



**THE EFFECT OF CONCEPT CIRCLE STRATEGY ON  
STUDENTS' VOCABULARY MASTERY AT GRADE  
VII MTS N 2 PADANGSIDIMPUAN**

**A THESIS**

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

**Written By:**

**RAHMI PU'ADI SIREGAR**  
**Reg. Number. 13 340 0026**

**ENGLISH EDUCATION DEPARTMENT**

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



**THE EFFECT OF CONCEPT CIRCLE STRATEGY ON  
STUDENTS' VOCABULARY MASTERY AT GRADE  
VII MTS N 2 PADANGSIDIMPUAN**

**A THESIS**

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

**Written By:**

**RAHMI PU'ADI SIREGAR**

**Reg. Number. 13 340 0026**

**Advisor I**

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

**Advisor II**

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



**ENGLISH EDUCATION DEPARTMENT**

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

**2017**

Term : Munaqosyah  
a.n. Rahmi Pu'adi Siregar  
Item : 7 (seven) exemplars

Padangsidempuan, Agustust2017

To:  
Dean Tarbiyah and  
Teacher Training Faculty  
In-  
Padangsidempuan

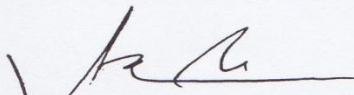
Assalamu'alaikum Wr.Wb.

After reading, studying and giving advice for necessary revision on thesis belongs to **Rahmi Pu'adi Siregar**, entitled "*The Effect of Concept Circle Strategy on Students' Vocabulary Mastery at Grade VII MTs N 2 Padangsidempuan*", we approved that the thesis has been acceptable to complete the requirement to fulfill for the degree of Graduate of Islamic Education (S.Pd.) in English.

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

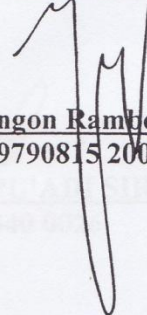
Wassalamu'alaikum Wr.Wb.

Advisor I



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

Advisor II



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



### DECLARATION OF SELF THESIS COMPLETION

The name who signed here:

Name : **RAHMI PU'ADI SIREGAR**  
Registration Number : 13 340 0026  
Faculty/Department : Tarbiyah and Teacher Training Faculty/TBI-1  
The Title of a Thesis : The Effect of Concept Circle Strategy on  
Students' Vocabulary Mastery at Grade VII  
MTs N 2 Padangsidempuan

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

I do this declaration truthfully. If there is deceitfulness and incorrectness regarding to this declaration in the future, I will be willing to get punishment as it is required in students' Ethic Code of IAIN Padangsidempuan, article 19 verses 4, that is to cancel academic degree disrespectfully, and other punishment regarding norms and legal law.

Padangsidempuan, 29 - 09 - 2017

Declaration Maker



**RAHMI PU'ADI SIREGAR**  
**NIM. 13 340 0026**



## AGREEMENT PUBLICATION OF FINAL TASK FOR ACADEMY CIVITY

As Academic Civity of the State Institute for Islamic Studies Padangsidimpuan, the name who signed here:

Name : RAHMI PU'ADI SIREGAR

Registration Number : 13 340 0026

Faculty/Department : Tarbiyah and Teacher Training Faculty/TBI-1

Kind : Thesis

To develop of science and knowledge, I hereby declare that I present Islamic Studies Padangsidimpuan **Non Exclusive Royalty Right** on my thesis with entitled:

**"THE EFFECT OF CONCEPT CIRCLE STRATEGY ON STUDENTS' VOCABULARY MASTERY AT GRADE VII MTS N 2 PADANGSIDIMPUN"**

With all the sets of equipments (if needed). Based on the this non exclusive royalty right, the State Institute for Islamic Studies Padangsidimpuan has the right to save, to format, to organize in data base form, to keep and to publish thesis for as I am determined as a writer and owner of its creative right.

Above all, thus statement is made true heartedly to be used properly.

Padangsidimpuan, 29-09-2017

The signed



RAHMI PU'ADI SIREGAR

Reg. No. 13 340 0026

**EXAMINERS**  
**SCHOLAR MUNAQOSYAH EXAMINATION**

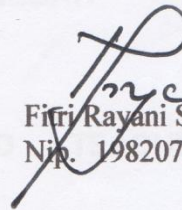
Name : Rahmi Pu'adi Siregar  
Reg. No. : 13 340 0026  
Faculty/Department : Tarbiyah and Teacher Training Faculty/English Education  
Department  
Thesis : THE EFFECT OF CONCEPT CIRCLE STRATEGY ON  
STUDENTS' VOCABULARY MASTERY AT GRADE VII  
MTS N 2 PADANGSIDIMPUAN

Chief,



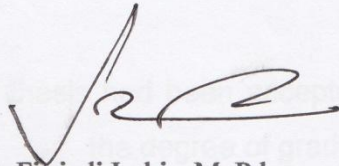
Rayendriani Fahmei Lubis, M.Ag.  
Nip. 19710510 200003 2 001

Secretary,

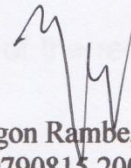


Fitri Rayani Siregar, M. Hum.  
Nip. 19820731 200912 2 004

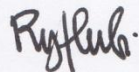
Members,



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



Sojuangon Rambe, S.S., M. Pd.  
Nip. 19790815 200604 1 003



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



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

Proposed:

Place : Padangsidimpuan  
Date : October, 13<sup>th</sup> 2017  
Time : 09.00 WIB - finish  
Result/Mark : 80.37 (A)  
IPK : 3.36  
Predicate : Very good





RELIGION MINISTRY INDONESIA REPUBLIC

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

Alamat: Jl. H.T. Rizal Nurdin Km 4.5 Telp (0634) 22080 Sihitang 22733 Padangsidimpuan

**LEGALIZATION**

**Thesis : THE EFFECT OF CONCEPT CIRCLE  
STRATEGY ON STUDENTS' VOCABULARY  
MASTERY AT GRADE VII MTS N 2  
PADANGSIDIMPUAN**

**Written By : RAHMI PU'ADI SIREGAR**

**Reg. No : 13 340 0026**

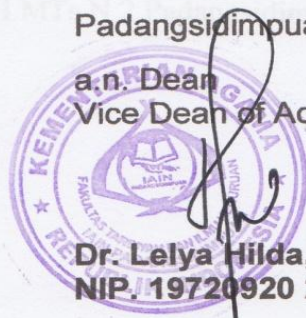
**Faculty/Department : TARBIYAH AND TEACHER TRAINING  
FACULTY/TBI-1**

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

Padangsidimpuan, Oktober 2017

a.n. Dean  
Vice Dean of Academic Fields

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





**Name : Rahmi Pu'adi Siregar**  
**Reg. No : 13 340 0026**  
**Faculty : Tarbiyah and Teacher Training**  
**Department : English Education (TBI-1)**  
**Title of Thesis : The Effect of Concept Circle Strategy on Students' Vocabulary Mastery at Grade VII MTs N 2 Padangsidimpuan.**

### **ABSTRACT**

This research focused on the effect of Concept Circle Strategy on students' vocabulary mastery at grade VII MTs N 2 Padangsidimpuan. The students' problems in vocabulary were: 1) students' low in vocabulary, 2) students were difficult to understand new words, 3) students did not know many words. Finally, the students were difficult in every fields of their learning process such as listening, speaking, reading and writing. The purpose of this research was to know whether there is the significant effect of Concept Circle Strategy on Students' Vocabulary Mastery at grade VII MTs N 2 Padangsidimpuan.

The method used in this research was experimental research. Two classes were chosen randomly as the sample. They were VII-2 as experimental class that consisted of 24 students and VII-3 as control class that consisted of 22 students. It was taken after conducting normality and homogeneity test. The data was derived from pre-test and post-test. To analyze the data, the researcher used t-test formula.

After analyzing the data, the researcher found that mean score of experimental class after using Concept Circle Strategy was higher than control class. Mean score of experimental class before using Concept Circle strategy was 55.62 and mean score after using Concept Circle strategy was 82.62. Meanwhile, the mean score of control class in post test was 68.58. Besides it, the score of  $t_{count}$  was bigger than  $t_{table}$  ( $4.205 > 2.021$ ). It meant that the hypothesis alternative ( $H_a$ ) was accepted. It was concluded that there was a significant effect of Concept Circle strategy on Students' Vocabulary Mastery at Grade VII MTs N 2 Padangsidimpuan.

## ACKNOWLEDGEMENT

### بسم الله الرحمن الرحيم

Firstly, the researcher would like to convey her grateful to Allah SWT. the most Creator and Merciful who has given her the health, time and chance for finishing the thesis entitled “The Effect of Concept Circle Strategy on Students’ Vocabulary Mastery at Grade VII MTs N 2 Padangsidimpuan”. Besides, shalawat and salam be upon to the prophet Muhammad SAW that has brought the human from the darkness era into the lightness era.

