.84$$

Item 62

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n62}$$

$$M_{pl} = \frac{92+86+85+86+84+85+87+86+86+94+87+94+93+89+86+96+84}{17}$$

$$M_{pl} = \frac{1500}{17} = 88.23$$

Item 63

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n63}$$

$$M_{pl} = \frac{84+86+92+86+85+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1754}{20} = 87.7$$

Item 64

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n64}$$

$$M_{pl} = \frac{84+86+92+86+85+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1754}{20} = 87.7$$

Item 65

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n65}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+86+94+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1752}{20} = 87.6$$

Item 66

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n66}$$
$$M_{pl} = \frac{85+86+92+86+85+86+84+85+87+84+86+94+87+94+89+86+96}{17}$$
$$M_{pl} = \frac{1492}{17} = 87.76$$

Item 67

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n67}$$
$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+94+87+94+93+89+86+96+84}{19}$$
$$M_{pl} = \frac{1667}{19} = 87.73$$

Item 68

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n68}$$
$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+94+87+94+93+89+86+96+84}{19}$$
$$M_{pl} = \frac{1667}{19} = 87.73$$

Item 69

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n69}$$
$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+86+86+94+87+94+93+86+96}{17}$$
$$M_{pl} = \frac{1495}{17} = 87.94$$

Item 70

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n70}$$
$$M_{pl} = \frac{85+92+86+85+86+84+85+87+86+86+87+94+93+89+86+96+84}{17}$$
$$M_{pl} = \frac{1491}{17} = 87.80$$

Item 71

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n71}$$
$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+86+86+94+87+94+93+86+96}{17}$$
$$M_{pl} = \frac{1495}{17} = 87.94$$

Item 72

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n72}$$

$$M_{pl} = \frac{85+92+86+85+86+84+85+87+86+86+87+94+93+89+86+96+84}{17}$$

$$M_{pl} = \frac{1491}{17} = 87.80$$

Item 73

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n73}$$

$$M_{pl} = \frac{85+84+86+92+86+86+84+85+84+86+86+94+94+93+89+86+96+84}{18}$$

$$M_{pl} = \frac{1580}{18} = 87.77$$

Item 74

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n74}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1753}{20} = 87.65$$

Item 75

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n75}$$

$$M_{pl} = \frac{85+86+92+86+85+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1755}{20} = 87.75$$

Item 76

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n76}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+86+94+87+94+93+89+86+84}{18}$$

$$M_{pl} = \frac{1573}{18} = 87.38$$

Item 77

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n77}$$

$$M_{pl} = \frac{85+84+86+92+84+85+87+84+86+86+94+94+93+89+86+96+84}{17}$$

$$M_{pl} = \frac{1495}{17} = 87.94$$

Item 78

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n78}$$

$$M_{pl} = \frac{85+86+92+86+85+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1755}{20} = 87.75$$

Item 79

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n79}$$

$$M_{pl} = \frac{85+86+92+86+85+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1755}{20} = 87.75$$

Item 80

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n80}$$

$$M_{pl} = \frac{84+92+86+85+87+86+94+87+94+93+96+84}{12}$$

$$M_{pl} = \frac{11068}{12} = 89$$

Item 81

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n81}$$

$$M_{pl} = \frac{85+92+86+85+86+84+87+84+86+87+94+89+86+96+84}{15}$$

$$M_{pl} = \frac{1311}{15} = 87.4$$

Item 82

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n82}$$

$$M_{pl} = \frac{85+84+86+92+86+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1754}{20} = 87.7$$

Item 83

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n83}$$

$$M_{pl} = \frac{85+92+86+85+86+84+85+87+86+86+87+94+93+89+86+96+84}{17}$$

$$M_{pl} = \frac{1491}{17} = 87.80$$

Item 84

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n84}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+87+84+86+86+94+87+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1660}{19} = 87.36$$

Item 85

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n85}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+86+94+87+94+89+86+96+84}{20}$$

$$M_{pl} = \frac{1746}{20} = 87.3$$

Item 86

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n86}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+86+86+94+87+94+89+86+96+84}{19}$$

$$M_{pl} = \frac{1662}{19} = 87.47$$

Item 87

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n87}$$

$$M_{pl} = \frac{85+92+86+85+86+84+85+87+84+86+86+94+87+89+86+96+84}{17}$$

$$M_{pl} = \frac{1482}{17} = 87.17$$

Item 88

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n88}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+87+84+86+86+94+87+93+89+86+96+84}{17}$$

$$M_{pl} = \frac{1491}{17} = 87.80$$

Item 89

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n89}$$

$$M_{pl} = \frac{85+84+86+92+86+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1668}{19} = 87.79$$

Item 90

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n90}$$

$$M_{pl} = \frac{85+84+86+92+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1668}{19} = 87.79$$

Item 91

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n91}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+86+94+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1752}{20} = 87.6$$

Item 92

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n92}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+86+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1745}{20} = 87.25$$

Item 93

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n93}$$

$$M_{pl} = \frac{85+84+86+92+86+86+84+85+87+84+86+86+94+87+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1754}{20} = 87.7$$

Item 94

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n94}$$

$$M_{pl} = \frac{85+84+86+92+85+86+84+85+87+84+86+86+94+87+94+93+89+86+96}{19}$$

$$M_{pl} = \frac{1669}{19} = 87.84$$

Item 95

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n95}$$

$$M_{pl} = \frac{85+84+86+92+86+84+85+87+84+86+94+87+94+93+89+86+96+84}{18}$$

$$M_{pl} = \frac{1582}{18} = 87.88$$

Item 96

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n96}$$

$$M_{pl} = \frac{85+84+86+92+86+86+84+85+84+86+86+94+94+93+89+86+96+84}{18}$$

$$M_{pl} = \frac{1580}{18} = 87.77$$

Item 97

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n97}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+84+85+87+84+86+86+94+94+93+89+86+96+84}{20}$$

$$M_{pl} = \frac{1752}{20} = 87.6$$

Item 98

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n98}$$

$$M_{pl} = \frac{85+84+86+92+86+85+86+85+87+84+86+94+87+94+93+89+86+96+84}{19}$$

$$M_{pl} = \frac{1669}{19} = 87.84$$

Item 99

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n99}$$

$$M_{pl} = \frac{92+85+86+84+85+84+86+86+94+87+94+93+86+96}{14}$$

$$M_{pl} = \frac{1238}{14} = 88.45$$

Item 100

$$M_{pl} = \frac{\text{totalscoreofstudents'scorethattrueitemanswer}}{n100}$$

$$M_{pl} = \frac{85+84+86+92+86+84+85+87+86+86+94+87+94+93+89+86+96+84}{17}$$

$$M_{pl} = \frac{1584}{17} = 93.17$$

Appendix 10

Calculation of the formulation

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

Item 1

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

$$r_{\text{pbi}} = \frac{89 - 87.57}{0.12} \sqrt{\frac{0.5}{0.5}}$$

$$r_{\text{pbi}} = \frac{1.43}{0.12} \sqrt{1}$$

$$r_{\text{pbi}} = 11.92 \times 1 = 11.92$$

Item 2

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

$$r_{\text{pbi}} = \frac{88.36 - 87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{0.79}{0.12} \sqrt{1.5}$$

$$r_{\text{pbi}} = 6.58 \times 1.22 = 8.03$$

Item 3

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

$$r_{\text{pbi}} = \frac{88.55 - 87.57}{0.12} \sqrt{\frac{0.4}{0.6}}$$

$$r_{\text{pbi}} = \frac{0.98}{0.12} \sqrt{0.81}$$

$$r_{\text{pbi}} = 8.16 \times 0.9 = 7.34$$

Item 4

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

$$r_{\text{pbi}} = \frac{88.64 - 87.57}{0.12} \sqrt{\frac{0.4}{0.6}}$$

$$r_{\text{pbi}} = \frac{8.91}{0.12} \sqrt{0.81}$$

$$r_{\text{pbi}} = 0.74 \times 0.9 = 0.66$$

Item 5

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

$$r_{\text{pbi}} = \frac{88.45 - 87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{pbi} = \frac{0.58}{0.12} \sqrt{1.5}$$

$$r_{pbi} = 4.83 \times 1.22 = 5.89$$

Item 6

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

$$r_{pbi} = \frac{87.87-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{pbi} = \frac{0.3}{0.12} \sqrt{1.5}$$

$$r_{pbi} = 0.02 \times 1.22 = 0.02$$

Item 7

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

$$r_{pbi} = \frac{87.93-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{pbi} = \frac{0.36}{0.12} \sqrt{1.5}$$

$$r_{pbi} = 3 \times 1.22 = 3.66$$

Item 8

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

$$r_{pbi} = \frac{87.75-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{pbi} = \frac{0.18}{0.12} \sqrt{1.5}$$

$$r_{pbi} = 1.5 \times 1.22 = 1.83$$

Item 9

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

$$r_{pbi} = \frac{87.61-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{0.04}{0.12} \sqrt{2.33}$$

$$r_{pbi} = 0.33 \times 1.52 = 0.50$$

Item 10

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

$$r_{pbi} = \frac{92.76-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{5.19}{0.12} \sqrt{2.33}$$

$$r_{pbi} = 43.25 \times 1.52 = 64.74$$

Item 11

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

$$r_{pbi} = \frac{87.61-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{0.04}{0.12} \sqrt{2.33}$$

$$r_{pbi} = 0.33 \times 1.52 = 0.50$$

Item 12

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

$$r_{pbi} = \frac{87.6-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{0.03}{0.12} \sqrt{4}$$

$$r_{pbi} = 0.25 \times 2 = 0.5$$

Item 13

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

$$r_{pbi} = \frac{87.84-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{0.27}{0.12} \sqrt{4}$$

$$r_{pbi} = 1.8 \times 2 = 3.6$$

Item 14

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

$$r_{pbi} = \frac{88-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{0.43}{0.12} \sqrt{2.33}$$

$$r_{pbi} = 3.58 \times 1.52 = 5.44$$

Item 15

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

$$r_{\text{pbi}} = \frac{83.56-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{-4.0}{0.12} \sqrt{1.5}$$

$$r_{\text{pbi}} = -33.3 \times 1.52 = -50$$

Item 16

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

$$r_{\text{pbi}} = \frac{88-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.43}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 3.58 \times 1.52 = 5.44$$

