# THE EFFECT OF WORD CHAIN GAME <br> TO STUDENTS' VOCABULARY MASTERY AT GRADE VIII OF SMP NEGERI 5 PADANGSIDIMPUAN 

## A THESIS

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

## Written By:

SRI WAHYUNINGSIH
Reg. Number: 1520300029

## ENGLISH EDUCATION PROGRAM

TARBIYAH AND TEACHER TRAINING FACULTY
STATE INSTITUTE FOR ISLAMIC STUDIES PADANGSIDIMPUAN


```
TE4tF Itwes%
```

```
TE4tF Itwes%
```




(4.) Sn) Woleyemimysif

Inlitrat
It+ity-ats and I racher I raming I acalty
(1)


## dastlomen blankuner ish


 Ciame th Stuhents vocabulary Mastery at Grade sift of SME Veyerisl'adimusidimpuan". We asmumed that the thens ham hom acoglable tor

 IF F

 | ramin! | acculty I AIN Padangesdampuan Thank you


Advisor 11
Advisor 1


EkaSustri Harida, M. Pd
NIP. 197509172003122002


## 

The name who seemed here

Name
Tint Number FacultyiDepmertenemt The title of the Thesis

## SRI WAHYUNINOSII

+5 2002 *vol 9
Tartoysub and Teacher Training Faculty TB4-1
The Effect of Word Chain Game to Students? Vocabulary Mastery at Grade VIII of SMP Negteri 5 Padangxidimpuin

I hereby declare that I have arranged and written the Thesis by myself, without asking for illegal help from the others, except the guidance from advisors. and without plagiarism as it is required in students' ethic code of IAIN Padangsidimpuan in article 14 verse 2

I do this declaration truthfully, if there is deceitfulness and incorrectness regarding to this declaration in the future, 1 will be willing to get the punishment as it is required in students' ethic code of IAIN Padangsidimpuan, article 19 verse 4. that is to cancel academic degree disrespectfully and other punishment regarding norms and legal law.

Padangsidimpuan, Desember 2019


Declaration Maker

| As academbic | cavity of the state | Institute | for | Istamk | Studies |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Fadangsictimyman, the name who sugned here |  |  |  |  |  |
| Name | Nni Wahyuningsih |  |  |  |  |
| Rent Number | 1520300029 |  |  |  |  |
| Faculty/Department | Tarturya and Teacher Teaining Faculty/TB1-1 |  |  |  |  |
| Kind | Thesis |  |  |  |  |

To develop science and knowledge, I hereby declare that I present to the State Institute for Islamic Studics Padangsidimpuan Non Exclusive Royalty Right on my thesis entitled." The Effect of Word Chain Game to Students" Vocabulary Mastery at Grade VIIt of SMP Negeri 5 Padangsidimpuan" With all the sets of equipments (if needed). Based on this Non Exelusive Royalty Right, the State Institute for Islamic Studies Padangsidimpuan has the right to save, to format, to organize in data base form, keep and publish my thesis as far as I am determined as writer and own creative right.

Based on statement above all, this statement is made truthfully to be used to properly.

Padangsidimpuan, Desember 2019
The Signed


SRI WAHYUNINGSIH
Reg. Number 1520300029

## Y NAMINYBE





 Twhiviah ams
impartment




Chief.


Members,


Dr. Fitriadi Lubis, M Pd Nip. 196209171992031002

Nocretary, Mr.d
Eki Sustti Harida. Mis 2 cog
Nif 197509172003122002


Eka Sustr Harida, M.Pd Nip. 197909172003122002


## Proposed

Place Padanysidimpuan
Pate : Januari, 03 ${ }^{\text {rid }} 2020$
Time $\quad 14.00$ WIB -finish
Result/Mark : 85 (A-)
IPK
Predicate
3.38

SANGAT MEMUASKAN

REL.IG:IGN MINISTRY INDONESIAN REPUBLIC


 Padangsidimpana

## LEGALIZATION

Thesis | : The Effect of Word Chain Game to |
| :--- |
|  |
| Students Vocabulary Mastery at Grade |
|  |
| VIII of SMP Negeri 5 Padangsidimpuan |

Written By
Reg. No

The Thesis had been accepted as a partial fulfillment of the Requirement for Graduate Degree of Education (S.Pd.)

Padangsidi npuan, January 2020
Dean


Dr. Lely a Hilda., M.Si.
NIP. 197209202000032002

## ACKNOWLEDGEMENT



First of all, let the researcher says a lot of praise and Alhamdulillah to Allah SWT, as the best Creator of everything in the world, and as the most Merciful who has given to the researcher the health, time, knowledge, so the researcher can accomplish her thesis. The Second, shalawat and salaam upon to the prophet Muhammad SAW that had guided the human beings from the bad character into the good one.

It is a pleasure to acknowledge the help and contribution to all of lecturers, institution, family and friends who have contributed in different ways hence this thesis is processed until it becomes a complete writing. Therefore, in this opportunity I would like to express my deepest gratitude to the following people:

1. Mrs. Eka Sustri Harida, M.Pd., as my first advisor and Mrs. Fitri Rayani Siregar, M.Hum., as my second advisor and as the Chief of English Education Department who has guided me patiently during the progress of writing this thesis.
2. Mr. Prof. Dr. H. Ibrahim Siregar, M.CL., as the Rector of IAIN Padangsidimpuan.
3. Mr, Zainuddin, S.S., M.Hum., as my academic advisor who has given me motivations.Mrs. Rayendriani Fahmei Lubis, M.Ag., Mrs. Yusni Sinaga, S.Pd., M.Hum., Mrs. Sri Ramadhani Siregar, M.Pd., Mr. Hamka, M.Hum., Mr. Sojuangon Rambe, S.S., Mr. Dr. Fitriadi Lubis, M.Pd., and other lectures.
4. Headmaster of Junior High School 5 Padangsidimpuan who has given the writer permission to carry out the research.
5. My parents (Alm. Ibrahim Situmeang and Rosliana Pane) who taught me how to be patient, who always give me pray, motivation, a lot of love, attention and moral encouragement to finish my study, my beloved sisters (Dewi Sartika and Sarah Anita Situmeang) my beloved brothers (Yusuf Azhari and Muhammad Azis Situmeang) uak (Saibah Pane) and all my beloved family.
6. My beloved friends from TBI 1 especially Dian, Adan, Mira, Meli, Fifah,Galung and also to Ayuk Era, Ustadz Mukhlis, Mahatir, Nia, my friends from MFISSYW who always support me, thanks for being my good listener to every problem I faced, and all of member of TBI-2 and TBI-3. I realize this thesis can't be considered perfect without critiques and seggestions. Therefore, it is such a pleasure for me to get critiques and suggestions to make this thesis better.

Padangsidimpuan, Desember 2019
Researcher

SRI WAHYUNINGSIH
Reg. No. 1520300029

Name
Reg. no
Faculty
Department
Title of Thesis
: SRI WAHYUNINGSIH
: 1520300029
: Tarbiyah and Teacher Training
: English Education (TBI-1)
: The Effect of Word Chain Game to students' Vocabulary Mastery at Grade VIII of SMP N 5 Padangsidimpuan.


#### Abstract

This research describes about students' problems in vocabulary mastery. It was solved by choosing an appropriate game that is Word Chain Game. There were some problems in this research: 1) Lack of motivation in learning vocabulary, 2) Lack of vocabularies, 3) difficult in memorizing a new vocabulary. The purpose of this research is to know whether there is the effect of Word Chain Game to students' vocabulary mastery at grade VIII of SMP N 5 Padangsidimpuan

The method that is used in this research is experimental research. The population of this research is all of the eight grade of SMP N 5 Padangsidimpuan that consist of 265 students. Then, the sample of the research was 2 classes, VIII 5 as experimental class that consist of 28 students and VIII 4 as control class that consist of 28 students. The data was derived from pre-test and post-test. To analyze the data, the researcher used t-test formula.

Based on the calculation of $t$-test, the researcher found that $t_{\text {count }}=9.09$ and $\mathrm{t}_{\text {table }}=$ 1.67356. It means $\mathrm{t}_{\text {count }}>\mathrm{t}_{\text {table }}(9.09>1.67356)$. So, the researcher could concluded that Ha was accepted and Ho was rejected. There was the significant effect of using Word Chain Game to students' Vocabulary Mastery at grade VIII students of SMP Negeri 5 Padangsidimpuan.


Keywords: Vocabulary Mastery, Noun and Word Chain Game.

Name<br>: SRI WAHYUNINGSIH<br>Reg. no<br>: 1520300029<br>Faculty : Fakultas Tarbiyah dan Ilmu Keguruan<br>Department : Tadris Bahasa Inggris (TBI-1)<br>Title of Thesis<br>: The Effect of Word Chain Game to Students' Vocabulary Mastery at Grade VIII<br>of SMP N 5 Padangsidimpun


#### Abstract

ABSTRAK Penelitian ini mendeskripsikan tentang pengaruh game Kata Berantai untuk meningkatkan kosa kata pada siswa kelas VIII SMP N 5 Padangsidimpuan. Ada beberapa masalah dalam penelitian ini : 1). Siswa memiliki sedikit motivasi, 2). Siswa, 3). Siswa kesulitan dalam menghapal kosa kata baru.

Metode yang digunakan dalam penelitian ini adalah penelitian eksperimen. Populasi dalam penelitian ini adalah seluruh siswa kelas VIII SMP N 5 Padangsidimpuan. Total populasi adalah 265 siswa. Lalu, sampel penelitian ini adalah dua kelas, VIII 5 sebagai kelas eksperimen yang terdiri dari 28 siswa dan VIII 4 sebagai kelas kontrol yang terdiri dari 28 siswa. Data dikumpulkan melalui pre-test dan post-test. Untuk menganalisa data, peneliti menggunakan rumus t-test.

Berdasarkan perhitungan t-test, peneliti menemukan bahwa $\mathrm{t}_{\text {hitung }}=9.09$ dan $\mathrm{t}_{\text {table }}=$ 1.67356. Itu artinya $\mathrm{t}_{\text {hitung }}>\mathrm{t}_{\text {table }}(9.09>1.67356)$. Jadi, peneliti dapat menyimpulkan bahwa Ha diterima dan Ho ditolak. Ada pengaruh yang signifikan dari penggunaan Game Kata Berantai untuk meningkatkan kosa kata pada siswa kelas VIII SMP N 5 Padangsidimpuan.


Kata kunci: Kosa Kata, Kata Benda dan Word Chain Game.

## TABLE OF CONTENTS

Page
INSIDE TITLE PAGE ..... i
AGREEMENT ADVISORS SHEET ..... ii
DECLARATION OF SELF THESIS COMPLETION ..... iii
AGREEMENT PUBLICATION OF FINAL TASK FORACADEMIC CIVITY ..... iv
ABSTRACT ..... v
SCHOLAR MUNAQOSYAH EXAMINATION ..... vi
LEGALIZATION OF DEAN OF FTIK ..... vii
ACKNOWLEDGEMENT ..... viii
TABLE OF CONTENTS ..... x
LIST OF TABLES ..... xi
LIST OF FIGURES ..... xii
LIST OF APPENDIXES ..... xV
CHAPTER I INTRODUCTION
A. TheBackground of the Problem ..... 1
B. The Identification of the Problem ..... 5
C. The Limitation of the Problem ..... 5
D. The Definition of Operational Variables ..... 5
E. The Formulation of the Problem ..... 6
F. The Purposes of the Research ..... 6
G. The Significances of the Research ..... 6
H. The Outline of the Thesis ..... 7
CHAPTER II THEORETICAL DESCRIPTION
A. The Theoretical Description ..... 8

1. Vocabulary ..... 8
a. Definition of Vocabulary ..... 8
b. Kinds of Vocabulary ..... 10
c. Classification of Vocabulary ..... 11
d. Teaching Vocabulary ..... 15
e. Principle of Teaching Vocabulary ..... 17
2. Word Chain Game ..... 19
a. Definition of Word Chain Game ..... 19
b. The Roles of Word Chain Game to Develop Students' Vocabulary Mastery ..... 21
c. Procedure of Word Chain Game ..... 22
B. Conventional Strategy ..... 23
C. Review of Related Findings ..... 24
D. Framework of Thinking. ..... 26
E. The Hypothesis of the Research ..... 28
CHAPTER III RESEARCH METHODHOLOGY
A. The Place and Schedule of the Research ..... 29
B. The Research Design ..... 29
C. The Population and Sample ..... 30
3. Population ..... 30
4. Sample ..... 31
D. The Instrument of Research ..... 32
E. The Validity and Reliability Instrument ..... 33
5. The Validity ..... 33
6. The Reliability ..... 34
F. The Technique of Collecting Data ..... 35
7. Pre-test ..... 35
8. Treatment ..... 36
9. Post-test ..... 36
G. TheTechnique of Data Analysis ..... 37
10. Requirement test ..... 37
11. Hypothesis test ..... 39
CHAPTER IV THE RESULT OF RESEARCH
A. Description of Data ..... 41
12. The Description of Data before Using Word Chain Game 4 ..... 41
a. Score of Pre-Test Experimental Class ..... 41
b. Score of Pre-Test Control Class ..... 43
13. The Description of Data after Using Word Chain Game ..... 46
a. Score of Post-Test Experimental Class ..... 46
b. Score of Post-Test Control Class ..... 48
14. The Description of Comparison Data of Pre-Test and Post-Test. ..... 53
a. The Comparison Data of Pre-Test and Post-Test in Experimental Class ..... 53
b. The Comparison Data of Pre Test and Post Test in Control Class ..... 54
c. The Comparison Data between Experimental and Control Class in Post Test ..... 54
B. Technique of Data Analysis ..... 55
15. Requirement Test ..... 55
a. Normality and Homogeneity Pre-Test ..... 55
1) Normality of Experimental Class and Control Control in Pre-Test ..... 55
2) Homogeneity of Experimental Class and Control Class inPre-Test ..... 56
b. Normality and Homogeneity Post-Test. ..... 57
3) Normality of Experimental Class and Control Class in Post-Test ..... 57
4) Homogeneity of Experimental Class and Control Class in Post-Test ..... 57
2. Hypothesis Test ..... 58
C. Discussion ..... 59
D. Threats of the Research ..... 61
CHAPTER V THE CONCLUSION AND SUGGESTION
A. Conclusion ..... 62
B. Suggestion ..... 62

## REFERENCES

## APPENDIXES

## LIST OF TABLES

Page
Table 1 Example of Kinds of Noun ..... 13
Table 2 list of Playing Word Chain Game ..... 21
Table 3 Research Design ..... 30
Table 4 Populatin of the Research ..... 30
Table 5 Sample of the Research ..... 32
Table 6 The Indicators of Vocabulary Mastery Test of Pre-Test ..... 33
Table 7 The Indicators of Vocabulary Mastery Test of Post-Test ..... 33
Table 8 The Score of Experimental Class in Pre-Test ..... 42
Table 9 Frequency Distribution of Students' Score ..... 42
Table 10 The Score of Control Class in Pre-Test ..... 44
Table 11 Frequency Distribution of Students' Score ..... 44
Table 12 The Score of Experimental Class in Post-Test. ..... 46
Table 13 Frequency Distribution of Students' Score ..... 47
Table 14 The Score of Control Class in Post-Test ..... 48
Table 15 Frequency Distribution of Students' Score ..... 49
Table 16 The Comparison Data of Exp. Class in Pre-Test and Post Test ..... 51
Table 17 The Comparison Data of Control Class in Pre-Test and Post Test ..... 52
Table 18 Normality \& Homogeneity in Pre-Test ..... 55
Table 19 Normality \& Homogeneity in Post-Test ..... 57
Table 20 Result ot T-Test from the Both Averages ..... 58

## LIST OF FIGURES

Page
Figure 1 Contetual Framework ..... 27
Figure 2 Description Data Pre-Test of Experiment Class ..... 43
Figure 3 Description Data Pre-Test of Control Class ..... 45
Figure 4 Description Data Post-Test of Experiment Class . ..... 47
Figure 5 Description Data Post-Test of Control Class. ..... 49
Figure 6 Comparison between Pre-Test and Post-Test in Exp. Class. ..... 51
Figure 7 Comparison between Pre-Test and Post-Test in Control Class ..... 53
Figure 8 Comparison between Experimental and Control Class in Post-
Test ..... 54

## LIST OF APPENDIXES

| Appendix 1 | Lesson Plan of Experimental Class |
| :--- | :--- |
| Appendix 2 | Lesson Plan of Control Class |
| Appendix 3 | Instrument for Pre- Test before Validity |
| Appendix 4 | Instrument for Pre-Test after Validity |
| Appendix 5 | Instrument for Post- Test before Validity |
| Appendix 6 | Instrument for Post-Test after Validity |
| Appendix 7 | Key Answer |
| Appendix 8 | Validity of Pre Test |
| Appendix 9 | Table Validity of Pre-Test |
| Appendix 10 | Reliability of Pre Test |
| Appendix 11 | Reliability of Pre Test |
| Appendix 12 | Validity of Post Test |
| Appendix 13 | Table Validity of Post-Test |
| Appendix 14 | Reliability of Post Test |
| Appendix 15 | Reliability of Post Test |
| Appendix 16 | Result of Normality Test in Pre Test |
| Appendix 17 | Homogeneity Test (Pre-Test) |
| Appendix 18 | Score of Experimental Class and Control Class Pre Test |
| Appendix 19 | Score of Experimental Class and Control Class Post Test |
| Appendix 20 | Result of Normality Test in Post Test |
| Appendix 21 | Homogeneity Test (Post-Test) |
| Appendix 22 | T-test of the Both Averages in Pre-Test |
| Appendix 23 | T-test of the Both Averages in Post-Test |
| Appendix 24 | Chi-Square Table |
| Appendix 25 | Z-Table |
| Appendix 26 | Percentage Points of the t Distribution |
| Appendix 27 | Research Documentation |
| Ap 10 |  |

## CHAPTER I

## INTRODUCTION

## A. Background of the Problem

Vocabulary is one of the important aspects in teaching a language. It is an essential role in creating understanding of language through what the students learning in school. It helps the students to communicate succesfully. It also has an important place to make students master the four skills in language. They are speaking, listening, reading and writing which prominant in teaching and English learning, without vocabulary students cannot master the four skills above.

The first is speaking skill. Speaking is people can communicate by having much vocabularies, so we can not speak well and have good meaning without have much vocabulary. So the first thing that must be measured by the students to be able in speaking is vocabularies.

The second is listening skill, while people do the communication, of course they want to know what the others want to communicate to them, so if they lack of vocabularies it will make them difficult in understanding what others want to communicate to them, so that why have many vocabularies is more needed to increase this skill.

The third is reading comprehension. Reading is the skill or activity of getting information from written text or book. getting information from the text is not difficult but it can be difficult if the readers do not know what is the meaning of the word in the text. So that, by having many vocabularies it will make them easier to understand what the text is about.

The fourth is writing skill, as one of the productive skill in language, having many vocabularies is needed. It will help them in delivering their ideas, expressing the options and developing their ideas in writing.

In the line with the explanation above vocabulary learning is an important and indispensable part of any language learning process to mastery four skills in English. It's mean that vocabulary is need to all of the skills, like speaking and listening, students cannot speak and understanding without vocabulary. Thus, in reading and writing, students cannot understand without know the meaning of the word and cannot write paragraph or sentence without vocabulary.

The students faced many problems in learning vocabulary, so that they are very difficult to understand all of materials that the teacher was explained,they are:

First is understanding meaning of word. Most students have found difficulties in understanding meaning of words, because they may not know it when they are learning, so that it is so hard for them could understand the lesson well, and it also might make them dissappointed and unmotivated. Besides that, they try to translate it into Bahasa Indonesia, so that they attempt look up it in dictionary.

Second is differentiating the foreign word-spelling. The students have found some similiar words and sounds in English, if they do not have
much vocabulary in Engliash it might make them feel confused to differenciate it.

Third is using the words. The students have difficulties in using the words because they forgot word that has been learned before, so that they could not make a sentence well.

When the researcher asks the teacher of eigthth grade of SMP Negeri 5 Padangsidimpuan, she is Hapsyah Sri Mei Siregar. ${ }^{1}$ Hafsyah says that students had lack motivation, if the teacher gives exercise or material in class. Partly of the students at eigth grade of SMP Negeri 5 Padangsidimpuan, always calm down and they did not do what have teacher given. The teacher did not know, how students have understand or not. It makes one problematic in learning english, especially in teaching vocabulary.

Students had lack vocabularies. It includes students' vocabulary enrichment. When the researcher asked students about some vocabularies, many students did not know about english vocabularies. It means that many students had less vocabulary, its also make them difficult in mastering vocabulary.

Students had difficulties in memorizing a new vocabulary because they feel english is difficult. Students tend to be bored and low participantion in english class. They did not know how to pronounce the word correctly. It makes them lazy to study English.

[^0]This research used word chain Game as a media to help students to enrich their vocabulary. Carrol states that Word Chain game is a kinds of game purposing to improve the players ability in mastering vocabulary of words. ${ }^{2}$ It also supported by Ten in her research that word chain game can enrich students vocabulary. ${ }^{3}$ Word chain game is a game where the players have to mention a thing based on a choosen theme simultaneously or a word game in which players come up with words that begin with the letter ended with.

Based on the explanation above, the researcher interested to use word chain game as a media in teaching vocabulary. The researcher wants to know whether Word Chain Game give significant effect to students' vocabulary mastery or not. So, this media can be used next time by the researcher herself or other teachers.

## B. The Identification of the Problem

Based on the bakground above, there are some problems in vocabulary mastery at grade VIII SMP Negeri 5 Padangsidimpuan as following are:

1) Students had lack motivation in learning vocabulary
2) Students had lack vocabularies

[^1]3) Students had difficulties in memorizing a new vocabulary

## C. The Limitation of the Problem

The researcher focus the problem on lack vocabulary of the students' . Then the strategy is limited by using word chain game. It will be focus on common noun and proper noun (fruit, profession, and animal) to solve the problem.

## D. The Defenition of the Operational Variables

1. Word Chain game

Word chain is a game where its players have to mention a thing based on a chosen theme simultaneously or a word game in which players come up with words that begin with the letter or letters that the previous word ended with.
2. Students' vocabulary Mastery

Students vocabulary Mastery is students' knowladge about the word it self that use to master the skills in language such as speaking, listening, reading, writing.

## E. The Formulation of the Problem

1. How is the students' vocabulary mastery before using word chain game?
2. How is the students' vocabulary mastery after using word chain game?
3. Is there a significant effect of using word chain game to students' vocabulary mastery?

## F. The Purposes of the Research

1. To describe the students' vocabulary mastery before using word chain game.
2. To describe the students' vocabulary mastery after using word chain game.
3. To examine whether the effect of using word chain game to students' vocabulary mastery is significant or not.

## G. The Significances of the Research

The result of this research gave the benefit to some categories below:

1. Theoritically, The result of the research contribute useful information for the next research with the smiliar problem of vocabulary skill achievemant.
2. Practically, To the English teacher, can give the contribution in teaching and learning process and can apply it effectively.

## H. Outline of the Thesis

The systematic of this research is devided into five chapter. Each chapter consist of many sub chapters are follow: chapter one, it consist of background of the problem, identification of the problems, limitation of the problem, defenition of the operational variables, formulation of the problem, purpose of the research, significances of the research.

Chapter two, it consists of the theoritical description, which the sub chapters consist of theoretical description of vocabulary and word chain game. Then, review of related findings, conceptual of frame work and hypothesis.

Chapter three, it consists of research methodology which consist of time and place of the research, research design, population and sample, instrument of collecting data, validity and reability, procedures of the research and the last is the techniques of analyzing data.

Chapter four, it consists of the result of the research talking about the analysis of data. It consist of description of data, hypothesis testing, discussion and the threats of reserach.

Finally, chapter five consists of conclusion that give conclusion about the result of research and suggestion to principal of the school and other research.

## CHAPTER II

## THEORITICAL DESCRIPTION

## A. Theoretical Description

## 1. Vocabulary

## a. The Definition of vocabulary

Vocabulary plays an important role because it appears in every language skills. In mastering the four skills in English, the learners should master the vocabulary as the basic skill firstly. Oxford learner's pocket dictionary states that "vocabulary is all the words that a person knows or uses". ${ }^{1}$ It means Vocabulary is all the words in a language, vocabulary also lists of words with their meaning. Moreover, in cambridge dictionary states that "vocabulary is all the words that exist in a particular language or subject". ${ }^{2}$ It means that vocabulary is the most importance of language, students who rich in vocabulary will be successful in all language skills : speaking, writing, listening and reading, but who low in vocabulary will get trouble in those skills.

Vocabulary is a collection of words in english language. ${ }^{3}$ It means that vocabulary is a component of language which gives information or explanation in a language terms. The other

[^2]defenition Vocabulary is part of relationship on language. ${ }^{4}$ It is the main element of language because human will do nothing for increasing language into practice without any words or vocabulary. it is relevant with Schmitt statement, he says that with grammar very little can be conveyed, and without vocabulary nothing can be conveyed". While Penny Ur stated that "Vocabulary is the words that teach in the foreign language". ${ }^{5}$ It can be said that vocabulary is one of the language components that must be learned in learning English.

Richard and Renandya in their book said that vocabulary is a core component of language proficiency and provides much of the basis for how well learners can speak, listen, read, and write. ${ }^{6}$ Without an extensive vocabulary and strategies for acquiring new vocabulary, learners often achieve less than their potential and may be discouraged from making use of language learning opportunities around them such as listening to the radio, listening to native speakers, using the language in different contexts, reading, or watching television, and how to speak English well.

[^3]Based on the definition above the researcher can conclude that vocabulary is important part of language. Without vocabulary, the language cannot produce, so we cannot speak anything.

## b. Kinds of Vocabulary

Many kinds of vocabulary can be used to tell some people about their knowledge or their vocabulary. Another word, kinds of vocabulary can be used to identify the level of someone; who is in the beginner level, who is in the intermediate level, or who is in the advance level. So, kinds of vocabulary are one of the knowledge to know how far their ability in vocabulary.

According to Stuart in Mofareh, there are two kinds of vocabulary, as follow:

Receptive vocabulary or passive vocabulary it is words that learners recognize and understand when they are used in context, but which they cannot produce. It is vocabulary that learners recognize when they see or meet in reading text but do not use it in speaking and writing.

It can be concluded that receptive vocabulary is the students recognizes and understand when they occur in a context, but which they cannot produce correctly.

Productive vocabulary, it is the words that the learners understand and can pronounce correctly and use constructively in speaking and writing . it involves what is needed for receptive vocabulary plus the ability to speak or write at the appropriate time. therefore, productive vocabulary can be addresssed as an active process, because
the learners can produce the words to express their thoughts to others. ${ }^{\text {. }}$

It can be conclude that productive vocabulary is words which the students know and can pronounce it correctly. These two kinds of vocabulary that learners recognize and understand when they are used in contex.