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

1. Dr. Fitriadi Lubis, M.Pd., as the first advisor and Sojuangon Rambe, S.S., M.Pd as the second advisor that had guided, supported, advised, and suggested the researcher with great patience to finish this thesis as well.
2. Rector of IAIN Padangsidimpuan. Dr. H. Ibrahim Siregar, M.CL, who has given chance and time. Therefore, the researcher could learn and got some knowledge from IAIN Padangsidimpuan.
3. Hj. Zulhimma, S.Ag., M.Pd as the Dean of Tarbiyah Faculty.
4. Rayendriani Fahmei Lubis, M.Ag as the Leader of English Department.
5. IAIN Padangsidimpuan Librarian (Mrs. Yusri Fahmi, S.Ag., S.S., M.Hum) for their cooperative and permission to use their books.
6. All lectures and all the academic cavities of IAIN Padangsidimpuan who had given so much knowledge and helped during i studied in this beloved instituted.

7. Headmaster, English teacher and students of MTS N 2 Padangsidimpuan who helped me to complete my research.
8. My Parents, ( Julhammi Siregar and Ruasna Pane ) who has supported emotionally and economically, who have taught the researcher how to be patient and survive. Also My beloved sister, ( Nur Hidayah Siregar ) They give big suplay in her life with much love, life knowledge, supports, patience, and pray that guarded the researcher to be better in all conditions.
9. My lovely friends, Trinila, Rahma Yunisah, Hairani Harahap, Annisa Nur Habibi Harahap, Yohana Rizky Nindari, Diva Ritonga, Sri Devi and all of my friends in TBI-1, TBI 2, TBI 3 and also all my friends in IAIN Padangsidimpuan, thanks for your help, patience and care to support me from starting till finishing my thesis as well. Good luck for you.
10. All of the people who have helped me to finish my study that researcher cannot mention one by one.

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

Padangsidimpuan,  
Writer,

**RAHMI PU'ADI SIREGAR**  
**Reg.No. 13 340 0026**



## TABLE OF CONTENTS

<b>TITLE PAGE .....</b>	<b>i</b>
<b>LEGALIZATION ADVISORS SHEET .....</b>	<b>ii</b>
<b>AGREEMENT ADVISORS SHEET .....</b>	<b>iii</b>
<b>DECLARATION OF SELF THESIS COMPLETION .....</b>	<b>iv</b>
<b>AGREEMENT PUBLICATION OF FINAL TASK FOR ACADEMIC CIVITY .....</b>	<b>v</b>
<b>SCHOLAR MUNAQOSYAH EXAMINATION .....</b>	<b>vi</b>
<b>LEGALIZATION OF DEAN OF TARBIYAH AND TEACHER TRAINING FACULTY .....</b>	<b>vii</b>
<b>ABSTRACT .....</b>	<b>viii</b>
<b>ACKNOWLEDGEMENT .....</b>	<b>ix</b>
<b>TABLE OF CONTENTS .....</b>	<b>x</b>
<b>LIST OF TABLES .....</b>	<b>xiii</b>
<b>LIST OF FIGURES .....</b>	<b>xiv</b>
<b>LIST OF APPENDIXES .....</b>	<b>xv</b>

### CHAPTER I: INTRODUCTION

A. Background of the Problem .....	1
B. Identification of the Problem .....	6
C. Limitation of the Problem .....	7
D. Formulation of the Problem .....	7
E. Purpose of the Research .....	7
F. The Significances of the Research .....	8
G. The Outline of Thesis .....	8

### CHAPTER II: LITERATURE REVIEW

A. Theoretical Description	
1. Vocabulary .....	11
a. Defenitions of Vocabulary .....	11
b. The Important of Vocabulary .....	12
c. Kinds of Vocabulary .....	14
d. Purpose of Vocabulary Mastery .....	16
e. Principles for Teaching Vocabulary .....	18
f. The Vocabulary Materials .....	19
2. Concept Circle Strategy .....	21
a. Defenitions of Concept Circle .....	21
b. The Purpose of Concept Circle .....	23
c. The Procedure of Concept Circle .....	24
d. The Advantages and Disadvantages of Concept Corcle .....	25

3. Conventional Strategy .....	26
a. Defenitions of Conventional Strategy .....	26
b. The Purpose of Conventional Strategy .....	27
c. The Procedures of Conventional Strategy.....	28
d. Advantages and Disadvantages of Conventional Strategy .....	30
B. Review of Related Findings .....	32
C. Conceptual Framework .....	34
D. Hypothesis .....	35

### **CHAPTER III: RESEARCH METHODOLOGY**

A. Place and Time of the Research .....	36
B. Research Design .....	36
C. Population and Sample .....	38
D. Definition of Operational Variable .....	41
E. Instrument of Collecting Data .....	41
F. Validity and Reliability .....	43
G. Procedure of Data Collection.....	46
H. Technique of Analyzing Data .....	48

### **CHAPTER IV: THE RESULT OF THE RESEARCH**

A. Description of Data .....	51
B. Testing of Hypothesis .....	65
C. Discussion .....	68
D. Limitation of the Research .....	72

### **CHAPTER V: THE CONCLUSION AND SUGGESTION**

A. Conclusion .....	73
B. Suggestion .....	73

### **REFERENCES**

### **APPENDIX**

### **CURRICULUM VITAE**

## LIST OF TABLES

	Page
Table 1 Research Design .....	37
Table 2 The Population of the Grade VII Students of MTs N 2 Padangsidimpuan.....	38
Table 3 Indicators Vocabulary Masteryfor Pre-test.....	42
Table 4 Indicators Vocabulary Masteryfor Post-test.....	42
Table 5 The Score of Experimental Class in Pre-test.....	51
Table 6 Frequency Distribution ofExperimental Class (Pre-test).....	52
Table 7 The Score of Control Class in Pre-test .....	54
Table 8 Frequency Distribution of Control Class (Pre-test).....	54
Table 9 The Score of Experimental Class in Post Test .....	56
Table 10 Frequency Distribution of Experimental Class (Post-test).....	57
Table 11 The Score of Control Class in Post-test.....	58
Table 12 Frequency Distribution of Control Class (Post-test) .....	59
Table 13 Comparison Score on Students' Vocabulary Mastery of Pre-test in Experimental Class and Control Class .....	61
Table 14 Comparison Score of Post-test in Experimental Class and Control Class .....	63
Table 15 Normality and Homogeneity in Pre-Test .....	65
Table 16 Normality and Homogeneity in Post-Test.....	66
Table 17 Result of T-test from the Both Averages.....	67



## LIST OF FIGURES

	Page
Figure 1 : Description of Experimental Class (Pre Test) .....	53
Figure 2 : Description of Control Class (Pre Test) .....	55
Figure 3 : Description of Experimental Class (Post Test) .....	57
Figure 4 : Description of Control Class (Post-Test) .....	59
Figure 5 : Comparison Score in Experimental and Control Class (Pre-Test) .....	62
Figure 6 : Comparison Score in Experimental and Control Class (Post-Test) .....	64

## **LIST OF APPENDIXES**

- Appendix 1 : Lesson Plan of Experimental Class
- Appendix 2 : Lesson Plan of Control Class
- Appendix 3 : Instrument of Validity Test for Pre-Test
- Appendix 4 : Instrument of Validity Test for Post-Test
- Appendix 5 : Answer Key of Pre-Test and Post-test Validity
- Appendix 6 : Validity of Pre-Test
- Appendix 7 : Calculation of Pre-Test Validity
- Appendix 8 : Table Validity of Pre Test
- Appendix 9 : Validity of Post Test
- Appendix 10: Calculation of Post Test Validity
- Appendix 11: Table Validity of Post Test
- Appendix 12: Reliability Pre-Test
- Appendix 13: Reliability Post-Test
- Appendix 14: Score of Experimental Class in Pre Test
- Appendix 15: Score of Control Class in Post Test
- Appendix 16: Result of Normality test in Pre Test (VII-1, VII-2, VII-3)
- Appendix 17: Homogeneity Test of Pre Test
- Appendix 18: Result of Normality Test of Experiment Class Post Test
- Appendix 19: Result of Normality Test of Control Class Post Test
- Appendix 20: Homogeneity Test in Post Test
- Appendix 21: T-test of the Both Averages in Pre Test

Appendix 22: T-test of the Both Averages in Post Test

Appendix 23: Chi-Square Table

Appendix 24: Z-Table

Appendix 25: Percentage Points of the t Distribution

Appendix 26: Documentation



# **CHAPTER I**

## **INTRODUCTION**

### **A. Background of the Problem**

English is one of languages that can make people communicate from different countries. English is very important and has interrelationships with various aspects of life owned by human being. Also, English is not only as a mean of communication but also it is a medium to transform the knowledge and technology.

In Indonesia, English has been taught from elementary school, junior high school, senior high school and university level as a compulsory subject and it has a position in Indonesia curriculum. Students are expected to be able to master the four language skills: listening, speaking, reading and writing. By using those English skills, students will be easier in accessing many kinds of information source in English such as article, journal, magazine, novel, textbook and others. In this case, the researcher focuses on vocabulary mastery that is one of the problematic in English learning.