Item 17

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

$$r_{\text{pbi}} = \frac{87.35-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{-0.22}{0.12} \sqrt{1.5}$$

$$r_{\text{pbi}} = -1.83 \times 1.22 = -2.23$$

Item 18

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

$$r_{\text{pbi}} = \frac{89-87.57}{0.12} \sqrt{\frac{0.5}{0.5}}$$

$$r_{\text{pbi}} = \frac{1.43}{0.12} \sqrt{1}$$

$$r_{\text{pbi}} = 11.92 \times 1 = 11.92$$

Item 19

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

$$r_{\text{pbi}} = \frac{87.93-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{0.36}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 3 \times 1.52 = 4.56$$

Item 20

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

$$r_{\text{pbi}} = \frac{87.08 - 87.57}{0.12} \sqrt{\frac{0.5}{0.5}}$$

$$r_{\text{pbi}} = \frac{-0.49}{0.12} \sqrt{1}$$

$$r_{\text{pbi}} = -4.08 \times 1 = -4.08$$

Item 21

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

$$r_{\text{pbi}} = \frac{88.16 - 87.57}{0.12} \sqrt{\frac{0.5}{0.5}}$$

$$r_{\text{pbi}} = \frac{0.59}{0.12} \sqrt{1}$$

$$r_{\text{pbi}} = 4.91 \times 1 = 4.91$$

Item 22

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

$$r_{\text{pbi}} = \frac{88.16 - 87.57}{0.12} \sqrt{\frac{0.5}{0.5}}$$

$$r_{\text{pbi}} = \frac{0.59}{0.12} \sqrt{1}$$

$$r_{\text{pbi}} = 4.91 \times 1 = 4.91$$

Item 23

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

$$r_{\text{pbi}} = \frac{87.52 - 87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{-0.05}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = -0.42 \times 1.52 = -1.89$$

Item 24

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

$$r_{\text{pbi}} = \frac{87.84 - 87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.27}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 2.25 \times 1.52 = 3.42$$

Item 25

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

$$r_{\text{pbi}} = \frac{87.94-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.37}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 3.08 \times 2 = 6.16$$

Item 26

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

$$r_{\text{pbi}} = \frac{87.84-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.27}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 2.25 \times 1.52 = 3.42$$

Item 27

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

$$r_{\text{pbi}} = \frac{87.84-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.3}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 2.5 \times 2 = 5$$

Item 28

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

$$r_{\text{pbi}} = \frac{87.73-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.16}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.33 \times 2 = 2.66$$

Item 29

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

$$r_{\text{pbi}} = \frac{87.78-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.21}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.75 \times 2 = 3.5$$

Item 30

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

$$r_{\text{pbi}} = \frac{87.6-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.03}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 0.25 \times 2 = 0.5$$

Item 31

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

$$r_{\text{pbi}} = \frac{87.65-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.08}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 0.66 \times 2 = 1.32$$

Item 32

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

$$r_{\text{pbi}} = \frac{87.84-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.27}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 2.25 \times 2 = 4.5$$

Item 33

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

$$r_{\text{pbi}} = \frac{88.0-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.43}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 3.58 \times 1.52 = 5.44$$

Item 34

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

$$r_{\text{pbi}} = \frac{87.15-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{-0.42}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = -3.5 \times 2 = -7$$

Item 35

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

$$r_{\text{pbi}} = \frac{87.77-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.2}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 1.66 \times 1.52 = 2.52$$

Item 36

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

$$r_{\text{pbi}} = \frac{88.0-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.43}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 3.58 \times 1.52 = 5.44$$

Item 37

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

$$r_{\text{pbi}} = \frac{88.05-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.48}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 4 \times 1.52 = 6.08$$

Item 38

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

$$r_{\text{pbi}} = \frac{94.13-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{6.56}{0.12} \sqrt{1.5}$$

$$r_{\text{pbi}} = 54.6 \times 1.22 = 66.6$$

Item 39

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

$$r_{\text{pbi}} = \frac{87.65-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.08}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 0.66 \times 2 = 1.32$$

Item 40

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

$$r_{\text{pbi}} = \frac{87.68-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.11}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 0.91 \times 2 = 1.82$$

Item 41

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

$$r_{\text{pbi}} = \frac{87.65-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.08}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 0.66 \times 1.52 = 1.003$$

Item 42

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

$$r_{\text{pbi}} = \frac{87.78-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.21}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.75 \times 2 = 3.5$$

Item 43

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

$$r_{\text{pbi}} = \frac{88.36-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{0.79}{0.12} \sqrt{1.5}$$

$$r_{\text{pbi}} = 6.58 \times 1.22 = 8.03$$

Item 44

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

$$r_{\text{pbi}} = \frac{87.78-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{0.21}{0.12} \sqrt{4}$$

$$r_{pbi} = 1.75 \times 2 = 3.5$$

Item 45

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

$$r_{pbi} = \frac{87.75-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{0.18}{0.12} \sqrt{4}$$

$$r_{pbi} = 1.5 \times 2 = 3$$

Item 46

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

$$r_{pbi} = \frac{88.17-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{0.6}{0.12} \sqrt{2.33}$$

$$r_{pbi} = 5 \times 1.52 = 7.6$$

Item 47

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

$$r_{pbi} = \frac{87.68-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{0.11}{0.12} \sqrt{4}$$

$$r_{pbi} = 0.91 \times 2 = 1.82$$

Item 48

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

$$r_{pbi} = \frac{88.18-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{pbi} = \frac{0.61}{0.12} \sqrt{1.5}$$

$$r_{pbi} = 5.08 \times 1.22 = 6.19$$

Item 49

$$\Gamma_{\text{pbi}} = \frac{M_{p-M_t}}{SD_t} \sqrt{\frac{p}{q}}$$

$$\Gamma_{\text{pbi}} = \frac{88.23-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$\Gamma_{\text{pbi}} = \frac{0.66}{0.12} \sqrt{2.33}$$

$$\Gamma_{\text{pbi}} = 5.5 \times 1.52 = 8.36$$

Item 50

$$\Gamma_{\text{pbi}} = \frac{M_{p-M_t}}{SD_t} \sqrt{\frac{p}{q}}$$

$$\Gamma_{\text{pbi}} = \frac{87.65-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$\Gamma_{\text{pbi}} = \frac{0.08}{0.12} \sqrt{4}$$

$$\Gamma_{\text{pbi}} = 0.66 \times 2 = 1.32$$

Item 51

$$\Gamma_{\text{pbi}} = \frac{M_{p-M_t}}{SD_t} \sqrt{\frac{p}{q}}$$

$$\Gamma_{\text{pbi}} = \frac{87.25-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$\Gamma_{\text{pbi}} = \frac{-0.32}{0.12} \sqrt{4}$$

$$\Gamma_{\text{pbi}} = -2.66 \times 2 = -5.32$$

Item 52

$$\Gamma_{\text{pbi}} = \frac{M_{p-M_t}}{SD_t} \sqrt{\frac{p}{q}}$$

$$\Gamma_{\text{pbi}} = \frac{87.78-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$\Gamma_{\text{pbi}} = \frac{0.21}{0.12} \sqrt{4}$$

$$\Gamma_{\text{pbi}} = 1.75 \times 2 = 3.5$$

Item 53

$$\Gamma_{\text{pbi}} = \frac{M_{p-M_t}}{SD_t} \sqrt{\frac{p}{q}}$$

$$\Gamma_{\text{pbi}} = \frac{87.6-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$\Gamma_{\text{pbi}} = \frac{0.03}{0.12} \sqrt{4}$$

$$\Gamma_{\text{pbi}} = 0.25 \times 2 = 0.5$$

Item 54

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

$$r_{\text{pbi}} = \frac{87.57-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 0 \times 2 = 4$$

Item 55

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

$$r_{\text{pbi}} = \frac{87.7-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.13}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.08 \times 2 = 2.16$$