## c. Classification of Vocabulary

Vocabularies are classified into function and contents of words. The function words are closed class, we cannot add to the preposition or auxiliaries or modals, or any structure words of language. The content words, on other hands can be added to any time new scientific advances make new words and communication about new invention necessary. It means that vocabulary is words that are part of language, but words can be combined and cannot be combined, just stand alone. Thus, to make comprehending about word more clearly. The words also still has some classification, such as nouns, pronoun, verb, adjective, preposition, conjunction, and interjections. Wren and Martin say that words are divided into different kinds of classes, called "Parts of Speech", thus parts of speech are eight in number, they are 1) noun 2) adverb 3 ) adjective 4) preposition 5) pronoun 6) conjunction 7) verb 8) interjection. ${ }^{8}$

[^4]Based on the researcher said before the focus on this research that only in common and proper noun. Noun is a word used as the name of all things, we know about, have, see, hear, taste, smell, or feel. This includes words for people, things, words for thing we know exist but cannot touch, and an idea or a quality of mind is defined as a noun. Many nouns can be counted. These nouns have plural forms, which in English usually mean they have an " s " add to the end, according to certain set spelling and pronunciation patterns. Other noun cannot be counted. They do not have plural forms that are used with singular verb, and they are called "noncount" nouns.

Howard Jackson said that nouns as things, including people,animals, objects, abstract ideas, and feeling. ${ }^{9}$ That means noun is one of the most important parts of speech. Its arrangement with the verb helps to form the sentence core which is essential to every complete sentence. In addition, noun may function as the chief or head words in many structures of modification. Some noun may belong to more than one of types given below:
a) Common noun is a name given in common to every person or thing of the same class or kind
b) Proper noun is the name of some particular person or place. Proper nouns are always written with a capital letters at the beginning.
c) Collective noun is the name of collection of things or person.

[^5]d) Concrete noun is the name of thing that can be touched or seen. Concrete noun also is a word for a physical object that can be perceived by sense, it can see, touch, smell, the object.
e) Abstract noun is a word for a concept. It is ideas that exist in our mind only. It is usually the name of quality or state, action, or state considered apart from the object.
f) Countable noun is the name of things that can be counted or divided into singular or plural. A countable noun can usually be made plural by the addition of " $s$ or es"
g) Uncountable noun is the name of thing that cannot be counted or divided into singular or plural. An uncountable noun is not used in the plural. Material noun is the name of material or substance out of which things are made. ${ }^{10}$

To make definition of kinds of noun above more clearly, the researcher gives table of examples about kinds of noun below:

Table. 1
Example of Kinds of Noun

| Kinds of Noun | Example |
| :--- | :--- |
| 1. Common Noun | Boy, woman, girl, officer, poet, <br> city, village, place, traveller, <br> dramatist, etc. |
| 2. Proper Noun | Roni, Restu, Netherlands, <br> Sydney, Jogjakarta, Grand <br> Omega, etc. |
| 3. Collective Noun | Crowd, mob, team, herd, army, <br> fleet, jury, family, nation, <br> parliament, committee, poultry, <br> cattle, gentry, class. |
| 4. Concrete Noun | Room, sun, girl, boy, windows, <br> etc. |
| 5. Abstract Noun | lieedom, liberty, though, joy, <br> sorrow, love, death, goodness, <br> kindness, childhood, voice, <br> ability, etc. |

[^6]| 6. Countable Noun | Arrow, blood, boat, bone, <br> bridge, man, woman, etc. |
| :--- | :--- |
| 7. Uncountable Noun | Ice, coffee, tea, ink, liberty, <br> justice, life, truth, beauty, <br> money, etc. |
| 8. Material Noun | Gold, silver, butter, paper, ice, <br> tea, money, steel, milk, car, etc. |

Based on definition above, the researcher give conclusion that in concrete noun has been included; proper that include common noun, and in common noun include collective noun, and another kinds that is included in proper noun is countable, uncountable, and material noun. In abstract noun has been included uncountable noun. Thus, in each kinds of noun relate one to one other kinds, but to make noun more clearly to comprehend, noun is divided in several parts like as above.

In this research, the researcher only focus on common and proper noun;

1. Common Noun,

According to Howard Sargeant, words that given to name people, things, and places in general are called as the common noun. ${ }^{11}$ So, common noun is name given in common to every person or thing of the same class or kind such as boy, doctor, officer, teacher, town, place.

[^7]Common noun does not use capital letter at the beginning of the word.

Example : I see the teacher in the class. Teacher in this sentence is common.
2. Proper Noun.

According to Gordon Winch, proper noun is a name especially person, place, or things. ${ }^{12}$ It means proper noun is the name of particular person place, or thing. The first letter of word is capitalized such as Isma, Indonesia, Manggo, Saturday.

Example: we are Indonesian. Indonesian in this sententence is proper noun.

## d. Teaching Vocabulary

Teaching English vocabulary is integrated into the four skills of the language. Another hand, vocabulary holds significant role in mastery of the four skills of the language. In the teaching of English or any foreign language, teaching vocabulary is one of the important aspects because the unlimited number of vocabulary in a language. Teaching vocabulary should be presented interactively in teaching of the four language skills. It was impossible to learn a language without words. Therefore, vocabulary is the most important subject in teaching and learning process.

[^8]In teaching vocabulary, teachers also must provide opportunities to organize vocabulary. It is in meaningful ways to make it easier to learn by students. Into the bargain, teacher also must focus on vocabulary." ${ }^{13}$ It means that, in teaching vocabulary, the teachers give vocabulary a high profile in the syllabus and the classroom so that students can see its importance and understand that learning a language is not just about learning grammar.

Additionally, there is a lot to learn about vocabulary in terms of its range, the sheer number of words and phrases to learn, and the depth of knowledge students' needs to know about each vocabulary item. Materials can help students in two broad areas: First, they need to present and practice in natural contexts the vocabulary that is frequent, current, and appropriate to learners' needs. Second, materials should help students become better learners of vocabulary by teaching different techniques and strategies they can use to continue learning outside the classroom.

Furthermore, the types of words that taught to students' matters. The all words that to teach to students must directly to students, so the goal is to select the most productive words to teach. The most productive words are the position from which

[^9]teachers develop the heuristic of word tiers. ${ }^{14}$ In teaching vocabulary, there are some guidelines for the communicative treatment of vocabulary instruction in teaching vocabulary:

1) Allocate specific class time to vocabulary learning.
2) Help students to learn vocabulary in context
3) Play down the role of bilingual dictionaries
4) Encourage students to develop strategies for determining the meaning of words. ${ }^{15}$

These guidelines above show that when the teachers start the teaching vocabulary, the teachers must pay attention all of the aspects that are related with teaching vocabulary.

## e. Principle of Teaching Vocabulary

To make teaching vocabulary more effectively, we have some principle in teaching vocabulary. According to Tricia Hedge, there are number of principle for the teaching of vocabulary: ${ }^{16}$

1) Developing a variety of techniques for the teaching of meaning. It means the teacher will need to make decisions about which words are useful to retain and choose techniques accordingly.
2) Encouraging the development of effective strategies. Therefore, building on what we know of the strategies

[^10]used by good language learners for vocabulary acquisition, it is possible to involve students in activities which help them to develop new strategies as well as strengthen existing ones.
3) Exposing learners to vocabulary through reading and training lexical inferencing. It means that teacher suggest to learner for reading unfamiliar words involves a degree of problem solving this will help with the retention of the word. It is also useful to remember the distinction between inferencing for the purpose of fluent reading and inferencing as strategy in vocabulary acquisition.
4) Teaching the effective use of dictionaries. While teacher can take on a number of useful roles with regard to dictionary, because the dictionary has come into focus as an important classroom and personal resource.
5) Evaluating the vocabulary component of coursebooks. It means that contemporary coursebooks vary greatly in the degree to which they show a concern with vocabulary acquicition.
6) Teaching vocabulary explicitly through a range of activity types. Moreover, direct vocabulary instruction is useful.
7) Developing resources for vocabulary teaching.

Based on the explanation above researcher concluded that in teaching vocabulary teacher should have a variety of techniques to make students easy in understanding meaning of vocabulary. Teacher also evaluate the vocabulary component and develop an effective strategies in teaching vocabulary.

## 2. Word Chain Game

## a. Definition of Word Chain Games

Game is one of several way that very easy to apply in process of learning because game is more interesting and can give the easy way to the students to recall or memorize English vocabulary. Wright, Betteridge, Buckby state that "Game is an activity which is entertaining and engaging, often challenging and an activity in which the learners play and usually interact with others". ${ }^{17}$ Using game as a technique is not a new thing. Many researchers had done their researches by using classroom games in teaching English for young learners. According to Kuzu and Ural "when games and education are combined, it can be educative and education environments can be entertaining". ${ }^{18}$ The learners who learned with the use of games, gain positive attitudes and can be more motivated while learning.

[^11]Word Chain Game is one of the games used in teaching language learning for English as a Second Language. Carrol in Ten states that Word Chain game is a kinds of game purposing to improve the players ability in mastering vocabulary of words. ${ }^{19}$ This is a game where the players have to mention a thing based on a choosen theme simultaneously or a word game in which players come up with words that begin with the letter ended with, its relevant with Holden :
"This is a variation on the Japanese game 'shiritori'. Students try to connect the words by the way they are spelled, matching the last letter of a word with the first letter of the following word. For example: career, relocate, executive, entertain, neighbour, where each new word has as its first letter the last letter of the previous word. They can use any words that they know, but try to include in the chain all the new words that they are learning." ${ }^{20}$

Meanwhile, Based on the opinions, it can be said that word chain game is one of the games can be used by the teacher in language teaching process. Firmansyah also mentions that Word chain game is well-known game that has been applied in language teaching class for a long time. ${ }^{21}$ "Word chain" is a well-known game and has been used in many language classes for a long time.

Word chain game specially used in vocabulary teaching learning process. When this game is played in a class, the first

[^12]player is most likely the teacher and is followed by the rest of the class. The theme can be decided based on the level of the player (player's grade and vocabulary mastery).

In other words, the difficulty of this game is adjustable. Examples of the themes which are commonly used are animals, fruit and vegetable, city and country around the world, food, and so forth. An axample chain for word animal would be :

Table 2
List of playing word chain game

| No | Fruits | Profession | Animals |
| :---: | :---: | :---: | :---: |
| 1 | Guava | Accountant | Bird |
| 2 | Avocado | Technician | Dog |
| 4 | Orange | Novelist | Giraffe |
|  | Elderberry | Tailor | Elephent |

b. The Roles of Words Chain Game to Develop Students'

## Vocabulary Mastery

In playingWord Chain Game, students try to connect one of English words to another English word. By applying this game, the students will recall all of English words in their mind or the English words that they have memorized or they have known before. Word Chain Game also helps students to explore the linkages among the English words, understand the meaning of the words, and remember the meaning of that words.

According to Eichel, ${ }^{22}$ in playing Word Chain Game, each of words does not allow to be repeated. It means in playing this game, students will produce the new English words and they will hear the pronounce of the new words from their friends or from the other students. In other words, they will be familiar and know the words they have never heard before.

To help students to play this game related to the theme that has been given by the teacher, the teacher can be the first player and this teacher can say the first word that related to the theme that has been chosen. In other words, when this game is applied in the teaching learning process, the teacher needs to help the students. The teacher helps the students to understand the rule of word chain game and how the word chain game used in teaching and learning English vocabulary.

## c. The Procedure of Word Chain Game

Word chain game takes an important roles from the teachers and the students. Without the teacher and the students, this game will not be able to apply in the context of teaching language learning.

According to Sperling ,the ways to increase vocabulary by using word chain game are:

1) dividing the classroom into some groups;

[^13]2) dividing the whiteboard into the members of groups;
3) one of the students from each group comes up to the whiteboard and give them time to write a word;
4) the next student from each team comes up and writes another word that begins with the last letter of the previous word;
5) giving a time limit about 5 until 10 minutes;
6) the group which has the most words written on the board correctly wins. ${ }^{23}$

When the word chain game is played in a class, the first player is most likely the teacher and is followed rest of the class. In the class, the teacher can control the stuedents to play this game related to the theme has been given by the teacher, the teacher also can to be the first player that followed by the all of the students in the class. The researcher concluded the procedure of word chain is the steps to make students understand how to play it in the classroom.

## B. Conventional strategy

Conventional strategy is the strategy used by the teachers based on mutual agreement in a school. Conventional strategy is the strategy or the way used by the teachers to teach the vocabulary to the students. Based on the explanation above, the researacher concluded that conventional method is the strategy used by the teacher to teach learning materials based on arragement at school. The procedure used by the English teacher at SMP Negeri 5 Padangsidimpuan is explain the subject metter and give the home work.

[^14]
## C. Review of Related Findings

Many researchers were talking about students' vocabulary mastery and there were some researchers that have been used Word Chain Game. Related to this research, some researchers had been done as follow:

First, Jerni Ariyanti Gultom in her research concluded that there was the improvement of students' vocabulary mastery by using Word Chain Game. ${ }^{24}$ The researcher found that the mean of pre-test in experiment class was 73.75 and control class was 68.125 . Mean of posttest in expeiment class was 84.625 and control class was 76 . it was found that the observation was 2.73 , where the $t$ table was 1.994 for $\alpha=0.05$. The observation was higher than $t$ table (2.73 1.994), so Ha was accepted while Ho was rejected. It means that there was significant effect of using word chain game.

Second, Rosmini Yanti in her research showed that there was the significant effect of Word Chain Game to students' vocabulary mastery. ${ }^{25}$ The tests showed that the mean of post-test score $(71,8)$ was higher than the mean of pre-test $(63,8)$. In answering the questionnaire most of the students gave the good respond in answering questionnaire. So, the application of Word Chain Game is better, effective, and efficient than conventional technique.

[^15]Third, Zahrotul Izzah in her research concluded that there was the improvement of students' vocabulary mastery by using word chain game. ${ }^{26}$ The mean score in the first cycle was 64 and second cycle was 76.1. It shows the word chain game can improve students' vocabulary mastery.

Fourth, Ten Nove Melfin Lase in her research showed that there was the significant effect of Word Chain Game to students' vocabulary mastery. ${ }^{27}$ It shows that count is higher than T table $(2.33>2.04)$. that means word chain game can enrich students vocabulary mastery.

The differences of this research from the previous studies is the selecting of material and grade that will be integrated in the classroom. It can be seen that selecting appropriate material and technique can be implemented in practicing and enrich students' vocabulary knowledge. This research will focus on noun using the word chain game that will be conducted at junior high school with eight grade students as the participants to know whether the word chain game can affect students' vocabulary when they are learning vocabulary.

## D. Framework

[^16]Vocabulary is all about words the words in a language or a special set of words you are trying to learn. Many people are difficult in memorizing new vocabulary, so do students of SMP Negeri 5 Padangsidimpuan especially in the second grade. They have some problems in vocabulary mastery, for instance difficult to memorize new vocabulary, lack of vocabularies, and have lack motivation. Word Chain Game is a game that can help students to enrich students vocabulary. So by applying this technique, the students will be easier to remember the new vocabulary. The researcher illustrates the conceptual framework as follow:

Figure 1
Conceptual Framework


## E. Hypotheses of the Research

Hypotheses are typically derived from theories or from knowledge gained while reviewing the related literature, which often leads the researcher to expect a certain finding. ${ }^{28}$ The hypothesis of this research are:

1. There is the significant effect of Word Chain Game to students' vocabulary Mastery at grade VIII SMP Negeri 5 Padangsidimpuan.
2. There is no significant effect of Word Chain Game to students' vocabulary Mastery at grade VIII SMP Negeri 5 Padangsidimpuan.
[^17]
## CHAPTER III

## RESEARCH METHOD

## A. Place and Time Schedule of the Research

This research has been conducted at SMP Negeri 5 Padangsidimpuan. It is located on jln. Perintis Kemerdekaan No. 61 Padangsidimpuan Selatan. It was done from April 2019 until Desember 2019.

## 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 (Word Chain Game) and dependent (Students' Vocabulary Mastery). The researcher use two classes in this research. One of the classes is taught with Word Chain Game 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 true experimental design'. The design which used is PretestPosttest Control Group Design. The pretest-posttest control group design requires at least two groups, each of which is formed by random assignment. Both groups are administered a pretest, each group receives a different treatment, and both groups are posttested at the end of the study. Posttest scores are compared to determine the effectiveness of the treatment.

Table 3
Research Design

| Class | Pre- test | Treatment | Post- test |
| :---: | :---: | :---: | :---: |
| Experiment <br> Class | $\checkmark$ | Word Chain <br> Game | $\checkmark$ |
| Control Class | $\checkmark$ | Conventional <br> Strategy | $\checkmark$ |

## C. Population and Sample

## 1. Population

The population as the data sources of this research are all of the second grade students of SMP Negeri 5 Padangsidimpuan that consist of 9 classes.

Table 4
The Population of the Grade VIII Students in SMP Negeri 5
Padangsidimpuan

| No | Class | Students |
| :---: | :---: | :---: |
| 1 | VIII-1 | 32 |
| 2 | VIII-2 | 31 |
| 3 | VIII-3 | 31 |
| 4 | VIII-4 | 28 |
| 5 | VIII-5 | 28 |
| 6 | VIII-6 | 28 |
| 7 | VIII-7 | 29 |
| 8 | VIII-8 | 29 |
| 9 | VIII-9 | 29 |
|  | JUMLAH | 265 |

## 2. Sample

In this research, the researcher chose two classes as a sample. The classes are divided into experimental class and control class. The research used random sampling to take the sample. To know the homogeneity of the samples, researcher do homogeneity and normality test. Normality test is used to know whether the data of research is normal or not. The researcher use normality test with using Chi Square formula, as follow: ${ }^{1}$

$$
\begin{aligned}
& x^{2}=\sum\left(\frac{\left(f_{o}-f e\right) 2}{f e}\right) \\
& \text { Where }: \mathrm{x}^{2}=\text { value of Chi Square } \\
& \mathrm{f}_{\mathrm{o}}=\text { observed frequency } \\
& \mathrm{f}_{\mathrm{e}}=\text { expected frequency }
\end{aligned}
$$

To calculate the result of Chi Square, it was used significant level $5 \%(0,05)$ and degree of freedom as big as total of frequency was lessened $1(\mathrm{df}=\mathrm{k}-1)$. If result $\mathrm{x}^{2}$ count $<\mathrm{x}^{2}$ table. So, it can be said that the data is distributed normal.

Homogeneity test is used to know whether control class and experimental class have the same variant or not. If both classes are same, it can be called homogenous. The researcher use homogeneity test with using Harley test, as follow: ${ }^{2}$

[^18]$\mathrm{F}=\frac{\text { the biggest variant }}{\text { The smallest variant }}$
Where: $n_{1}=$ total of the data that bigger variant
$\mathrm{n}_{2}=$ total of the data that smaller variant
Hypothesis is rejected if $\mathrm{F} \leq \mathrm{F} \frac{1}{2} a\left(\mathrm{n}_{1}-1\right) \quad\left(1=\mathrm{n}_{2}-1\right)$, while if $\mathrm{F}_{\text {count }}>$ $\mathrm{F}_{\text {table }}$ hypothesis is accepted. It determined with significant level 5\% (0.05) and dk numerator was $\left(\mathrm{n}_{1}-1\right)$, while dk detominators is $\left(\mathrm{n}_{2}-1\right)$.

Based on the explanation above, the researcher give the pre-test to the class that similar ability in English to know the normality and homogeneity of the sample.

Sample is a part of population which will be researched. In a research, the imformation about population is gain by using sample.

Table 5
Sample of research

| No | Class | Sample |
| :---: | :---: | :---: |
| 1 | VII-4 | 25 |
| 2 | VII-5 | 28 |
| Total |  |  |

## D. The Instrument for Collecting Data

In this research, the researcher uses test as the instrument to collect the data of students' vocabulary mastery. The test that used before validity is 25 items. The researcher only used 20 items after validity. The test that used in this research is multiple choice test consist of four option $\mathrm{a}, \mathrm{b}, \mathrm{c}$, and d.

Table 6
The Indicator of Vocabulary (pre-test)

| No | Indicator | Number of Item | Total Item | Score | Total <br> Score |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1. | Common <br> Noun | $2,3,5,7,8,14,17,18,19,20$ | 10 | 5 | 50 |
| 2. | Proper <br> Noun | $1,4,6,9,10,11,12,13,15,16$ | 10 | 5 | 50 |
| Total Score |  |  |  |  | 100 |

Table 7
The Indicator of Vocabulary Mastery (post-test)

| No | Indicator | Number of Item | Total Item | Score | Total Score |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 1. | Common <br> Noun | $7,8,10,11,13,14,18,19,2$ <br> 0 | 10 | 5 | 50 |
| 2. | Proper <br> Noun | Part II <br> $1,2,3,4,5,6,9,12,15,16,1$ <br> 7, | 10 | 5 | 50 |
| Total Score |  |  |  |  |  |

## E. The Validity and Reability of Instrument

## 1. The Validity

In this research, the researcher used item validity. It is concerned with whether the test items are relevant to the measurement of the intended content area. ${ }^{3}$ The formula of $r$ point biserial can be used as follow:

$$
r_{p b i}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}
$$

[^19]Where:
$\mathrm{r}_{\mathrm{pbi}}$ : coefficient item validity
$\mathrm{M}_{\mathrm{p}}$ : mean score
$\mathrm{M}_{\mathrm{t}} \quad$ : mean score of the total score
$\mathrm{SD}_{\mathrm{t}}$ : Standard Deviation of the total score
p : Presentation of the right answer of the item tested validity
$\mathrm{q} \quad:$ Presentation of the wrong answer of the item tested validity. ${ }^{4}$

## 2. The Reliability

An instrument of the research must be reliable. To get the reliability of the test, the researcher uses K-R. 20 formula. The formula is as follow:

$$
\mathrm{R}_{11}=\left(\frac{k}{k-1}\right)\left(\frac{s_{t^{2}}-\sum p q}{S_{t^{2}}}\right)
$$

Where:
$\mathrm{R}_{11} \quad$ : Reliability of the instrument
$\mathrm{N} \quad$ : Total of question
St : Variants total
$\sum p q \quad:$ Total of the result times p and q
$p \quad:$ Proportion of Subject who is right Answer
$q \quad:$ Proportion of Subject who is Wrong Answer ${ }^{5}$

[^20]Reliability is a good character of the test that refers to the consistency of the measurement. The test is reliable if $r_{\text {count }}>r_{\text {table }}$ by using formulation K-R. 20 .

## F. The Procedures of the Research

In collecting data the researcher use test for students. The kind of the test is multiple choice test. In giving the test, it divide into two kinds; pre-test and post-test. The procedure as bellow:

## 1. Pre-test

It is a test that is given before doing the treatment to the students. It is needed to know the students' ability in experiment and control class before the research give the treatment to experiment class. It is also used to find out the homogeneity and normality level of the sample. The researcher uses some steps in giving pre-test. They are:
a. Prepare 20 items of the multiple choice test.
b. Distribute the test paper to both of classes; experimental and control class.
c. Explain what the students need to do.
d. Give the times to the students to answer the questions.
e. Collect the students' test paper.
f. Check the answer and counts the students' score.

## 2. Treatment

The treatment will be done after pre- test. The experimental class received the treatment thought by word chain game, while the control class taught by conventional strategy. The experimental class is taught by using word chain game, while the control class is taught by conventional technique. The researcher uses some procedures in treatment class. They are:
a. For the beginning, researcher starts the learning activity with greeting. Then, ask the students to take a pray. Next, explain the indicators and give them motivation.
b. Giving the example of word chain game to the students.
c. Introduce the word chain game and explain how to play it.
d. Give feed back to students' task.
3. Post-test

After giving treatment, the researcher conduct a post-test. The function is to know the difference score of experiment and control class and the effect of treatment, whether it has an effect or not. The researcher uses some steps in giving pre-test. They are:
a. Prepare 20 items of the multiple choice test.
b. Distribute the test paper to both of classes; experimental and control class.
c. Explain what the students need to do.
d. Give the times to the students to answer the questions.
e. Check the answer and counts the students' score.

## G. Technique of Data Analyzing

Experimental research design was done through experimental class and control class. After experimental process, two of classes were tested by using technique of data analysis as follow:

## 1. Requirement test

## a. Normality Test

The researcher used normality test with using Chi - Quadrate formula, as follow:
$x^{2}=\sum\left(\frac{f_{o}-f_{h}}{f_{h}}\right)$

Where:
$x^{2}=$ Chi-Quadrate
$\mathrm{f}_{\mathrm{o}}=$ 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 $1(\mathrm{dk}$ $=\mathrm{k}-1$ ).

## 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: ${ }^{6}$
$\mathrm{F}=\frac{\text { The biggest variant }}{\text { The smallest variant }}$

Where:
$\mathrm{n}_{1}=$ Total of the data that bigger variant
$\mathrm{n}_{2}=$ Total of the data that smaller variant

Hypothesis is rejected if $\mathrm{F} \leq \mathrm{F} \frac{1}{2} \mathrm{a}\left(\mathrm{n}_{1}-1\right) \quad\left(1=\mathrm{n}_{2}-1\right)$, while if $\mathrm{F}_{\text {count }}>$ $\mathrm{F}_{\text {table }}$ hypothesis is accepted. It determined with significant level 5\% (0.05) and dk numerator was $\left(\mathrm{n}_{1}-1\right)$, while dk deminators is $\left(\mathrm{n}_{2}-1\right)$.

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

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

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

## 2. Hypothesis Test

The technique in analyzing the data was 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

[^21]class and control class. The hypothesis test stated as: there is a significant effect of using Word Chain Game on students' vocabulary mastery $\left(\mu_{1>} \mu_{2}\right)$ and there is no significant effect of using Word Chain Game on students' vocabulary mastery $\left(\mu_{1=} \mu_{2}\right)$.

From explanation above, to test hypothesis researcher used formula as follows: ${ }^{7}$

$$
T t=\frac{M_{1}-M_{2}}{\sqrt{\left(\frac{\Sigma x_{1}^{2}+\Sigma x_{2}^{2}}{n_{1}+n_{2}-2}\right)\left(\frac{1}{n_{1}}+\frac{1}{n_{2}}\right)}}
$$

Where:
3.

Tt : The value which the statistical significance
$\mathrm{M}_{1}$ : The average score of experimental class
$\mathrm{M}_{2}$ : The average score of control class
$\mathrm{X}_{1}{ }^{2}$ : Deviation of experimental class
$\mathrm{X}_{2}{ }^{2}$ : Deviation of control class
$\mathrm{n}_{1}$ : Number of experimental
$\mathrm{n}_{2}:$ 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:

$$
x^{2}=\sum\left(\frac{f_{o}-f_{h}}{f_{h}}\right)
$$

[^22]Where:
$\mathrm{x}^{2}=$ Chi-Quadrate
$\mathrm{f}_{\mathrm{o}}=$ Frequency is gotten from the sample/result of observation (questioner).
$\mathrm{f}_{\mathrm{h}}=$ 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 $\mathrm{x}^{2}{ }_{\text {count }}<\mathrm{x}^{2}$ table . So, it can be concluded that data is distributed normally.