English as compulsory subject also has a syllabus. Syllabus is used by teachers as guidance in teaching. In English syllabus, especially in vocabulary students are encouraged to mastery the four skills. Such as, when the material is about reading, the lesson is not only about contents of the text

but also about related vocabulary. So, vocabulary is the basic all subjects in English teaching.<sup>1</sup>

Generally, vocabulary is all the words in a language. vocabulary has role as the foundation of language competence, because if there is no vocabulary , there is no language. Learning a new language is basically a matter of learning the vocabulary of that language. moreover, the first lesson of human language is words. It can be proved from the children in their first language acquisition. When the children speaks firstly, the first thing that she/he says is word and then develop with the sentences as the end of this process. It also occurs for foreign language acquisition such as English. The first step to master English is by learning and memorizing vocabulary as much as possible. So, without vocabulary, to master English of students will not be good.

There are some reasons why students need to learn and why students need to mastery of vocabulary. The first, vocabulary will help the students to comprehend the information from those sources such as magazine, novel, newspaper, and internet if they have many vocabularies. Second, vocabularies help the students to know what people says. Third, vocabularies will help them to share their ideas. The last, vocabularies help the students active to communicate if they has well vocabularies.

---

<sup>1</sup> *Syllabus of Mts N 2 Padangsidempuan 2017/2018.*

In teaching learning process, there are components that support the success of the process. Kasbolah states that teacher, materials (textbooks), strategy, students, curriculum, and society are needed to support the teaching and learning process.<sup>2</sup>Teacher is one of an important role to effect of students'. It is caused by teachers are the most influent people in the classroom and in case students will learn by the fasilitator of the teacher. In increasing students vocabulary mastery the teacher must used strategy in order to motivate and to attract students' attention in teaching vocabulary.The efforts that can teacher use to enrich students' mastery are by making a lesson plan and using suitable strategy and media. Lesson plan is a guided to teach in the class. In the lesson plan, teacher can add or find the other material from the other source to support the material in students' textbook and can convey it to students by using suitable strategy and media. By doing this, the class is expected more alive and students can give their attention on the lesson and they want to take a part in the teaching and learning process.

Based on the information from Dewi as English teacher in MTs N 2 Padangsidimpuan the students in this Junior High School are low in vocabulary. It makes them bad in understanding or comprehending English spoken and difficult to speak in good English. They are also bad in understanding English passage and difficult to write their thought in written form. The students have some problems in vocabulary mastery, such as bad

---

<sup>2</sup>KasbolahKasihani, *Teaching Learning Strategy* (Malang: IKIP Malang, 1993), p. 3

pronunciation, difficult to understand new words, and the worst problem is that students do not know many words. The problems are caused by several reasons such as students' educational background, their less practice, interesting and motivation, their bad mindset about English, their less strategy to learn vocabulary and the teacher's less strategies in teaching.<sup>3</sup> The researcher thinks that it is a big problem.

There are some factors in students' vocabulary mastery, such as media and strategy. Strategy is teacher's way to teach a material or everything teachers do or should do in order to help their learners learn. A teacher must use various strategies in teaching vocabulary in order to take students' attention and make the learning process fun. The application of strategies is important in vocabulary teaching. Besides that, the existence of media such as video, record, picture and other also gives good effect on vocabulary mastery. So, the students' good vocabulary mastery also depends on teacher's policy to apply some strategies and use suitable media.

The strategies give big supply in vocabulary teaching. By applying various strategies in teaching vocabulary, the good result is not only in students' attention, but also in teaching and learning process. Teacher's good class management and the application of suitable strategies will give good effect in classroom atmosphere. The application of strategies will make students pay attention to the lesson. The various strategies will also avoid

---

<sup>3</sup>English Teacher in MTs N 2 Padangsidempuan, *Private Interview*. Tuesday, 05 October 2016.

students from bored and bad mindset about English. On the contrary, the learning process will be fun and enjoyable. So, vocabulary teaching strategies is the important role in teaching vocabulary.

There are many strategies that can be applied in teaching vocabulary. Some of the popular strategies are List-Label-Group, Dictogloss, Frayer Model, Word Sorts and Concept Circle Strategy and other. Those various strategies are suitable and good for enjoyable teaching and learning process in vocabulary classes.

One of the strategies to teach vocabulary is Concept Circle strategy. This vocabulary teaching strategy uses some Circle and divided four section. Describe the Topic and answer based on characteristics or definition in the Concept Circle strategy. So, Concept Circle strategy used to describe something.

Concept Circle strategy is one of the strategy which make the students' interest to learn and used to describe something. This strategy divided four section for more and teacher give some clues in concept circle and students can answer based on describing.<sup>4</sup> This strategy can help students to know the meaning of word and remember of new words. So, this strategy can give good effect on students' vocabulary mastery.

---

<sup>4</sup>Mark Twain, 1890, teaching Vocabulary: Vocabulary Skill can make or break any Students feelings about Reading, ( ebook).

Based on the explanation above, the researcher was interested to introduce Concept Circle Strategy to teach vocabulary in the school. The researcher wants to know whether Concept Circle Strategy give significant effect on students' vocabulary mastery or not. So, this strategy can be used for the next time by researcher herself or other teachers if it gives positive effect for students. This reason finally guides the researcher to formulate the title “*The Effect of Concept Circle Strategy on Students' Vocabulary Mastery at Grade VII MTs N 2 Padangsidempuan*”.

## **B. Identification of the Problem**

Based on the background of the problem before, vocabulary is an important element in language teaching and has role as the foundation of language competence. The importance of vocabulary has known by people in educational institution, especially English teachers and learners. Vocabulary mastery is the main basic for everyone to master the four skills of English; listening, speaking, reading, and writing.

According to jannet Allen there are many strategies that can be applied in teaching vocabulary. Those are List-Label-Group, Dictoglos, Frayer Model, Word Sorts and Concept Circle Strategy.<sup>5</sup>

---

<sup>5</sup>Allen, Janet. 2007. *Inside Words: Tools for Teaching Academic Vocabulary Grade 4-12*. Portland: Stenhouse Publishers.

### **C. Limitation of the Problem**

Based on the identification above, there are many strategies that can be applied in teaching vocabulary. Those are List-Label-Group, Dictoglos, Frayer Model, Word Sorts and Concept Circle Strategy.

The researcher does not discuss all the strategies but the researcher just choice one strategy, that is concept circle strategy. The researcher choices concept circle strategy because concept circle help students understand the meaning of words by asking them to consider how a group of words are related. Then, students have fun thinking about the words while learning them.<sup>6</sup>

### **D. The Formulation of the Problem**

1. How was the students' vocabulary mastery before using concept circle strategy at grade VII of MTs N 2 Padangsidimpuan?
2. How was the students' vocabulary mastery after using concept circle strategy at grade VII of MTs N 2 Padangsidimpuan ?
3. Is there a significant effect of concept circle to students' vocabulary mastery at grade VII of MTs N 2 Padangsidimpuan ?

### **E. Purpose of the Research**

1. To describe the students' vocabulary mastery before using concept circle strategy at grade VII MTsN 2 Padangsidimpuan.

---

<sup>6</sup>Allen, Janet. 2007. *Inside Words: Tools for Teaching Academic Vocabulary Grade 4-12...*p.14



2. To describe the students' vocabulary mastery after using concept circle strategy at grade VII MTsN 2 Padangsidempuan.
3. To know there is a significant effect concept circle to students' vocabulary at grade VII of MTsN 2 Padangsidempuan or not.

#### **F. The Significant of the Research**

The significant of this research are :

1. To head master of the school, to motivate the English teachers' to use Concept Circle strategy and another various strategies in teaching and to lead them to teach English in a better way.
2. To teacher, to add his strategies in teaching English vocabulary, and motivate the teacher to increase his professionalism in teaching learning process.
3. To reader and another researchers, as the addition information about teaching vocabulary strategies and also for related researches.

#### **G. The Outline Thesis**

This research was organized into five chapters. Every chapter was subdivided into subtopics to elaborate the given issue. First chapter, it consisted of background of the problem explained about the students vocabulary mastery based on the facts in the field and the other factors are effect of students' vocabulary mastery. Identification of the problem explained about the cause and effect of students' problems in vocabulary mastery. Limitation of the problem the researcher limits the strategy that will

be used in this research. Formulation of the problem consist of list of questions about how is students' vocabulary mastery before and after using cocept circle strategy. The objectives of the problem are to know the students vocabulary mastery before and using concept circle strategy and to know whether there is a significant effect concept circle strategy toward students' vocabulary mastery. significances of the research explained about to whom the significances of the research will be useful.

Second chapter, it was consisted of the theoretical description. First, consisted of explanation about concept circle strategy and vocabulary mastery. Second, review related findings where are from journaling by Chairunnisa and Rahmad Husein, Kurniawan Yudhi Nugroho and Jaeni Arif. The frame of thinking, and the last hypothesis that there is significant effect of concept circle strategy on students' vocabulary mastery.

Third chapter, it was consisted of research methodology concisted of place and schedule of rsearch, research design, population and sample, definition of operational variable, instrument of collecting data, validity and reability instument, procedure of data collection and technique of analyzing data.