Item 56

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

$$r_{\text{pbi}} = \frac{87.86-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{0.29}{0.12} \sqrt{1.5}$$

$$r_{\text{pbi}} = 2.41 \times 1.22 = 2.94$$

Item 57

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

$$r_{\text{pbi}} = \frac{87.84-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.27}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 2.25 \times 2 = 4.5$$

Item 58

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

$$r_{\text{pbi}} = \frac{87.68 - 87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.11}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 0.19 \times 2 = 1.82$$

Item 59

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

$$r_{\text{pbi}} = \frac{88.11 - 87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.54}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 4.5 \times 1.52 = 6.84$$

Item 60

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

$$r_{\text{pbi}} = \frac{87.6 - 87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.03}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 0.25 \times 2 = 0.5$$

Item 61

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

$$r_{\text{pbi}} = \frac{87.84 - 87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.27}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 2.25 \times 2 = 4.5$$

Item 62

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

$$r_{\text{pbi}} = \frac{88.23 - 87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.66}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 3.14 \times 1.52 = 4.77$$

Item 63

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

$$r_{\text{pbi}} = \frac{87.7-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.13}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.08 \times 2 = 2.16$$

Item 64

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

$$r_{\text{pbi}} = \frac{87.7-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.13}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.08 \times 2 = 2.16$$

Item 65

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

$$r_{\text{pbi}} = \frac{87.6-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.03}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 0.25 \times 2 = 0.5$$

Item 66

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

$$r_{\text{pbi}} = \frac{87.76-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.19}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 1.58 \times 1.52 = 2.4$$

Item 67

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

$$r_{\text{pbi}} = \frac{87.73-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.16}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.33 \times 2 = 2.66$$

Item 68

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

$$r_{\text{pbi}} = \frac{87.73 - 87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.16}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.33 \times 2 = 2.66$$

Item 69

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

$$r_{\text{pbi}} = \frac{87.94 - 87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.37}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 3.08 \times 2 = 4.68$$

Item 70

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

$$r_{\text{pbi}} = \frac{87.80 - 87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.23}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 1.91 \times 1.52 = 2.90$$

Item 71

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

$$r_{\text{pbi}} = \frac{87.94 - 87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.37}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 3.08 \times 2 = 4.68$$

Item 72

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

$$r_{pbi} = \frac{87.80 - 87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{0.23}{0.12} \sqrt{2.33}$$

$$r_{pbi} = 1.91 \times 1.52 = 2.90$$

Item 73

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

$$r_{pbi} = \frac{87.77 - 87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{0.2}{0.12} \sqrt{2.33}$$

$$r_{pbi} = 1.66 \times 1.52 = 2.52$$

Item 74

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

$$r_{pbi} = \frac{87.65 - 87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{0.08}{0.12} \sqrt{4}$$

$$r_{pbi} = 0.66 \times 2 = 1.32$$

Item 75

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

$$r_{pbi} = \frac{87.75 - 87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{pbi} = \frac{0.18}{0.12} \sqrt{4}$$

$$r_{pbi} = 1.5 \times 2 = 3$$

Item 76

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

$$r_{pbi} = \frac{87.38 - 87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{pbi} = \frac{-0.19}{0.12} \sqrt{2.33}$$

$$r_{pbi} = -1.58 \times 1.52 = 2.40$$

Item 77

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

$$r_{\text{pbi}} = \frac{87.94-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.57}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 3.08 \times 1.52 = 4.68$$

Item 78

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

$$r_{\text{pbi}} = \frac{87.75-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.18}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.5 \times 2 = 3$$

Item 79

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

$$r_{\text{pbi}} = \frac{87.75-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.18}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.5 \times 2 = 3$$

Item 80

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

$$r_{\text{pbi}} = \frac{89-87.57}{0.12} \sqrt{\frac{0.5}{0.5}}$$

$$r_{\text{pbi}} = \frac{1.43}{0.12} \sqrt{1}$$

$$r_{\text{pbi}} = 11.92 \times 1 = 11.92$$

Item 81

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

$$r_{\text{pbi}} = \frac{87.4-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{-0.17}{0.12} \sqrt{1.5}$$

$$r_{\text{pbi}} = -1.41 \times 1.22 = -1.72$$

Item 82

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

$$r_{\text{pbi}} = \frac{87.7-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.13}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.08 \times 2 = 2.16$$

Item 83

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

$$r_{\text{pbi}} = \frac{87.80-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.23}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 1.91 \times 1.52 = 2.90$$

Item 84

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

$$r_{\text{pbi}} = \frac{87.36-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{-0.21}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = -1.75 \times 2 = -3.5$$

Item 85

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

$$r_{\text{pbi}} = \frac{87.3-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{-0.27}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = -0.03 \times 2 = -0.06$$

Item 86

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

$$r_{\text{pbi}} = \frac{87.47-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{-0.1}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = -0.47 \times 2 = -0.94$$

Item 87

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

$$r_{\text{pbi}} = \frac{87.17-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{-0.4}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = -3.33 \times 2 = -6.66$$

Item 88

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

$$r_{\text{pbi}} = \frac{87.80-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.23}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 1.91 \times 1.52 = 2.90$$

Item 89

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

$$r_{\text{pbi}} = \frac{87.79-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.22}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.83 \times 2 = 3.66$$

Item 90

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

$$r_{\text{pbi}} = \frac{87.79-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.22}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.83 \times 2 = 3.66$$

Item 91

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

$$r_{\text{pbi}} = \frac{87.6-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.03}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 0.25 \times 2 = 0.5$$

Item 92

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

$$r_{\text{pbi}} = \frac{87.25-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{-0.32}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = -2.66 \times 2 = -5.32$$

Item 93

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

$$r_{\text{pbi}} = \frac{87.7-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.13}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 1.08 \times 2 = 2.16$$

Item 94

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

$$r_{\text{pbi}} = \frac{87.84-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.27}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 2.25 \times 2 = 4.5$$

Item 95

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

$$r_{\text{pbi}} = \frac{87.88-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.31}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 2.58 \times 1.52 = 3.92$$

Item 96

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

$$r_{\text{pbi}} = \frac{87.77-87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{0.2}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 1.66 \times 1.52 = 2.52$$

Item 97

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

$$r_{\text{pbi}} = \frac{87.6-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.03}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 0.25 \times 2 = 0.5$$

Item 98

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

$$r_{\text{pbi}} = \frac{87.84-87.57}{0.12} \sqrt{\frac{0.8}{0.2}}$$

$$r_{\text{pbi}} = \frac{0.27}{0.12} \sqrt{4}$$

$$r_{\text{pbi}} = 2.25 \times 2 = 4.5$$

Item 99

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

$$r_{\text{pbi}} = \frac{878.45-87.57}{0.12} \sqrt{\frac{0.6}{0.4}}$$

$$r_{\text{pbi}} = \frac{0.58}{0.12} \sqrt{1.5}$$

$$r_{\text{pbi}} = 4.83 \times 1.22 = 5.89$$

Item 100

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

$$r_{\text{pbi}} = \frac{93.17 - 87.57}{0.12} \sqrt{\frac{0.7}{0.3}}$$

$$r_{\text{pbi}} = \frac{5.6}{0.12} \sqrt{2.33}$$

$$r_{\text{pbi}} = 46.6 \times 1.52 = 70.83$$

Appendix 11

HOMOGENEITY TEST (PRE-TEST)

Calculation of parameter to get variant of the first class as experimental class sample and variant of the second class as control class sample are used homogeneity test by using formula:

$$S^2 = \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)}$$

Hypotheses:

$$H_0 : \delta_1^2 = \delta_2^2$$

$$H_1 : \delta_1^2 \neq \delta_2^2$$

A. Variant of the XI IPS 3 class is:

NO	Xi	Xi ²
1.	82	6724
2.	80	6400
3.	81	6561
4.	92	8464
5.	87	7569
6.	80	6400
7.	81	6561
8.	78	6084
9.	84	7056
10.	81	6561
11.	74	5476
12.	81	6561
13.	81	6561
14.	91	8281
15.	87	7569
16.	93	8649
17.	93	8649
18.	82	6724
19.	80	6400
20.	97	9409
21.	81	6561
Total	1766	149220

$$n = 21$$

$$\sum xi = 1766$$

$$\sum xi^2 = 149220$$

So:

$$\begin{aligned} S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\ &= \frac{21(149220) - (1766)^2}{21(21-1)} \\ &= \frac{3133620 - 3118756}{21(20)} \\ &= \frac{14860}{420} \\ &= 35.38 \end{aligned}$$

B. Variant of the XI IPS 1 class is:

NO	Xi	Xi ²
1.	78	6084
2.	79	6241
3.	81	6561
4.	91	8281
5.	85	7225
6.	81	6561
7.	81	6561
8.	79	6241
9.	83	6889
10.	80	6400
11.	79	6241
12.	80	6400
13.	80	6400
14.	91	8281
15.	87	7569
16.	92	8464
17.	92	8464
18.	79	6241
19.	77	5929
20.	92	8464
21.	80	6400
22.	76	5776

Total	1747	151673
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$$N = 22$$

$$\sum xi = 1747$$

$$\sum xi^2 = 151673$$

So:

$$\begin{aligned} S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\ &= \frac{22(151673) - (1747)^2}{22(22-1)} \\ &= \frac{3336806 - 3052009}{22(21)} \\ &= \frac{284797}{462} \\ &= 616.44 \end{aligned}$$

The Formula was used to test the hypothesis was:

$$F = \frac{\text{The Biggest Variant}}{\text{The Smallest Variant}}$$

XI IPS 1 and XI IPS 3 :

$$F = \frac{\text{The Biggest Variant}}{\text{The Smallest Variant}}$$

So:

$$\begin{aligned} F &= \frac{616.40}{35.38} \\ &= 17.42 \end{aligned}$$

After doing the calculation, researcher found that $F_{\text{count}} = 17.42$. It had been compared to F_{table} with $\alpha 5\%$ and dk numerator and deminator were same (n_1 and $n_2 = 21$; $dk = 21-1 = 20$). From the distribution list F, researcher found that $F_{\text{table}} = 2.59$, so $F_{\text{count}} > F_{\text{table}}$ ($17.42 > 2.59$). It could be concluded that there is no difference variant between the XI IPS 1 class and XI IPS 3 class. It means that the variant is homogenous.