## CHAPTER IV

## THE RESULT OF RESEARCH

As mentioned in earlier chapter, in order to find out the effect of using Word Chain Game on students' vocabulary mastery, the researcher had calculated the data using pre-test and post-test. The researcher used the formulation of T-test to test the hypothesis. Next, the researcher described the data as follow:

## A. The Description of Data

## 1. The Description of Data before Using Word Chain Game

a. Score of Pre-test Experimental Class

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

## Table 8 <br> The Score of Experimental Class in Pre-test

| Total | 1085 |
| :--- | :---: |
| Highest score | 55 |
| Lowest score | 20 |
| Mean | 36.24 |
| Median | 39.48 |
| Modus | 40.5 |
| Range | 35 |
| Interval | 6 |
| Standard deviation | 9.84 |
| Variants | 97.45 |

Based on the above table the total score of experimental class in pre-test was 1085 , mean was 36.24 , standard deviation was 9.84 ,
variants was 97.45 , median was 39.48 , range was 30 , modus was 40.5 , interval was 6 . The researcher got the highest score was 55 and the lowest score was 20. It can be seen on appendix 16 and 17 .

Then, the computed of the frequency distribution of the students' score of experimental class can be applied into table frequency distribution as follow:

Table 9
Frequency Distribution of Students' Score

| No | Interval | Frequency | Percentages |
| :---: | :---: | :---: | :---: |
| 1 | $20-25$ | 4 | $14 \%$ |
| 2 | $26-31$ | 3 | $11 \%$ |
| 3 | $32-37$ | 5 | $18 \%$ |
| 4 | $38-43$ | 6 | $21 \%$ |
| 5 | $44-49$ | 5 | $18 \%$ |
| 6 | $50-55$ | 5 | $18 \%$ |
| $i=6$ |  | 28 | $100 \%$ |

From the table above, the students' score in class interval between 20 - 25 was 4 students (14\%), class interval between $26-31$ was 3 students (11\%), class interval between $32-37$ was 5 students (18\%), class interval between 38 - 43 was 6 students ( $21 \%$ ), interval between $44-49$ was 5 students ( $18 \%$ ), and the last class interval between $50-55$ was 5 students ( $18 \%$ ).

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


From the histogram of students' score of experimental class in pre test shown that the lowest interval $20-25$ was 4 students and highest interval $50-55$ was 5 students. Histogram also shown that the highest frequency in interval $38-43$ was 6 students.
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 question (test). The score of pre-test control class can be seen in the following table:

Table 10
The Score of Control Class in Pre-test

| Total | 1050 |
| :---: | :---: |
| Highest score | 55 |
| Lowest score | 20 |
| Mean | 31.5 |
| Median | 36.48 |
| Modus | 33.9 |
| Range | 35 |
| Interval | 6 |
| Standard deviation | 11.22 |
| Variants | 100.92 |

Based on the above table the total score of control class in pretest was 1050 , mean was 31.5 , standard deviation was 11.22 , variants was 100.92 , median was 36.48 , range was 35 , modus was 33.9 , interval was 6 . The researcher got the highest score was 55 and the lowest score was 20 . It can be seen on appendix 16 and 17 .

Then, the computed of the frequency distribution of the students' score of control class could be applied into table frequency distribution as follow:

Table 11
Frequency Distribution of Students' Score

| No | Interval | Frequency | Percentages |
| :---: | :---: | :---: | :---: |
| 1 | $20-25$ | 5 | $18 \%$ |
| 2 | $26-31$ | 4 | $14 \%$ |
| 3 | $32-37$ | 6 | $21 \%$ |
| 4 | $38-43$ | 3 | $11 \%$ |
| 5 | $44-49$ | 5 | $18 \%$ |
| 6 | $50-55$ | 5 | $18 \%$ |
|  | $i=6$ | 28 | $100 \%$ |

From the table above, the students' score in class interval between $20-25$ was 5 students ( $18 \%$ ), class interval between $26-31$ was 4 students ( $14 \%$ ), class interval between $32-37$ was 6 students ( $21 \%$ ), class interval between $38-43$ was 3 students ( $11 \%$ ), class interval between $44-49$ was 5 students (18\%), and the last class interval between 50 - 55 was 5 students (18\%).

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


From the histogram of students' score of control class in pre test shown that the lowest interval $20-25$ was 5 students and highest interval $50-55$ was only 5 students. Histogram also shown that the highest frequency in interval $32-37$ was 6 students.

## 2. The Description of Data After Using Word Chain Game

a. Score of Post-Test Experimental Class

In post-test of experimental class, the researcher calculated the result that had been gotten by the students in answering the question (test) after the researcher did the treatment by using Word Chain Game. The score of post-test experimental class can be seen in the following table:

Table 12 The Score of Experimental Class in Post-test

| Total | 1650 |
| :---: | :---: |
| Highest score | 80 |
| Lowest score | 45 |
| Mean | 60.1 |
| Median | 58.18 |
| Modus | 58.48 |
| Range | 35 |
| Interval | 6 |
| Standard deviation | 10.98 |
| Variants | 80.29 |

Based on the above table the total score of experiment class in post-test was 1650 , mean was 60.1 standard deviation was 10.92 , variants was 80.29 , median was 58.18 , range was 35 , modus was 58.48 , interval was 6 . The researcher got the highest score was 80 and the lowest score was 45. It can be seen on appendix 18 and 19.

Then, the computed of the frequency distribution of the students' score of experiment class can be applied into table frequency distribution as follow:

Table 13
Frequency Distribution of Students' Score

| No | Interval | Frequency | Percentages |
| :---: | :---: | :---: | :---: |
| 1 | $45-50$ | 6 | $21 \%$ |
| 2 | $51-56$ | 6 | $21 \%$ |
| 3 | $57-62$ | 7 | $25 \%$ |
| 4 | $63-68$ | 5 | $18 \%$ |
| 5 | $69-74$ | 2 | $7 \%$ |
| 6 | $75-80$ | 2 | $7 \%$ |
| $i=6$ |  | 28 | $100 \%$ |

From the table above, the students' score in class interval between 45 - 50 was 6 students ( $21 \%$ ), class interval between $51-56$ was 6 students ( $21 \%$ ), class interval between $57-62$ was 7 students (25\%), class interval between $63-68$ was 5 students (18\%), class interval between $67-74$ was 2 students ( $7 \%$ ), and the last class interval between $75-80$ was 2 students ( $7 \%$ ).

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


From the histogram of students' score of experimental class in post test shown that the lowest interval $45-50$ was 6 students and highest interval $75-80$ was only 2 students. Histogram also shown that the highest frequency in interval $57-62$ was 7 students.

## b. Score of Post-Test Control Class

In post-test of control class, the researcher calculated the result that had been gotten by the students in answering the question (test)
after the researcher taught the vocabulary mastery by using Conventional Technique. The score of post-test control class can be seen in the following table:

Table 14
The Score of Control Class in Post-test

| Total | 1160 |
| :---: | :---: |
| Highest score | 60 |
| Lowest score | 25 |
| Mean | 37.82 |
| Median | 40.52 |
| Modus | 39.5 |
| Range | 35 |
| Interval | 6 |
| Standard deviation | 10.14 |
| Variants | 92.32 |

Based on the above table the total score of control class in posttest was 1160 , mean was 37.82 , standard deviation was 10.14 , variants was 92.32 , median was 40.52 , range was 35 , modus was 39.5 , interval was 6 . The researcher got the highest score was 60 and the lowest score was 25 . It can be seen on appendix 20 and 21.

Then, the computed of the frequency distribution of the students' score of control class could be applied into table frequency distribution as follow:

Table 15
Frequency Distribution of Students' Score

| No | Interval | Frequency | Percentages |
| :---: | :---: | :---: | :---: |
| 1 | $25-30$ | 5 | $18 \%$ |
| 2 | $31-36$ | 5 | $18 \%$ |
| 3 | $37-42$ | 6 | $21 \%$ |
| 4 | $43-48$ | 5 | $18 \%$ |


| 5 | $49-54$ | 3 | $11 \%$ |
| :---: | :---: | :---: | :---: |
| 6 | $55-60$ | 4 | $14 \%$ |
| $i=6$ |  | 28 | $100 \%$ |

From the table above, the students' score in class interval between 25 - 30 was 5 students ( $18 \%$ ), class interval between $31-36$ was 5 students ( $18 \%$ ), class interval between $37-42$ was 6 students ( $21 \%$ ), class interval between $43-48$ was 5 students ( $18 \%$ ), class interval between 49 - 54 was 3 students (11\%), class interval between $54-60$ was 4 students (14\%).

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


From the histogram of students' score of control class in post test shown that the lowest interval $25-30$ was 5 students and highest interval $55-60$ was only 4 students. Histogram also shown that the highest frequency in interval 40 - 44 was 6 students.

## 3. The Description of Comparison Data of Pre-Test and Post-Test

a. The Comparison Data of Pre-Test and Post-Test in Experimental Class

The comparison data between pre-test and post-test of experimental class can bee seen in the following table:

Table 16
The Comparison Data of Experimental Class in Pre-test and Post-Test

| Description | Pre-Test | Post-Test |
| :---: | :---: | :---: |
| Total | 1085 | 1650 |
| Highest score | 55 | 80 |
| Lowest score | 20 | 45 |
| Mean | 36.24 | 60.1 |
| Median | 39.48 | 58.18 |
| Modus | 40.5 | 58.48 |
| Range | 35 | 35 |
| Interval | 6 | 6 |
| Standard deviation | 9.84 | 10.98 |
| Variants | 97.45 | 80.29 |

Based on students' answers in experimental of pre-test and posttest, the researcher has calculated the students' score and most of students both of classes were low in reading. Experimental class consisted of 28 students (VIII 5). The lowest score in pre-test was 20 whereas the highest score was 55 and the lowest score in post-test was 45 whereas the highest score was 80 .

In order to get the pre-test and post-test data description of experimental class clearly and completely, the researcher presents the histogram on the following histogram:

Figure 6: Comparison between Pre-test and Post Test in Experimental Class


From the histogram above, Pre-test frequency of students' score from 20 up to 27 was $4 ; 28$ up to 35 was $8 ; 36$ up to 43 was 6 students, 44 up to 51 was 7,52 up to 59 was 3 students. In post-test, the frequency of students' score from 44 up to 51 was $6 ; 52$ up to 59 was 6; and 60 up to 67 was 12 ; 68 up to 75 was 3 , 76 up to 83 was 1 student. The histogram shows that the highest interval (72-84) was 1 student and the lowest interval $(20-32)$ was 4 students. So the students' scores of experimental class in post-test was higher than pre-test.

## b. The Comparison Data of Pre-test and Post Test in Control Class

The comparison data between pre-test and post-test of control class can bee seen in the following table:

Table 17
The Comparison Data of Control Class in Pre-test and Post-Test

| Description | Pre-Test | Post-Test |
| :---: | :---: | :---: |
| Total | 1050 | 1160 |
| Highest score | 55 | 60 |
| Lowest score | 20 | 25 |
| Mean | 31.5 | 37.82 |
| Median | 36.48 | 40.52 |
| Modus | 33.9 | 39.5 |
| Range | 35 | 35 |
| Interval | 6 | 6 |
| Standard deviation | 11.22 | 10.14 |
| Variants | 100.92 | 92.32 |

Based on students' answers in control class of pre-test and posttest has calculated the students' score and most of students both of classes were low in reading. Control class consisted of 28 students (VIII 4). The lowest score in pre-test was 20 whereas the highest score was 55 and the lowest score in post-test was 25 whereas the highest score was 60 .

In order to get the pre-test and post-test data description of control class clearly and completely, the researcher presents the histogram on the following histogram:


From the histogram above, Pre-test frequency of students' score from 20 up to 32 was $9 ; 33$ up to 45 was $14 ; 46$ up to 58 was 5 students. In post-test, the frequency of students' score from 20 up to 32 was $5 ; 33$ up to 45 was $16 ; 46$ up to 58 was $5 ; 59$ up to 71 was 2 students.

## c. The Comparison Data between Experimental and Control Class

 in Post-TestBased on students' answers in post-test in experimental and control class, the researcher has calculated the students' score and most of students both of classes increased. Experimental class consisted of 28 students (VIII 5), the lowest score was 45 whereas the highest score was 80 . Then, most of students got raising score and their score increased very significant. Control class consisted of 28
students (VIII 4), the lowest score was 20 whereas the highest score was 55. Studens' score increased too but not significant.

In order to get easier description of data, the researcher presented them in histogram. It can be seen on following histogram:


From histogram above, in experimental class, the frequency of students' score from 45 up to 54 was $6 ; 55$ up to 64 was $13 ; 65$ up to 74 was 7; 75 up to 84 was 2 students. In control class, the frequency of students' score from 25 up to 34 was $5 ; 35$ up to 44 was $11 ; 45$ up to 54 was $8 ; 55$ up to 64 was 4 students.

## B. Technique of Data Analysis

## 1. Requirement Test

## a. Normality and Homogeneity Pre-Test

1) Normality of Experimental Class and Control Class in PreTest

Table 18
Normality and Homogeneity in Pre-Test

| Class | Normality <br> Test |  | Homogeneity <br> Test |  |
| :--- | :---: | :---: | :---: | :---: |
|  | $\mathrm{x}_{\text {count }}$ | $\mathrm{x}_{\text {table }}$ | $\mathrm{f}_{\text {count }}$ | $\mathrm{f}_{\text {table }}$ |
| Experiment Class | -4.08 | 11.070 | $1.03<2.66$ |  |
| Control Class | -4.23 | 11.070 |  |  |

Based on the above table researcher calculation, the score of experimental class $\mathrm{Lo}=-4.08<\mathrm{Lt}=11.070$ with $\mathrm{n}=28$ and control class $\mathrm{Lo}=-4.23<\mathrm{Lt}=11.070$ with $\mathrm{n}=28$, and real level $\alpha 0.05$. Cause Lo< Lt in the both class. So, $\mathrm{H}_{\mathrm{a}}$ was accepted. It means that experimental class and control class were distributed normal. It can be seen in appendix 16 and 17 .
2) Homogeneity of Experimental Class and Control class in PreTest

The coefficient of $\mathrm{F}_{\text {count }}=1.03$ was compared with $\mathrm{F}_{\text {table }}$. Where $\mathrm{F}_{\text {table }}$ was determined at real $\alpha 0.05$, and the different numerator $\mathrm{dk}=\mathrm{n}-1=28-1=27$ and denominator $\mathrm{dk} \mathrm{n}-1=28-1=$ 27. So, by using the list of critical value at F distribution is got $\mathrm{F}_{0.05}$ $=2.66$. It showed that $\mathrm{F}_{\text {count }} 1.03<\mathrm{F}_{\text {table }} 2.66$. So, the researcher
concluded that the variant from the data of the Students' Vocabulary Mastery at SMP Negeri 5 Padangsidimpuan by experimental class and control class was homogenous. The calculation can be seen on the appendix 17.

## b. Normality and Homogeneity Post-Test

1) Normality of Experimental Class and Control class in PostTest

Table 19
Normality and Homogeneity in Post-Test

| Class | Normality <br> Test |  | Homogeneity <br> Test |  |
| :--- | :---: | :---: | :---: | :---: |
|  | $\mathrm{x}_{\text {count }}$ | $\mathrm{x}_{\text {table }}$ | $\mathrm{f}_{\text {count }}$ | $\mathrm{f}_{\text {table }}$ |
| ExperimentalClass | -12.65 | 11.070 | $1.14<2.66$ |  |
| Control Class | 0.62 | 11.070 |  |  |

Based on the table above researcher calculation, the score of experiment class Lo $=-12.65<L t=11.070$ with $n=28$ and control class $\mathrm{Lo}=0.62<\mathrm{Lt}=11.070$ with $\mathrm{n}=28$, and real level $\alpha 0.05$. Cause $\mathrm{Lo}<\mathrm{Lt}$ in the both class. So, $\mathrm{H}_{\mathrm{a}}$ was accepted. It means that experimental class and Control class were distributed normal. It can be seen in appendix 20 and 21 .
2) Homogeneity of Experimental Class and Control class in Posttest

The coefficient of $\mathrm{F}_{\text {count }}=1.14$ was compared with $\mathrm{F}_{\text {table }}$. Where $\mathrm{F}_{\text {table }}$ was determined at real $\alpha 0.05$, and the different numerator $\mathrm{dk}=\mathrm{n}-1=28-1=27$ and denominator $\mathrm{dk} \mathrm{n}-1=28-1=$
27. So, by using the list of critical value at F distribution is got $\mathrm{F}_{0.05}=2.66$. It showed that $\mathrm{F}_{\text {count }} 1.14<\mathrm{F}_{\text {table }} 2.66$. So, the researcher concluded that the variant from the data of the Students' Vocabulary mastery at SMP Negeri 5 Padangsidimpuan by experimental class and Control class was homogenous. The calculation can be seen on the appendix 21 .

## 2. Hypothesis Test

After calculating the data of post-test, researcher found that posttest 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 $\left(\mathrm{H}_{\mathrm{a}}\right)$ of the research was "There is the significant effect of using Word Chain Game to Students' Vocabulary Mastery at grade VIII students of SMP Negeri 5 Padangsidimpuan". Hyphotesis null (Ho) of the research was "There is no significant effect of using Word Chain Game to Students' Vocabulary Mastery at grade VIII students of SMP Negeri 5 Padangsidimpuan". Ha is accepted if $t_{\text {count }}$ is higher than $t_{\text {table }}$. In this case, the researcher found that $\mathrm{t}_{\text {count }}>\mathrm{t}_{\text {table }}$ which means that there was the significant effect of using Word Chain Game to Students' Vocabulary Mastery at grade VIII students of SMP Negeri 5 Padangsidimpuan. The calculation can be seen on the appendix 22 and 23.

Table 20
Result of T-test from the Both Averages

| Pre-test |  |  | Post-test |
| :--- | :--- | :--- | :--- |
| $\mathrm{t}_{\text {count }}$ | $\mathrm{t}_{\text {table }}$ | $\mathrm{t}_{\text {count }}$ | $\mathrm{t}_{\text {table }}$ |
| -1.80 | 1.67356 | 9.09 | 1.67356 |

$\mathrm{H}_{\mathrm{a}}: \mu_{1}>\mu_{2}$
Where:
$\mathrm{H}_{\mathrm{a}}: \mu_{1}>\mu_{2}$ "There was the significant effect of using Word Chain Game to Students' Vocabulary Mastery at grade VIII of SMP Negeri 5 Padangsidimpuan".

Based on researcher calculation, researcher found that $\mathrm{t}_{\text {count }} 9.09$ while $\mathrm{t}_{\text {table }}$ 1.67356 with opportunity $(1-\alpha)=1-5 \%=95 \%$ and $d k=n_{1}+n_{2}-2=28$ $+28-2=54$. Cause $\mathrm{t}_{\text {count }}>\mathrm{t}_{\text {table }}(9.09>1.67356)$, it means that hypothesis $H_{a}$ was accepted and $H_{0}$ was rejected. So, there was the significant effect of using Word Chain Game to Students Vocabulary Mastery at grade VIII of SMP Negeri 5 Padangsidimpuan".

## C. Discussion

Based on the result of this research, the researcher has proved what had been stated by Holden that "This is a variation on the Japanese game 'shiritori'. Students try to connect the words by the way they are spelled, matching the last letter of a word with the first letter of the following word. For example: career, relocate, executive, entertain, neighbour, where each new word has as its first letter the last letter of the previous word. They can use any words that they know, but try to include in the chain all the new
words that they are learning. ${ }^{1}$ The theory stated that Word Chain Game is an appropriate technique for vocabulary, and in this research, the researcher found that the mean score of students' vocabulary mastery before using Word Chain Game was 37.82 and after using Word Chain Game was 60.1. It means there was the effect of using Word Chain Game on vocabulary mastery.

The result above supported the previous research by some researchers. First, Jerni Ariyanti Gultom on her thesis got the mean score in pre-test was 73.75 and in post was $84.625 .{ }^{2}$ Next, Rosmini Yanti on her thesis she got mean score of pre-test was 63.8 after applying Word Chain Game the mean score of post-test was 71.8. ${ }^{3}$ Then, Zahrotul Izzah on her thesis got the mean score in first cycle was 64 and the second cycle was 76.1. ${ }^{4}$ It shows the Word Chain can improve students' vocabulary mastery.

Meanwhile, the researcher got the mean score of pre-test of the experimental class was 36.24 . The mean score of pre-test result was lower than Jerni Ariyanti Gultom, Rosmini Yanti and Zahrotul Izzah's result. From the above description, it can be seen that the highest mean score was gotten by Jerni Ariyanti Gultom where the mean score in pre-test was 73.75 and the lowest mean score of pre-test of the experimental group was gotten by the researcher on this thesis where the mean score of pre-test was 36.24 .

[^23]Then, for the post-test result the researcher got the mean score of posttest of the experimental class was 60.1. The mean score of post-test result was lower than Jerni Ariyanti Gultom, Rosmini Yanti and Zahrotul Izzah’s result. From the above description, it can be seen that the highest mean score was gotten by the Jerni Ariyanti Gultom where the mean score in post test was 84.625 and the lowest mean score of post-test of the experimental group was gotten by Researcher where the mean score of post-test was 60.1 .

From the above explanation, there was the increasing from the pre-test score to post-test score after using the game among the related findings. Jerni Ariyanti Gultom got the increasing 10.87, Rosmini Yanti got the increasing 8, and Zahrotul Izzah got the increasing 12.1. Meanwhile the researcher got the increasing was 22.28 .

Based on the result, the researcher has got the effect of using Word Chain Game on students' vocabulary mastery. Jerni Ariyanti Gultom, found that $\mathrm{t}_{\text {count }}=2.73>\mathrm{t}_{\text {table }}=1.994$. The researcher also found that $\mathrm{t}_{\text {count }}$ is higher than $\mathrm{t}_{\text {table }}$ where $\mathrm{t}_{\text {count }}$ was 9.58 and $\mathrm{t}_{\text {table }}$ was 1.67356 (9.09>1.67356). It can be seen among the researches that the using of Word Chain Game gave the effect to students' vocabulary mastery especially at grade VIII Students of SMP Negeri 5 Padangsidimpuan. It means the theory has been proved where the students able to mastering the vocabulary. Therefore, Word Chain Game has given the significant effect to the research that has been done by the researcher or the other researcher who mentioned in related finding and Word Chain Game is
highly effective to help the English teacher in teaching learning process especially in teaching vocabulary.

## D. Threats of the Research

The researcher found the threats of the research as follows:

1. The students were not serious in answering the pre-test and post-test. Some of them still were cheating. It made the answer of the test was not pure because they did not do it by themselves.
2. The students were noisy while the learning process. They were not concentrating in following the learning process. Some of them talked to their friends and some of them did something outside the teacher's rule.
3. The learning implementation is not effective because of the limited time.

## CHAPTER V <br> CONCLUSION AND SUGGESTION

## A. Conclusion

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

1. Students' vocabulary mastery at grade VIII SMP Negeri 5 Padagsidimpuan before using Word Chain Game were still low. It can be seen from the students' mean score of pre-test was 36.24 in experimental class and 31.5 in control class.
2. Students' vocabulary mastery at grade VIII SMP Negeri 5 Padangsdimpuan after using Word Chain Game had higher score. It can be seen from the students' mean score of post-test was 60.1 in experimental class and 37.82 in control class.
3. It is found that $\mathrm{t}_{\text {count }}$ was higher than $\mathrm{t}_{\text {table }} 9.09>1.67356$ which means $\mathrm{H}_{\mathrm{a}}$ was accepted. Hence, there was significant effect of using Word Chain Game to students' vocabulary mastery at grade VIII of SMP Negeri 5 Padangsidimpuan.

## 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 Word Chain Game in teaching vocabulary. This research and others proved that Word Chain Game was effective to be applied in classroom.
2. For the students, it is hoped to use Word Chain Game because it can make them to be able to memorize the vocabulary.
3. 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.
4. For the English lecturer, it is hoped to teach this game so that the university students who will become teachers can apply this game while they are teaching vocabulary.

## REFERENCES

A. Wright, Betteridge, D. Bucky, M. Second Language Learning and Teaching. New York: Cambridge University Press, 2006.

A S Hornby. Oxford Advanced Learner's Dictionary of Current English. Oxford: Oxford University Press, 1995.

Agus Irianto. Statistik Konsep Dasar Dan Aplikasinya. Jakarta: Kencana, 2009.
Alqahtani, Mofareh. "The Importance Of Vocabulary In Language Learning And How To Be Taught." International Journal of Teaching and Education III, no. 3 (2015): 21-34. https://doi.org/10.20472/TE.2015.3.3.002.

Arikunto, Suharsimi. Dasar-Dasar Evaluasi Pendidikan. Kedua. Jakarta: Bumi Aksara, 2012.

Carrol Lewis. "Word Chains-the Game of Subtlechanges," 2007. www.wordchains.com/faq.php.

Eichel C. "Word Chain and Games Critical Thinking Activities," 2014. https://www.ebay.com/p/Critical-Thinking-Activities-Brain-Teasers-Who.

Elizabeth Walker. Cambridge Learner's Dictionary. England: Cambridge University Press, 2004.

Firmansyah, Achmad Yanuar. "Applying The ' Word Chain ' Game To Teach Descriptive Speaking To The Eight Graders In Smpn 26 Surabaya," 2009, 17. https://jurnalmahasiswa.unesa.ac.id/index.php/retain/article/view/12982.

Gay, L. R., Geoffrey E. Mills, and Peter Airasian. Educational Research Competencies for Analysis and Applicatins. Tenth Edit. America: Pearson, 2012.

Gordon Winch. The Foundation Grammar Dictionary. Australia: New Frontier Publishing, 2004.

Gultom, Jerni Ariyanti. "The Effect of Using Word Chain Game on The Students' Vocabulary Mastery at Seventh Grade of MTS 3 Menteri Bingkat." uinsu, 2018. http://repository.uinsu.ac.id/3906/.

## H. Douglas Brown. Teaching by Principles An Interactive Approach in Language Pedagogy. America: Prentice Hall Regents, 1998.

Hapsyah Sri Mei Siregar. English Teacher of SMP Negeri 5 Padangsidimpuan, Private Interview, n.d.

Holden, William R. "Learning To Learn : 15 Vocabulary Acquistition Activities, Tips and Hints." Modern English Teacher 8, no. 1 (1999).

Howard Jackson. Good Grammar for Students. London: Sage Publication, 2005.
——. Words, Meaning and Vocabulary. London: Casell, 2000.
Howard Sargaent. Basic English Grammar For English Language Learner. United Stated: Saddleback Educational Publishing, 2007.

Jack C.Richards and Willy A Renandya. Methodology in Language Teaching An Antalogy of Current Practice. Cambridge: Cambridge University Press, 2002.

Jayanthi Dakhsina Murthy. Contemporary English Grammar. New Delhi: Shivam Printers, 2003.

Kuzu, A., and N. Ural. Games Choices and Factor Effecting on Game Choicee of Game Players. Anadolu University, 2010.