Fourth chapter, it is result of the research talking about the analysis of data. This chapter four, it is concist of description of data, testing hypothesis, discussion and threats of research.

Fifth chapter, it consisted of conclusion about the result of this research and suggestions that were given by the researcher.

## CHAPTER II

### LITERATURE REVIEW

#### A. The Theoretical Description

##### 1. Vocabulary

###### a. Definition of Vocabulary

Vocabulary is one aspect which own by every student to make them understand and master english language. It is a part of language that so important to all aspect in life. Hornby said “ vocabulary is all the words that person know or use, the words that people use when they are telling about particular subject”.<sup>1</sup> Then, Jack C. Richard and Willy A Renandya said “Vocabulary is a core component of language proficiency and provides much of the basic for how well learners speak, read, listen and write”.<sup>2</sup> It means words can be noun, verb, adverbs, adjectives, preposition, and conjunction to use language. Then language is some words or vocabulary for speak, listen, read and write. According to Ur Penny “vocabulary is the words we teach in foreign language”.<sup>3</sup> It is mean vocabulary is the list of words that work in language and it is teach by the teacher based on the student’s

---

<sup>1</sup> A.S Hornby, *Oxford Advanced Learner’s Dictionary* ( New York: Oxford University Press, 1995 ) p. 1506

<sup>2</sup> Jack C. Richard & Willy A. Renandya, *Methodology in Language Teaching and Anthology of Current Practice*,( USA: Cambridge Ubiversity Press, 2000), p. 255.

<sup>3</sup>Penny Ur, *A Course in Language Teaching* (United Kingdom: University Press, 2000), p. 60

level. Then, according to Jackson, vocabulary is a representative collection of the words that exist in the English language.<sup>4</sup>So, vocabulary is the words that are known and use by human. Vocabulary is so important for the students because it is the core part of the language and has the link to each skill in English.

it can be concluded that vocabulary is list of words that are understood and used to communicate in a language. Then, vocabulary is the words that are known and used by human. Vocabulary is so important for the students because it is the core part of the language and has the link to each skill in English.

#### **b. The Importance Vocabulary**

Vocabulary is very important in English language. Hanson and Jennifer say that to communicate effectively using oral and print language, learners must be able to flexibly use words that they recognize and understand.<sup>5</sup>Knowledge of words is essential for learners in all areas of the curriculum such as listening, reading, speaking and writing activities as explained in the following passages:

Students' knowledge of words impacts their achievement in all areas of the curriculum because words are necessary for communicating the content. As classroom teachers know,

---

<sup>4</sup> Howard Jackson, *Words, Meaning and Vocabulary* (London: Casell, 2000), p. 118.

<sup>5</sup> Susan Hanson and Jennifer F.M. Padua, *Teaching Vocabulary Explicitly*, (U.S.: Institute of Education Sciences, 2011) p. 5

students have difficulty understanding and expressing the concepts and principles of the content areas if they do not know the specialized vocabulary that represents those concepts and principles. It is nearly impossible for students to read about, talk about, write about, and understand information about volcanoes for example if they don't know the words *magma*, *lava*, *vent*, and *erupt*.<sup>6</sup>

The explanation above shows that vocabulary is the foundation to master the skills in English. Lack vocabulary knowledge may place learners in difficulties along their learning process.

Vocabulary mastery is especially important in reading. The Report of the National Reading Panel, for example, concluded "The importance of vocabulary knowledge has long been recognized in the development of reading skills. As early as 1924, researchers noted that growth in reading power relies on continuous growth in word knowledge" as quoted by John and Shane.<sup>7</sup> Furthermore, McKeown states that there is a strong relationship between vocabulary knowledge and reading. He explains it as follow:

Withoutadequate vocabulary knowledge, students cannot fullyunderstand what they read, and they will have difficultywith content instruction. Students with good vocabularyknowledge will comprehend text more easily, whichleads them to more extensive reading and, in turn, greatervocabulary growth. Vocabulary development is a criticallyimportant aspect of instruction for all students and especiallyfor English learners. Keep in mind that vocabularyis best learned within the context of

---

<sup>6</sup>Ashley Bishopet. al., *Vocabulary Instruction for Academic Purpose*, (USA: Shell Education, 2009) p.14

<sup>7</sup>John J. Pikulski and Shane Templeton, *Teaching and Developing Vocabulary: Key to Long-Term Reading Success*, (USA: Houghton Mifflin Company, 2004) p.1

interesting activities, not by memorizing lists of words or copying definitions.<sup>8</sup>

This quotation shows that vocabulary enables learners to understand the text easily. Bishop and colleagues also state that a reader must have rich vocabulary to support understanding of text. The reader needs to understand the words the author has chosen to use. The less learners understand words, the less they are able to comprehend the passage.<sup>9</sup> From previous explanations it can be concluded that vocabulary can't be separated from learners' reading activities.

### c. Kinds of Vocabulary

Generally, vocabulary is divided into two kinds; 1) receptive or passive vocabulary and 2) productive or active vocabulary. Thornbury in Harmer states that Receptive Vocabulary or Passive Vocabulary is understood through listening and reading and Productive Vocabulary or Active Vocabulary involves knowing how to pronounce the word, how to write and spell it, how to use it in correct grammatical patterns along with the words that usually collocate with.<sup>10</sup> Elfrieda and Michael define Productive vocabulary as the set of words that an

---

<sup>8</sup>Carmen Zuñiga Dunlap and Evelyn Marino Weisman, *Helping English Language Learners Succeed: Practical Strategies for Successful Classrooms*, (U.S.A: Shell Education 2006) p.145

<sup>9</sup>Ashley Bishop et al., *Vocabulary Instruction for Academic Purpose*, (USA: Shell Education, 2009), p. 13

<sup>10</sup>Jeremy Harmer, *The Practical of English Language Teaching*, (New York: Longman, 2000) p. 158

individual can use when writing or speaking. Conversely, receptive, or recognition, vocabulary is that set of words for which an individual can assign meanings when listening or reading.<sup>11</sup> Lehr, Osborn, and Hiebert also say that Receptive vocabulary refers to the words learners understand through reading and listening and Productive vocabulary refers to the words learners use to communicate through writing and speaking.<sup>12</sup> Additionally, Inbaraj says,

Anyone who learns a new language is likely to recognize more words than he can produce. It is difficult to produce a word correctly. One has to pronounce or spell it in the right way, use it in the correct grammatical form, use it appropriately with the correct words coming before and after it and so on. It may therefore be important for a teacher to decide which words she wishes the students to produce correctly. These words form the 'productive' or 'active' vocabulary. The teacher also should decide which words she wishes her students merely to recognize. These words form the 'receptive' or 'passive' vocabulary. Producing (speaking or writing) words in the target language makes much greater demands on the learner. Of course in productive vocabulary, the learner has an advantage in that he is able to choose which word he wishes to use: whereas in receptive vocabulary (as in listening or reading) he has to handle whatever language the speaker or writer uses.<sup>13</sup>

Based on the quotation, it can be concluded that vocabulary can be productive or receptive. In productive vocabulary the learners can choose which words he/she wants to use. Whereas, in receptive

---

<sup>11</sup>Elfrieda H. Hiebert and Michael L. Kamil, *Teaching and Learning Vocabulary: Bringing Research to Practice*, (New Jersey: Lawrence Erlbaum Associates Publishers, 2005) p. 3

<sup>12</sup>Susan Hanson and Jennifer F.M. Padua, *Teaching Vocabulary Explicitly*.....p. 5

<sup>13</sup>J. Inbaraj, *English Language Teaching*, (Chennai, India: Tamilnadu Textbook Corporation 2008) p. 157



vocabulary he/she has to accept and understand what speaker or writer uses.

#### **d. Purpose of Vocabulary Mastery**

Purpose of vocabulary is to increase learners' ability in language and to have knowledge about words and its element. Julie Meltzer and Edmund T. Hamann quote from Allen as below:

According to Allen, teachers in each content area should implement purposeful vocabulary instruction to: (1) increase reading comprehension, (2) develop knowledge of new concepts, (3) improve range and specificity in writing, (4) help students communicate more effectively, and (5) develop deeper understanding of words and concepts with which students are only nominally familiar.<sup>14</sup>

The quotation shows that vocabulary relates to learners' activities in learning process. Additionally, John and Shane say that purpose of vocabulary instruction is to facilitate the comprehension of a selection. Broadly speaking, one reason teachers are concerned about teaching vocabulary is to facilitate the comprehension of a text that students will be assigned to read. If students do not know the meaning of the words that they will encounter in a text, their comprehension of that selection is likely to be compromised.<sup>15</sup> So, the purpose of teaching vocabulary relates with students' learning activities where teaching

---

<sup>14</sup>Julie Meltzer and Edmund T. Hamann, *Meeting the Literacy Development Needs of Adolescent English Language Learners Through Content Area Learning: Focus on Classroom Teaching and Learning Strategies* (The Education Alliance at Brown University, 2005) p. 55

<sup>15</sup>John J. Pikulski and Shane Templeton, *Teaching and Developing Vocabulary: Key to Long-Term Reading Success*, (USA: Houghton Mifflin Company, 2004) p.5

vocabulary increases reading comprehension, improves writing, and helps in communication.