Appendix 12

Reliability of Vocabulary Pre Test

To get reliability of the test, the researcher uses formula KR-20:

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

$$N = 21$$

$$\sum X_t = 1766$$

$$\sum X_t^2 = 14922$$

$$\sum pq = 0.576$$

$$\begin{aligned} S_t^2 &= \sum X_t^2 - \left(\frac{\sum X_t}{N} \right)^2 \\ &= 14922 - \left(\frac{1766}{21} \right)^2 = 14922 - 84.09523^2 = 149220 - 70720 = 78.500 \end{aligned}$$

$$S_t^2 = \frac{\sum X_t^2}{N} = \frac{78.500}{21}$$

$$S_t^2 = 373.80$$

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

$$R_{11} = \left(\frac{21}{21-1} \right) \left(\frac{373.80 - 0.576}{373.80} \right) = \left(\frac{21}{20} \right) \left(\frac{373.224}{373.80} \right)$$

$$= (1.05) (0.99)$$

$$= 1.04 (r_{11} > 0.70 = \text{reliable})$$

Test is reliable if $r_{\text{count}} > r_{\text{table}}$. Based on calculation above, the test have very high reliable.

Appendix 13

RESULT OF NORMALITY TEST IN PRE TEST

RESULT OF THE NORMALITY TEST OF XI IPS 1 IN PRE-TEST

1. The score of XI IPS 3 class in pre test from low score to high score:

74	78	80	80	80	81	81
81	81	81	81	82	82	84
87	87	91	92	93	93	97

2. High = 97

Low = 74

Range = High – Low

= 97 – 74

= 23

3. Total of Classes = $1 + 3,3 \log (n)$

= $1 + 3,3 \log (21)$

= $1 + 3,3 (0.30)$

= $1 + 0.99$

= 1.99

4. Length of Classes = $\frac{\text{range}}{\text{totalofclass}} = \frac{23}{2} = 11.5$

5. Mean

Interval Class	F	X	x'	fx	x ²	fx ²
70-75	1	72	+3	3	9	27
76-79	1	78	+2	2	4	8
80-85	12	82	+1	12	1	12
86-90	2	88	0	0	0	0
91-95	4	93	-1	-4	1	4
96-100	1	98	-2	-2	4	4
<i>i</i> = 11.5	21	-	3	-11	-	55

$$Mx = M^1 + i \frac{\sum fx^1}{N}$$

$$= 88 + 11.5 \left(\frac{-11}{21} \right)$$

$$= 88 + 11.5 (-0.52)$$

$$= 88 + (-5,98)$$

$$= 82.02$$

$$SD_t = i \sqrt{\frac{\sum fx'^2}{n} - \left(\frac{\sum fx'}{n} \right)^2}$$

$$= 11.5 \sqrt{\frac{55}{21} - \left(\frac{-11}{21} \right)^2}$$

$$= 11.5 \sqrt{2.62 - (-0.52)^2}$$

$$= 11.5 \sqrt{2,62 - 0.27}$$

$$= 11.5 \times 1.532 = 17.618$$

Table of Normality Data Test with Chi Kuadrat Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f_h	f_0	$\frac{(f_0-f_h)}{f_h}$
90 - 95	100.5	2.01	0.4821				
85 - 89	95.5	1.47	0.4292	0.04	1.12	4	2.57
80 - 84	80.5	0.93	0.3238	0.10	2.8	5	0.78
75 - 79	85.5	0.40	0.1554	0.16	4.48	3	-0.33
70 – 74	79.5	0.13	0.0517	0.10	2.8	6	1.14
				-0.19	-5.32	5	-1.93
						X^2	2.23

Based on the table above, the reseracher found that $x^2_{count} = 2.23$ while $x^2_{table} = 11.070$, cause $x^2_{count} < x^2_{table}$ ($2.23 < 11.070$) with degree of freedom (dk) = $2-1 = 1$ and significant level $\alpha = 5\%$. So distribution of XI IPS 1 class (pre-test) is normal.

6. Median

No	Interval	F	Fk
1	70 – 75	1	1
2	76 - 79	1	2
3	80 - 85	2	4
4	86 - 90	12	16
5	91 – 95	4	20
6	96 – 100	1	21

Position of Me in the interval of classes is number 4, that:

$$Bb = 85.5$$

So :

$$F = 4$$

$$Me = Bb + i \left(\frac{\frac{n}{2} - F}{fn} \right)$$

$$Fm = 12$$

$$= 85.5 + 11.5 (0.58)$$

$$i = 11.5 \qquad = 85.5 + 11.5 (0.58)$$

$$n = 22 \qquad = 85.5 + 6.67$$

$$1/2n = 11 \qquad = 92.17$$

7. Modus

No	Interval	F	Fk
1	70 – 75	1	1
2	76 - 79	1	2
3	80 - 85	2	4
4	86 - 90	12	16
5	91 – 95	4	20
6	96 – 100	1	21

$$M_o = L + \frac{d_1}{d_1 + d_2} i \qquad \text{So,}$$

$$L = 85.5 \qquad M_o = 85.5 + \frac{10}{10+8} 11.5$$

$$d_1 = 10 \qquad = 85.5 + 0.55 (11.5)$$

$$d_2 = 8 \qquad = 85.5 + 6.34$$

$$i = 11.5 \qquad = 91.84$$

RESULT OF THE NORMALITY TEST OF XI IPS 3 IN PRE-TEST

1. The score of XI IPS 1 class in pre test from low score to high score:

70	73	73	75	75	75	77	77
79	79	79	80	80	82	83	83
84	85	86	86	88	90	95	

$$2. \text{ High} = 95 \qquad 3. \text{ Total of Classes} = 1 + 3,3 \log (n)$$

$$\text{Low} = 70 \qquad = 1 + 3,3 \log (23)$$

$$\text{Range} = \text{High} - \text{Low} \qquad = 1 + 3,3 (1.36)$$

$$= 95 - 70 \qquad = 1 + 4.49$$

$$= 25 \qquad = 5.49 = 5$$

$$4. \text{ Length of Classes} = \frac{\text{range}}{\text{totalofclass}} = \frac{25}{5.5} = 4.5$$

5. Mean

Interval Class	F	X	x'	fx'	x' ²	fx' ²
70 – 74	3	72	+2	6	4	12
75 – 79	8	77	+1	8	1	8

80 – 84	6	82	0	0	0	0
85 – 89	4	87	-1	-4	16	4
90 – 95	2	92.5	-2	-4	16	8
$i = 4.5$	23	-	-	6	-	32

$$Mx = M^1 + i \frac{\sum fx^1}{N}$$

$$= 82 + 4.5 \left(\frac{6}{23}\right)$$

$$= 82 + 4.5 (0.26)$$

$$= 82 + 1.17$$

$$= 83.17$$

$$SD_t = i \sqrt{\frac{\sum fx^2}{n} - \left(\frac{\sum fx^1}{n}\right)^2}$$

$$= 4.5 \sqrt{\frac{32}{23} - \left(\frac{6}{23}\right)^2}$$

$$= 4.5 \sqrt{1.39 - (0.26)^2}$$

$$= 4.5 \sqrt{1.39 - 0.067}$$

$$= 4.5 \sqrt{1.323}$$

$$= 4.5 \times 1.150 = 5.175$$

Table of Normality Data Test with Chi Kuadrat Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f_h	f_0	$\frac{(f_0 - f_h)}{f_h}$
90 - 95	100.5	2.01	0.4821				
85 - 89	95.5	1.47	0.4292	0.04	1.12	4	2.57
80 - 84	80.5	0.93	0.3238	0.10	2.8	5	0.78
75 - 79	85.5	0.40	0.1554	0.16	4.48	3	-0.33
70 – 74	79.5	0.13	0.0517	0.10	2.8	6	1.14
				-0.19	-5.32	5	-1.93
						X^2	-1.81

Based on the table above, the reseracher found that $x^2_{count} = -1.81$ while $x^2_{table} =$, cause $x^2_{count} < x^2_{table}$ ($2.23 < 11.070$) with degree of freedom (dk) = $5.5 - 1 = 4.5$ and significant level $\alpha = 5\%$.