Nove, Ten, and Melfin Lase. "The Effect of Word Chain Game on Students ' Vocabulary Mastery ( An Experimental Study at Seventh Grade Students of SMP Negeri 1 Pandan 2017 / 2018 )" 1, no. 3 (2018): 39-65. https://journal.ipts.ac.id/index.php/LINER/article/download/.../252/\
\%0 A.
penny Ur. A Course in Language Teaching Practice and Theory. New York: Cambridge University Press, 1991.

Rakhmawati, Dian. "The Influence of Vocabulary Journal in Teaching Students' Vocabulary Mastery." Smart 2, no. 1 (2016): 52-59. http://ejournal.stkipmpringsewu-lpg.ac.id/index.php/smart/article/view/148.

Sperling, D. "'W-O-R-D-c-H-a-I-N'. Dave's ESI," 2009. http://www.eslcafe.com/idea/index.cgi?display:109713289519798.txt.

Sudijono, Anas. Pengantar Statistik Pendidikan. Jakarta: Raja Grafindo Persada, 2008.

Wren and Martin. High School English Grammar and Composition. Jakarta: Persada Rao, 1990.

Yanti, Rosmini. "The Implementation of Word Chain Game to Improve The Mastery of English Vocabulary." Uin Ar- Raniry, 2017. https://repository.arraniry.ac.id/1912/.

Zahrotul Izzah. "The Use of Word Chain Game to Improve Vocabulary Mastery of Grade Students at SMP N 3 Kalibagor," 2015. http://repository.ump.ac.id/46/2/ Zahrotul.pdf.

## CURRICULUM VITAE

## A. Identity

Name
Reg. No
Place / Birthday
Religion
Address
: Sri Wahyuningsih
: 1520300029
: Manggala Sakti / April 02 ${ }^{\text {nd }}, 1997$
: Islam
: Desa Keritang, Kec. Kemuning, Kab.
Indragiri Hilir, Riau

## B. Parents

Father's name
Mother's name

## C. Educational Background

1. Elementary School : SD N 011 Sempang (2009)
2. Junior High School : MTSN Darul Istiqomah Selensen (2012)
3. Senior High School : MA Darul Istiqomah Selensen (2015)
4. Institute : IAIN Padangsidimpuan (2020)

## Appendix 1

Control Class

# RENCANA PELAKSANAAN PEMBELAJARAN 

(RPP)

| Sekolah | $:$ SMP N 5 Padangsidimpuan |
| :--- | :--- |
| Mata Pelajaran | $:$ Bahasa Inggris |
| Kelas | $:$ VIII |
| Semester | $:$ I(Satu) |
| Aspek/ Sub Skill | $:$ Vocabulary |
| Alokasi Waktu | $: 2$ X 45 Minutes |
| Peneliti | $:$ SRI WAHYUNINGSIH |

## A. Kompetensi Inti :

1. Menghayati dan mengamalkan ajaran agama yang dianutnya.
2. Menghayati dan mengamalkan perilaku jujur, disiplin, tanggungjawab, peduli (gotong royong, kerjasama, toleran, damai), santun, responsif dan pro-aktif dan menunjukkan sikap sebagai bagian dari solusi atas berbagai permasalahan dalam berinteraksi secara efektif dengan lingkungan sosial dan alam serta dalam menempatkan diri sebagai cerminan bangsa dalam pergaulan dunia.
3. Memahami, menerapkan, menganalisis pengetahuan faktual, konseptual, prosedural berdasarkan rasa ingin tahunya tentang ilmu pengetahuan, teknologi, seni, budaya, dan humaniora dengan wawasan kemanusiaan,
kebangsaan, kenegaraan, dan peradaban terkait penyebab fenomena dan kejadian, serta menerapkan pengetahuan prosedural pada bidang kajian yang spesifik sesuai dengan bakat dan minatnya untuk memecahkan masalah.
4. Mengolah, menalar, dan menyaji dalam ranah konkret dan ranah abstrak terkait dengan pengembangan dari yang dipelajarinya di sekolah secara mandiri, dan mampu menggunakan metoda sesuai kaidah keilmuan.

## B. Kompetensi dasar :

3.6 Menerapkan fungsi sosial, struktur teks, dan unsur kebahasaan teks interaksi transaksional lisan dan tulis yang melibatkan tindakan memberi dan meminta informasi terkait noun, dan mampu menyambung kosa kata noun sesuai dengan konteks penggunaannya.
4.6 Menyusun teks interaksi transaksional, lisan dan tulis, pendek dan sederhana yang melibatkan tindakan memberi dan meminta informasi terkait noun, fungsi sosial, struktur teks, dan unsur kebahasaan yang benar dan sesuai konteks.
C. Indikator :

## Pengetahuan

### 3.6.1Mengidentifikasi noun

3.6.2Menemukan kosa kata baru dalam bentuk noun

## Keterampilan

4.6.1Siswa dapat mengidentifikasi kosa kata baru dalam bentuk
4.6.2 Menengetahui macam-macam noun

## D. Objective

Siswa mampu membedakan kosa kata dalam bentuk noun
E. Material : Noun (common noun and proper noun)
F. Learning strategy : Conventional Strategy

## G. Langkah-langkah Kegiatan :

| Pertemuan pertama Pendahuluan (10') | - Guru menyapa siswa dalam Bahasa Inggris <br> - Guru memeriksa kehadiran siswa <br> - Guru mengaitkan materi pembelajaran dengan pengalaman peserta didik atau pembelajaran sebelumnya <br> - Guru menyampaikan tujuan pembelajaran <br> - Guru mendemontrasikan sesuatu yang terkait dengan tema <br> - Guru menyampaikan kemampuan yang akan dicapai peserta didik <br> - Guru menyampaikan rencana kegiatan |
| :---: | :---: |
| Kegiatan <br> Inti (60') | Mengamati <br> - Guru memberikan materi concrete noun (common and proper noun), abstract noun, serta material noun dengan bantuan object gambar dari buku pelajaran dan sekitar ruangan kelas. <br> - Guru memberikan penjelasan mengenai perbedaan dari ketiga jenis noun tersebut. <br> - Guru memberikan satu kata kunci/ key word, dan menyuruh siswa secara individu untuk mencari kata-kata apa saja yang berhubungan dengan key word tersebut. <br> - Setelah itu, guru meminta siswa untuk menggolongkan kata-kata yang telah ditemukan itu termasuk jenis noun apa? <br> - Untuk lebih mengingatkan siswa terhadap new vocabularies itu serta perbedaan jenis noun tersebut, guru memberi stimulasi terhadap siswa. <br> Menanya |


|  | Dengan bimbingan guru siswa menggali informasi dengan mengajukan pertanyaan mengenai hal-hal yang berhubungan dengan noun <br> Mengumpulkan Informasi <br> - Dengan bimbingan guru siswa mempelajari pola kalimat yang diberbentuk noun <br> - Dengan bimbingan guru siswa mempelajari cara penggunaan noun <br> - Mengolah Informasi <br> - Dengan bimbingan guru siswa berlatih menggunakan pola kalimat noun <br> Mengomunikasikan <br> Siswa mencari kosa kata tentang noun |
| :---: | :---: |
| Kegiatan <br> Penutup <br> (10') | - Guru dan siswa melakukan refleksi pembelajaran <br> - Guru memberikan tulisan <br> - Guru melaksanakan tindak lanjut dengan memberikan arahan kegiatan berikutnya dan tugas pengayaan |
| Pertemuan ke 2 <br> Pedahuluan (10) | - Guru menyapa siswa dalam Bahasa Inggris <br> - Guru memeriksa kehadiran siswa |
| Kegiatan inti (60) | - Guru mengulang kembali pelajaran sebelumnya dan melanjutkan ke materi selanjutnya <br> - Guru memberikan soal |


|  | Siswa menjawab soal yang diberikan |
| :--- | :--- |
| Kegiatan | • Guru mengumpulkan hasil kerja siswa |
| Penutup | • Guru menutup pertemuan dengan hamdalah dan salam |
| $(10)$ |  |

## F. Sumber Belajar :

a. Buku teks yang relevan
b. Alat peraga
c. kamus
G. penilaian :
a. Tekhnik : Merespon Pertanyaan Secara Tertulis
b. Bentuk : Pertanyaan Tertulis
c. Instrumen : Terlampir

## H. Pedoman Penilaian :

a. Jumlah Skor Maksimal x $5=20$
b. Nilai Maksimal $=100$
c. Nilai Siswa $=\underline{\text { Skor Perolehan }} \times 100$ Skor Maksimum

Mengetahui, 2019
Guru b,inggris

Hapsyah Sri Mei Siregar S.Pd
NIP. 196705031991032005

$$
\text { IIP. } 196705031991032005
$$

Padangsidimpuan,
Mahasiswa peneliti

Sri wahyuningsih
NIM. 1520300029

Kepala sekolah SMP N 5 Padangsidimpuan

## Jamali, S,Pd

NIP. 196806261994121001

Appendix 2
Experimental Class

## RENCANA PELAKSANAAN PEMBELAJARAN

(RPP)

Sekolah
Mata Pelajaran
Kelas
Semester
Aspek/ Sub Skill
Alokasi Waktu
Peneliti
: SMP N 5 Padangsidimpuan
: Bahasa Inggris
: VIII
: I(Satu)
: Vocabulary (Noun)
: 2 X 45 Minutes
: SRI WAHYUNINGSIH

## H. Kompetensi Inti :

5. Menghayati dan mengamalkan ajaran agama yang dianutnya.
6. Menghayati dan mengamalkan perilaku jujur, disiplin, tanggungjawab, peduli (gotong royong, kerjasama, toleran, damai), santun, responsif dan pro-aktif dan menunjukkan sikap sebagai bagian dari solusi atas berbagai permasalahan dalam berinteraksi secara efektif dengan lingkungan sosial dan alam serta dalam menempatkan diri sebagai cerminan bangsa dalam pergaulan dunia.
7. Memahami, menerapkan, menganalisis pengetahuan faktual, konseptual, prosedural berdasarkan rasa ingin tahunya tentang ilmu pengetahuan, teknologi, seni, budaya, dan humaniora dengan wawasan kemanusiaan, kebangsaan, kenegaraan, dan peradaban terkait penyebab fenomena dan kejadian, serta menerapkan pengetahuan prosedural pada bidang kajian
yang spesifik sesuai dengan bakat dan minatnya untuk memecahkan masalah.
8. Mengolah, menalar, dan menyaji dalam ranah konkret dan ranah abstrak terkait dengan pengembangan dari yang dipelajarinya di sekolah secara mandiri, dan mampu menggunakan metoda sesuai kaidah keilmuan.

## I. Kompetensi dasar :

3.6 Menerapkan fungsi sosial, struktur teks, dan unsur kebahasaan teks interaksi transaksional lisan dan tulis yang melibatkan tindakan memberi dan meminta informasi terkait noun, dan mampu menyambung kosa kata noun sesuai dengan konteks penggunaannya.
8.6 Menyusun teks interaksi transaksional, lisan dan tulis, pendek dan sederhana, yang melibatkan tindakan memberi dan meminta informasi terkait noun, fungsi sosial, struktur teks, dan unsur kebahasaan yang benar dan sesuai konteks.

## J. Indikator

## Pengetahuan

3.6.1Mengidentifikasi noun
3.6.2Menemukan kosa kata baru dalam bentuk noun

## Keterampilan

### 4.6.1 Menengetahui macam-macam noun

4.6.2 Mampu mennyambung kosa kata baru dari huruf terakhir kata sebelumnya.

## K. Objective :

Siswa mampu menbedakan kosa kata dalam bentuk common dan proper noun Melalui Word Chain Game siswa mampu menemukan kosa kata baru

## M. Learning strategy :Word Chain Game

## N. Langkah-langkah Kegiatan :

| Pertemuan pertama Pendahuluan (10') | - Guru menyapa siswa dalam Bahasa Inggris <br> - Guru memeriksa kehadiran siswa <br> - Guru mengaitkan materi pembelajaran dengan pengalaman peserta didik atau pembelajaran sebelumnya <br> - Guru menyampaikan tujuan pembelajaran <br> - Guru mendemontrasikan sesuatu yang terkait dengan tema <br> - Guru menyampaikan kemampuan yang akan dicapai peserta didik <br> - Guru menyampaikan rencana kegiatan |
| :---: | :---: |
| Kegiatan <br> Inti (60’) | Mengamati <br> - Dengan bimbingan guru siswa mengamati beberapa langkah-langkah dalam permainan word chain game <br> 1. Membagi murid menjadi 4 grup. <br> 2. Membagi papan tulis 1 per grup <br> 3. Salah satu murid pada setiap grup maju kedepan untuk menuliskan 1 kata, contohnya Apple <br> 4. Selanjutnya, siswa yg lain menuliskan kata dari huruf terakhir apple <br> 5. Guru memberi waktu sekitar 5-10 menit <br> 6. Murid yang banyak menjawab dengan benar pemenangnya <br> Menanya <br> Dengan bimbingan guru siswa menggali informasi dengan mengajukan pertanyaan mengenai hal-hal yang berhubungan |


|  | dengan noun <br> Mengumpulkan Informasi <br> - Dengan bimbingan guru siswa mempelajari pola kalimat yang diberbentuk noun <br> - Dengan bimbingan guru siswa mempelajari cara penggunaan noun <br> - Mengolah Informasi <br> - Dengan bimbingan guru siswa berlatih menggunakan pola kalimat noun <br> Mengomunikasikan <br> Siswa bermain word chain game dengan menggunakan noun |
| :---: | :---: |
| Kegiatan <br> Penutup <br> (60') | - Guru dan siswa melakukan refleksi pembelajaran <br> - Guru memberikan tulisan <br> - Guru melaksanakan tindak lanjut dengan memberikan arahan kegiatan berikutnya dan tugas pengayaan |
| Pertemuan ke 2 <br> Pedahuluan (10) | - Guru menyapa siswa dalam Bahasa Inggris <br> - Guru memeriksa kehadiran siswa |
| Kegiatan <br> inti (60) | - Guru mengulang kembali pelajaran sebelumnya dan melanjutkan ke materi selanjutnya <br> - Guru memberikan soal <br> - Siswa menjawab soal yang diberikan |
| Kegiatan | - Guru mengumpulkan hasil kerja siswa |


| Penutup | $\bullet$ Guru menutup pertemuan dengan hamdalah dan salam |
| :--- | :--- |
| $(10)$ |  |

## O. Sumber Belajar :

d. Buku teks yang relevan
e. Alat peraga
f. kamus
P. Penilaian :
a. Tekhnik : Merespon Pertanyaan Secara Tertulis
b. Bentuk : Pertanyaan Tertulis
c. Instrumen : Terlampir
Q. Pedoman Penilain :
a. Jumlah Skor Maksimal x 5:20
b. Nilai Maksimal : 100
c. Nilai Siswa : Skor Perolehan x 100

Skor Maksimum

Mengetahui,
Padangsidimpuan,
Guru b.inggris Mahasiswa peneliti

Hapsyah Sri Mei Siregar S.Pd<br>Sri wahyuningsih<br>NIP. 196705031991032005<br>NIM. 1520300029

Kepala sekolah SMP N 5 Padangsidimpuan

Jamali, S,Pd
NIP. 196806261994121001

## Appendix 3

## Instrument for pre-test before validity

## Saying Basmallah before doing the test

Choose the most appropriate answer! (PilihlahJawabanyang paling tepat!)

1. The meaning of Rat........?
a. Tikus
b. Sarang
c. Kuda
d. Singa
2. Below are included in common noun, except..?
a. Parrot
b. Country
c. Handphone
d. Bag
3. The English of Supir. $\qquad$ ?
a. Driver
b. Teacher
c. Soldier
d. Nurse
4. Parrot, Eagle, Chicken, Dove, and Crow are included in $\qquad$ .?
a. Common Noun
b. Abstract Noun
c. Uncountable Noun
d. Proper Noun
5. The meaning of Headmaster...?
a. Guru
b. Penjaga Sekolah
c. Pegawai
d. Kepala Sekolah
6. The Eagle sea is included in $\qquad$ ?
a. Common Noun
b. Abstract Noun
c. Uncountable Noun
d.

Proper Noun
7. Manager, Actor, and Doctor are included in $\qquad$ noun.
a. Common
b. Abstract
c. Uncountable
d. Proper
8. The meaning of Dentist?
a. Dokter Gigi
b. Perawat
c. Guru
d. Petani
9. Manngo, Orange, and Apple are included in. $\qquad$ noun.
a. Common
b. Abstract
c. Uncountable
d. Proper
10. Below are included in proper noun, except..?
a. Shark
b. Dolphin
c. Lecturer
d. Frog
11. The Dolphin is $\qquad$ noun?
a. Common
b. Abstract
c. Uncountable
d. Proper
12. Where is proper noun from these words?
a. Fish
b. Animal
c. Fruit
d. Teacher
13. What is the meaning of seal?
a. Anjing laut
b. Paus
c. Hiu
d. Lumba-lumba
14. The English of paus. $\qquad$
a. Shark
b. Seal
c. Seagull
d. Crab
15. Below are some nouns which are included proper noun, except?
a. Snake
b. City
c. Fish
d. Eagle
16. What is the meaning of Seller?
a. Pedagang
b. Pemulung
c. Artis
d. Fotografer
17. Fish is the sea animal, so fish is included in. $\qquad$ noun?
a. Common
b. Abstract
c. Uncountable
d. Proper
18. The English of kepiting. $\qquad$ ?
a. Shark
b. Seal
c. Seagull
d. Crab
19. The meaning of Midwife....?
a. Suster
b. Bidan
c. Pedagang
d. Dosen
20. The English of hiu .....?
a. Fish
b. Shark
c. Sea Eagle
d. Seal
21. Below are some nouns which are included common noun, except?
a. City
b. Oppo
c. Watermelon
d. Boy
22. The English of Apoteker..... ?
a. Painter
b. Teacher
c. Pharmacist
d. Officer
23. The meaning of soldier..... ?
a. Pelukis
b. tentara
c. Pedagang
d. Supir
24. Below are some nouns which are included proper noun, except?
a. Beach
b. Oppo
c. Watermelon
d. Aisyah
25. The English of Kelinci?
a. Rabbit
b. Tortoise
c. Swan
d. Rat

## Appendix 4

## Instrumen for pre test after validity

## Name :

Class :
Saying Basmallah before doing the test
Choose the most appropriate answer! (PilihlahJawabanyang paling tepat!)
26. The meaning of Rat........?
b. Tikus
b. Sarang
c. Kuda
d. Singa
27. Below are included in common noun, except..?
b. Parrot
b. Country
c. Handphone
d. Bag
28. The English of Supir. ?
b. Driver
b. Teacher
c. Soldier
d. Nurse
29. Parrot, Eagle, Chicken, Dove, and Crow are included in ......?
b. Common Noun
b. Abstract Noun
c. Uncountable Noun
d.
Proper Noun
30. The meaning of Headmaster...?
b. Guru
b. Penjaga Sekolah
c. Pegawai
d. Kepala Sekolah
31. The Eagle sea is included in $\qquad$ ?
b. Common Noun b. Abstract Noun c. Uncountable Noun d.

Proper Noun
32. Manager, Actor, and Doctor are included in $\qquad$ noun.
a. Common
b. Abstract
c. Uncountable
d. Proper
33. The meaning of Dentist?
b. Dokter Gigi
b. Perawat
c. Guru
d. Petani
34. Manngo, Orange, and Apple are included in. $\qquad$ noun.
a. Common
b. Abstract
c. Uncountable
d. Proper
35. Below are included in proper noun, except..?
b. Shark
b. Dolphin
c. Lecturer
d. Frog
36. Where is proper noun from these words?
b. Fish
b. Animal
c. Fruit
d. Teacher
37. The English of paus..........?
b. Shark
b. Seal
c. Seagull
d. Crab
38. Below are some nouns which are included proper noun, except?
b. Snake
b. City
c. Fish
d. Eagle
39. What is the meaning of Seller?
b. Pedagang
b. Pemulung
c. Artis
d. Fotografer
40. Fish is the sea animal, so fish is included in. $\qquad$ noun?
a. Common
b. Abstract
c. Uncountable
d. Proper
41. The English of kepiting.........?
b. Shark
b. Seal
c. Seagull
d. Crab
42. The meaning of Midwife....?
b. Suster
b. Bidan
c. Pedagang
d. Dosen
43. Below are some nouns which are included common noun, except?
b. City
b. Oppo
c. Watermelon
d. Boy
44. The English of Apoteker..... ?
b. Painter
b. Teacher
c. Pharmacist
d. Officer
45. The meaning of soldier..... ?
b. Pelukis
b. tentara
c. Pedagang
d. Supir

## Appendix 5

## Instrument for post-test before validity

## Saying Basmallah before doing the test

## Choose the most appropriate answer! (Pilihlah Jawaban yang paling tepat!)

1. The word chain of guava in fruit is $\qquad$ ?
a. Apricot-tamarind-durian-nectarine
b. Avocado- olive- elderberry- yogurt
c. Apricot- tangerine-eagle-elderberry
d. Apple, eat, tamarind, date
2. The word chain of bull in animal is. $\qquad$
a. Leopard-dove-eel-leech
b. Lion-newt-tear - rabbit
c. Leech-hunt -newt-tired
d. Life- eagle-elk- kiwi
3. ant, badger, beagle, bee, are included in $\qquad$
a. Pantry
b. zoo
c. animal
d. food
4. The English of kumbang is $\qquad$ ?
a. Barrel
b. beetle
c. Kettle
d. battle
5. The word chain of buffalo in animal is $\qquad$ ?
a. Oyster- raccoon- newt-tiffani
b. Oyster-rabbit-tapir-rabbit
c. Otter-tiger-ring-gorilla
d. Octopus- scorpion- newt-tetre
6. Blackberry, blueberry, date, dragonfruit are included in $\qquad$ ?
a. Animal
b. Proffesion
c. Fruit
d. gedget
7. Lizard, duck,kangaroo, otter are included in $\qquad$ .?
a. Material
b. Proper
c. Common
d. Uncountable
8. turtule, whale, walrus are included in. $\qquad$
a. Common noun
b. proper noun
c. collective noun
d. material noun
9. The word chain of "actor" in profession are $\qquad$ .?
a. Reporter-rubber-receptionist-teacher
b. Referee-employee-eat-technician
c. receptionist-teller-referee-engineer
d. receptionist-teller-reporter-reference
10. The journalist always wants to know about the new news in each area. The underline word is included in ....?
a. Uncountable noun
b. common noun
c. proper noun
d. countable noun
11. Which the word below is included in proper noun........?
a. Bandung
b. Boy
c. Farmer
d. seller
12. Host, actrees, cat are included in $\qquad$ noun.
a. Uncountable
b. common
c. material
d. proper
13. The word lawyer is included in $\qquad$ .?
a. proper
b. material
c. common
d. uncountable
14. Below are some nouns that are included in common noun, except ...?
a. farmer
b. dentist
c. tiger
d. singapur
15. Below are some nouns that are included in proper noun, except ....?
a. ahmad
b. fruit
c. cat
d. lion
16. Midwife is included in common noun; the Meaning of Midwife is...?
a. Perawat
b. Bidan
c. Suster
d. dokter
17. The english of penjahit is ...?
a. Sailor
b. Tailor
c. Referee
d. painter
18. The word pineapple is included in .....?
a. Proper
b. material
c. common
d. uncountable
19. The word chain of pear in fruit is $\qquad$
a. Rhubarb-banana-avocado-olive
b. Rabbit-tangerine-earwig-guava
c. Rose-epple-elephant-tamarind
d. Raspberry-yogurt-tamarind-date
20. the word chain of crab in animal is ?
a. bee-elk-knife
b. beetle-ear-raven
c. buffalo-own -lamb
d. bison-newt-tortoise
21. the word singer is included in $\qquad$
a. material
c. common
c. proper
d. uncountable
22. The word chain of Nurse in profession..... ?
c. Ecologist- technician-novelist-teller
d. Economist-teller-receptionist-tangerine
e. Editor-referee-elephant-teacher
f. Employee-editor-rat- trout
23. Below are some nouns which are included proper noun, except?
b. River
b. Oppo
c. Watermelon
d. Aisyah
24. Manager, Actor, and Doctor are included in $\qquad$ noun.
a. Common
b. Abstract
c. Uncountable
d. Proper
25. The word painter is included in..... ?
c. Animal
b. Fruit
c. Food
d. Profession

## Appendix 6

## Instrument for post test after validity

## Name : <br> Class : <br> Saying Basmallah before doing the test

Choose the most appropriate answer! (Pilihlah Jawaban yang paling tepat!)
25. The word chain of guava in fruit is $\qquad$ .?
e. Apricot-tamarind-durian-nectarine
f. Avocado- olive- elderberry- yogurt
g. Apricot- tangerine-eagle-elderberry
h. Apple, eat, tamarind, date
26. The word chain of bull in animal is $\qquad$
e. Leopard-dove-eel-leech
f. Lion-newt-tear - rabbit
g. Leech-hunt -newt-tired
h. Life- eagle-elk- kiwi
27. ant, badger, beagle, bee, are included in $\qquad$
b. Pantry
b. zoo
c. animal
d. food
28. The word chain of buffalo in animal is $\qquad$ .?
e. Oyster- raccoon- newt-tiffani
f. Oyster-rabbit-tapir-rabbit
g. Otter-tiger-ring-gorilla
h. Octopus- scorpion- newt-tetre
29. Lizard, duck,kangaroo, otter are included in $\qquad$
b. Material
b. Proper
c. Common
d. Uncountable
30. turtule, whale, walrus are included in $\qquad$ ..?
b. Common noun
b. proper noun
c. collective noun
d. material noun
31. The word chain of "actor" in profession are $\qquad$ .?
e. Reporter-rubber-receptionist-teacher
f. Referee-employee-eat-technician
g. receptionist-teller-referee-engineer
h. receptionist-teller-reporter-reference
32. The journalist always wants to know about the new news in each area. The underline word is included in ....?
b. Uncountable noun
b. common noun
c. proper noun
d. countable noun
33. Which the word below is included in proper noun $\qquad$ ?
b. Bandung
b. Boy
c. Farmer
d. seller
34. Host, actrees, are included in $\qquad$ noun.
b. Uncountable
b. common
c. material
d. proper
35. The word lawyer is included in $\qquad$ .?
b. proper
b. material
c. common
d. uncountable
36. Below are some nouns that are included in proper noun, except .... ?
b. ahmad
b. fruit
c. cat
d. lion
37. Midwife is included in common noun; the Meaning of Midwife is...?
b. Perawat
b. Bidan
c. Suster
d. dokter
38. The english of penjahit is ...?
b. Sailor
b. Tailor
c. Referee
d. painter
39. The word host is included in .....?
b. Proper
b. material
c. common
d.
uncountable
40. The word chain of pear in fruit is $\qquad$
e. Rhubarb-banana-avocado-olive
f. Rabbit-tangerine-earwig-guava
g. Rose-epple-elephant-tamarind
h. Raspberry-yogurt-tamarind-date
41. the word chain of crab in animal is?
e. bee-elk-knife
f. beetle-ear-raven
g. buffalo-own -lamb
h. bison-newt-tortoise
42. the word singer is included in
b. material
c. common
c. proper
d. uncountable
43. The word chain of Nurse in profession.....?
g. Ecologist- technician-novelist-teller
h. Economist-teller-receptionist-tangerine
i. Editor-referee-elephant-teacher
j. Employee-editor-rat- trout
44. Manager, Actor, and Doctor are included in......... noun.
a. Common
b. Abstract
c. Uncountable
d. Proper