Purpose of vocabulary mastery is also to have knowledge about a word itself and its elements as explained by Inbaraj. He states that objectives of learning vocabulary is to know a word in a target language that may mean the ability to: recognize it in its spoken/written form, recall it when needed, relate it to an appropriate objective or concept, use it in the appropriate grammatical form, pronounce it, speak in a recognizable way, spell it clearly and correctly, use it with words that correctly goes with it.<sup>16</sup> It can be concluded that teaching vocabulary can develop the students' understanding of words elements.

Meanwhile, the purpose of vocabulary in junior high school institution ( MTs/ SMP ) there are some purposes for vocabulary students:

1. Students are able to memories vocabulary around 250 words.
2. Students are able to enrich vocabulary in daily activity.
3. Students are able to know the meaning of words.<sup>17</sup>

---

<sup>16</sup>J. Inbaraj, *English Language Teaching*, ( Chennai, India: Tamilnadu Textbook Corporation 2008) p. 156

<sup>17</sup>Syllabus at MTs N 2 Padangsidimpuan.

### e. Principles for Teaching Vocabulary

Recognizing what students need in learning is necessary for a teacher. The process of transferring knowledge will not simply succeed if he can not see his students' learning absorbing capability toward the material taught and the teaching portion should be given. According to Nunan, there are several principles for succesful in teaching vocabulary as follow :

1. Focus on the most useful vocabulary first
2. Focus on the vocabulary in the most appropriate way.
3. Encourage learner to reflect on and take responsibility for learning.
4. Give attention to the high frequency words across the four strands of a course.<sup>18</sup>

In addition, Michael says that there are the principles for teaching vocabulary, there are:

1. Give most attention to words that are already partly known.
2. Tell the learners if it is a high frequency word that they should remember.
3. Keep teaching simple and clear. No complicated explanations.
4. Relate the present teaching to past knowledge by showing pattern.<sup>19</sup>

Based on the principles above, the principles for teaching vocabulary are six principles. Where are the reseacher can conclusion is the teacher who is duty in help the students in learn about

---

<sup>18</sup>David Nunan, *Practical English Language Teaching* (New York:Mc.Grow Hill, 2003),p.135-140.

vocabulary, they are able to mastery what must be teach and give to them in order to they will have high motivation in learn about vocabulary. This principle can apply in a variation way and variation types of course. In other words, the variation principle in teach about vocabul;ary is effective to help the students learn vocabulary.

**f. The Material of Teaching Vocabulary at MTs N 2 Padangsidempuan**

There are many materials in vocabulary teaching. As has been explained above, there are some kinds of vocabulary, such as receptive vocabulary and productive vocabulary. So, the English learner can learn or understand vocabulary while listening to a spoken English or reading a passage and produce it when do speaking or writing activities. So, it is relevant with English lesson syllabus of Indonesian curriculum that places these four activities within it. The book used in MTs N 2 Padangsidempuan iswhen English rings the bell. It divided into eight units, they are : family ( unit I ), names of the days, months and years (unit II), favorite or hobbies (unit III), things in the classroom, things in my kicthen, parts of the house, animals in my school and my home (unit IV), profession ( unit V), animals and things (unit VI), people (unit VII), and warning/cautions (unit VIII).<sup>20</sup>

---








<sup>20</sup>Bahasa Inggris, *When English Rings the Bell for junior high school students years VII* . Kementrian Pendidikan dan Kebudayaan, Jakarta: Kementrian Pendidikan dan Kebudayaan, 2013.

There are some examples of material vocabulary in MTs N 2

Padangsidimpuan:

### Talking about Things in my kitchen

A. Please, match the appropriate words based on the pictures !

1. Stove	a. 	e. 
2. Freezer	b. 	f. 
3. Glass	c. 	g. 
4. Knife	d. 	
5. Chopstick		
6. Bowl		
7. Spoon		

Source: Mukarto, et. al., *English on Sky for Junior High School Students Year VII*, Penerbit Erlangga, 2007.

### Talking about profession

B. Choose the appropriate word above to complete the sentence !

a. Chef	1. Christian Ronaldo is my favorite _____.
b. football player	2. Ayu is the famous _____ in her town. She can play piano very well.
c. photographer	3. My brother is a _____. He always helps people to treat their illness.
d. teacher	4. I see a _____ in the sea. He gets a big fish.
e. barber	
f. singer	
g. doctor	
h. fisherman	

i. pianist j. dentist	5. I always check my teeth condition to the _____ regularly. 6. Justin bieber is my favourite _____. 7. I do not like the _____. She cut my hair vey shortly. 8. Sam is a professional _____. He can takes beautiful photo. 9. My sister works in the restaurant. She is a _____. She can makes delicious food. 10. Our _____ has the simple way in teaching mathematic to us.
--------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Source: Mukarto,et. al., *English on Sky for Junior High School Students Year VII*, Penerbit Erlangga, 2007.

## 2. Concept Circle

### a. Definition of Concept Circles

According to Mark Twain Concept Circles is a visual organizer, similar to Frayer Model, which helps students understand key words and concepts. A Concept Circles is divided into four or more equal sections to hold words or symbol that are connected by a common relationship.<sup>21</sup> Concept circles strategy is a suitable strategy to increase the students' vocabulary achievement in reading descriptive text. It is an activity that can be use across a wide range of grade levels. It is help students analyze connections between words and to

---

<sup>21</sup>Mark, Twain.1890. Teaching Vocabulary: Vocabulary Skill can make or break any Students feelings about reading, p. 46. Accessed on October, 25<sup>th</sup>2016 at 08.00 pm. From ( [http:// www.Storage/emulated/0/Vocabulary\\_Strategy.Pdf](http://www.Storage/emulated/0/Vocabulary_Strategy.Pdf) )

explain relationships among words and topic.<sup>22</sup> According to J. Allen concept circle is teaching about vocabulary with use circle. Circle which form game because circle divide four or more sections, with word or phrase in each section of the circle. In the circle students can be fill in the blank with follow the topic, or characteristic as a clues.<sup>23</sup>

It is mean concept circle is not only use to increase students' vocabulary but also motivate to learning vocabulary. Vocabulary circle is a fun activity to students'. Concept circles are an activity that can be used across a wide range of grade levels. The goal of the activity is for students to relate words conceptually to each other. Students are given a circle divided into parts with words or phrases written into each section. Teacher give the intruction or clues in circle. So, make a students easy to answer and understand about learning vocabulary.

It can be concluded that Concept Circles help focus to enrich students vocabulary. Where are students can be used this strategy to describe things. Then, make students interested to learned.

---

<sup>22</sup>Kimberly, Kimbell-Lopez.2009, *Teaching Vocabulary Material and Methods for Teaching Reading*,p. 19 from <http://hlperson.com/mt/archives/vocabulary.gif>

<sup>23</sup> Allen, Janet, *Word, Word, Word, Teaching Vocabulary in Grades 4-12*( Portlandmaine: Sthenhouse, 1999), p. 101.

### **b. The Purpose of Concept circles**

There are two purposes of the concept circle strategy. This strategy can help students to enrich vocabulary and easily to comprehend the meaning of words. They are:

- a) Concept circles are used to identify unfamiliar concepts and vocabulary.
- b) They create a visual reference for concepts and vocabulary. Through a visual representation, students see clearly how the concepts are related.
- c) The beauty of this strategy is that it involves active participation and also individual accountability. When students are actively engaged, they share ideas, solutions, are stimulated and have fun, consequently they feel successful.<sup>24</sup>

Then, there are some purposes of concept circles, according to Allen says:

- a) Identify unfamiliar concepts and vocabulary.
- b) Create a visual reference for concepts and vocabulary.<sup>25</sup>

Based on the quotations above, it can be concluded that the purpose of concept circles is to make students easily teach about vocabulary. Concept circles focus on vocabulary and with that students can make share ideas and have fun when teaching about vocabulary. Then, students can make new vocabulary and easy to remember.

---

<sup>24</sup>Mark, Twain. 1890. Teaching Vocabulary: Vocabulary Skill can make or break any Students feelings about reading. 42. Accessed on October, 25<sup>th</sup> 2016 at 08.00 pm. From ( [http://www.Storage/emulated/0/Vocabulary\\_Strategy.Pdf](http://www.Storage/emulated/0/Vocabulary_Strategy.Pdf) )

<sup>25</sup>Allen, Janet, *Word, Word, Word, Teaching Vocabulary in Grades 4-12* (Portland, Maine: Sthenhouse, 1999), p. 102



### c. Procedures of Concept Circles

The construct a concept circle divide a circle into four or more sections. In each section write a word or phrase related to the topic.