So distribution of XI IPS 3 class (pre-test) is normal.

6. Median

No	Interval	F	Fk
1	70 – 74	3	3
2	75 - 79	8	11
3	80 - 84	6	17
4	85 - 89	4	21
5	90 – 95	2	23

Position of Me in the interval of classes is number 4, that:

$$Bb = 79.5$$

So :

$$F = 11$$

$$Me = Bb + i \left(\frac{\frac{n}{2} - F}{fm} \right)$$

$$fm = 6$$

$$= 79.5 + 4.5 \left(\frac{11 - 11}{6} \right)$$

$$i = 4.5$$

$$= 79.5 + 4.5 (0)$$

$$n = 23$$

$$= 79.5 + 0$$

$$1/2n = 11$$

$$= 79.5$$

7. Modus

No	Interval	F	Fk
1	70 – 74	1	1
2	75 - 79	1	2
3	80 - 84	2	4
4	85 - 89	12	16
5	90 – 95	4	20

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

So,

$$L = 79.5$$

$$M_o = 79.5 + \frac{14}{10+8} 4.5$$

$$d_1 = 14$$

$$= 79.5 + 3.51 (4.5)$$

$$d_2 = 8$$

$$= 83.02$$

$$i = 4.5$$

Appendix 14

Score of Experimental Class and Control Class Pre Test

a. Pre Test Score of Experimental Class

NO.	The Name Of Students (N)	Pre Test
1.	AS	78
2.	PR	79
3.	SS	81
4.	RM	91
5.	SA	85
6.	AA	81
7.	AN	81
8.	RS	79
9.	PY	83
10.	AU	80
11.	REM	79
12.	NA	80
13.	Z	80
14.	MH	91
15.	HS	87
16.	M	92
17.	NP	92
18.	PRN	79
19.	HM	77
20.	MR	92
21.	SG	80
22.	WA	76
Total		1747

b. Pre Test Score of Control Class

NO.	The Name Of Students (N)	Pre Test
1.	RS	82
2.	M	80
3.	NH	81
4.	RS	92
5.	AZL	87
6.	RP	80
7.	Y	81
8.	RY	78
9.	N	84
10.	AW	81
11.	RD	74
12.	PD	81
13.	ZMS	81
14.	HF	91
15.	YN	87
16.	NN	93
17.	AMP	93
18.	MI	82
19.	KA	80
20.	JS	97
21.	NA	81
Total		1766

NO	M _p	M _t	SD _t	P	Q	$r_{pbi} = \frac{M_p - M_t}{SD_t}$	r_t on 5% significant	Interpretation
1.	89	87.57	0.12	0.5	0.5	11.92	0.433	Valid
2.	88.36	87.57	0.12	0.6	0.4	8.03	0.433	Valid
3.	88.55	87.57	0.12	0.4	0.6	7.34	0.433	Valid
4.	88.64	87.57	0.12	0.4	0.6	0.66	0.433	Valid
5.	88.45	87.57	0.12	0.6	0.4	5.89	0.433	Valid
6.	87.87	87.57	0.12	0.6	0.4	0.02	0.433	Invalid
7.	87.93	87.57	0.12	0.6	0.4	3.66	0.433	Valid
8.	87.75	87.57	0.12	0.6	0.4	1.83	0.433	Valid
9.	87.61	87.57	0.12	0.7	0.3	0.50	0.433	Valid
10	92.76	87.57	0.12	0.7	0.3	64.74	0.433	Valid
11	87.61	87.57	0.12	0.7	0.3	0.50	0.433	Valid
12	87.6	87.57	0.12	0.8	0.2	0.50	0.433	Valid
13	87.84	87.57	0.12	0.8	0.2	3.6	0.433	Valid
14	88	87.57	0.12	0.7	0.3	5.44	0.433	Valid
15	83.56	87.57	0.12	0.6	0.4	-50	0.433	Invalid
16	88	87.57	0.12	0.7	0.3	5.44	0.433	Valid
17	87.35	87.57	0.12	0.6	0.4	-2.23	0.433	Invalid
18	89	87.57	0.12	0.5	0.5	11.91	0.433	Valid
19	87.93	87.57	0.12	0.6	0.4	4.56	0.433	Valid
20	87.08	87.57	0.12	0.5	0.5	-4.08	0.433	Invalid
21	88.61	87.57	0.12	0.5	0.5	4.91	0.433	Valid
22	88.16	87.57	0.12	0.5	0.5	4.91	0.433	Valid
23	86.52	87.57	0.12	0.7	0.3	-1.89	0.433	Invalid
24	87.84	87.57	0.12	0.8	0.2	4.5	0.433	Valid
25	87.94	87.57	0.12	0.8	0.2	6.16	0.433	Valid
26	87.84	87.57	0.12	0.7	0.3	3.42	0.433	Valid
27	87.84	87.57	0.12	0.8	0.2	5	0.433	Valid
28	87.73	87.57	0.12	0.8	0.2	2.66	0.433	Valid
29	87.78	87.57	0.12	0.8	0.2	3.5	0.433	Valid
30	87.6	87.57	0.12	0.8	0.2	0.5	0.433	Valid
31	87.65	87.57	0.12	0.8	0.2	1.32	0.433	Valid
32	87.84	87.57	0.12	0.8	0.2	4.5	0.433	Valid
33	88.0	87.57	0.12	0.7	0.3	5.44	0.433	Valid
34	87.15	87.57	0.12	0.8	0.2	-7	0.433	Invalid
35	87.77	87.57	0.12	0.7	0.3	2.52	0.433	Valid
36	88.0	87.57	0.12	0.7	0.3	5.44	0.433	Valid
37	88.05	87.57	0.12	0.7	0.3	6.08	0.433	Valid
38	94.13	87.57	0.12	0.6	0.4	66.6	0.433	Valid
39	97.65	87.57	0.12	0.8	0.2	1.32	0.433	Valid
40	87.68	87.57	0.12	0.8	0.2	1.82	0.433	Valid
41	87.65	87.57	0.12	0.7	0.3	1.003	0.433	Valid
42	87.78	87.57	0.12	0.8	0.2	3.5	0.433	Valid
43	88.36	87.57	0.12	0.6	0.4	8.03	0.433	Valid

44	87.78	87.57	0.12	0.8	0.2	3.5	0.433	Valid
45	87.75	87.57	0.12	0.8	0.2	3	0.433	Valid
46	88.17	87.57	0.12	0.7	0.3	7.6	0.433	Valid
47	87.68	87.57	0.12	0.8	0.2	1.82	0.433	Valid
48	88.18	87.57	0.12	0.6	0.4	6.19	0.433	Valid
49	88.23	87.57	0.12	0.7	0.3	8.36	0.433	Valid
50	87.65	87.57	0.12	0.8	0.2	1.32	0.433	Valid
51		87.57	0.12	0.8	0.2		0.433	Valid
52	87.78	87.57	0.12	0.8	0.2	3.5	0.433	Valid
53	87.6	87.57	0.12	0.8	0.2	0.5	0.433	Valid
54	87.57	87.57	0.12	0.8	0.2	4	0.433	Valid
55	87.7	87.57	0.12	0.8	0.2	2.16	0.433	Valid
56	87.86	87.57	0.12	0.6	0.4	2.94	0.433	Valid
57	87.84	87.57	0.12	0.8	0.2	4.5	0.433	Valid
58	87.68	87.57	0.12	0.8	0.2	1.82	0.433	Valid
59	88.11	87.57	0.12	0.7	0.3	6.84	0.433	Valid
60	87.6	87.57	0.12	0.8	0.2	0.5	0.433	Valid
61	87.84	87.57	0.12	0.8	0.2	4.5	0.433	Valid
62	88.23	87.57	0.12	0.7	0.3	4.77	0.433	Valid
63	87.7	87.57	0.12	0.8	0.2	2.16	0.433	Valid
64	87.7	87.57	0.12	0.8	0.2	2.16	0.433	Valid
65	87.6	87.57	0.12	0.8	0.2	0.5	0.433	Valid
66	87.76	87.57	0.12	0.7	0.3	2.4	0.433	Valid
67	87.73	87.57	0.12	0.8	0.2	2.66	0.433	Valid
68	87.73	87.57	0.12	0.8	0.2	2.66	0.433	Valid
69	87.94	87.57	0.12	0.8	0.2	4.68	0.433	Valid
70	87.80	87.57	0.12	0.7	0.3	2.90	0.433	Valid
71	87.94	87.57	0.12	0.7	0.3	4.68	0.433	Valid
72	87.80	87.57	0.12	0.7	0.3	2.90	0.433	Valid
73	87.77	87.57	0.12	0.7	0.3	2.52	0.433	Valid
74	87.65	87.57	0.12	0.8	0.2	1.32	0.433	Valid
75	87.75	87.57	0.12	0.8	0.2	3	0.433	Valid
76	87.38	87.57	0.12	0.7	0.3	2.40	0.433	Valid
77	87.94	87.57	0.12	0.7	0.3	4.68	0.433	Valid
78	87.75	87.57	0.12	0.8	0.2	3	0.433	Valid
79	87.75	87.57	0.12	0.8	0.2	3	0.433	Valid
80	89	87.57	0.12	0.5	0.5	11.92	0.433	Valid
81	87.4	87.57	0.12	0.6	0.4	-17.72	0.433	Invalid
82	87.7	87.57	0.12	0.8	0.2	2.16	0.433	Valid
83	87.80	87.57	0.12	0.7	0.3	2.90	0.433	Valid
84	87.36	87.57	0.12	0.8	0.2	-3.5	0.433	Invalid
85	87.3	87.57	0.12	0.8	0.2	-0.06	0.433	Invalid
86	87.447	87.57	0.12	0.8	0.2	-0.94	0.433	Invalid
87	87.17	87.57	0.12	0.7	0.3	-6.66	0.433	Invalid
88	87.80	87.57	0.12	0.7	0.3	2.90	0.433	Valid