## Appendix 7

## Key Answer

| Post- test | Pre- test |
| :--- | :--- |
| 1. A | $1 . \mathrm{A}$ |
| 2. A | 2. A |
| 3. C | $3 . \mathrm{A}$ |
| 4. B | $4 . \mathrm{D}$ |
| 5. B | $5 . \mathrm{D}$ |
| 6. B | $6 . \mathrm{D}$ |
| 7. C | $7 . \mathrm{A}$ |
| 8. B | $8 . \mathrm{A}$ |
| 9. A | $9 . \mathrm{D}$ |
| 10. B | $10 . \mathrm{C}$ |
| 11. C | $11 . \mathrm{A}$ |
| 12. B | $12 . \mathrm{B}$ |
| 13. B | $13 . \mathrm{B}$ |
| 14. B | $14 . \mathrm{A}$ |
| 15. A | $15 . \mathrm{D}$ |
| 16. A | $16 . \mathrm{D}$ |
| 17. D | $17 . \mathrm{B}$ |
| 18. C | $18 . \mathrm{C}$ |
| 19. A | $19 . \mathrm{C}$ |
| 20. A | $20 . \mathrm{B}$ |

## Appendix 8

Validity of Pre Test

| $\begin{aligned} & \text { Zơ } \\ & \text { 苞 } \\ & 0 \\ & 0 \\ & 0 \end{aligned}$ | No. | Item |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 1 |
|  | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |  |
|  | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |  |
|  | 4 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |  |
|  | 5 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 8 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 |  |
|  | 9 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |  |
|  | 10 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |  |
|  | 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |  |
|  | 12 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |  |
|  | 13 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |  |
|  | 14 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |  |
|  | 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 17 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 18 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |  |
|  | 19 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 |  |
|  | 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 21 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 22 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |  |
|  | 23 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |  |
|  | 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |  |
|  | 25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | $\mathrm{N}=25$ | 22 | 22 | 22 | 21 | 18 | 22 | 17 | 22 | 17 | 23 | 21 | 21 | 20 | 22 | 1 |
|  | p | 0,9 | 0,9 | 0,9 | 0,8 | 0,7 | 0,9 | 0,7 | 0,9 | 0,7 | 0,9 | 0,8 | 0,8 | 0,8 | 0,9 | 0 |
|  | q | 0,1 | 0,1 | 0,1 | 0,2 | 0,3 | 0,1 | 0,3 | 0,1 | 0,3 | 0,1 | 0,2 | 0,2 | 0,2 | 0,1 | 0 | r

$\begin{array}{lllllllllllllll}\text { tabel } & 0,4 & 0,4 & 0,4 & 0,4 & 0,4 & 0,4 & 0,4 & 0,4 & 0,4 & 0,4 & 0,4 & 0,4 & 0,4 & 0,4\end{array}$ r $\begin{array}{lllllllllllllll}\text { hitung } & 0,76 & 0,76 & 0,8 & 0,51 & 0,67 & 0,51 & 0,75 & 0,76 & 0,75 & 0,52 & 0,33 & 0,51 & 0,22 & 0,76\end{array} 0$,

## Calculation of Pre-Test

1. Mean score from score total $\left(\mathrm{M}_{\mathrm{t}}\right)$
$\mathrm{M}_{\mathrm{t}}=\frac{\sum X_{t}}{N}$
$\mathrm{M}_{\mathrm{t}}=\frac{510}{25}=20.4$
2. Standard Deviation $\left(\mathrm{SD}_{\mathrm{t}}\right)$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{\frac{\sum X_{t^{2}}}{N}-\left(\frac{\sum X_{t}}{N}\right)^{2}}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{\frac{11264}{25}-\left(\frac{510}{25}\right)^{2}}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{450.56-20.4^{2}}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{450.56-416.16}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{34.4}=6$
3. Mean Score $\left(\mathrm{M}_{\mathrm{p}}\right)$

## Item 1

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 1}$
$\mathrm{M}_{\mathrm{pl}=} \frac{17+25+19+23+25+25+15+23+24+18+18+25+25+25+23+18+22+25+24+17+24+25}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{485}{22}=22.04$

## Item 2

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 2}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+19+23+25+25+15+23+24+18+18+25+25+25+23+18+22+25+24+17+24+25}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{485}{22}=22.04$

## Item 3

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 3}$
$\mathrm{M}_{\mathrm{pl}=} \frac{17+25+19+23+25+25+17+23+24+18+18+25+25+25+23+18+22+25+24+17+24+25}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{487}{22}=22.13$

## Item 4

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 4}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+19+23+25+25+17+15+24+18+18+25+25+25+18+22+25+24+17+24+25}{21}$
$\mathrm{M}_{\mathrm{pl}}=\frac{456}{21}=21.71$

## Item 5

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 5}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+19+25+25+17+23+24+25+25+25+23+18+22+25+24+24+25}{18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{411}{18}=22.83$

## Item 6

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents' 'scorethattrueitemanswer }}{n 6}$
$\mathrm{M}_{\mathrm{pl}}=\frac{25+6+19+23+25+25+17+15+23+24+18+18+25+25+25+23+22+25+24+17+24+25}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{473}{22}=21.5$

## Item 7

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 7}$
$\mathrm{M}_{\mathrm{pl}}=\frac{25+23+25+25+17+23+24+25+25+25+23+18+22+25+24+24+25}{17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{398}{17}=23.41$

## Item 8

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 8}$
$\mathrm{M}_{\mathrm{pl}=} \frac{17+25+19+23+25+25+15+23+24+18+18+25+25+25+23+18+22+25+24+17+24+25}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{485}{22}=22.04$

## Item 9

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 9}$
$\mathrm{M}_{\mathrm{pl}}=\frac{25+23+25+25+17+23+24+25+25+25+23+18+22+25+24+24+25}{17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{398}{17}=23.41$

## Item 10

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 10}$
$\mathrm{M}_{\mathrm{pl}}$
$\frac{17+25+6+19+23+25+25+17+15+23+24+18+18+25+25+25+23+22+25+24+17+24+25}{23}$
$\mathrm{M}_{\mathrm{pl}}=\frac{490}{23}=21.30$

## Item 11

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 11}$
$\mathrm{M}_{\mathrm{pl}}=\frac{25+19+23+25+25+17+15+23+24+18+18+25+2+25+25+23+18+22+25+24+25}{21}$
$M_{p l}=\frac{446}{21}=21.23$

## Item 12

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 12}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+19+23+25+25+17+15+24+18+18+25+25+25+18+22+25+24+17+24+25}{21}$
$M_{p l}=\frac{456}{21}=21.71$

Item 13
$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 13}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+19+23+25+25+15+23+18+18+25+2+25+25+23+22+25+24+17+25}{20}$
$\mathrm{M}_{\mathrm{pl}}=\frac{421}{20}=21.05$

## Item 14

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 14}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+19+23+25+25+15+23+24+18+18+25+25+25+23+18+22+25+24+17+24+25}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{485}{22}=22.04$

## Item 15

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 15}$
$\mathrm{M}_{\mathrm{pl}}=\frac{25+23+25+25+17+23+24+25+25+25+23+18+22+25+24+24+25}{17}$
$M_{p l}=\frac{398}{17}=23.41$

## Item 16

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 16}$
$\mathrm{M}_{\mathrm{pl}}=\frac{25+23+25+25+17+23+24+25+25+25+23+18+22+25+24+24+25}{17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{398}{17}=23.41$

## Item 17

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+23+25+25+15+23+24+18+18+25+25+25+23+18+22+25+24+17+24+25}{21}$
$M_{p l}=\frac{466}{21}=22.19$

## Item 18

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+6+19+23+25+25+17+15+23+24+18+18+25+25+25+23+25+24+17+24+25}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{468}{22}=21.27$

## Item 19

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 19}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+19+25+25+17+23+24+25+25+25+23+18+22+25+24+24+25}{18}$
$M_{p l}=\frac{411}{18}=22.83$

## Item 20

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 20}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+6+19+23+25+25+17+23+24+18+18+25+25+25+23+25+24+17+24+25}{21}$
$\mathrm{M}_{\mathrm{pl}}=\frac{453}{21}=21.57$

## Item 21

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 21}$
$\mathrm{M}_{\mathrm{pl}}=\frac{25+23+25+25+17+23+24+25+25+25+23+18+22+25+24+24+25}{17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{398}{17}=23.41$

## Item 22

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{25+6+19+23+25+25+17+15+23+24+18+18+25+25+25+23+22+25+24+17+24+25}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{473}{22}=21.5$

## Item 23

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 23}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+19+23+25+25+15+23+24+18+18+25+25+25+23+18+22+25+24+17+24+25}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{485}{22}=22.04$

## Item 24

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 24}$
$\mathrm{M}_{\mathrm{pl}=} \frac{17+25+19+23+25+25+15+23+24+18+18+25+25+25+23+18+22+25+24+17+24+25}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{485}{22}=22.04$
Item 25
$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 25}$
$\mathrm{M}_{\mathrm{pl}}=\frac{17+25+6+19+23+25+25+17+23+24+18+18+25+25+25+23+25+24+17+24+25}{21}$
$\mathrm{M}_{\mathrm{pl}}=\frac{453}{21}=21.57$

## Calculation of Post-Test

4. Mean score from score total $\left(\mathrm{M}_{\mathrm{t}}\right)$
$\mathrm{M}_{\mathrm{t}}=\frac{\sum x_{t}}{N}$
$\mathrm{M}_{\mathrm{t}}=\frac{415}{25}=16.6$
5. Standard Deviation $\left(\mathrm{SD}_{\mathrm{t}}\right)$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{\frac{\sum X_{t^{2}}}{N}-\left(\frac{\sum X_{t}}{N}\right)^{2}}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{\frac{7797}{25}-\left(\frac{415}{25}\right)^{2}}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{311.88-16.6}^{2}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{311.88-275.56}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{36.32}=6$
6. Mean Score $\left(\mathrm{M}_{\mathrm{p}}\right)$

## Item 1

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 1}$
$\mathrm{M}_{\mathrm{pl}}=\frac{13+10+17+16+23+24+19+19+25+20+15+12+13+18+20+24+23+12+24+18}{20}$
$\mathrm{M}_{\mathrm{pl}}=\frac{365}{20}=18.25$

## Item 2

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 2}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+15+16+23+24+19+19+25+15+18+24+23+24+18}{14}$
$M_{p l}=\frac{282}{14}=20.14$

Item 3
$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 3}$
$\mathrm{M}_{\mathrm{pl}=} \frac{13+10+17+16+23+24+19+19+25+20+15+12+13+18+20+24+23+12+24+18}{20}$
$M_{p l}=\frac{365}{20}=18.25$

## Item 4

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 4}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+13+10+15+17+16+23+24+19+2+25+3+20+15+12+13+18+20+24+23+24+18}{22}$
$M_{p l}=\frac{375}{22}=16.95$

## Item 5

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 5}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+15+17+16+23+24+11+19+19+25+20+15+12+18+20+24+23+24+18}{19}$
$M_{p l}=\frac{362}{19}=19.05$
Item 6
$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 6}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+13+10+15+17+16+23+24+19+2+25+3+20+15+12+13+20+24+23+24+18}{21}$
$M_{p l}=\frac{355}{21}=16.90$

## Item 7

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 7}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+13+10+15+17+23+24+11+19+25+20+15+13+18+20+24+23+12+24}{19}$
$M_{p l}=\frac{345}{19}=18.15$

## Item 8

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 8}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+15+17+23+24+11+19+25+20+13+20+24+23+12+24+18}{16}$
$M_{p l}=\frac{307}{16}=19.18$

## Item 9

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 9}$
$\mathrm{M}_{\mathrm{pl}=} \frac{19+13+10+23+24+11+19+25+20+18+20+24+23+12+24}{15}$
$\mathrm{M}_{\mathrm{pl}}=\frac{285}{15}=19$

## Item 10

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 10}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+15+17+16+23+24+11+19+19+25+20+15+12+18+20+24+23+24+18}{19}$
$\mathrm{M}_{\mathrm{pl}}=\frac{362}{19}=19.05$

## Item 11

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 11}$
$\mathrm{M}_{\mathrm{pl}=} \frac{19+15+17+16+23+24+11+19+19+25+20+15+12+18+20+24+23+24+18}{19}$
$\mathrm{M}_{\mathrm{pl}}=\frac{362}{19}=19.05$

## Item 12

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents' scorethattrueitemanswer }}{n 12}$
$\mathrm{M}_{\mathrm{pl}=} \frac{19+13+10+23+24+11+19+25+20+18+20+24+23+12+24}{15}$
$\mathrm{M}_{\mathrm{pl}}=\frac{285}{15}=19$

## Item 13

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 13}$
$\mathrm{M}_{\mathrm{pl}}=\frac{13+10+17+16+23+24+19+19+25+20+15+12+13+18+20+24+23+12+24+18}{20}$
$\mathrm{M}_{\mathrm{pl}}=\frac{365}{20}=18.25$

## Item 14

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 14}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+15+16+11+19+25+20+12+18+24+23+24}{12}$
$\mathrm{M}_{\mathrm{pl}}=\frac{226}{12}=18.83$

## Item 15

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 15}$
$\mathrm{M}_{\mathrm{pl}=} \frac{19+15+17+23+24+11+19+25+20+13+20+24+23+12+24+18}{16}$
$M_{p l}=\frac{307}{16}=19.18$

## Item 16

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 16}$
$\mathrm{M}_{\mathrm{pl}}=\frac{13+10+17+16+23+24+19+19+25+20+15+13+20+24+23+24}{16}$
$M_{p l}=\frac{305}{16}=19.06$

## Item 17

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+15+17+23+24+11+19+25+20+13+20+24+23+12+24+18}{16}$
$M_{p l}=\frac{307}{16}=19.18$

## Item 18

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+13+17+23+24+19+25+20+12+18+20+24+24}{13}$
$\mathrm{M}_{\mathrm{pl}}=\frac{258}{13}=19.84$

## Item 19

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 19}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+15+16+23+24+19+19+25+15+18+24+23+24+18}{14}$
$M_{p l}=\frac{282}{14}=20.14$

## Item 20

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 20}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+15+16+23+24+19+19+25+15+18+24+23+24+18}{14}$
$M_{p l}=\frac{282}{14}=20.14$
Item 21
$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 21}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+15+16+23+24+19+19+25+15+18+24+23+24+18}{14}$
$\mathrm{M}_{\mathrm{pl}}=\frac{282}{14}=20.14$

## Item 22

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents' 'scorethattrueitemanswer }}{n 22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+15+17+23+24+11+19+25+20+13+20+24+23+12+24+18}{16}$
$\mathrm{M}_{\mathrm{pl}}=\frac{307}{16}=19.18$
Item 23
$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 23}$
$\mathrm{M}_{\mathrm{pl}}=\frac{13+16+24+19+19+25+3+13+20+23+12+18}{12}$
$\mathrm{M}_{\mathrm{pl}}=\frac{205}{12}=17.08$

## Item 24

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 24}$
$\mathrm{M}_{\mathrm{pl}}=\frac{19+13+17+23+24+19+25+20+12+18+20+24+24}{13}$
$\mathrm{M}_{\mathrm{pl}}=\frac{258}{13}=19.84$
Item 25
$\mathrm{M}_{\mathrm{pl}}=\frac{\text { totalscoreofstudents'scorethattrueitemanswer }}{n 25}$
$\mathrm{M}_{\mathrm{pl}}=\frac{13+10+17+16+23+24+19+19+25+20+15+12+13+18+20+24+23+12+24+18}{20}$
$\mathrm{M}_{\mathrm{pl}}=\frac{365}{20}=18.25$

## Appendix 9

Table Validity of Pre-test

| No | $\mathrm{M}_{\mathrm{p}}$ | $\mathrm{M}_{\mathrm{t}}$ | $\mathrm{SD}_{\mathrm{t}}$ | P | Q | $\mathrm{r}_{\mathrm{pbi}=\frac{\mathrm{M}_{\mathrm{p}-\mathrm{M}_{\mathrm{t}}}^{S D_{t}}}{} \sqrt{\frac{\mathrm{p}}{\mathrm{q}}}}$$\mathrm{r}_{\mathrm{t}} \mathrm{on} 5 \%$ <br> significant | Interpretation |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1. | 22.04 | 20.4 | 6 | 0.9 | 0.1 | 0.81 | 0.396 | valid |
| 2. | 22.04 | 20.4 | 6 | 0.9 | 0.1 | 0.81 | 0.396 | valid |


| 3. | 22.13 | 20.4 | 6 | 0.9 | 0.1 | 0.84 | 0.396 | valid |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 4. | 21.71 | 20.4 | 6 | 0.8 | 0.2 | 0.42 | 0.396 | valid |
| 5. | 22.83 | 20.4 | 6 | 0.7 | 0.3 | 0.61 | 0.396 | valid |
| 6. | 21.5 | 20.4 | 6 | 0.9 | 0.1 | 0.54 | 0.396 | valid |
| 7. | 23.41 | 20.4 | 6 | 0.7 | 0.3 | 0.76 | 0.396 | valid |
| 8. | 22.04 | 20.4 | 6 | 0.9 | 0.1 | 0.81 | 0.396 | valid |
| 9. | 23.41 | 20.4 | 6 | 0.7 | 0.3 | 0.76 | 0.396 | valid |
| 10. | 21.30 | 20.4 | 6 | 0.9 | 0.1 | 0.45 | 0.396 | valid |
| 11. | 21.23 | 20.4 | 6 | 0.8 | 0.2 | 0.26 | 0.396 | invalid |
| 12. | 21.71 | 20.4 | 6 | 0.8 | 0.2 | 0.42 | 0.396 | valid |
| 13. | 21.05 | 20.4 | 6 | 0.8 | 0.2 | 0.21 | 0.396 | invalid |
| 14. | 22.04 | 20.4 | 6 | 0.9 | 0.1 | 0.81 | 0.396 | valid |
| 15. | 23.41 | 20.4 | 6 | 0.7 | 0.3 | 0.76 | 0.396 | valid |
| 16. | 23.41 | 20.4 | 6 | 0.7 | 0.3 | 0.76 | 0.396 | valid |
| 17. | 22.19 | 20.4 | 6 | 0.8 | 0.2 | 0.58 | 0.396 | valid |
| 18. | 21.27 | 20.4 | 6 | 0.9 | 0.1 | 0.43 | 0.396 | valid |
| 19. | 22.83 | 20.4 | 6 | 0.7 | 0.3 | 0.61 | 0.396 | valid |
| 20. | 21.57 | 20.4 | 6 | 0.8 | 0.2 | 0.39 | 0.396 | invalid |
| 21. | 23.41 | 20.4 | 6 | 0.7 | 0.3 | 0.76 | 0.396 | valid |
| 22. | 21.5 | 20.4 | 6 | 0.9 | 0.1 | 0.54 | 0.396 | valid |
| 23. | 22.04 | 20.4 | 6 | 0.9 | 0.1 | 0.81 | 0.396 | valid |
| 24. | 22.04 | 20.4 | 6 | 0.9 | 0.1 | 0.81 | 0.396 | valid |
| 25. | 21.57 | 20.4 | 6 | 0.8 | 0.2 | 031 | 0.396 | invalid |

Appendix 10
Realibi

| $\begin{aligned} & \ddot{0} \\ & \text { \#8 } \\ & 0 \\ & 0 \\ & 0 \\ & 0 \\ & 0 \end{aligned}$ | No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 |
|  | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
|  | 3 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 |


| 4 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 5 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 8 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 9 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 10 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 11 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 12 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 13 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 14 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 17 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 18 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 19 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 20 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 21 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 22 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| 23 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 25 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| $\mathrm{~N}=25$ | 22 | 22 | 22 | 21 | 18 | 22 | 17 | 22 | 17 | 23 | 21 | 21 |
| p | 0,9 | 0,9 | 0,9 | 0,8 | 0,7 | 0,9 | 0,7 | 0,9 | 0,7 | 0,9 | 0,8 | 0,8 |
| q | 0,1 | 0,1 | 0,1 | 0,2 | 0,3 | 0,1 | 0,3 | 0,1 | 0,3 | 0,1 | 0,2 | 0,2 |
| pq | 0,106 | 0,106 | 0,106 | 0,134 | 0,202 | 0,106 | 0,218 | 0,106 | 0,218 | 0,074 | 0,134 | 0,134 |

## Appendix 11

## Reliability of Pre Test

To get reliability of the test, the researcher uses formula KR-20:
$\mathrm{R}_{11}=\left(\frac{n}{n-1}\right)\left(\frac{s_{t^{2}}-\sum p q}{s_{t^{2}}}\right)$
$\mathrm{N}=25$

$$
\begin{aligned}
\sum \mathrm{Xt} & =510 \\
\sum \mathrm{Xt}^{2} & =11264 \\
\sum \mathrm{pq} & =3.312 \\
\mathrm{~S}_{\mathrm{t}}^{2} & =\sum \mathrm{Xt}^{2}-\left(\frac{\sum \mathrm{xt}}{N}\right)^{2} \\
& =11264-\left(\frac{510}{25}\right)^{2}=11264-20.4^{2}=11264-416.16=10847.84 \\
\mathrm{~S}_{\mathrm{t}}^{2} & =\frac{\sum \mathrm{Xt} 2}{N}=\frac{10847.84}{25} \\
\mathrm{~S}_{\mathrm{t}}^{2}= & 433.91 \\
\mathrm{R}_{11} & =\left(\frac{n}{n-1}\right)\left(\frac{S_{t^{2}}-\sum p q}{S_{t^{2}}}\right) \\
\mathrm{R}_{11} & =\left(\frac{25}{25-1}\right)\left(\frac{433.91-3.312}{433.91}\right)=\left(\frac{25}{24}\right)\left(\frac{2878.09}{433.91}\right) \\
& =(1.04)(6.63) \\
& =6.89\left(\mathrm{r}_{11}>0.70=\text { reliable }\right)
\end{aligned}
$$

## Appendix 12



| 2 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 3 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 4 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 5 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 9 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| 10 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| 11 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 13 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 14 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 15 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 |
| 17 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 18 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 19 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 20 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 21 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 22 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 23 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 |
| 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 25 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| $\mathrm{~N}=25$ | 20 | 14 | 20 | 22 | 19 | 21 | 19 | 16 | 15 | 19 | 19 | 15 | 20 | 12 |
| p | 0,8 | 0,6 | 0,8 | 0,9 | 0,8 | 0,8 | 0,8 | 0,6 | 0,6 | 0,8 | 0,8 | 0,6 | 0,8 | 0,5 |
| q | 0,2 | 0,4 | 0,2 | 0,1 | 0,2 | 0,2 | 0,2 | 0,4 | 0,4 | 0,2 | 0,2 | 0,4 | 0,2 | 0,5 |
| P | 2 |  |  |  |  |  |  |  |  |  |  |  |  |  |


| table | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 | 0,4 |
| ---: | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | $\begin{array}{llllllllllllll}r \\ \text { hitung } & 0,55 & 0,66 & 0,55 & 0,16 & 0,72 & 0,12 & 0,46 & 0,57 & 0,49 & 0,72 & 0,72 & 0,49 & 0,55 \\ 0,36\end{array}$

Calculation of the formulation $\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$

## Item 1

$$
\begin{aligned}
& \mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{22.04-20.4}{6} \sqrt{\frac{0.9}{0.1}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{1.64}{6} \sqrt{9} \\
& \mathrm{r}_{\mathrm{pbi}}=0.27 \times 3=0.81
\end{aligned}
$$

## Item 2

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{22.04-20.4}{6} \sqrt{\frac{0.9}{0.1}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.64}{6} \sqrt{9}$
$\mathrm{r}_{\mathrm{pbi}}=0.27 \times 3=0.81$

## Item 3

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{22.13-20.4}{6} \sqrt{\frac{0.9}{0.1}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.73}{6} \sqrt{9}$
$\mathrm{r}_{\text {pbi }}=0.28 \times 3=0.84$

## Item 4

$$
\begin{aligned}
& \mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{21.71-20.4}{6} \sqrt{\frac{0.8}{0.2}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{1.31}{6} \sqrt{4} \\
& \mathrm{r}_{\mathrm{pbi}}=0.21 \times 2=0.42
\end{aligned}
$$

## Item 5

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$

$$
\begin{aligned}
& r_{\mathrm{pbi}}=\frac{22.83-20.4}{6} \sqrt{\frac{0.7}{0.3}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{2.43}{6} \sqrt{2.33} \\
& \mathrm{r}_{\mathrm{pbi}}=0.405 \times 1.52=0.61
\end{aligned}
$$

## Item 6

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{p b i}=\frac{21.5-20.4}{6} \sqrt{\frac{0.9}{0.1}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.1}{6} \sqrt{9}$
$\mathrm{r}_{\mathrm{pbi}}=0.18 \mathrm{x} 3=0.54$

## Item 7

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{23.41-20.4}{6} \sqrt{\frac{0.7}{0.3}}$
$r_{\mathrm{pbi}}=\frac{3.01}{6} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.50 \times 1.52=0.76$

Item 8
$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{\mathrm{pbi}}=\frac{22.04-20.4}{6} \sqrt{\frac{0.9}{0.1}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.64}{6} \sqrt{9}$
$\mathrm{r}_{\mathrm{pbi}}=0.27 \times 3=0.81$

## Item 9

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{23.41-20.4}{6} \sqrt{\frac{0.7}{0.3}}$

$$
\begin{aligned}
& \mathrm{r}_{\mathrm{pbi}}=\frac{3.01}{6} \sqrt{2.33} \\
& \mathrm{r}_{\mathrm{pbi}}=0.50 \times 1.52=0.76
\end{aligned}
$$

## Item 10

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{21.30-20.4}{6} \sqrt{\frac{0.9}{0.1}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.9}{6} \sqrt{9}$
$\mathrm{r}_{\mathrm{pbi}}=0.15 \times 3=0.45$

## Item 11

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{21.23-20.4}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.83}{6} \sqrt{4}$
$r_{\text {pbi }}=0.13 \times 2=0.26$

## Item 12

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{21.71-20.4}{7} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.31}{6} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.21 \times 2=0.42$

## Item 13

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{21.05-20.4}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.65}{6} \sqrt{4}$
$r_{p b i}=0.108 \times 2=0.21$

Item 14

$$
\begin{aligned}
& \mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{22.04-20.4}{6} \sqrt{\frac{0.9}{0.1}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{1.64}{6} \sqrt{9} \\
& \mathrm{r}_{\mathrm{pbi}}=0.27 \times 3=0.81
\end{aligned}
$$