Concept circles may be used in three ways:

1. All of the words in the circle are related and the students must tell how they are related.
2. give some topic and ask students choose some words to applied in concept circle strategy.
3. All of the words in the circle are related except one. The student must identify the unrelated word and explain how the other words are related.
4. One or more of the sections is left blank. Students fill in the blank sections with words that are related to the other words in the circle and explain why they choose this words.
5. answer the question based on word association.<sup>26</sup>

Then, according to Jannet Allen the procedures of concept circle there are :

1. Put words or phrases in each section of the circle and ask students to write about the connections they see between the words and phrases.
2. Put vocabulary words in three of the sections of the circle.
3. Ask students to choose four vocabulary words from their study of a topic or a text and use those four words to write about what they have learned about the topic.
4. Teacher give some topic and ask students choose some words to applied in concept circle strategy.
5. Students answer the question based on word association in the concept circle.
6. Ask students to shade either the words that go together or the word that doesn't fit with the others.<sup>27</sup>

Based on the quotations above, it can concluded that the procedure of concept circle are first, to explain the topic based on

---

<sup>26</sup>*Ibid.*,p. 43

<sup>27</sup>Allen, Janet, *Word, Word, Word, Teaching Vocabulary in Grades 4-12*( Portlandmaine: Sthenhouse, 1999),p.27.

material with use concept circle strategy. Second, some students give the example. Third, the teacher give some topic and students choose some words association in the concept circle. The last students answer the quastion based on characteristic, definition or words association in the concept circle strategy. It is some procedure which make students easy to enrich new words. It is mean when we teach with use concept circle, teacher can make circle. Then parts of circle such as, four sections or more. Then, give the clues to task so that make a students understand for answer the task. In circle yo write some word and students fill in the blank that topic. This strategy works well using think, pair, share and drawing into bfull class discussion.

#### **d. Advantages and Disadvantages of Concept Circle Strategy**

Concept circle is an organizer which is divided into sections to hold word/symbols that are connected by a common relationship. There are some advantagesof using Concept circle strategy in teaching English, they are:

1. Help student understand the meaning of words.
2. Provide students with the opportunity to think about a word in multiple ways.
3. To help focus students discussion and help students to enrich the vocabulary.<sup>28</sup>

---

<sup>28</sup>Think works: *Vocabulary Stratey*, Teaching Comprehension, retrieved from <http://oame.on.ca/main/files/thinklit/conceptcircle.pdf> onjanuary20<sup>th</sup>, 2017 at 10.15 p.m..

Besides that, by using concept circle in the classroom, students will get more payoffs, as following description. The students will be able to:

- 1) Develop understanding of key concepts and vocabulary.
- 2) Draw on prior knowledge to make connections among concepts.
- 3) Compare attributes and examples.
- 4) Think critically to find relationships between concepts and to develop deeper understanding.<sup>29</sup>

Then, there are some disadvantages of using concept circle strategy in teaching English, there are:

1. The teacher difficulties to find the words which appropriate with students competence.
2. It cannot use for every learning.<sup>30</sup>

The points above also show that there are some advantages when a teachers use concept circle in their teaching activities. It gives teacher the strong reason to use this strategy to teach vocabulary. So, concept circle is a strategy that is computable to be used in English classroom.

### **3. Conventioanl Strategy**

#### **a. Definition of Conventional Strategy**

Conventional strategy is a traditional way that is used by a teacher in teaching and learning process. Conventional strategy is the

---

<sup>29</sup>Think Literacy: *Mathematics Subject-Specific Examples Grades 7-9* retrieved from <http://oame.on.ca/main/files/thinklit/conceptcircle.pdf> on September 20<sup>th</sup> 2016, at 10.15p.m.p. 34

<sup>30</sup>*Ibid.*, p.35

strategy or the way that usually used by the teachers to teach the text to students.<sup>31</sup> According to Hudson that conventional strategy is the strategy used by the teachers based on mutual agreement in a school.<sup>32</sup> So, the researcher concludes that conventional strategy is the strategy used by a teacher in common ways.

#### **b. The Purpose of Conventional Strategy**

Conventional strategy is the strategy or the way usually used by the teachers to teach the material to students. It means that the teacher usually gives all of the explanation of the materials or it is a teacher centered in classroom. In other word, teacher as controller, director, manager, facilitator, and resource for students in teaching learning process.

There are two purpose of conventional (lecture) strategy, they are:

1. To convey a subject matter is logically arranged, and irrelevant material or subject matter is avoided.
2. As the curriculum is design by the teacher, it become easy to achieve the desired goals by teacher.<sup>33</sup>

The two purpose is the first important in lecturer strategy or teacher-centered, in this strategy, the teacher is centered in learning

---

<sup>31</sup>JhonDeriden. Conventional Strategy, retrieved from: <http://www.britania.com/EBchecked/topic/421797/nuclear-strategy/52993/conventional-strategy> on May 7<sup>th</sup> 2017 at 10.00 p.m.

<sup>32</sup>Hudson, The Meaning of Conventional Strategy, retrieved from: <http://www.conventional-strategy/topic/54372-strategy> on October 7<sup>th</sup> 2016 at 10.00 p.m.

<sup>33</sup>Hudson, The Meaning of Conventional Teaching (Online), (<http://www.conventional-strategy/topic/54372-strategy>), Accessed on January, 20, 2017 at 11.15 am.

process. This strategy students to find a subject matter a material through a teacher.

In addition, Gattegno says that there are three purposes of Conventional (lecture) strategy, they are:

- 1) To convey the information or material in teaching learning process.
- 2) To increase the students' knowledge and language from teaching learning process in classroom.
- 3) To explain the subject matter or material based on design by teacher in clearly.<sup>34</sup>

Based on the quotations above, it can concluded that the conventional or lecture teaching strategy is oldest (traditional) teaching strategy applied in educational institution. This teaching strategy is one way to communicate the information or subject matter by teacher with lecturing in teaching learning process.

### **c. The Procedure of Conventional Strategy**

There are some procedure of conventional strategy. there are some steps needed to attention before teaching in the classroom, those are:

1. Preparation
  - a. To formulate the objectives to be achived.
  - b. Determine the main points of the material will be explain.
  - c. Preparing tools.
2. Implementation Phase
  - a. Steps Opening

---

<sup>34</sup> Caleb Gattegno. *Teaching Foreign Language in Schools*, (New York: Educational Solution,1972),p.136.

- i) Make sure that students understand the objectives to be achieved.
  - ii) Do apersepsi step, that is step linking the subject matter and the subject matter that will be delivered.
- b. Steps Presentation
  - i) Maintain continuous eye contact with students.
  - ii) The use of communicative language and easily digestible students.
  - iii) Present learning materials in systematic, no bounding to be easily captured by the students.
  - iv) Respond to immediate students responses.
  - v) Keep the class conducive and exciting to learn.
- 3. Steps Ending or Closing
  - a. Guide students to draw conclusion or summarize the subject matter.
  - b. Stimulate students to be able to respond or provide some sort of review of the learning materials that have been submitted.
  - c. Conduct an evaluation to determine the students ability to master the learning material that had just delivered<sup>35</sup>.

According to Kiki, the procedure of conventional strategy are:

- 1. Preparation
  - a. Formulate goals to be achieved.
  - b. Determine the main points of the material to be explain.
  - c. Prepare tools
- 2. Implementing Phase
  - a. Step opening
 

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

This stage is the core of the lecture method. Teachers must deliver learning materials by either using sentences easily understood.
- 3. Step ending or closing

---

<sup>35</sup> Andrean Prime, Steps Implementing Teaching Method, Available at <http://materiinside/2014/12/langkah-melaksanakan-metode-ceramah.html>, ( Accessed on January, 20, 2017 at 11.00 am)



Lecture method should be closed so that learning materials are already understood and mastered by the student does not fly everywhere<sup>36</sup>.

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

#### **b. Advantages and Disadvantages of Conventional Strategy**

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

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

---

<sup>36</sup> Kiki Amelia, Langkah-langkahMenggunakanMetodeCeramah, Avaiable at <http://lagibelajargoblog./2015/01/langkah-langkah-menggunakan-metode.html>, (Accessed on, January, 15, 2017 at 10.00 a.m)

11. Can strengthen students' reading and learning from some other source.<sup>37</sup>

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

- 1) Conventioanl is a method that is cheap and easy.
- 2) Conventional can present subject matter is broad.
- 3) Conventioanl can provide material points which need to be highlighted.
- 4) Through conventioan teachers can control the state of the class, because class is the responsibility of who teachers explian.
- 5) Class organization by using conventional can be set to be more simple.<sup>38</sup>

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

The disadvantage of conventioanl strategy, Andrean says:

1. Material held by students from the explanations will be limited to controlled teachers.
2. Conventional are not accompanied by demonstrations could lead to the occurrence of verbal;
3. Teachers who lack the ability to speak good, conventioanl often regarded as tedious method;
4. Through Conventional, it is very difficult to know whether all the students already understand what is being described or not.<sup>39</sup>

---

<sup>37</sup>DodikHeruSetiawan, Defenition, Adventages and Disadvantages Lecture Method, Avaible at <http://zonainfosemua./2011/01/pengertian-kelebihan-dan-kekurangan.html>(Accessed on, January, 20, 2017 at 10.15 a.m)

<sup>38</sup>AndreanPrime,Defenition, Adventages and Disadvantages Lecture Method, avaible at <http://materiinside.co.id/2014/12/pengertian-kelebihan-kekurangan-metode-ceramah.html>(Accessed on January, 20, 2017 at 11. 00 a.m)

<sup>39</sup>Andrean Prime, *Op. Cit*, (Accessed on January, 20, 2017 at 11. 00 a.m)

Then, disadvantage of conventional strategy, according to Dodikthere are:

1. Easy to be verbal.
2. The visual into a loss, and the auditory (listening) are actually received.
3. When are always used and are used can make bored.
4. The success of this method depends heavily on who is using it.
5. Tend to make students passive.<sup>40</sup>

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

Based on the explanation, conventional strategy is a teaching without media, technique, strategy, approach. The teachers just explain the material with lecture method, then teacher gives material, the teacher give the students exercises, the students answer the question, and the last teacher and the students discuss the answer of the question.