89	87.79	87.57	0.12	0.8	0.2	3.66	0.433	Valid
90	87.79	87.57	0.12	0.8	0.2	3.66	0.433	Valid
91	87.6	87.57	0.12	0.8	0.2	0.5	0.433	Valid
92	87.25	87.57	0.12	0.8	0.2	-5.32	0.433	Invalid
93	87.7	87.57	0.12	0.8	0.2	2.26	0.433	Valid
94	87.84	87.57	0.12	0.8	0.2	4.5	0.433	Valid
95	87.88	87.57	0.12	0.7	0.3	3.92	0.433	Valid
96	87.77	87.57	0.12	0.7	0.3	2.52	0.433	Valid
97	87.6	87.57	0.12	0.8	0.2	0.5	0.433	Valid
98	87.84	87.57	0.12	0.8	0.2	4.5	0.433	Valid
99	88.45	87.57	0.12	0.6	0.4	5.89	0.433	Valid
100	93.17	87.57	0.12	0.7	0.3	70.83	0.433	Valid

From the table above, it can be seen that 12 items was invalid and 88 items was valid. So, the researcher took 88 items for vocabulary pretest.

Appendix 16

T-test of the Both Averages in Pre-Test

The formula was used to analyse homogeneity test of the both averages was t-test, that:

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

$$Tt = \frac{83.17 - 80.02}{\sqrt{\left(\frac{(21 - 1)35.38 + (21 - 1)616.44}{21 + 21 - 2}\right)\left(\frac{1}{21} + \frac{1}{21}\right)}}$$

$$Tt = \frac{3.15}{\sqrt{\left(\frac{20(35.38) + 20(616.44)}{40}\right)\left(\frac{2}{21}\right)}}$$

$$Tt = \frac{3.15}{\sqrt{\left(\frac{70760 + 1232880}{40}\right)(0.09)}}$$

$$Tt = \frac{3.15}{\sqrt{(32591)(0.09)}}$$

$$Tt = \frac{3.15}{\sqrt{2933}}$$

$$Tt = \frac{3.15}{54.15}$$

$$Tt = 0.058$$

Based on researcher calculation result of homogeneity test of the both averages, researcher found that $t_{\text{count}} = 0.058$ with opportunity $(1 - \alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 21 + 21 - 2 = 40$, $t_{\text{table}} = 1.67356$. So, $t_{\text{count}} < t_{\text{table}} (0.058 < 1.67356)$ and H_0 is accepted, it means no difference the average between the first class as experimental class and the second class as control class in this research.

Appendix 17

HOMOGENEITY TEST (POST-TEST)

Calculation of parameter to get variant of the first class as experimental class sample and variant of the second class as control class sample are used homogeneity test by using formula:

Hypotheses:

$$H_0 : \delta_1^2 = \delta_2^2$$

$$H_1 : \delta_1^2 \neq \delta_2^2$$

C. Variant of the XI IPS 3 class is:

NO	X_i	X_i^2
22.	83	6899
23.	81	6561
24.	82	6724
25.	94	8836
26.	89	7921
27.	82	6724
28.	82	6724
29.	80	6400
30.	84	7056
31.	82	6724
32.	77	5929
33.	81	6561
34.	83	6889
35.	91	8281
36.	88	7744
37.	93	8649
38.	94	8836
39.	83	6889
40.	80	6400
41.	97	9409
42.	82	6724
Total	1788	152870

$$n = 21$$

$$\sum x_i = 1788$$

$$\sum x_i^2 = 152870$$

So:

$$\begin{aligned} S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\ &= \frac{21(152870) - (1788)^2}{21(21-1)} \\ &= \frac{3210270 - 3.196.944}{21(20)} \\ &= \frac{13.326}{420} = 31.27 \end{aligned}$$

D. Variant of the XI IPS 1 class is:

NO	Xi	Xi ²
23.	78	6084
24.	79	6241
25.	81	6561
26.	93	8649
27.	86	7396
28.	83	6889
29.	83	6889
30.	80	6400
31.	84	7056
32.	81	6561
33.	82	6724
34.	84	7056
35.	84	7056
36.	93	8649
37.	88	7744
38.	93	8649
39.	94	8836
40.	81	6561
41.	80	6400
42.	93	8649
43.	83	6889
Total	1863	158339

$$N = 22$$

$$\sum xi = 1863$$

$$\sum xi^2 = 158339$$

So:

$$\begin{aligned} S^2 &= \frac{n\sum xi^2 - (\sum xi)^2}{n(n-1)} \\ &= \frac{22(1518339) - (1863)^2}{22(22-1)} \\ &= \frac{33403678 - 3470769}{22(21)} \end{aligned}$$

$$= \frac{29932909}{462} = 64.80$$

The Formula was used to test the hypothesis was:

$$F = \frac{\textit{The Biggest Variant}}{\textit{The Smallest Variant}}$$

XI IPS 1 and XI IPS 3 :

$$F = \frac{\textit{The Biggest Variant}}{\textit{The Smallest Variant}}$$

So:

$$F = \frac{6480}{3172}$$
$$= 20.42$$

After doing the calculation, researcher found that $F_{\text{count}} = 20.42$. It had been compared to F_{table} with $\alpha 5\%$ and dk numerator and deminator were same (n_1 and $n_2 = 22$; $dk = 22-1 = 21$). From the distribution list F, researcher found that $F_{\text{table}} = 2.59$, so $F_{\text{count}} > F_{\text{table}}$ ($20.42 > 2.59$). It could be concluded that there is no difference variant between the XI IPS 1 class and XI IPS 3 class. It means that the variant is homogenous.

Appendix 18

Reliability of Vocabulary Post Test

To get reliability of the test, the researcher uses formula KR-20:

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

$$N = 21$$

$$\sum X_t = 1788$$

$$\sum X_t^2 = 152870$$

$$\sum pq = 5.3984$$

$$\begin{aligned} S_t^2 &= \sum X_t^2 - \left(\frac{\sum X_t}{N} \right)^2 \\ &= 152870 - \left(\frac{1788}{21} \right)^2 = 152870 - 85.1428^2 = 152870 - 72.49296 = 80.378 \end{aligned}$$

$$S_t^2 = \frac{\sum X_t^2}{N} = \frac{80378}{21}$$

$$S_t^2 = 38.275$$

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

$$R_{11} = \left(\frac{21}{21-1} \right) \left(\frac{38.275 - 5.398}{38.275} \right) = \left(\frac{21}{20} \right) \left(\frac{32.877}{38.275} \right)$$

$$= (1.05) (0.85)$$

$$= 0.89 \text{ (} r_{11} > 0.70 = \text{reliable)}$$

Test is reliable if $r_{\text{count}} > r_{\text{table}}$. Based on calculation above, the test have very high reliable.

Appendix 19

RESULT OF NORMALITY TEST IN POST TEST

RESULT OF THE NORMALITY TEST OF XI IPS 1 IN POST-TEST

1. The score of XI IPS 3 class in post test from low score to high score:

77	80	80	81	81	82	82	82
82	82	83	83	83	84	88	89
91	93	94	94	97			

2. High = 97

Low = 77

Range = High - Low

= 97 - 77

= 20

3. Total of Classes = $1 + 3,3 \log (n)$

= $1 + 3,3 \log (21)$

= $1 + 3,3 (1.32)$

= $1 + 4.36$

= $5.36 = 6$

4. Length of Classes = $\frac{\text{range}}{\text{totalofclass}} = \frac{20}{6} = 3.33 = 4$

5. Mean

Interval Class	F	X	x	fx	x ²	fx ²
75 - 79	1	77	+2	2	9	18
80 - 85	13	82	+1	13	4	8
86 - 89	2	88	0	0	1	7
90 - 95	4	92	-1	-4	0	0
96 - 100	1	98	-2	-4	1	4
<i>i = 4</i>	21	-	-	7	-	37

$$Mx = M^1 + i \frac{\sum fx^1}{N}$$

$$= 88 + 4 \left(\frac{7}{21}\right)$$

$$= 88 + 4 (0.33)$$

$$= 88 + 1.32$$

$$= 82.93$$

$$SD_t = i \sqrt{\frac{\sum fx^2}{n} - \left(\frac{\sum fx^1}{n}\right)^2}$$

$$= 4 \sqrt{\frac{37}{21} - \left(\frac{7}{21}\right)^2}$$

$$= 4 \sqrt{1.76 - (0.33)^2}$$

$$= 4 \sqrt{1.76 - 0.108}$$

$$= 4 \sqrt{1.66} = 4 \times 1.29 = 5.19$$

Table of Normality Data Test with Chi Kuadrat Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f_h	f_0	$\frac{(f_0-f_h)}{f_h}$	
100 - 96	95.5	1.69	0.4549	0.11	3.08	5	0.62	
90 - 95	89.5	0.98	0.3365	0.22	6.16	4	-0.35	
86 - 89	83.5	0.28	0.1103	-0.05	-1.4	8	-6.71	
80 - 85	77.5	-0.42	0.1628	0.10	2.8	7	1.5	
75 – 79	71.5	-1.12	0.3686	-0.20	-5.6	2	-1.37	
X^2								-6.31

Based on the table above, the reseracher found that $x^2_{count} = -6.31$ while $x^2_{table} = 11.070$, cause $x^2_{count} < x^2_{table}$ ($-6.31 < 11.070$) with degree of freedom (dk) = $2-1 = 1$ and significant level $\alpha = 5\%$. So distribution of XI IPS 1 class (post-test) is normal.