## Item 15

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{23.41-20.4}{6} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{3.01}{6} \sqrt{2.33}$
$r_{p b i}=0.50 \times 1.52=0.76$

## Item 16

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{23.41-20.4}{6} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{3.01}{6} \sqrt{2.33}$
$r_{p b i}=0.50 \times 1.52=0.76$

## Item 17

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{p b i}=\frac{22.19-20.4}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.79}{6} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.29 \times 2=0.58$

## Item 18

$$
\begin{aligned}
& \mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{21.27-20.4}{6} \sqrt{\frac{0.9}{0.1}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{0.87}{6} \sqrt{9} \\
& \mathrm{r}_{\mathrm{pbi}}=0.145 \times 3=0.43
\end{aligned}
$$

## Item 19

$$
\begin{aligned}
& \mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{22.83-20.4}{6} \sqrt{\frac{0.7}{0.3}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{2.43}{6} \sqrt{2.33} \\
& \mathrm{r}_{\mathrm{pbi}}=0.405 \times 1.52=0.61
\end{aligned}
$$

## Item 20

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{21.57-20.4}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.17}{6} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.195 \times 2=0.39$

## Item 21

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{23.41-20.4}{6} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{3.01}{6} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.50 \times 1.52=0.76$

## Item 22

$$
\begin{aligned}
& \mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{21.5-20.4}{6} \sqrt{\frac{0.9}{0.1}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{1.1}{6} \sqrt{9} \\
& \mathrm{r}_{\mathrm{pbi}}=0.18 \times 3=0.54
\end{aligned}
$$

## Item 23

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{22.04-20.4}{6} \sqrt{\frac{0.9}{0.1}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.64}{6} \sqrt{9}$
$\mathrm{r}_{\mathrm{pbi}}=0.27 \times 3=0.81$

## Item 24

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{p b i}=\frac{22.04-20.4}{6} \sqrt{\frac{0.9}{0.1}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.64}{6} \sqrt{9}$
$\mathrm{r}_{\mathrm{pbi}}=0.27 \times 3=0.81$
Item 25
$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{\mathrm{pbi}}=\frac{21.57-20.4}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.17}{6} \sqrt{4}$
$r_{p b i}=0.159 \times 2=0.31$

Calculation of the formulation $\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$

## Item 1

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{\mathrm{pbi}}=\frac{18.25-16.6}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.65}{6} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.275 \times 2=0.55$

Item 2
$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{20.14-16.6}{6} \sqrt{\frac{0.6}{0.4}}$

$$
\begin{aligned}
& \mathrm{r}_{\mathrm{pbi}}=\frac{3.54}{6} \sqrt{1.5} \\
& \mathrm{r}_{\mathrm{pbi}}=0.59 \times 1.22=0.71
\end{aligned}
$$

## Item 3

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{p b i}=\frac{18.25-16.6}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.65}{6} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.275 \times 2=0.55$

## Item 4

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{\mathrm{pbi}}=\frac{16.95-16.6}{6} \sqrt{\frac{0.9}{0.1}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.35}{6} \sqrt{9}$
$\mathrm{r}_{\mathrm{pbi}}=0.058 \times 3=0.17$
Item 5
$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{19.05-16.6}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.45}{6} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.40 \times 2=0.8$

## Item 6

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{p b i}=\frac{16.90-16.6}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.3}{6} \sqrt{4}$

$$
\mathrm{r}_{\mathrm{pbi}}=0.05 \times 2=0.1
$$

## Item 7

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{18.15-16.6}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.55}{6} \sqrt{4}$
$r_{p b i}=0.25 \times 2=0.5$

## Item 8

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{p b i}=\frac{19.18-16.6}{6} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.58}{6} \sqrt{1.5}$
$\mathrm{r}_{\mathrm{pbi}}=0.43 \times 1.22=0.52$

## Item 9

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{p b i}=\frac{19-16.6}{6} \sqrt{\frac{0.6}{0.4}}$
$r_{p b i}=\frac{2.4}{6} \sqrt{1.5}$
$\mathrm{r}_{\mathrm{pbi}}=0.4 \times 1.22=0.48$
Item 10
$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{\mathrm{pbi}}=\frac{19.05-16.6}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.45}{6} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.40 \times 2=0.8$

Item 11
$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{19.05-16.6}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.45}{6} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.40 \times 2=0.8$

## Item 12

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\text {pbi }}=\frac{19-16.6}{6} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.4}{6} \sqrt{1.5}$
$\mathrm{r}_{\mathrm{pbi}}=0.40 \times 1.22=0.48$

## Item 13

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{18.25-16.6}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.65}{6} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.275 \times 2=0.55$

## Item 14

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{18.83-16.6}{6} \sqrt{\frac{0.5}{0.5}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.23}{6} \sqrt{1}$
$\mathrm{r}_{\mathrm{pbi}}=0.37 \times 1=0.37$

## Item 15

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{19.18-16.6}{6} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.58}{6} \sqrt{1.5}$
$\mathrm{r}_{\mathrm{pbi}}=0.43 \times 1.22=0.52$

## Item 16

$$
\begin{aligned}
& \mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{19.06-16.6}{6} \sqrt{\frac{0.6}{0.4}} \\
& \mathrm{r}_{\mathrm{pbi}}=\frac{2.46}{6} \sqrt{1.5} \\
& \mathrm{r}_{\mathrm{pbi}}=0.41 \times 1.22=0.50
\end{aligned}
$$

## Item 17

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{19.18-16.6}{6} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.58}{6} \sqrt{1.5}$
$\mathrm{r}_{\mathrm{pbi}}=0.43 \times 1.22=0.52$

## Item 18

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{19.84-16.6}{6} \sqrt{\frac{0.5}{0.5}}$
$r_{p b i}=\frac{3.24}{6} \sqrt{1}$
$\mathrm{r}_{\mathrm{pbi}}=0.54 \times 1=0.54$

## Item 19

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{20.14-16.6}{6} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{3.54}{6} \sqrt{1.5}$
$\mathrm{r}_{\mathrm{pbi}}=0.59 \times 1.22=0.71$

## Item 20

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{20.14-16.6}{6} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{3.54}{6} \sqrt{1.5}$
$\mathrm{r}_{\mathrm{pbi}}=0.59 \times 1.22=0.71$

## Item 21

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{20.14-16.6}{6} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{3.54}{6} \sqrt{1.5}$
$\mathrm{r}_{\mathrm{pbi}}=0.59 \times 1.22=0.71$

## Item 22

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{19.18-16.6}{6} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.58}{6} \sqrt{1.5}$
$\mathrm{r}_{\mathrm{pbi}}=0.43 \times 1.22=0.52$

## Item 23

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{17.08-16.6}{6} \sqrt{\frac{0.5}{0.5}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.48}{6} \sqrt{1}$
$\mathrm{r}_{\mathrm{pbi}}=0.08 \times 1=0.08$
Item 24
$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{19.84-16.6}{6} \sqrt{\frac{0.5}{0.5}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{3.24}{6} \sqrt{1}$
$\mathrm{r}_{\mathrm{pbi}}=0.54 \times 1=0.54$

## Item 25

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{18.25-16.6}{6} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.65}{6} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.275 \times 2=0.55$

## Appendi 13

Table Validity of Post-test

| No | $\mathrm{M}_{\mathrm{p}}$ | $\mathrm{M}_{t}$ | $\mathrm{SD}_{\mathrm{t}}$ | P | Q | $\mathrm{r}_{\mathrm{pbi}=\frac{\mathrm{M}_{\mathrm{p}-\mathrm{M}_{\mathrm{t}}}}{\mathrm{SD}_{\mathrm{t}}} \sqrt{\frac{\mathrm{p}}{\mathrm{q}}}}$$\mathrm{r}_{\mathrm{t}} \mathrm{on} 5 \%$ <br> significant | Interpretation |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1. | 18.25 | 16.6 | 6 | 0.8 | 0.2 | 0.55 | 0.396 | valid |
| 2. | 20.14 | 16.6 | 6 | 0.6 | 0.4 | 0.71 | 0.396 | valid |
| 3. | 18.25 | 16.6 | 6 | 0.8 | 0.2 | 0.55 | 0.396 | valid |
| 4. | 16.95 | 16.6 | 6 | 0.9 | 0.1 | 0.17 | 0.396 | invalid |
| 5. | 19.05 | 16.6 | 6 | 0.8 | 0.2 | 0.8 | 0.396 | valid |
| 6. | 16.90 | 16.6 | 6 | 0.8 | 0.2 | 0.1 | 0.396 | invalid |
| 7. | 18.15 | 16.6 | 6 | 0.8 | 0.2 | 0.5 | 0.396 | valid |
| 8. | 19.18 | 16.6 | 6 | 0.6 | 0.4 | 0.52 | 0.396 | valid |
| 9. | 19 | 16.6 | 6 | 0.6 | 0.4 | 0.48 | 0.396 | valid |
| 10. | 19.05 | 16.6 | 6 | 0.8 | 0.2 | 0.8 | 0.396 | valid |
| 11. | 19.05 | 16.6 | 6 | 0.8 | 0.2 | 0.8 | 0.396 | valid |
| 12. | 19 | 16.6 | 6 | 0.6 | 0.4 | 0.48 | 0.396 | valid |
| 13. | 18.25 | 16.6 | 6 | 0.8 | 0.2 | 0.55 | 0.396 | valid |
| 14. | 18.83 | 16.6 | 6 | 0.5 | 0.5 | 0.37 | 0.396 | invalid |
| 15. | 19.18 | 16.6 | 6 | 0.6 | 0.4 | 0.52 | 0.396 | valid |
| 16. | 19.06 | 16.6 | 6 | 0.6 | 0.4 | 0.50 | 0.396 | valid |
| 17. | 19.18 | 16.6 | 6 | 0.6 | 0.4 | 0.52 | 0.396 | valid |
| 18. | 19.84 | 16.6 | 6 | 0.5 | 0.5 | 0.54 | 0.396 | valid |
| 19. | 20.14 | 16.6 | 6 | 0.6 | 0.4 | 0.71 | 0.396 | valid |
| 20. | 20.14 | 16.6 | 6 | 0.6 | 0.4 | 0.71 | 0.396 | valid |
| 21. | 23.41 | 16.6 | 6 | 0.6 | 0.4 | 0.71 | 0.396 | valid |
| 22. | 19.18 | 16.6 | 6 | 0.6 | 0.4 | 0.52 | 0.396 | valid |


| 23. | 17.08 | 16.6 | 6 | 0.5 | 0.5 | 0.08 | 0.396 | invalid |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 24. | 19.84 | 16.6 | 6 | 0.5 | 0.5 | 0.54 | 0.396 | valid |
| 25. | 18.25 | 16.6 | 6 | 0.8 | 0.2 | 0.55 | 0.396 | valid |

Appendix 14
Realibility of

| $\begin{aligned} & \ddot{0} \\ & \text { O } \\ & 0 \\ & 0,0 \\ & 0 \end{aligned}$ | No. | Item |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 |
|  | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |  |
|  | 3 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 |  |
|  | 4 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |  |
|  | 5 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |  |
|  | 6 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |  |
|  | 7 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 8 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 9 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 10 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |  |
|  | 11 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  |
|  | 12 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |  |
|  | 13 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 14 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |  |
|  | 15 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 |  |
|  | 17 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |  |
|  | 18 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |  |
|  | 19 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |  |
|  | 20 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 21 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 22 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 23 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 |  |
|  | 24 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |  |
|  | 25 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 |  |
|  | $\mathrm{N}=25$ | 20 | 14 | 20 | 22 | 19 | 21 | 19 | 16 | 15 | 19 | 19 | 15 | 2 |


| p | 0,8 | 0,6 | 0,8 | 0,9 | 0,8 | 0,8 | 0,8 | 0,6 | 0,6 | 0,8 | 0,8 | 0,6 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| q | 0,2 | 0,4 | 0,2 | 0,1 | 0,2 | 0,2 | 0,2 | 0,4 | 0,4 | 0,2 | 0,2 | 0,4 | 0 |
| pq | 0,16 | 0,246 | 0,16 | 0,106 | 0,182 | 0,134 | 0,182 | 0,23 | 0,24 | 0,182 | 0,182 | 0,24 | 0, |

## Appendix 15

## Reliability of Post Test

To get reliability of the test, the researcher uses formula KR-20:

$$
\left.\begin{array}{l}
\mathrm{R}_{11}=\left(\frac{n}{n-1}\right)\left(\frac{S_{t^{2}}-\sum p q}{s_{t^{2}}}\right) \\
\mathrm{N}=25 \\
\sum \mathrm{Xt}
\end{array}\right) \begin{aligned}
\sum \mathrm{Xt}^{2} & =7797 \\
\sum \mathrm{pq} & =5.226 \\
\mathrm{~S}_{\mathrm{t}}^{2} \quad & =\sum \mathrm{Xt}^{2}-\left(\frac{\sum \mathrm{xt}}{N}\right)^{2} \\
& =7797-\left(\frac{415}{25}\right)^{2}=7797-16.6^{2}=7797-275.56=7521.44 \\
\mathrm{~S}_{\mathrm{t}}^{2} \quad & =\frac{\sum \mathrm{Xt} 2}{N}=\frac{7521.44}{25} \\
\mathrm{~S}_{\mathrm{t}}^{2}= & 300.85 \\
\mathrm{R}_{11}= & \left(\frac{n}{n-1}\right)\left(\frac{s_{t^{2}}-\sum p q}{s_{t^{2}}}\right) \\
\mathrm{R}_{11}= & \left(\frac{25}{25-1}\right)\left(\frac{300.85-5.226}{300.85}\right)=\left(\frac{25}{24}\right)\left(\frac{295.624}{300.85}\right) \\
& =(1.04)(0.98) \\
& =0.98\left(\mathrm{r}_{11}>0.70=\text { reliable }\right)
\end{aligned}
$$

## APPENDIX 16

## RESULT OF NORMALITY TEST IN PRE TEST

## RESULT OF THE NORMALITY TEST OF VIII 5 IN PRE-TEST

1. The score of VIII 5 class in pre test from low score to high score:

| 20 | 20 | 25 | 25 | 30 | 30 | 30 | 35 | 35 | 35 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 35 | 35 | 40 | 40 | 40 | 40 | 40 | 40 | 45 | 45 |
| 45 | 45 | 45 | 50 | 50 | 55 | 55 | 55 |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

2. High $=55$

$$
\begin{array}{ll}
\text { Low } & =25 \\
\text { Range } & =\text { High }- \text { Low } \\
& =55-25 \\
& =35
\end{array}
$$

3. Total of Classes $=1+3,3 \log (\mathrm{n})$

$$
=1+3,3 \log (28)
$$

$$
=1+3,3(1.44)
$$

$$
=1+4.75
$$

$$
=5.75
$$

$$
=6
$$

4. Length of Classes $=\frac{\text { range }}{\text { totalofclass }} \quad=\frac{35}{6}=6$
5. Mean

| Interval Class | F | X | x | fx | $\mathrm{x}^{2}$ | $\mathrm{fx}^{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $20-25$ | 4 | 22.5 | +2 | 8 | 4 | 16 |
| $26-31$ | 3 | 28.5 | +1 | 3 | 1 | 3 |

$$
\begin{aligned}
& M x=M^{1}+i \frac{\Sigma f x^{1}}{N} \\
& =40.5+6\left(\frac{-20}{28}\right) \\
& =40.5+6(-0.71) \\
& =40.5+(-4.26) \\
& =36.24 \\
& \mathrm{SD}_{\mathrm{t}}=i \sqrt{\frac{\sum f x^{2}}{n}-\left(\frac{\sum f x^{\prime}}{n}\right)^{2}} \\
& =6 \sqrt{\frac{90}{28}-\left(\frac{-20}{28}\right)^{2}} \\
& =6 \sqrt{3.21-(-0.71)^{2}} \\
& =6 \sqrt{3.21-0.50} \\
& =6 \sqrt{2.71} \\
& =6 \times 1.64=9.84
\end{aligned}
$$

Table of Normality Data Test with Chi Kuadrad Formula

| Interval <br> of Score | Real <br> Upper <br> Limit | $\mathrm{Z}-$ Score | Limit of <br> Large of the <br> Area | Large of <br> area | $f_{h}$ | $f_{0}$ | $\frac{\left(f_{0}-f_{\mathrm{h}}\right)}{f_{h}}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |


| $50-55$ | 55.5 | 1.95 | 0.4744 | 0.06 | 1.68 | 5 | 1.97 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $44-49$ | 49.5 | 1.34 | 0.4099 | 0.14 | 3.29 | 5 | 0.51 |
| $38-43$ | 43.5 | 0.73 | 0.2673 | 0.21 | 5.88 | 6 | 0.02 |
| $32-37$ | 37.5 | 0.12 | 0.0478 | -0.13 | -3.64 | 5 | -2.37 |
| $26-31$ | 31.5 | -0.48 | 0.1844 | -0.17 | -4.76 | 3 | -1.63 |
| $20-25$ | 25.5 | -1.09 | 0.3621 | -0.09 | -2.52 | 4 | -2.58 |
|  | 19.5 | -1.70 | 0.4554 |  |  |  |  |

Based on the table above, the reseracher found that $\mathrm{x}^{2}$ count $=-4.08$ while $\mathrm{x}_{\text {table }}^{2}=$, cause $\mathrm{x}_{\text {count }}^{2}<\mathrm{x}_{\text {table }}^{2}(-4.08<11.070)$ with degree of freedom $(\mathrm{dk})=6-1=$ 5 and significant level $\alpha=5 \%$. So distribution of VIII 4 class (post-test) is normal.
6. Median

| No | Interval | F | Fk |
| :---: | :---: | :---: | :---: |
| 1 | $20-25$ | 4 | 4 |
| 2 | $26-31$ | 3 | 7 |
| 3 | $32-37$ | 5 | 12 |
| 4 | $\mathbf{3 8}-\mathbf{4 3}$ | 6 | 18 |
| 5 | $44-49$ | 5 | 23 |
| 6 | $50-55$ | 5 | 28 |

Position of Me in the interval of classes is number 3, that:

$$
\begin{aligned}
\mathrm{Bb} & =37.5 \\
\mathrm{~F} & =12 \\
\mathrm{fm} & =6 \\
\mathrm{i} & =6
\end{aligned}
$$

$\mathrm{n}=28$
$1 / 2 n=14$
So :

$$
\begin{aligned}
\mathrm{Me} & =\mathrm{Bb}+\mathrm{i}\left(\frac{n / 2-F}{f m}\right) \\
& =37.5+6\left(\frac{14-12}{6}\right) \\
& =37.5+6(0.33) \\
& =37.5+1.98 \\
& =39.48
\end{aligned}
$$

7. Modus

| No | Interval | F | Fk |
| :---: | :---: | :---: | :---: |
| 1 | $20-25$ | 4 | 4 |
| 2 | $26-31$ | 3 | 7 |
| 3 | $32-37$ | 5 | 12 |
| 4 | $\mathbf{3 8}-\mathbf{4 3}$ | 6 | 18 |
| 5 | $44-49$ | 5 | 23 |
| 6 | $50-55$ | 5 | 28 |

$\mathrm{M}_{\mathrm{o}}=L+\frac{d_{1}}{d_{1}+d_{2}} i$
$\mathrm{L}=37.5$
$\mathrm{d}_{1}=1$
$\mathrm{d}_{2}=1$
i $=6$
So,

$$
\begin{aligned}
\mathrm{M}_{\mathrm{o}} & =37.5+\frac{1}{1+1} 6 \\
& =37.5+0.5(6) \\
& =37.5+3 \\
& =40.5
\end{aligned}
$$

## RESULT OF THE NORMALITY TEST OF VIII 4 IN PRE-TEST

8. The score of VIII 4 class in pre test from low score to high score:

| 20 | 20 | 25 | 25 | 25 | 30 | 30 | 30 | 30 | 35 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 35 | 35 | 35 | 35 | 35 | 40 | 40 | 40 | 45 | 45 |
| 45 | 45 | 45 | 50 | 50 | 50 | 55 | 55 |  |  |

9. High $=55$

Low $=20$
Range $=$ High - Low
$=55-20$
$=35$
10. Total of Classes $=1+3,3 \log (\mathrm{n})$

$$
\begin{aligned}
& =1+3,3 \log (28) \\
& =1+3,3(1.44) \\
& =1+4.75 \\
& =5.75 \\
& =6
\end{aligned}
$$

11. Length of Classes $=\frac{\text { range }}{\text { totalofclass }}=\frac{35}{6}=5,83=6$
12. Mean

| Interval Class | F | X | x | fx | $\mathrm{x}^{\prime}{ }^{\prime}$ | $\mathrm{fx}^{\prime 2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $20-25$ | 5 | 22.5 | +2 | 10 | 4 | 20 |
| $26-31$ | 4 | 28.5 | +1 | 4 | 1 | 4 |
| $32-37$ | 6 | $\mathbf{3 4 . 5}$ | 0 | 0 | 0 | 0 |
| $38-43$ | 3 | 40.5 | -1 | -3 | -1 | 3 |
| $44-49$ | 5 | 46.5 | -2 | -10 | -4 | 20 |
| $50-55$ | 5 | 52.5 | -3 | -15 | -9 | 45 |
| $i=6$ | 28 | - | - | -14 | - | 92 |

$M x=M^{1}+i \frac{\Sigma f x^{1}}{N}$
$=34.5+6\left(\frac{-14}{28}\right)$
$=34.5+6(-0.5)$

$$
\begin{aligned}
& =34.5+(-3) \\
& =31.5 \\
\mathrm{SD}_{\mathrm{t}} & =i \sqrt{\frac{\sum f x^{2}}{n}-\left(\frac{\sum f x x^{2}}{n}\right)^{2}} \\
& =6 \sqrt{\frac{92}{28}-\left(\frac{-14}{28}\right)^{2}} \\
& =6 \sqrt{3.28-(-0.5)^{2}} \\
& =6 \sqrt{3.28-0.25} \\
& =6 \sqrt{3.53} \\
& =6 \times 1.87=11.22
\end{aligned}
$$

Table of Normality Data Test with Chi Kuadrad Formula

| Interval <br> of Score | Real <br> Upper <br> Limit | Z -Score | Limit of <br> Large of the <br> Area | Large of <br> area | $\mathrm{f}_{\mathrm{h}}$ | $\mathrm{f}_{0}$ | $\frac{\left(\mathrm{f}_{0}-\mathrm{f}_{\mathrm{h}}\right)}{\mathrm{f}_{\mathrm{h}}}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $50-55$ | 55.5 | 2.13 | 0.4834 | 0.03 | 0.84 | 5 | 4.95 |
| $44-49$ | 49.5 | 1.60 | 0.4452 | 0.08 | 2.24 | 5 | 1.22 |
| $38-43$ | 43.5 | 1.06 | 0.3554 | 0.15 | 4.2 | 3 | -0.28 |
| $32-37$ | 37.5 | 0.53 | 0.2019 | 0.20 | 5.6 | 6 | 0.07 |
| $26-31$ | 31.5 | 0 | 0.0000 | 0.20 | 5.6 | 4 | -8 |
| $20-25$ | 25.5 | -0.53 | 0.2019 | -0.15 | -4.2 | 5 | -2.19 |
|  | 19.5 | -1.06 | 0.3554 |  |  |  |  |

Based on the table above, the reseracher found that $\mathrm{x}^{2}$ count $=-4.23$ while $\mathrm{x}_{\text {table }}^{2}=$, cause $\mathrm{x}_{\text {count }}^{2}<\mathrm{x}_{\text {table }}^{2}(-4.23<11.070)$ with degree of freedom $(\mathrm{dk})=6-1=$ 5 and significant level $\alpha=5 \%$. So distribution of VIII 6 class (pre-test) is normal.
13. Median

| No | Interval | F | Fk |
| :---: | :---: | :---: | :---: |
| 1 | $20-25$ | 5 | 5 |
| 2 | $26-31$ | 4 | 9 |
| 3 | $\mathbf{3 2}-\mathbf{3 7}$ | 6 | 15 |
| 4 | $38-43$ | 3 | 18 |
| 5 | $44-49$ | 5 | 23 |
| 6 | $50-55$ | 5 | 28 |

Position of Me in the interval of classes is number 3, that:

$$
\begin{aligned}
\mathrm{Bb} & =31.5 \\
\mathrm{~F} & =9 \\
\mathrm{fm} & =6 \\
\mathrm{i} & =6 \\
\mathrm{n} & =28 \\
1 / 2 \mathrm{n} & =14
\end{aligned}
$$

So :

$$
\begin{aligned}
\mathrm{Me} & =\mathrm{Bb}+\mathrm{i}\left(\frac{n / 2-F}{f m}\right) \\
& =31.5+6\left(\frac{14-9}{6}\right) \\
& =31.5+6(0.83) \\
& =31.5+4.98 \\
& =36.48
\end{aligned}
$$

14. Modus

| No | Interval | F | Fk |
| :---: | :---: | :---: | :---: |
| 1 | $20-25$ | 5 | 5 |
| 2 | $26-31$ | 4 | 9 |
| 3 | $\mathbf{3 2}-\mathbf{3 7}$ | 6 | 15 |
| 4 | $38-43$ | 3 | 18 |
| 5 | $44-49$ | 5 | 23 |
| 6 | $50-55$ | 5 | 28 |

$$
\begin{aligned}
& \mathrm{M}_{\mathrm{o}}=L+\frac{d_{1}}{d_{1}+d_{2}} i \\
& \mathrm{~L}=31.5 \\
& \mathrm{~d}_{1}=2 \\
& \mathrm{~d}_{2}=3 \\
& \mathrm{i}=6
\end{aligned}
$$

So,

$$
\begin{aligned}
\mathrm{M}_{\mathrm{o}} & =31.5+\frac{2}{2+3} 6 \\
& =31.5+0.4(6) \\
& =31.5+2.4 \\
& =33.9
\end{aligned}
$$

## Appendix 17

## 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 experimental class sample are used homogeneity test by using formula:

$$
\mathrm{S}^{2}=\frac{n \Sigma x i^{2}-(\Sigma x i)}{n(n-1)}
$$

Hypotheses:
$\mathrm{H}_{0} \quad: \delta_{1}^{2}=\delta_{2}^{2}$
$\mathrm{H}_{1} \quad: \delta_{1}^{2} \neq \delta_{2}^{2}$
A. Variant of the VIII-5 class is:

| $\mathbf{N O}$ | $\mathbf{X i}$ | $\mathbf{X i}^{\mathbf{2}}$ |
| :---: | :---: | :---: |
| 1. | 20 | 400 |
| 2. | 20 | 400 |


| 3. | 25 | 625 |
| :---: | :---: | :---: |
| 4. | 25 | 625 |
| 5. | 30 | 900 |
| 6. | 30 | 900 |
| 7. | 30 | 900 |
| 8. | 35 | 1225 |
| 9. | 35 | 1225 |
| 10. | 35 | 1225 |
| 11. | 35 | 1225 |
| 12. | 35 | 1225 |
| 13. | 40 | 1600 |
| 14. | 40 | 1600 |
| 15. | 40 | 1600 |
| 16. | 40 | 1600 |
| 17. | 40 | 1600 |
| 18. | 40 | 1600 |
| 19. | 45 | 2025 |
| 20. | 45 | 2025 |
| 21. | 45 | 2025 |
| 22. | 45 | 2025 |
| 23. | 45 | 2025 |
| 24. | 50 | 2500 |
| 25. | 50 | 2500 |
| 26. | 55 | 3025 |
| 27. | 55 | 3025 |
| 28. | 55 | 3025 |
| Total | 1085 | 44675 |

$\mathrm{N}=28$
$\sum x i=1085$
$\sum_{x i} 2=44675$
So:

$$
\begin{aligned}
S^{2} & =\frac{n \Sigma x i^{2}-(\Sigma x i)}{n(n-1)} \\
& =\frac{28(44675)-(1085)^{2}}{28(28-1)} \\
& =\frac{1250900-1177225}{28(27)} \\
& =\frac{73675}{756}
\end{aligned}
$$

$$
=97.45
$$

B. Variant of the VIII 4 class is:

| NO | Xi | $\mathbf{X i}{ }^{\mathbf{2}}$ |
| :---: | :---: | :---: |
| 29. | 20 | 400 |
| 30. | 20 | 400 |
| 31. | 25 | 625 |
| 32. | 25 | 625 |
| 33. | 25 | 625 |
| 34. | 30 | 900 |
| 35. | 30 | 900 |
| 36. | 30 | 900 |
| 37. | 30 | 900 |
| 38. | 35 | 1225 |
| 39. | 35 | 1225 |
| 40. | 35 | 1225 |
| 41. | 35 | 1225 |
| 42. | 35 | 1225 |
| 43. | 35 | 1225 |
| 44. | 40 | 1600 |
| 45. | 40 | 1600 |
| 46. | 40 | 1600 |
| 47. | 45 | 2025 |
| 48. | 45 | 2025 |
| 49. | 45 | 2025 |
| 50. | 45 | 2025 |
| 51. | 45 | 2025 |
| 52. | 50 | 2500 |
| 53. | 50 | 2500 |
| 54. | 50 | 2500 |
| 55. | 55 | 3025 |
| 56. | 55 | 3025 |
| Total | 1050 | 42100 |

$\mathrm{N}=28$
$\sum x i=1050$
$\sum_{x i} 2=42100$
So:

$$
\begin{aligned}
S^{2} & =\frac{n \Sigma x i^{2}-(\Sigma x i)}{n(n-1)} \\
& =\frac{28(42100)-(1050)^{2}}{28(28-1)} \\
& =\frac{1178800-1102500}{28(27)} \\
& =\frac{76300}{756} \\
& =100.92
\end{aligned}
$$

The Formula was used to test the hypothesis was:

$$
\mathrm{F}=\frac{\text { The Biggest Variant }}{\text { The Smallest Variant }}
$$

VIII 5 and VIII 4 :
$\mathrm{F}=\frac{\text { The Biggest Variant }}{\text { The Smallest Variant }}$
So:

$$
\begin{aligned}
\mathrm{F} & =\frac{100.92}{97.45} \\
& =1.03
\end{aligned}
$$

After doing the calculation, researcher found that $\mathrm{F}_{\text {count }}=1.03$. It had been compared to $\mathrm{F}_{\text {table }}$ with ${ }_{\alpha} 5 \%$ and dk numerator and deminator were same ( $\mathrm{n}_{1}$ and $\mathrm{n}_{2}=28 ; \mathrm{dk}=28-1=27$ ). From the distribution list F , researcher found that $\mathrm{F}_{\text {table }}=2.66$, so $\mathrm{F}_{\text {count }}<\mathrm{F}_{\text {table }}(1.03<2.66)$. It could be concluded that there is no difference variant between the VIII 5 class and VIII 4 class. It means that the variant is homogenous.