## **B. Review of the Related Findings**

There are some related findings relate to this reseach. The first is Sri Mujiyatmi Wulan Mei “ The Use of Circle Game as a Strategy to Improve the Students’ Mastery in English Vocabulary to The Fourth Grade of SDN 01 Sumarjalak Plumpang”. The conclusion is there is the significant effect of using circle game as a strategy to improve the students vocabulary mastery.

---

<sup>40</sup>DodikHeruSetiawan, *Op. Cit*, (Accessed on, January, 20, 2017 at 10.15 a.m)

The mean score after using concept circle is 80.3 and mean score before using concept circle is 70.5. The result of t-test is high than t-table ( $1.69 > 1.66$ ).<sup>41</sup>

The second journal from Chairunnisa and Rahmad Husein is “The Effect of Concept Circle Strategy on the Students’ Vocabulary Achievement in Reading Descriptive Texts”. The conclusion is there is the significant effect of Concept Circle Strategy to students’ vocabulary achievement in reading descriptive. The mean score after using is 76 and score before use learning tournament is 63. The result of t-test is high than t-table ( $2.41 > 1.92$ ).<sup>42</sup>

The last, is Latifah Annur “The Effect of Verbal and Visual Word Association Strategy toward Vocabulary Mastery at Grade VIII Students of SMPN 1 Panyabungan Selatan”. The conclusion is there is the significant effect of Charades Technique on students’ vocabulary master. The mean score

---

<sup>41</sup>Sri Mujiyatmi Wulan Mei, The Use of Circle Game as a Strategy to Improve the Students’ Mastery in English Vocabulary to Fourth Grade of SDN 01 Sumarjalak Plumpang, Unpublished thesis, English Department Faculty of Education University PGRI Ronggolawe Tuban 2007/2008, accessed on <http://web.University-PGRI-Ronggolawe-Tuban/> Sri. Mujiyatmi. Wulan. Mei/thesis.pdf, retrieved on November 14<sup>th</sup> 2016 at 9.28 pm.

<sup>42</sup>Chairunnisa and Rahmad Husein, The Effect of Concept Circle Strategy on Students’ Achievement in Reading Descriptive Texts, Retrieved on May 19<sup>th</sup>, 2017 at 11:58 PM from <https://www.google/storage/emulated/0/Download/3951-7485-1-SM-2.pdf>”.

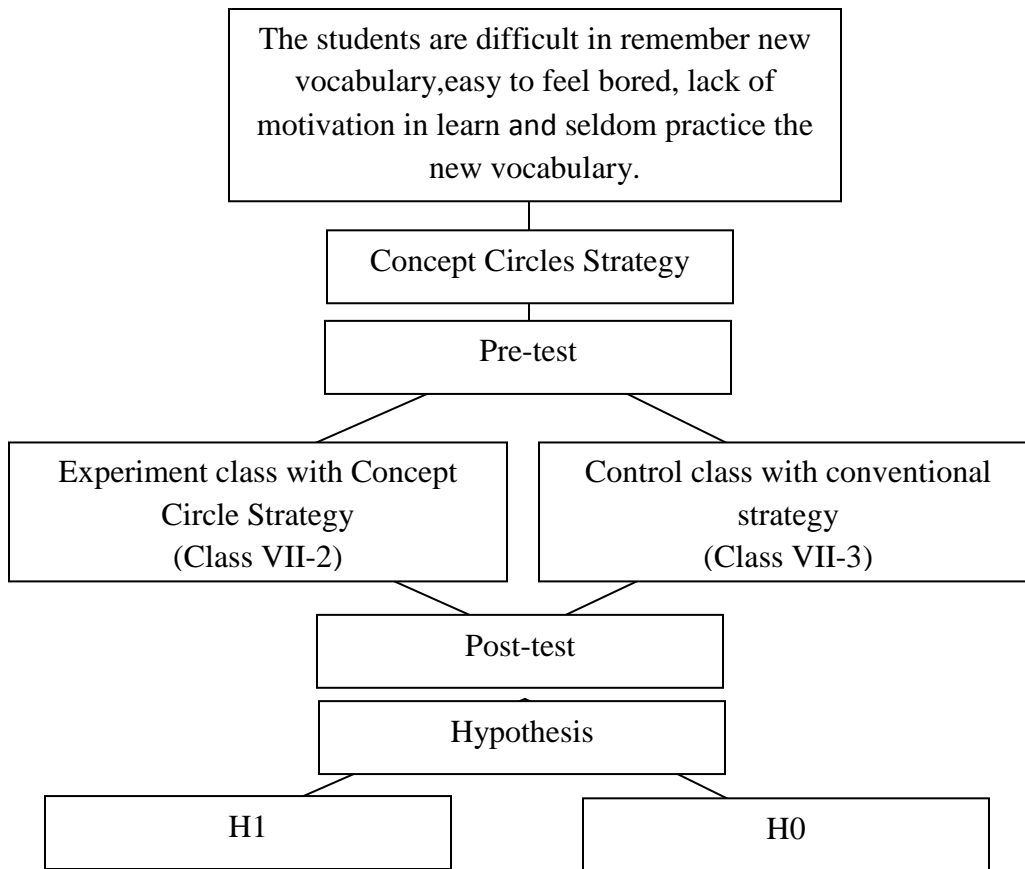
before using charades is 61.87 and after using charades technique score is 80.20. The result of t-test is high than t-table ( $3.47 > 1.67$ ).<sup>43</sup>

### **C. Conceptual Frame Work**

Strategy in teaching vocabulary is an important thing that must be consider by the teacher to success the learn about vocabulary. The teacher must choose the suitable strategy for the students so they are not easy to feel boring when follow the vocabulary lesson. For junior high school's students, the teacher can choose the strategy which do not only ask them to learn but also they can play. By mix learn and play, the student more enthusiasm in learning vocabulary and it is make the students easy in remembering the vocabulary. The conceptual framework that is do is as below:

---

<sup>43</sup>Latifah Annur," The Effect of Verbal and Visual Word Association Strategy toward Vocabulary Mastery at Grade VIII Students of SMPN 1 Panyabungan Selatan.



#### D. Hypothesis

Hypothesis is a conventional result of research. The hypothesis of this research are:

1. There is the positive effect of concept circles strategy on students' vocabulary mastery at grade VII MTs N 2 Padangsidimpuan ( $H_a$ ).  $\mu_1 > \mu_2$
2. There is no positive effect of concept circles strategy on students' vocabulary mastery at grade VII MTs N 2 Padangsidimpuan ( $H_0$ ).  $\mu_1 = \mu_2$

## **CHAPTER III**

### **RESEARCH METHODOLOGY**

#### **A. Place and Time of the Research**

The research was done at MTs N 2 Padangsidempuan. It is located at Jl. HT. Rijal Nurdin KM. 6,5 PAL-IV Pijorkoling, Padangsidempuan. It is about 200 meters from the roadside to insides. It is in the South east from Padangsidempuan.

The time of the research was done from September 27<sup>th</sup>,2016 until September 15<sup>th</sup>, 2017.

#### **B. Research Design**

The kind of this research is quantitative method with experimental method. Experimental method is a research with a purpose to find the effect of one or more variables to the other variable. It is a research that can test hypothesis based on cause and effect relationship between one variable to the other variable.

Creswell state “ experimental research include the experiment with the random assignment of the subject to treatment condition as well as quasi experiment that use none randomized”.<sup>1</sup>

---

<sup>1</sup>JhonCreswell. *Research Design Qualitative, Quantitative and Mixed Methods Approaches Second Edition* ( USA: Prentice hall.,2000), P. 14.

From the definition above, the researcher conclude that the experimental is kind of research that is aim to know the causal effect relationship between one or more variable to other variables.