6. Median

No	Interval	F	Fk
1	75 – 79	2	2
2	80 - 85	2	4
3	86 - 89	7	11
4	90 - 95	8	19
5	96 -100	4	23

Position of Me in the interval of classes is number 4, that:

$$Bb = 85.5$$

$$F = 4$$

$$fm = 7$$

$$i = 4$$

$$n = 21$$

$$1/2n = 11$$

So :

$$Me = Bb + i \left(\frac{\frac{n}{2} - F}{fm} \right)$$

$$= 85.5 + 4 \left(\frac{11-4}{7} \right)$$

$$= 85.5 + 4 (1)$$

$$= 85.5 + 4$$

$$= 89.5$$

7. Modus

No	Interval	F	Fk
1	75 - 79	2	2
2	80 - 85	2	4
3	86 - 89	7	11
4	90 - 95	8	19
5	96 - 100	4	23

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$So, M_o = 85.5 + \frac{5}{1+(-1)} 4$$

$$L = 85.5$$

$$= 85.5 + 0 (4)$$

$$d_1 = 5$$

$$= 85.5 + 0$$

$$d_2 = -1$$

$$= 85.5$$

$$i = 4$$

RESULT OF THE NORMALITY TEST OF XI IPS 3 IN POST-TEST

1. The score of XI IPS 1 class in post test from low score to high score:

74	75	75	77	77	78	78
79	80	80	81	81	83	84
86	86	87	88	90	93	94

2. High = 94

Low = 74

Range = High - Low

$$= 94 - 74$$

$$= 20$$

3. Total of Classes = $1 + 3,3 \log (n)$

$$= 1 + 3,3 \log (23)$$

$$= 1 + 3,3 (1.36)$$

$$= 1 + 4.90$$

$$= 5.90 = 6$$

4. Length of Classes = $\frac{range}{totalofclass} = \frac{20}{6} = 3.33 = 3$

5. Mean

Interval Class	F	X	x'	fx'	x' ²	fx' ²
70 – 74	1	72	+2	2	4	8
75 - 79	7	77	+1	8	1	8
80 – 84	6	82	0	0	0	0
85 - 89	4	87	-1	-4	1	4
90 -94	3	92	-2	-6	2	12
<i>i</i> = 3	21	-	-	0	-	32

$$\begin{aligned}
 Mx &= M^1 + i \frac{\sum fx^1}{N} \\
 &= 82 + 3 \left(\frac{0}{23} \right) \\
 &= 82 + 3 (0) \\
 &= 82 + 3 \\
 &= 85
 \end{aligned}$$

$$\begin{aligned}
 SD_t &= i \sqrt{\frac{\sum fx^2}{n} - \left(\frac{\sum fx^1}{n} \right)^2} \\
 &= 3 \sqrt{\frac{32}{23} - \left(\frac{0}{23} \right)^2} \\
 &= 3 \sqrt{1.91 - 0^2} \\
 &= 3 \sqrt{1.91 - 0} \\
 &= 3 \sqrt{1.91} = 3 \times 1.38 = 4.14
 \end{aligned}$$

Table of Normality Data Test with Chi Kuadrat Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f _h	f ₀	$\frac{(f_0 - f_h)}{f_h}$
75 – 79	79.5	2.05	0.4798	0.05	1.4	2	0.42
70 – 74	74.5	1.43	0.4236	0.12	3.36	2	-0.40
65 – 69	69.5	0.82	0.2939	0.21	5.88	5	-0.14
60 – 64	64.5	0.20	0.0793	-0.07	-1.96	8	-5.08
55 – 59	59.5	-0.41	0.1591	-0.18	-5.04	5	-1.99
						X²	-2.55

Based on the table above, the reseracher found that $x^2_{count} = -2.55$ while $x^2_{table} = 11.070$, cause $x^2_{count} < x^2_{table}$ ($-2.55 < 11.070$) with degree of freedom (dk) = 2-1 = 1 and significant level $\alpha = 5\%$. So distribution of XI IPS 3 class (post-test) is normal.

6. Median

No	Interval	F	Fk
1	70 – 74		
2	75 - 79		
3	80 – 84		
4	85 - 89		
5	90 – 94		

Position of Me in the interval of classes is number 3, that:

$$Bb = 79.5$$

$$F =$$

$$fm =$$

$$i = 3$$

$$n = 23$$

$$1/2n = 11$$

So :

$$Me = Bb + i \left(\frac{n/2 - F}{fm} \right)$$

$$= 79.5 + 3 \left(\frac{11 -}{ } \right)$$

$$= 79.5 + 3 ()$$

$$= 79.5 + 8$$

$$= 62.5$$

7. Modus

No	Interval	F	Fk
1	45 – 49	3	3
2	50 – 54	3	6
3	55 – 59	5	11
4	60 – 64	8	19
5	65 – 69	5	24
6	70 – 74	2	26
7	75 – 79	2	28

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 54.5$$

$$d_1 = 3$$

$$d_2 = 3$$

$$i = 5$$

So,

$$\begin{aligned}M_0 &= 54.5 + \frac{3}{3+3} 5 \\ &= 54.5 + 0.5 (5) \\ &= 54.5 + 2.5 \\ &= 57\end{aligned}$$

Appendix 20

Score of Experimental Class and Control Class Post Test

a. Pre Test Score of Experimental Class

NO.	The Name Of Students (N)	Post test
1.	AS	83
2.	PR	81
3.	SS	82
4.	RM	94
5.	SA	89
6.	AA	82
7.	AN	82
8.	RS	80
9.	PY	84
10.	AU	82
11.	REM	77
12.	NA	81
13.	Z	83
14.	MH	91
15.	HS	88
16.	M	93
17.	NP	94
18.	PRN	83
19.	HM	80
20.	MR	97
21.	SG	82
Total		1788

b. Pre Test Score of Control Class

NO.	The Name Of Students (N)	Post test
1.	RS	78
2.	M	79
3.	NH	81
4.	RS	93
5.	AZL	86
6.	RP	83
7.	Y	83
8.	RY	80
9.	N	84
10.	AW	81
11.	RD	82
12.	PD	84
13.	ZMS	84
14.	HF	93
15.	YN	88
16.	NN	93
17.	AMP	94
18.	MI	81
19.	KA	80
20.	JS	93
21.	NA	83
Total		1783

Appendix 21

T-test of the Both Averages in Post-Test

The formula was used to analyse homogeneity test of the both averages was t-test, that:

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

$$Tt = \frac{82.93 - 85}{\sqrt{\left(\frac{(21 - 1)31.27 + (21 - 1)64.80}{21 + 21 - 2}\right)\left(\frac{1}{21} + \frac{1}{21}\right)}}$$

$$Tt = \frac{-2.07}{\sqrt{\left(\frac{20(31.27) + 21(64.80)}{40}\right)\left(\frac{2}{21}\right)}}$$

$$Tt = \frac{-2.07}{\sqrt{\left(\frac{6254 + 136080}{40}\right)(0.09)}}$$

$$Tt = \frac{-2.07}{\sqrt{(35.58)(0.09)}}$$

$$Tt = \frac{-2.07}{\sqrt{3.20}}$$

$$Tt = \frac{-2.07}{17.89}$$

$$Tt = -0.115$$

Based on researcher calculation result of homogeneity test of the both averages, researcher found that $t_{\text{count}} = -0.115$ with opportunity $(1 - \alpha) = 1 - 5\% = 95\%$ and $dk = n_1 + n_2 - 2 = 21 + 21 - 2 = 40$, $t_{\text{table}} = 1.67356$. So, $t_{\text{count}} > t_{\text{table}} (-0.115 > 1.67356)$ and H_a is rejected, it means there was no the difference average between the first class as experimental class and the second class as control class in this research.