## Appendix 18

Score of Pre-test in Experimental Class and Control Class
a. Pre-Test Score of Experimental Class

| No | The Name of Students (N) | Pre-Test |
| :---: | :--- | :---: |
| 1 | AFP | 30 |
| 2 | ARH | 35 |
| 3 | AL | 25 |
| 4 | CRS | 45 |
| 5 | DMH | 20 |
| 6 | DSP | 55 |
| 7 | DH | 35 |
| 8 | D | 55 |
| 9 | DDA | 45 |
| 10 | DP | 35 |
| 11 | HSH | 30 |
| 12 | HAH | 45 |
| 13 | HS | 40 |
| 14 | ID | 55 |
| 15 | IlDA | 35 |
| 16 | IL | 20 |
| 17 | ILH | 40 |
| 18 | NPL | 45 |
| 19 | NR | 45 |


| 20 | RA | 25 |
| :---: | :--- | :---: |
| 21 | SPN | 40 |
| 22 | SAS | 40 |
| 23 | SAH | 40 |
| 24 | SNP | 50 |
| 25 | SA | 40 |
| 26 | WPS | 50 |
| 27 | YTA | 30 |
| 28 | ZS | 35 |
|  | Total |  |

b. Pre-Test Score of Control Class

| No | The Name of Students (N) | Pre-Test |
| :---: | :--- | :---: |
| 1 | AAH | 30 |
| 2 | AFH | 30 |
| 3 | AY | 25 |
| 4 | ALP | 55 |
| 5 | As | 20 |
| 6 | APS | 45 |
| 7 | AAJ | 35 |
| 8 | DAL | 30 |
| 9 | DIS | 45 |
| 10 | DPH | 35 |
| 11 | DAH | 30 |
| 12 | IW | 45 |
| 13 | IrWi | 35 |
| 14 | LJH | 35 |
| 15 | MAS | 35 |
| 16 | MRN | 20 |


| 17 | NJS | 35 |
| :---: | :--- | :---: |
| 18 | NFL | 45 |
| 19 | PR | 45 |
| 20 | R | 25 |
| 21 | RPH | 40 |
| 22 | RAS | 40 |
| 23 | RS | 40 |
| 24 | ROS | 50 |
| 25 | Ri | 35 |
| 26 | S | 50 |
| 27 | TR | 25 |
| 28 | WR | 55 |
|  |  | 1085 |

## Appendix 19

Score of Post-test in Experimental and Control Class
a. Post-Test Score of Experimental Class

| No | The Name of Students (N) | Post-Test |
| :---: | :--- | :---: |
| 1 | AFP | 50 |
| 2 | ARH | 45 |
| 3 | AL | 50 |
| 4 | CRS | 70 |
| 5 | DMH | 45 |
| 6 | DSP | 70 |
| 7 | DH | 55 |
| 8 | DI | 65 |
| 9 | DDA | 55 |
| 10 | DP | 65 |
| 11 | HSH | 65 |
| 12 | HAH | 55 |
| 13 | HS | 55 |
| 14 | ID | 60 |
| 15 | I Daud | 60 |
| 16 | IL | 45 |
| 17 | ILH | 60 |
| 18 | NPU | 60 |


| 19 | NR | 55 |
| :--- | :--- | :---: |
| 20 | RA | 65 |
| 21 | SPN | 65 |
| 22 | SAS | 55 |
| 23 | SAH | 65 |
| 24 | SNP | 80 |
| 25 | SA | 75 |
| 26 | WPS | 60 |
| 27 | YTA | 60 |
| 28 | ZS | 45 |
|  |  | 1650 |

b. Post-Test Score of Control Class

| No | The Name of Students (N) | Post-Test |
| :---: | :--- | :---: |
| 1 | AAH | 50 |
| 2 | AFH | 35 |
| 3 | AY | 30 |
| 4 | ALP | 55 |
| 5 | As | 35 |
| 6 | APS | 55 |
| 7 | AAJ | 40 |
| 8 | DAL | 55 |
| 9 | DIS | 45 |
| 10 | DPW | 35 |
| 11 | DAH | 30 |
| 12 | IW | 45 |
| 13 | IrWi | 40 |
| 14 | LJLH | 60 |
| 15 | MAS | 35 |
| 16 | MRN | 25 |
| 17 | NJS | 40 |
| 18 | NFL | 45 |


| 19 | PR | 45 |
| :---: | :--- | :---: |
| 20 | R | 25 |
| 21 | RPH | 40 |
| 22 | RAS | 40 |
| 23 | RS | 40 |
| 24 | RSH | 50 |
| 25 | Ri | 45 |
| 26 | S | 50 |
| 27 | TS | 30 |
| 28 | WR | 60 |
|  |  | 1160 |

## Appendix 20

## RESULT OF NORMALITY TEST IN POST TEST

 RESULT OF THE NORMALITY TEST OF VIII 5 IN POST-TEST1. The score of VIII 5 class in pre test from low score to high score:

| 45 | 45 | 45 | 45 | 50 | 50 | 55 | 55 | 55 | 55 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 55 | 55 | 60 | 60 | 60 | 60 | 60 | 60 | 60 | 65 |
| 65 | 65 | 65 | 65 | 70 | 70 | 75 | 80 |  |  |

2. High $=80$

Low $=45$
Range = High - Low
$=80-45$
$=35$
3. Total of Classes $=1+3,3 \log (\mathrm{n})$

$$
\begin{aligned}
& =1+3,3 \log (28) \\
& =1+3,3(1.44)
\end{aligned}
$$

$$
\begin{aligned}
& =1+4.75 \\
& =5.75 \\
& =6
\end{aligned}
$$

4. Length of Classes $=\frac{\text { range }}{\text { totalofclass }} \quad=\frac{35}{6}=5.83=6$
5. Mean

| Interval Class | F | X | x | fx | $\mathrm{x}^{2}$ | $\mathrm{fx}^{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $45-50$ | 6 | 47.5 | +3 | 18 | 9 | 54 |
| $51-56$ | 6 | 53.5 | +2 | 12 | 4 | 24 |
| $57-62$ | 7 | $\mathbf{5 9 . 5}$ | +1 | 7 | 1 | 7 |
| $63-68$ | 5 | 65.5 | 0 | 0 | 0 | 0 |
| $69-74$ | 2 | 71.5 | -1 | -2 | -1 | 2 |
| $75-80$ | 2 | 77.5 | -2 | -4 | -4 | 8 |
| $i=6$ | 28 | - | - | 3 | - | 95 |

$M x=M^{1}+i \frac{\Sigma f x^{1}}{N}$
$=59.5+6\left(\frac{3}{28}\right)$
$=59.5+6(0.10)$
$=59.5+(0.6)$
$=60.1$
$\mathrm{SD}_{\mathrm{t}}=i \sqrt{\frac{\sum f x^{2}}{n}-\left(\frac{\sum f x \prime^{\prime}}{n}\right)^{2}}$

$$
=6 \sqrt{\frac{95}{28}-\left(\frac{3}{28}\right)^{2}}
$$

$$
=6 \sqrt{3.39-(0.10)^{2}}
$$

$$
=6 \sqrt{3.39-0.01}
$$

$$
=6 \sqrt{3.38}
$$

$$
=6 \times 1.83=10.98
$$

Table of Normality Data Test with Chi Kuadrad Formula

| Interval <br> of Score | Real <br> Upper <br> Limit | $\mathrm{Z}-$ Score | Limit of <br> Large of the <br> Area | Large of <br> area | $f_{h}$ | $f_{0}$ | $\left(\mathrm{f}_{0}-\mathrm{f}_{\mathrm{h}}\right)$ <br> $\mathrm{f}_{\mathrm{h}}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |


| $75-80$ | 80.5 | 1.85 | 0.4678 | 0.06 | 1.68 | 2 | 0.19 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $69-74$ | 74.5 | 1.31 | 0.4049 | 0.12 | 3.36 | 2 | -0.40 |
| $63-68$ | 68.5 | 0.76 | 0.2764 | 0.19 | 5.32 | 5 | -0.06 |
| $57-62$ | 62.5 | 0.21 | 0.0832 | -0.04 | -1.12 | 7 | -7.25 |
| $51-56$ | 56.5 | -0.32 | 0.1255 | -0.18 | -5.04 | 6 | -2.19 |
| $45-50$ | 50.5 | -0.87 | 0.3078 | -0.11 | -3.08 | 6 | -2.94 |
|  | 44.5 | -1.42 | 0.4222 |  |  |  |  |

Based on the table above, the reseracher found that $\mathrm{x}^{2}$ count $=-12.65$ while $\mathrm{x}_{\text {table }}^{2}=$, cause $\mathrm{x}_{\text {count }}^{2}<\mathrm{x}_{\text {table }}^{2}(-12.65<11.070)$ with degree of freedom ( dk ) $=6-1$
$=5$ and significant level $\alpha=5 \%$. So distribution of VIII 5 class (pre-test) is normal.
6. Median

| No | Interval | F | Fk |
| :---: | :---: | :---: | :---: |
| 1 | $45-50$ | 6 | 6 |
| 2 | $51-56$ | 6 | 12 |
| 3 | $\mathbf{5 7 - 6 2}$ | 7 | 19 |
| 4 | $63-68$ | 5 | 24 |
| 5 | $69-74$ | 2 | 26 |
| 6 | $75-80$ | 2 | 28 |

Position of Me in the interval of classes is number 4, that:

$$
\begin{aligned}
\mathrm{Bb} & =56.5 \\
\mathrm{~F} & =12 \\
\mathrm{fm} & =7 \\
\mathrm{i} & =6
\end{aligned}
$$

$\mathrm{n}=28$
$1 / 2 n=14$
So :

$$
\begin{aligned}
\mathrm{Me} & =\mathrm{Bb}+\mathrm{i}\left(\frac{n / 2-F}{f m}\right) \\
& =56.5+6\left(\frac{14-12}{7}\right) \\
& =39.5+6(0.28) \\
& =56.5+1.68 \\
& =58.18
\end{aligned}
$$

7. Modus

| No | Interval | F | Fk |
| :---: | :---: | :---: | :---: |
| 1 | $45-50$ | 6 | 6 |
| 2 | $51-56$ | 6 | 12 |
| 3 | $\mathbf{5 7 - 6 2}$ | 7 | 19 |
| 4 | $63-68$ | 5 | 24 |
| 5 | $69-74$ | 2 | 26 |
| 6 | $75-80$ | 2 | 28 |

$\mathrm{M}_{\mathrm{o}}=L+\frac{d_{1}}{d_{1}+d_{2}} i$
$\mathrm{L}=56.5$
$\mathrm{d}_{1}=1$
$\mathrm{d}_{2}=2$
i $=6$
So,

$$
\begin{aligned}
M_{o} & =56.5+\frac{1}{1+2} 6 \\
& =56.5+0.33(6) \\
& =56.5+1.98 \\
& =58.48
\end{aligned}
$$

RESULT OF THE NORMALITY TEST OF VIII 4 IN POST-TEST
8. The score of VIII 4 class in pre test from low score to high score:

| 25 | 25 | 30 | 30 | 30 | 35 | 35 | 35 | 35 | 35 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 40 | 40 | 40 | 40 | 40 | 40 | 45 | 45 | 45 | 45 |
| 45 | 50 | 50 | 50 | 55 | 55 | 60 | 60 |  |  |
|  |  |  |  |  |  |  |  |  |  |

9. High $=60$

Low $=25$
Range $=$ High - Low
$=60-25$

$$
=35
$$

10. Total of Classes $=1+3,3 \log (\mathrm{n})$

$$
\begin{aligned}
& =1+3,3 \log (28) \\
& =1+3,3(1.44) \\
& =1+4.75 \\
& =5.75 \\
& =6
\end{aligned}
$$

11. Length of Classes $=\frac{\text { range }}{\text { totalofclass }}=\frac{35}{6}=5.83=6$
12. Mean

| Interval Class | F | X | x | fx | $\mathrm{x}^{2}$ | $\mathrm{fx}^{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $25-30$ | 5 | 27.5 | +2 | 10 | 4 | 20 |
| $31-36$ | 5 | 33.5 | +1 | 5 | 1 | 5 |
| $37-42$ | 6 | $\mathbf{3 9 . 5}$ | 0 | 0 | 0 | 0 |
| $43-48$ | 5 | 45.5 | -1 | -5 | 1 | 5 |
| $49-54$ | 3 | 51.5 | -2 | -6 | 4 | 12 |
| $55-60$ | 4 | 57.5 | -3 | -12 | 9 | 36 |
| $i=6$ | 28 | - | - | -8 | - | 78 |

$M x=M^{1}+i \frac{\Sigma f x^{1}}{N}$
$=39.5+6\left(\frac{-8}{28}\right)$
$=39.5+6(-0.28)$
$=39.5+(-1.68)$
$=37.82$

$$
\begin{aligned}
\mathrm{SD}_{\mathrm{t}} & =i \sqrt{\frac{\sum f x^{\prime}}{n}-\left(\frac{\sum f x^{\prime}}{n}\right)^{2}} \\
& =6 \sqrt{\frac{78}{28}-\left(\frac{-8}{28}\right)^{2}} \\
& =6 \sqrt{2.78-(-0.28)^{2}} \\
& =6 \sqrt{2.78-0.078} \\
& =6 \sqrt{2.858} \\
& =6 \times 1.690=10.14
\end{aligned}
$$

Table of Normality Data Test with Chi Kuadrad Formula

| Interval <br> of Score | Real <br> Upper <br> Limit | $\mathrm{Z}-$ Score | Limit of <br> Large of the <br> Area | Large of <br> area | $\mathrm{f}_{\mathrm{h}}$ | $\mathrm{f}_{0}$ | $\underline{\left(\mathrm{f}_{0}-\mathrm{f}_{\mathrm{h}}\right)}$ <br> $\mathrm{f}_{\mathrm{h}}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $55-60$ | 60.5 | 2.23 | 0.4871 | 0.03 | 0.84 | 4 | 3.76 |
| $49-54$ | 54.5 | 1.64 | 0.4495 | 0.09 | 2.52 | 3 | 0.19 |
| $43-48$ | 48.5 | 1.05 | 0.3531 | 0.17 | 4.76 | 5 | 0.05 |
| $37-42$ | 42.5 | 0.46 | 0.1772 | 0.12 | 3.36 | 6 | 0.78 |
| $31-36$ | 36.5 | -0.13 | 0.0517 | -0.20 | -5.6 | 5 | -1.89 |
| $25-30$ | 30.5 | -0.72 | 0.2612 | -0.14 | -3.92 | 5 | -2.27 |
|  | 24.5 | -1.31 | 0.4049 |  |  |  |  |

Based on the table above, the reseracher found that $\mathrm{x}^{2}$ count $=0.62$ while $x_{\text {table }}^{2}=$, cause $\mathrm{x}_{\text {count }}^{2}<\mathrm{x}_{\text {table }}^{2}(0.62<11.070)$ with degree of freedom (dk) $=6-1=$

5 and significant level $\alpha=5 \%$. So distribution of VIII 5 class (pre-test) is normal.
13. Median

| No | Interval | F | Fk |
| :---: | :---: | :---: | :---: |
| 1 | $25-30$ | 5 | 5 |


| 2 | $31-36$ | 5 | 10 |
| :---: | :---: | :---: | :---: |
| 3 | $\mathbf{3 7 - 4 2}$ | 6 | 16 |
| 4 | $43-48$ | 5 | 21 |
| 5 | $49-54$ | 3 | 24 |
| 6 | $55-60$ | 4 | 28 |

Position of Me in the interval of classes is number 4, that:
$\mathrm{Bb}=36.5$
$\mathrm{F}=10$
$\mathrm{fm}=6$
i $=6$
n $=28$
$1 / 2 n=14$
So :

$$
\begin{aligned}
\mathrm{Me} & =\mathrm{Bb}+\mathrm{i}\left(\frac{n / 2-F}{f m}\right) \\
& =36.5+6\left(\frac{14-10}{6}\right) \\
& =36.5+6(0.67) \\
& =36.5+4.02 \\
& =40.52
\end{aligned}
$$

14. Modus

| No | Interval | F | Fk |
| :---: | :---: | :---: | :---: |
| 1 | $25-30$ | 5 | 5 |
| 2 | $31-36$ | 5 | 10 |
| 3 | $\mathbf{3 7 - 4 2}$ | 6 | 16 |
| 4 | $43-48$ | 5 | 21 |
| 5 | $49-54$ | 3 | 24 |
| 6 | $55-60$ | 4 | 28 |

$\mathrm{M}_{0}=L+\frac{d_{1}}{d_{1}+d_{2}} i$
$\mathrm{L}=36.5$

$$
\begin{aligned}
\mathrm{d}_{1} & =1 \\
\mathrm{~d}_{2} & =1 \\
\mathrm{i} & =6 \\
\text { So, } & \\
\mathrm{M}_{\mathrm{o}} & =36.5+\frac{1}{1+1} 6 \\
& =36.5+0.5(6) \\
& =36.5+3 \\
& =39.5
\end{aligned}
$$

## Appendix 21

## 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 experimental class sample are used homogeneity test by using formula:
$S^{2}=\frac{n \Sigma x i^{2}-(\Sigma x i)}{n(n-1)}$

Hypotheses:
$\mathrm{H}_{0} \quad: \delta_{1}^{2}=\delta_{2}^{2}$
$\mathrm{H}_{1} \quad: \delta_{1}^{2} \neq \delta_{2}^{2}$
C. Variant of the VIII-5 class is:

| $\mathbf{N O}$ | $\mathbf{X i}$ | $\mathbf{X i}^{\mathbf{2}}$ |
| :---: | :---: | :---: |
| 1. | 45 | 2025 |
| 2. | 45 | 2025 |
| 3. | 45 | 2025 |
| 4. | 45 | 2025 |
| 5. | 50 | 2500 |
| 6. | 50 | 2500 |


| 7. | 55 | 3025 |
| :--- | :---: | :---: |
| 8. | 55 | 3025 |
| 9. | 55 | 3025 |
| 10. | 55 | 3025 |
| 11. | 55 | 3025 |
| 12. | 55 | 3025 |
| 13. | 60 | 3600 |
| 14. | 60 | 3600 |
| 15. | 60 | 3600 |
| 16. | 60 | 3600 |
| 17. | 60 | 3600 |
| 18. | 60 | 3600 |
| 19. | 60 | 3600 |
| 20. | 65 | 4225 |
| 21. | 65 | 4225 |
| 22. | 65 | 4225 |
| 23. | 65 | 4225 |
| 24. | 65 | 4225 |
| 25. | 70 | 4900 |
| 26. | 70 | 4900 |
| 27. | 75 | 5625 |
| 28. | 80 | 6400 |
| Total | 1650 | 99400 |

$\mathrm{n}=28$
$\sum x i=1650$
$\sum_{x i} 2=99400$
So:

$$
\begin{aligned}
\mathrm{S}^{2} & =\frac{n \Sigma x i^{2}-(\Sigma x i)}{n(n-1)} \\
& =\frac{28(99400)-(1650)^{2}}{28(28-1)} \\
& =\frac{2783200-2722500}{28(27)} \\
& =\frac{60700}{756} \\
& =80.29
\end{aligned}
$$

D. Variant of the VIII 4 class is:

| $\mathbf{N O}$ | $\mathbf{X i}$ | $\mathbf{X i}^{\mathbf{2}}$ |
| :---: | :---: | :---: |
| 29. | 25 | 625 |
| 30. | 25 | 625 |
| 31. | 30 | 900 |
| 32. | 30 | 900 |
| 33. | 30 | 900 |
| 34. | 35 | 1225 |
| 35. | 35 | 1225 |
| 36. | 35 | 1225 |
| 37. | 35 | 1225 |
| 38. | 35 | 1225 |
| 39. | 40 | 1600 |
| 40. | 40 | 1600 |
| 41. | 40 | 1600 |
| 42. | 40 | 1600 |
| 43. | 40 | 1600 |
| 44. | 40 | 1600 |
| 45. | 45 | 2025 |
| 46. | 45 | 2025 |
| 47. | 45 | 2025 |
| 48. | 45 | 2025 |
| 49. | 45 | 2025 |
| 50. | 50 | 2500 |
| 51. | 50 | 2500 |
| 52. | 50 | 2500 |
| 53. | 55 | 3025 |
| 54. | 55 | 3025 |
| 55. | 60 | 3600 |
| 56. | 60 | 3600 |
| Total | 1160 | 50550 |

$\mathrm{n}=28$
$\sum x i=1160$
$\sum_{x i} 2=50550$
So:

$$
\begin{aligned}
S^{2} & =\frac{n \Sigma x i^{2}-(\Sigma x i)}{n(n-1)} \\
& =\frac{28(50550)-(1160)^{2}}{28(28-1)}
\end{aligned}
$$

$$
\begin{aligned}
& =\frac{1415400-1345600}{28(27)} \\
& =\frac{69800}{756} \\
& =92.32
\end{aligned}
$$

The Formula was used to test the hypothesis was:

$$
\mathrm{F}=\frac{\text { The Biggest Variant }}{\text { The Smallest Variant }}
$$

VIII 5 and VIII 4 :
$\mathrm{F}=\frac{\text { The Biggest Variant }}{\text { The Smallest Variant }}$
So:

$$
\begin{aligned}
\mathrm{F}= & \frac{92.32}{80.29} \\
& =1.14
\end{aligned}
$$

After doing the calculation, researcher found that $\mathrm{F}_{\text {count }}=1.14$. It had been compared to $\mathrm{F}_{\text {table }}$ with $\alpha 5 \%$ and dk numerator and deminator were same ( $\mathrm{n}_{1}$ and $\mathrm{n}_{2}=28 ; \mathrm{dk}=28-1=27$ ). From the distribution list F , researcher found that $\mathrm{F}_{\text {table }}=2.66$, so $\mathrm{F}_{\text {count }}<\mathrm{F}_{\text {table }}(1.14<2.66)$. It could be concluded that there is no difference variant between the VIII 5 class and VIII 4 class. It means that the variant is homogenous.

## Appendix 22

## 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:

$$
T t=\frac{X_{1}-X_{2}}{\sqrt{\left(\frac{\left(n_{1}-1\right) s_{1}^{2}+\left(n_{2}-1\right) s_{2}^{2}}{n_{1}+n_{2}-2}\right)\left(\frac{1}{n_{1}}+\frac{1}{n_{2}}\right)}}
$$

$$
T t=\frac{31.5-36.24}{\sqrt{\left(\frac{(28-1) 92.32+(28-1) 100.92}{28+28-2}\right)\left(\frac{1}{28}+\frac{1}{28}\right)}}
$$

$$
T t=\frac{-4.74}{\sqrt{\left(\frac{27(97.45)+27(100.92)}{54}\right)\left(\frac{2}{28}\right)}}
$$

$$
T t=\frac{-4.74}{\sqrt{\left(\frac{2631.15+2724.84}{54}\right)(0.07)}}
$$

$$
\begin{aligned}
& T t=\frac{-4.74}{\sqrt{(99.18)(0.07)}} \\
& T t=\frac{-4.74}{\sqrt{6.94}} \\
& T t=\frac{-4.74}{2.63} \\
& T t=-1.80
\end{aligned}
$$

Based on researcher calculation result of homogeneity test of the both averages, researcher found that $\mathrm{t}_{\text {count }}=-1.80$ with opportunity $(1-\alpha)=1-5 \%=$ $95 \%$ and $\mathrm{dk}=\mathrm{n}_{1}+\mathrm{n}_{2}-2=28+28-2=54, \mathrm{t}_{\text {table }}=1.67356$. So, $\mathrm{t}_{\text {count }}<\mathrm{t}_{\text {table }}(-1.80$ <1.67356) and $\mathrm{H}_{0}$ 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 23

## 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:

$$
T t=\frac{X_{1}-X_{2}}{\sqrt{\left(\frac{\left(n_{1}-1\right) s_{1}^{2}+\left(n_{2}-1\right) s_{2}^{2}}{n_{1}+n_{2}-2}\right)\left(\frac{1}{n_{1}}+\frac{1}{n_{2}}\right)}}
$$

$$
T t=\frac{60.1-37.82}{\sqrt{\left(\frac{(28-1) 80.29+(28-1) 92.32}{28+28-2}\right)\left(\frac{1}{28}+\frac{1}{28}\right)}}
$$

$$
T t=\frac{22.28}{\sqrt{\left(\frac{27(80.29)+27(92.32)}{54}\right)\left(\frac{2}{28}\right)}}
$$

$$
T t=\frac{22.28}{\sqrt{\left(\frac{2167.83+2492.64}{54}\right)(0.07)}}
$$

$T t=\frac{22.28}{\sqrt{(86.30)(0.07)}}$
$T t=\frac{22.28}{\sqrt{6.04}}$
$T t=\frac{22.28}{2.45}$
$T t=9.09$
Based on researcher calculation result of homogeneity test of the both averages, researcher found that $t_{\text {count }}=9.58$ with opportunity $(1-\alpha)=1-5 \%=95 \%$ and $\mathrm{dk}=\mathrm{n}_{1}+\mathrm{n}_{2}-2=28+28-2=54, \quad \mathrm{t}_{\text {table }}=1.67356$. So, $\mathrm{t}_{\text {count }}>\mathrm{t}_{\text {table }}(9.09$ $>1.67356)$ and $\mathrm{H}_{\mathrm{a}}$ is accepted, it means there was the difference average between the first class as experimental class and the second class as control class in this research.

## Appendix 24

Chi-Square Table

| $\mathbf{d k}$ | Significant level |  |  |  |  |  |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\mathbf{5 0 \%}$ | $\mathbf{3 0 \%}$ | $\mathbf{2 0 \%}$ | $\mathbf{1 0 \%}$ | $\mathbf{5 \%}$ | $\mathbf{1 \%}$ |
| $\mathbf{1}$ | 0,455 | 1,074 | 1,642 | 2,706 | 3,841 | 6,635 |
| $\mathbf{2}$ | 1,386 | 2,408 | 3,219 | 4,605 | 5,991 | 9,210 |
| $\mathbf{3}$ | 2,366 | 3,665 | 4,642 | 6,251 | 7,815 | 11,341 |
| $\mathbf{4}$ | 3,357 | 4,878 | 5,989 | 7,779 | 9,488 | 13,277 |
| $\mathbf{5}$ | 4,351 | 6,064 | 7,289 | 9,236 | 11,070 | 15,086 |
| $\mathbf{6}$ | 5,348 | 7,231 | 8,558 | 10,645 | 12,592 | 16,812 |
| $\mathbf{7}$ | 6,346 | 8,383 | 9,803 | 12,017 | 14,067 | 18,475 |
| $\mathbf{8}$ | 7,344 | 9,524 | 11,030 | 13,362 | 15,507 | 20,090 |
| $\mathbf{9}$ | 8,343 | 10,656 | 12,242 | 14,684 | 16,919 | 21,666 |
| $\mathbf{1 0}$ | 9,342 | 11,781 | 13,442 | 15,987 | 18,307 | 23,209 |
| $\mathbf{1 1}$ | 10,341 | 12,899 | 14,631 | 17,275 | 19,675 | 24,725 |


| $\mathbf{1 2}$ | 11,340 | 14,011 | 15,812 | 18,549 | 21,026 | 26,217 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathbf{1 3}$ | 12,340 | 15,119 | 16,985 | 19,812 | 22,362 | 27,688 |
| $\mathbf{1 4}$ | 13,339 | 16,222 | 18,151 | 21,064 | 23,685 | 29,141 |
| $\mathbf{1 5}$ | 14,339 | 17,222 | 19,311 | 22,307 | 24,996 | 30,578 |
| $\mathbf{1 6}$ | 15,338 | 18,418 | 20,465 | 23,542 | 26,296 | 32,000 |
| $\mathbf{1 7}$ | 16,338 | 19,511 | 21,615 | 24,769 | 27,587 | 33,409 |
| $\mathbf{1 8}$ | 17,338 | 20,601 | 22,760 | 25,989 | 28,869 | 34,805 |
| $\mathbf{1 9}$ | 18,338 | 21,689 | 23,900 | 27,204 | 30,144 | 36,191 |
| $\mathbf{2 0}$ | 19,337 | 22,775 | 25,038 | 28,412 | 31,410 | 37,566 |
| $\mathbf{2 1}$ | 20,337 | 23,858 | 26,171 | 29,615 | 32,671 | 38,932 |
| $\mathbf{2 2}$ | 21,337 | 24,939 | 27,301 | 30,813 | 33,924 | 40,289 |
| $\mathbf{2 3}$ | 22,337 | 26.018 | 28,429 | 32,007 | 35,172 | 41,638 |
| $\mathbf{2 4}$ | 23,337 | 27,096 | 29,553 | 33,196 | 35,415 | 42,980 |
| $\mathbf{2 5}$ | 24,337 | 28,172 | 30,675 | 34,382 | 37,652 | 44,314 |
| $\mathbf{2 6}$ | 25,336 | 29,246 | 31,795 | 35,563 | 38,885 | 45,642 |
| $\mathbf{2 7}$ | 26,336 | 30,319 | 32,912 | 36,741 | 40,113 | 46,963 |
| $\mathbf{2 8}$ | 27,336 | 31,391 | 34,027 | 37,916 | 41,337 | 48,278 |
| $\mathbf{2 9}$ | 28,336 | 32,461 | 35,139 | 39,087 | 42,557 | 49,588 |
| $\mathbf{3 0}$ | 29,336 | 33,530 | 36,250 | 40,256 | 43,773 | 50,892 |

## Appendix 25

## Z-Table

| $\mathbf{z}$ | $\mathbf{0 . 0 0}$ | $\mathbf{0 . 0 1}$ | $\mathbf{0 . 0 2}$ | $\mathbf{0 . 0 3}$ | $\mathbf{0 . 0 4}$ | $\mathbf{0 . 0 5}$ | $\mathbf{0 . 0 6}$ | $\mathbf{0 . 0 7}$ | $\mathbf{0 . 0 8}$ | $\mathbf{0 . 0 9}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\mathbf{0 . 0}$ | 0.0000 | 0.0040 | 0.0080 | 0.0120 | 0.0160 | 0.0199 | 0.0239 | 0.0279 | 0.0319 | 0.0359 |
| $\mathbf{0 . 1}$ | 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 |
| 2.7 | 0.4965 | 0.4966 | 0.4967 | 0.4968 | 0.4969 | 0.4970 | 0.4971 | 0.4972 | 0.4973 | 0.4974 |
| 2.8 | 0.4974 | 0.4975 | 0.4976 | 0.4977 | 0.4977 | 0.4978 | 0.4979 | 0.4979 | 0.4980 | 0.4981 |


| $\mathbf{2 . 9}$ | 0.4981 | 0.4982 | 0.4982 | 0.4983 | 0.4984 | 0.4984 | 0.4985 | 0.4985 | 0.4986 | 0.4986 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathbf{3 , 0}$ | 0.4987 | 0.4987 | 0,4987 | 0.4988 | 0.4988 | 0.4989 | 0.4989 | 0.4989 | 0.4990 | 0,4990 |
| $\mathbf{3 , 1}$ | 0,4990 | 0,4991 | 0,4991 | 0.4991 | 0,4992 | 0,4992 | 0,4992 | 0,4992 | 0,4993 | 0,4993 |
| $\mathbf{3 , 2}$ | 0,4993 | 0,4993 | 0,4994 | 0,4994 | 0,4994 | 0,4994 | 0,4994 | 0,4995 | 0,4995 | 0,4995 |
| $\mathbf{3 , 3}$ | 0,4995 | 0,4995 | 0,4995 | 0,4996 | 0,4996 | 0,4996 | 0,4996 | 0,4996 | 0,4997 | 0,4997 |
| $\mathbf{3 , 4}$ | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4998 |
| $\mathbf{3 , 5}$ | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 |
| $\mathbf{3 , 6}$ | 0,4998 | 0,4998 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 |
| $\mathbf{3 , 7}$ | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 |
| $\mathbf{3 , 8}$ | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 |
| $\mathbf{3 , 9}$ | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 |

## Appendix 26

Percentage Points of the $t$ Distribution

| $\mathbf{P r}$ <br> $\mathbf{d f}$ | $\mathbf{0 . 2 5}$ | $\mathbf{0 . 1 0}$ | $\mathbf{0 . 0 5}$ | $\mathbf{0 . 0 2 5}$ | $\mathbf{0 . 0 1}$ | $\mathbf{0 . 0 0 5}$ | $\mathbf{0 . 0 0 1}$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathbf{0 . 5 0}$ | $\mathbf{0 . 2 0}$ | $\mathbf{0 . 1 0}$ | $\mathbf{0 . 0 5 0}$ | $\mathbf{0 . 0 2}$ | $\mathbf{0 . 0 1 0}$ | $\mathbf{0 . 0 0 2}$ |  |
| $\mathbf{2}$ | 1.00000 | 3.07768 | 6.31375 | 12.70620 | 31.82052 | 63.65674 | 318.30884 |
| $\mathbf{3}$ | 0.76489 | 1.88562 | 2.91999 | 4.30265 | 6.96456 | 9.92484 | 22.32712 |
| $\mathbf{4}$ | 0.74070 | 1.63774 | 2.35336 | 3.18245 | 4.54070 | 5.84091 | 10.21453 |
| $\mathbf{5}$ | 0.72669 | 1.47588 | 2.13185 | 2.77645 | 3.74695 | 4.60409 | 7.17318 |
| $\mathbf{6}$ | 0.71756 | 1.43976 | 1.94318 | 2.57058 | 3.44691 | 3.1426493 | 4.03214 |
| 5.89343 |  |  |  |  |  |  |  |
| $\mathbf{7}$ | 0.71114 | 1.41492 | 1.89458 | 2.36462 | 2.99795 | 3.79743 | 5.20763 |
| $\mathbf{8}$ | 0.70639 | 1.39682 | 1.85955 | 2.30600 | 2.89646 | 3.35539 | 4.78529 |
| $\mathbf{9}$ | 0.70272 | 1.38303 | 1.83311 | 2.26216 | 2.82144 | 3.24984 | 4.29681 |
| $\mathbf{1 0}$ | 0.69981 | 1.37218 | 1.81246 | 2.22814 | 2.76377 | 3.16927 | 4.14370 |
| $\mathbf{1 1}$ | 0.69745 | 1.36343 | 1.79588 | 2.20099 | 2.71808 | 3.10581 | 4.02470 |
| $\mathbf{1 2}$ | 0.69548 | 1.35622 | 1.78229 | 2.17881 | 2.68100 | 3.05454 | 3.92963 |
| $\mathbf{1 3}$ | 0.69383 | 1.35017 | 1.77093 | 2.16037 | 2.65031 | 3.01228 | 3.85198 |
| $\mathbf{1 4}$ | 0.69242 | 1.34503 | 1.76131 | 2.14479 | 2.62449 | 2.97684 | 3.78739 |
| $\mathbf{1 5}$ | 0.69120 | 1.34061 | 1.75305 | 2.13145 | 2.60248 | 2.94671 | 3.73283 |
| $\mathbf{1 6}$ | 0.69013 | 1.33676 | 1.74588 | 2.11991 | 2.58349 | 2.92078 | 3.68615 |
| $\mathbf{1 7}$ | 0.68920 | 1.33338 | 1.73961 | 2.10982 | 2.56693 | 2.89823 | 3.64577 |
| $\mathbf{1 8}$ | 0.68836 | 1.33039 | 1.73406 | 2.10092 | 2.55238 | 2.87844 | 3.61048 |
| $\mathbf{1 9}$ | 0.68762 | 1.32773 | 1.72913 | 2.09302 | 2.53948 | 2.86093 | 3.57940 |
| $\mathbf{2 0}$ | 0.68695 | 1.32534 | 1.72472 | 2.08596 | 2.52798 | 2.84534 | 3.55181 |
| $\mathbf{2 1}$ | 0.68635 | 1.32319 | 1.72074 | 2.07961 | 2.51765 | 2.83136 | 3.52715 |
| $\mathbf{2 2}$ | 0.68581 | 1.32124 | 1.71714 | 2.07387 | 2.50832 | 2.81876 | 3.50499 |
| $\mathbf{2 3}$ | 0.68531 | 1.31946 | 1.71387 | 2.06866 | 2.49987 | 2.80734 | 3.48496 |
| $\mathbf{2 4}$ | 0.68485 | 1.31784 | 1.71088 | 2.06390 | 2.49216 | 2.79694 | 3.46678 |
| $\mathbf{2 5}$ | 0.68443 | 1.31635 | 1.70814 | 2.05954 | 2.48511 | 2.78744 | 3.45019 |
| $\mathbf{2 6}$ | 0.68404 | 1.31497 | 1.70562 | 2.05553 | 2.47863 | 2.77871 | 3.43500 |
| $\mathbf{2 7}$ | 0.68368 | 1.31370 | 1.70329 | 2.05183 | 2.47266 | 2.77068 | 3.42103 |
| $\mathbf{2 8}$ | 0.68335 | 1.31253 | 1.70113 | 2.04841 | 2.46714 | 2.76326 | 3.40816 |
| $\mathbf{2 9}$ | 0.68304 | 1.31143 | 1.69913 | 2.04523 | 2.46202 | 2.75639 | 3.39624 |
| $\mathbf{3 0}$ | 0.68276 | 1.31042 | 1.69726 | 2.04227 | 2.45726 | 2.75000 | 3.38518 |
| $\mathbf{3 1}$ | 0.68249 | 1.30946 | 1.69552 | 2.03951 | 2.45282 | 2.74404 | 3.37490 |
| $\mathbf{3 2}$ | 0.68223 | 1.30857 | 1.69389 | 2.03693 | 2.44868 | 2.73848 | 3.36531 |
| $\mathbf{3 3}$ | 0.68200 | 1.30774 | 1.69236 | 2.03452 | 2.44479 | 2.73328 | 3.35634 |
| $\mathbf{3 4}$ | 0.68177 | 1.30695 | 1.69092 | 2.03224 | 2.44115 | 2.72839 | 3.34793 |
| $\mathbf{3 5}$ | 0.68156 | 1.30621 | 1.68957 | 2.03011 | 2.43772 | 2.72381 | 3.34005 |
| $\mathbf{3 6}$ | 0.68137 | 1.30551 | 1.68830 | 2.02809 | 2.43449 | 2.71948 | 3.33262 |
|  |  |  |  |  |  |  |  |


| $\mathbf{3 7}$ | 0.68118 | 1.30485 | 1.68709 | 2.02619 | 2.43145 | 2.71541 | 3.32563 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathbf{3 8}$ | 0.68100 | 1.30423 | 1.68595 | 2.02439 | 2.42857 | 2.71156 | 3.31903 |
| $\mathbf{3 9}$ | 0.68083 | 1.30364 | 1.68488 | 2.02269 | 2.42584 | 2.70791 | 3.31279 |
| $\mathbf{4 0}$ | 0.68067 | 1.30308 | 1.68385 | 2.02108 | 2.42326 | 2.70446 | 3.30688 |
| $\mathbf{4 1}$ | 0.68052 | 1.30254 | 1.68288 | 2.01954 | 2.42080 | 2.70118 | 3.30127 |
| $\mathbf{4 2}$ | 0.68038 | 1.30204 | 1.68195 | 2.01808 | 2.41847 | 2.69807 | 3.29595 |
| $\mathbf{4 3}$ | 0.68024 | 1.30155 | 1.68107 | 2.01669 | 2.41625 | 2.69510 | 3.29089 |
| $\mathbf{4 4}$ | 0.68011 | 1.30109 | 1.68023 | 2.01537 | 2.41413 | 2.69228 | 3.28607 |
| $\mathbf{4 5}$ | 0.67998 | 1.30065 | 1.67943 | 2.01410 | 2.41212 | 2.68959 | 3.28148 |
| $\mathbf{4 6}$ | 0.67986 | 1.30023 | 1.67866 | 2.01290 | 2.41019 | 2.68701 | 3.27710 |
| $\mathbf{4 7}$ | 0.67975 | 1.29982 | 1.67793 | 2.01174 | 2.40835 | 2.68456 | 3.27291 |
| $\mathbf{4 8}$ | 0.67964 | 1.29944 | 1.67722 | 2.01063 | 2.40658 | 2.68220 | 3.26891 |
| $\mathbf{4 9}$ | 0.67953 | 1.29907 | 1.67655 | 2.00958 | 2.40489 | 2.67995 | 3.26508 |
| $\mathbf{5 0}$ | 0.67943 | 1.29871 | 1.67591 | 2.00856 | 2.40327 | 2.67779 | 3.26141 |
| $\mathbf{5 1}$ | 0.67933 | 1.29837 | 1.67528 | 2.00758 | 2.40172 | 2.67572 | 3.25789 |
| $\mathbf{5 2}$ | 0.67924 | 1.29805 | 1.67469 | 2.00665 | 2.40022 | 2.67373 | 3.25451 |
| $\mathbf{5 3}$ | 0.67915 | 1.29773 | 1.67412 | 2.00575 | 2.39879 | 2.67182 | 3.25127 |
| $\mathbf{5 4}$ | 0.67906 | 1.29743 | 1.67356 | 2.00488 | 2.39741 | 2.66998 | 3.24815 |
| $\mathbf{5 5}$ | 0.67898 | 1.29713 | 1.67303 | 2.00404 | 2.39608 | 2.66822 | 3.24515 |
| $\mathbf{5 6}$ | 0.67890 | 1.29685 | 1.67252 | 2.00324 | 2.39480 | 2.66651 | 3.24226 |
| $\mathbf{5 7}$ | 0.67882 | 1.29658 | 1.67203 | 2.00247 | 2.39357 | 2.66487 | 3.23948 |
| $\mathbf{5 8}$ | 0.67874 | 1.29632 | 1.67155 | 2.00172 | 2.39238 | 2.66329 | 3.23680 |
| $\mathbf{5 9}$ | 0.67867 | 1.29607 | 1.67109 | 2.00100 | 2.39123 | 2.66176 | 3.23421 |
| $\mathbf{6 0}$ | 0.67860 | 1.29582 | 1.67065 | 2.00030 | 2.39012 | 2.66028 | 3.23171 |

## Appendix 26

## RESEARCH DOCUMENTATION






[^0]:    ${ }^{1}$ Hapsyah Sri Mei Siregar, English Teacher of SMP Negeri 5 Padangsidimpuan, Private Interview., April 052019.

[^1]:    ${ }^{2}$ Carrol Lewis, "Word Chains-the Game of Subtlechanges," 2007, www.wordchains.com/faq.php.
    ${ }^{3}$ Ten Nove and Melfin Lase, "The Effect of Word Chain Game on Students ' Vocabulary Mastery ( An Experimental Study at Seventh Grade Students of SMP Negeri 1 Pandan 2017 / 2018 1, no. 3 (2018): 39-65, https://journal.ipts.ac.id/index.php/LINER/article/download/.../252/\%0A\%0A.

[^2]:    ${ }^{1}$ A S Hornby, Oxford Advanced Learner's Dictionary of Current English (Oxford: Oxford University Press, 1995).
    ${ }^{2}$ Elizabeth Walker, Cambridge Learner's Dictionary (England: Cambridge University Press, 2004)
    ${ }^{3}$ Howard Jackson, Words, Meaning and Vocabulary (London: Casell, 2000), 118.

[^3]:    ${ }^{4}$ Dian Rakhmawati, "The Influence of Vocabulary Journal in Teaching Students' Vocabulary Mastery," Smart 2, no. 1 (2016): p.53, http://ejournal.stkipmpringsewulpg.ac.id/index.php/smart/article/view/148.
    ${ }^{5}$ Penny Ur, A Course in Language Teaching Practice and Theory (New York: Cambridge University Press, 1991), 71.
    ${ }^{6}$ Jack C.Richards and Willy A Renandya, Methodology in Language Teaching An Antalogy of Current Practice (Cambridge: Cambridge University Press, 2002), p. 255.

[^4]:    ${ }^{7}$ Mofareh Alqahtani, "The Importance Of Vocabulary In Language Learning And How To Be Taught," International Journal of Teaching and Education III, no. 3 (2015): 21-34, https://doi.org/10.20472/TE.2015.3.3.002.
    ${ }^{8}$ Wren and Martin, High School English Grammar and Composition (Jakarta: Persada Rao, 1990), p. 3.

[^5]:    ${ }^{9}$ Howard Jackson, Good Grammar for Students (London: Sage Publication, 2005), 18.

[^6]:    ${ }^{10}$ Jayanthi Dakhsina Murthy, Contemporary English Grammar (New Delhi: Shivam Printers, 2003), p.5-10.

[^7]:    ${ }^{11}$ Howard Sargaent, Basic English Grammar For English Language Learner (United Stated: Saddleback Educational Publishing, 2007).

[^8]:    ${ }^{12}$ Gordon Winch, The Foundation Grammar Dictionary (Australia: New Frontier Publishing, 2004).

[^9]:    ${ }^{13}$ Jeanne McCarten, Teaching Vocabulary, Lesson From the Corpus, Lesson for the Classroom, (United State America, Cambridge University Press, 2007), p. 19-23.

[^10]:    ${ }^{14}$ Michel F.Graves., et.all., Teaching Vocabulary to English Language Learner, (United State America: Catherine Snow, 2013), p. 11.
    ${ }^{15}$ H. Douglas Brown, Teaching by Principles An Interactive Approach in Language Pedagogy (America: Prentice Hall Regents, 1998), 365.
    ${ }^{16}$ Tricia Hedge, Teaching and Learning in the Language Classroom, (United Kingdom: Oxford University Press, 2000), p. 125-135.

[^11]:    ${ }^{17}$ M. A. Wright, Betteridge, D. Bucky, Second Language Learning and Teaching (New York: Cambridge University Press, 2006).
    ${ }^{18}$ A. Kuzu and N. Ural, Games Choices and Factor Effecting on Game Choicee of Game Players (Anadolu University, 2010).

[^12]:    19 Carrol Lewis, "Word Chains-the Game of Subtlechanges," 2007, www.wordchains.com/faq.php.
    ${ }^{20}$ William R Holden, "Learning To Learn: 15 Vocabulary Acquistition Activities, Tips and Hints," Modern English Teacher 8, no. 1 (1999): 45.
    ${ }^{21}$ Achmad Yanuar Firmansyah, "Applying The ' Word Chain ' Game To Teach Descriptive Speaking To The Eight Graders In Smpn 26 Surabaya," 2009, 1-7, https://jurnalmahasiswa.unesa.ac.id/index.php/retain/article/view/12982.

[^13]:    ${ }^{22}$ Eichel C, "Word Chain and Games Critical Thinking Activities," 2014, https://www.ebay.com/p/Critical-Thinking-Activities-Brain-Teasers-Who.

[^14]:    ${ }^{23}$ D. Sperling, ""W-O-R-D-c-H-a-I-N’. Dave's ESI," 2009, http://www.eslcafe.com/idea/index.cgi?display:109713289519798.txt.

[^15]:    ${ }^{24}$ Jerni Ariyanti Gultom, "The Effect of Using Word Chain Game on The Students' Vocabulary Mastery at Seventh Grade of MTS 3 Menteri Bingkat" (uinsu, 2018), http://repository.uinsu.ac.id/3906/.
    ${ }^{25}$ Rosmini Yanti, "The Implementation of Word Chain Game to Improve The Mastery of English Vocabulary" (Uin Ar- Raniry, 2017), https://repository.ar-raniry.ac.id/1912/.

[^16]:    ${ }^{26}$ Zahrotul Izzah, "The Use of Word Chain Game to Improve Vocabulary Mastery of Grade Students at SMP N 3 Kalibagor" 2015, http://repository.ump.ac.id/46/2/ Zahrotul.pdf.
    ${ }^{27}$ Ten Nove and Melfin Lase, "The Effect of Word Chain Game on Students, Vocabulary Mastery (An Experimental Study at Seventh Grade Students of SMP Negeri 1 Pandan 2017 2018" 1, no. 3 (2018): 39-65, https://journal.ipts.ac.id/index.php/LINER/article/download/.../252/\%0A\%0A.

[^17]:    ${ }^{28}$ L. R. Gay, Geoffrey E. Mills, and Peter Airasian, Educational Research Competencies for Analysis and Applicatins, Tenth Edition (America: Pearson, 2012), p.70, http://englishlangkan.com/2017/01/21/download-free-ebook-education-research-l-r-gay-2012-pdf/.

[^18]:    ${ }^{1}$ Gay, Mills, and Airasian, Educational Research Competencies for Analysis and Applicatins.
    ${ }^{2}$ Agus Irianto, Statistik Konsep Dasar Dan Aplikasinya (Jakarta: Kencana, 2009), p.276.

[^19]:    ${ }^{3}$ Gay, Mills, and Airasian, Educational Research Competencies for Analysis and Applicatins.

[^20]:    ${ }^{4}$ Anas Sudijono, Pengantar Statistik Pendidikan (Jakarta: Raja Grafindo Persada, 2008), p. 258.
    ${ }^{5}$ Suharsimi Arikunto, Dasar-Dasar Evaluasi Pendidikan, Kedua (Jakarta: Bumi Aksara, 2012), p. 115.

[^21]:    ${ }^{6}$. Agus Irianto, Statistik Konsep Dasar p. 276.

[^22]:    ${ }^{7}$. Suharsimi Arikunto, Prosedur Penelitian Suatu Pendekatan Praktek Edisi Revisi II, (Jakarta: Rineka Cipta, 1993), p. 269.

[^23]:    ${ }^{1}$ Holden, "Learning To Learn: 15 Vocabulary Acquistition Activities, Tips and Hints."
    ${ }^{2}$ Gultom, "The Effect of Using Word Chain Game on The Students' Vocabulary Mastery at Seventh Grade of MTS 3 Menteri Bingkat."
    ${ }^{3}$ Yanti, "The Implementation of Word Chain Game to Improve The Mastery of English Vocabulary."
    ${ }^{4}$ Zahrotul Izzah, "The Use of Word Chain Game to Improve Vocabulary Mastery of Grade Students at SMP N 3 Kalibagor."