Appendix 22

Chi-Square Table

dk	Significant level					
	50%	30%	20%	10%	5%	1%
1	0,455	1,074	1,642	2,706	3,841	6,635
2	1,386	2,408	3,219	4,605	5,991	9,210
3	2,366	3,665	4,642	6,251	7,815	11,341
4	3,357	4,878	5,989	7,779	9,488	13,277
5	4,351	6,064	7,289	9,236	11,070	15,086
6	5,348	7,231	8,558	10,645	12,592	16,812
7	6,346	8,383	9,803	12,017	14,067	18,475
8	7,344	9,524	11,030	13,362	15,507	20,090
9	8,343	10,656	12,242	14,684	16,919	21,666
10	9,342	11,781	13,442	15,987	18,307	23,209
11	10,341	12,899	14,631	17,275	19,675	24,725
12	11,340	14,011	15,812	18,549	21,026	26,217
13	12,340	15,119	16,985	19,812	22,362	27,688
14	13,339	16,222	18,151	21,064	23,685	29,141
15	14,339	17,222	19,311	22,307	24,996	30,578
16	15,338	18,418	20,465	23,542	26,296	32,000
17	16,338	19,511	21,615	24,769	27,587	33,409
18	17,338	20,601	22,760	25,989	28,869	34,805
19	18,338	21,689	23,900	27,204	30,144	36,191
20	19,337	22,775	25,038	28,412	31,410	37,566
21	20,337	23,858	26,171	29,615	32,671	38,932
22	21,337	24,939	27,301	30,813	33,924	40,289
23	22,337	26,018	28,429	32,007	35,172	41,638
24	23,337	27,096	29,553	33,196	35,415	42,980
25	24,337	28,172	30,675	34,382	37,652	44,314
26	25,336	29,246	31,795	35,563	38,885	45,642
27	26,336	30,319	32,912	36,741	40,113	46,963
28	27,336	31,391	34,027	37,916	41,337	48,278
29	28,336	32,461	35,139	39,087	42,557	49,588
30	29,336	33,530	36,250	40,256	43,773	50,892

Appendix 23

Z-Table

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964

Appendix 24

Percentage Points of the t Distribution

Pr df	0.25	0.10	0.05	0.025	0.01	0.005	0.001
	0.50	0.20	0.10	0.050	0.02	0.010	0.002
1	1.00000	3.07768	6.31375	12.70620	31.82052	63.65674	318.30884
2	0.81650	1.88562	2.91999	4.30265	6.96456	9.92484	22.32712
3	0.76489	1.63774	2.35336	3.18245	4.54070	5.84091	10.21453
4	0.74070	1.53321	2.13185	2.77645	3.74695	4.60409	7.17318
5	0.72669	1.47588	2.01505	2.57058	3.36493	4.03214	5.89343
6	0.71756	1.43976	1.94318	2.44691	3.14267	3.70743	5.20763
7	0.71114	1.41492	1.89458	2.36462	2.99795	3.49948	4.78529
8	0.70639	1.39682	1.85955	2.30600	2.89646	3.35539	4.50079
9	0.70272	1.38303	1.83311	2.26216	2.82144	3.24984	4.29681
10	0.69981	1.37218	1.81246	2.22814	2.76377	3.16927	4.14370
11	0.69745	1.36343	1.79588	2.20099	2.71808	3.10581	4.02470
12	0.69548	1.35622	1.78229	2.17881	2.68100	3.05454	3.92963
13	0.69383	1.35017	1.77093	2.16037	2.65031	3.01228	3.85198
14	0.69242	1.34503	1.76131	2.14479	2.62449	2.97684	3.78739
15	0.69120	1.34061	1.75305	2.13145	2.60248	2.94671	3.73283
16	0.69013	1.33676	1.74588	2.11991	2.58349	2.92078	3.68615
17	0.68920	1.33338	1.73961	2.10982	2.56693	2.89823	3.64577
18	0.68836	1.33039	1.73406	2.10092	2.55238	2.87844	3.61048
19	0.68762	1.32773	1.72913	2.09302	2.53948	2.86093	3.57940
20	0.68695	1.32534	1.72472	2.08596	2.52798	2.84534	3.55181
21	0.68635	1.32319	1.72074	2.07961	2.51765	2.83136	3.52715
22	0.68581	1.32124	1.71714	2.07387	2.50832	2.81876	3.50499
23	0.68531	1.31946	1.71387	2.06866	2.49987	2.80734	3.48496
24	0.68485	1.31784	1.71088	2.06390	2.49216	2.79694	3.46678
25	0.68443	1.31635	1.70814	2.05954	2.48511	2.78744	3.45019
26	0.68404	1.31497	1.70562	2.05553	2.47863	2.77871	3.43500
27	0.68368	1.31370	1.70329	2.05183	2.47266	2.77068	3.42103
28	0.68335	1.31253	1.70113	2.04841	2.46714	2.76326	3.40816
29	0.68304	1.31143	1.69913	2.04523	2.46202	2.75639	3.39624
30	0.68276	1.31042	1.69726	2.04227	2.45726	2.75000	3.38518
31	0.68249	1.30946	1.69552	2.03951	2.45282	2.74404	3.37490
32	0.68223	1.30857	1.69389	2.03693	2.44868	2.73848	3.36531
33	0.68200	1.30774	1.69236	2.03452	2.44479	2.73328	3.35634
34	0.68177	1.30695	1.69092	2.03224	2.44115	2.72839	3.34793
35	0.68156	1.30621	1.68957	2.03011	2.43772	2.72381	3.34005
36	0.68137	1.30551	1.68830	2.02809	2.43449	2.71948	3.33262
37	0.68118	1.30485	1.68709	2.02619	2.43145	2.71541	3.32563
38	0.68100	1.30423	1.68595	2.02439	2.42857	2.71156	3.31903
39	0.68083	1.30364	1.68488	2.02269	2.42584	2.70791	3.31279

40	0.68067	1.30308	1.68385	2.02108	2.42326	2.70446	3.30688
41	0.68052	1.30254	1.68288	2.01954	2.42080	2.70118	3.30127
42	0.68038	1.30204	1.68195	2.01808	2.41847	2.69807	3.29595
43	0.68024	1.30155	1.68107	2.01669	2.41625	2.69510	3.29089
44	0.68011	1.30109	1.68023	2.01537	2.41413	2.69228	3.28607
45	0.67998	1.30065	1.67943	2.01410	2.41212	2.68959	3.28148
46	0.67986	1.30023	1.67866	2.01290	2.41019	2.68701	3.27710
47	0.67975	1.29982	1.67793	2.01174	2.40835	2.68456	3.27291
48	0.67964	1.29944	1.67722	2.01063	2.40658	2.68220	3.26891
49	0.67953	1.29907	1.67655	2.00958	2.40489	2.67995	3.26508
50	0.67943	1.29871	1.67591	2.00856	2.40327	2.67779	3.26141
51	0.67933	1.29837	1.67528	2.00758	2.40172	2.67572	3.25789
52	0.67924	1.29805	1.67469	2.00665	2.40022	2.67373	3.25451
53	0.67915	1.29773	1.67412	2.00575	2.39879	2.67182	3.25127
54	0.67906	1.29743	1.67356	2.00488	2.39741	2.66998	3.24815
55	0.67898	1.29713	1.67303	2.00404	2.39608	2.66822	3.24515
56	0.67890	1.29685	1.67252	2.00324	2.39480	2.66651	3.24226
57	0.67882	1.29658	1.67203	2.00247	2.39357	2.66487	3.23948
58	0.67874	1.29632	1.67155	2.00172	2.39238	2.66329	3.23680
59	0.67867	1.29607	1.67109	2.00100	2.39123	2.66176	3.23421
60	0.67860	1.29582	1.67065	2.00030	2.39012	2.66028	3.23171

Appendix 25

RESEARCH DOCUMENTATION







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

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Nomor : B - 216 /In.14/E.1/TL.00/02/2020
Hal : Izin Penelitian
Penyelesaian Skripsi.

4 Februari 2020

Yth. Kepala SMA Negeri 1 Siabu
Kabupaten Mandailing Natal

Dengan hormat, bersama ini kami sampaikan bahwa :

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NIM : 1520300083

Program Studi : Tadris/Pendidikan Bahasa Inggris

Fakultas : Tarbiyah dan Ilmu Keguruan

adalah Mahasiswa Fakultas Tarbiyah dan Ilmu Keguruan IAIN Padangsidimpuan yang sedang menyelesaikan Skripsi dengan Judul "The Effect of Using Animation Videos to Vocabulary Learning Interest at Grade XI Students of SMA Negeri 1 Siabu".

Sehubungan dengan itu, kami mohon bantuan Bapak/Ibu untuk memberikan izin penelitian sesuai dengan maksud judul diatas.

Demikian disampaikan, atas kerja sama yang baik diucapkan terimakasih.



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Yang bertanda tangan di bawah ini :

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Yang telah melaksanakan penelitian di SMA Negeri 1 Siabu dengan nomor surat : B-216 / In.14 / E.1
L.00 / 02 / 2020, dengan judul Skripsi :

***The Effect of Using Animation Videos to Vocabulary Learning Interest at Grade XI Students of
MA Negeri 1 Siabu***

Demikian surat keterangan ini dibuat dengan sesungguhnya, untuk dapat dipergunakan sebagaimana
keperluannya.

Siabu, 09 Maret 2020
Kepala SMA Negeri 1 Siabu


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