In this research, the researcher use two class, as an experimental class and control class. The experiment class is the class that teach with cocept circle strategy, as a treatment. Then, the control class is the class that teach with use conventional strategy or without treatment. The research design of this research can be see from the table:

**Table 1. Pretest-Posttest Control Group Design**

<b>Class</b>	<b>Pre-test</b>	<b>Treatment</b>	<b>Post-test</b>
Experimental class	√	Concept Circle Strategy	√
Control class	√	Conventional Strategy	√

From the definition above, researcher concludes that the experimental research was a kind of research that tries to observe the cause and effect relation between one variable with another variable. Variables in this research are concept circle and student's vocabulary mastery. Experimental research also used to know the cause and effect relations by comparing the result of experimental group who get a treatment with control group who do not get a treatment. Experimental class is the class that taught with concept circle as a treatment. Meanwhile



the control class is a class that taught with using conventional strategy or without a treatment.

### C. Population and Sample

#### a. Population

Gay and Airasian stated that population is the group of interest to the researcher, the group to which she or he would like the results of the study to be generalizable. It means that the population of this research is all of the VII class of MTs N 2 Padangsidempuan. It consist of 5 classes with students. It can be seen in the following table:

**Table 2. The Population of the Grade VII Students in MTs N 2 Padangsidempuan**

No.	Class	Total Students
1	VII-1	24
2	VII-2	24
3	VII-3	22
4	VII-4	22
5	VII-5	21
Total		113

Source: School Administration Data of MTs N 2 Padangsidempuan

#### b. Sample

Gay and Airasian state sample is comprises the individuals, items, or events selected from a larger group referred to as a

population”.<sup>2</sup> Suharsimi Arikunto state “ Sample is part of population that will be do by research”.<sup>3</sup>

In this research, the researcher choose two classes as a sample. They will be divided into experimental class and control class. The researcher will use random sampling to take the sample. Random sampling is the process of selecting a sample in such a way that all individuals in the defined population have an equal and independent chance of being selected for the sample.<sup>4</sup> Before using random sampling, the researcher must use normality and homogeneity test.

#### 1. Normality test

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

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

Where :

$x^2$  = Chi-Quadrate

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

$f_h$  = Frequency is get from the sample as image from frequency is hope from the population.<sup>5</sup>

---

<sup>2</sup>*Ibid.*,p. 121.

<sup>3</sup>Suharsimi Arikunto, *Op. Cit.*, 174

<sup>4</sup>*Ibid.*, p. 123.

<sup>5</sup>Anas Sudijono, *Pengantar Statistik Pendidikan*. (Jakarta: PT. Raja Grafindo Persada.2005), p. 298.

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

## 2. Homogeneity test

Homogeneity test is use to know whether control class and experimental class have the same variant or not. If both classes are same, it can be call homogenous. Homogeneity is the similar of variance of the group will be compare. So, to find the homogeneity the researcher use the formula as follow:

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

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

Hypotheses is reject if  $F_{\text{count}} \geq F_{\text{table}}$

Hypothesis is reject if  $F \leq F_{\frac{1}{2} \alpha(n_1-1)} (1= n_2-1)$ , while if  $F_{\text{count}} > F_{\text{table}}$  hypothesis is accept .<sup>6</sup>

To conclude the significant level 5% (0.05) and dk numerator is (n<sub>1</sub>-1), while dk detominators is (n<sub>2</sub>-1).

---

<sup>6</sup>Agus Irianto, *Statistik Konsep Dasar dan Aplikasinya*. ( Padang: P2LPTK Departemen Pendidikan Nasional, 2003), p. 276

### D. Definition of Operational Variables

The terms use in this research are as follows:

1. Vocabulary is all the words that a person knows or uses in a language.
2. Concept Circle strategy is strategy that focus on teaching vocabulary with forms circle where are every circle have characteristics.

### E. Instrument of Collecting Data

Instrument is a tool that can be use by the researcher to collect the valid and reliable data. In this research, the researcher will use a test. Good instrument certify the validity of the data. The reseacrcher use instrument of validity and reliability for the take the valid data. The researcher use test as instrumentation. Test is some of question or view or other tool use for measure skill, knowledge, intelligence and ability.

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

**Table 3. The indicator of vocabulary Pre-Test**

No	Indicator	Topic	Number of Items	Item	Score Per Item	Total Score
1	Identifying the definition of words	Profession/job	1, 2, 3, 4, 5, 6, 7, 8	8	2	16
		Things in my kicthen	9,10,11,12,13, 14,15	7		14
2	Identifying the word association of words	Thigs in my kicthen	16,17,18,19,20,21,22	7		14
		Job:work place	23, 24, 25, 26, 27, 28, 29	7		14

3	To memories the words	Profession /job	30, 31, 32, 33, 34,35, 36	7		14
		Job: work place	37,38,39,40,41,42,43	7		14
						14
		Things in my kicthen	44,45,46,47,48,49,50	7		14
Total				50		100

**Table 4. The indicators of vocabulary Post-test**

N o	Indicator	Topic	Number of Items	Item	Score Per Item	Total Score
1	Identifying the definition of words	Things in my kicthen	1, 2, 3, 4, 5, 6, 7, 8	8	2	16
		Profession/job	9,10,11,12,13, 14,15	7		14
		Job:work place	16,17,18,19,2 0,21,22	7		14
2	Identifying the word association of words	Thigs in my kicthen	23,24,25,26,2 7,28,29	7		14
		Job:work place	30,31,32,33,3 4,35,36	7		14
3	To memories the words	Profession /job	37,38,39,40,4 1,42,43	7		14
		Things in my kicthen	44,45,46,47,4 8,49,50	7		14
Total				50		100

## F. Validity and Reliability Instrument

### a. Validity

Anas Sudijono state that the validity is a characteristic of the good test. To get the validity of an achievement test can be use two way:

- a) Totality of the test validity
- b) Item validity.<sup>7</sup>

Beside that Gay and Airasian state that validity is the most important characteristic a test or measure instrument can possess.<sup>8</sup>Kumar state that validity is the ability of an instrument to measure what it is design to measure.<sup>9</sup>

There are three types of validity in quantitative research:

- 1) Face and content validity
- 2) Concurrent and predictive validity
- 3) Construct validity.<sup>10</sup>

In this research, the researcher use item validity to get the validity of instrument. Item validity is a part of the test as a totality to

---

<sup>7</sup>Anas Sudijono, *Pengantar Evaluasi Pendidikan* ( Jakarta: PT Raja Grafindo Persada, 1996), p. 163.

<sup>8</sup>Gay and Airasian, *Op. Cit*, p. 161

<sup>9</sup>Ranjit Kumar, *Research Methodology: A Step by Step Guide for Beginners, Third Edition* (New Delhi, Sage Publication, 2011) p. 178

<sup>10</sup>*Ibid.*, 179

measure the test by item. Where, the test consist of 100 questions of multiple-choice test. It is divide into two groups: 50 for pre-test and 50 for post-test.

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

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

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

Where:

- $r_{pbi}$  : Coefficient item validity
- $M_p$  : Mean score of the total sore
- $SD_t$  : Standard Deviation of the total score
- $P$  : Presentation of the right answer of the item test validity.
- $q$  : Presentation of the wrong answer of the item test validity.<sup>11</sup>

#### b. Reliability

Reliability is the degree of accuracy or precision in the measurements made by a research instrument.<sup>12</sup> To get the reliability of the test, Suharsimi Arikunto state that the obtain the reliability of the test, the researcher use formula K-R 20.

---

<sup>11</sup>Anas Sudijono, *Op.Cit.*p. 166

<sup>12</sup>*Ibid.*, p. 181

The formula are :

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

Where :

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

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

P =  $\frac{\text{Proporsi Subject who is right Answer (1)}}{N}$

Q =  $\frac{\text{Proporsi Subject who is wrong Answer (0)}}{N}$

n = Total of Question

$S_t^2$  = Variants Total.<sup>13</sup>

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

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

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

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

$R_{11} < \text{low correlation ( not reliable )}$  .<sup>14</sup>

## G. Procedures of Data Collection

To collect the data, the researcher is use test. In give the test, it is divided into two kinds; pre-test and post-test.

---

<sup>13</sup>Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik* ( Jakarta: Rineka Cipta, 2006 ), p. 188.

<sup>14</sup>Anas Sudijono. *Op.Cit*, P. 209.



a. Pre test

The pre-test conduct to find out the homogeneity of the sample. A test give before do the treatment to students. Pre- test have the function is to find the mean scores of the concept circle strategy and conventional strategy before researcher give treatment to the experimental class. Here, the researcher use some steps in give the pre-test. There are :

- 1) The researcher prepares the test 50 items.
- 2) The researcher distributes the paper of the test to students of experimental class and control class.
- 3) The researcher explains what students to do.
- 4) Giving time to students.
- 5) The students answer the question .
- 6) The researcher collect the test paper
- 7) The researcher checks the answer question of students.
- 8) Then, the researcher find the mean score of control and experimental class.

b. Treatment

After giving the pre-test, the researcher give treatment to students. The experimental class receive the treatment teach by use concept circle strategy and control class is teach by use conventional strategy.

### c. Post-test

After giving the treatment, the researcher conduct a post-test which the different test with the pre-test. Also, it use to know the different score of experimental class and control class and the effect of treatment, whether it is an effect or not. Here, the researcher use some step in give post-test. There are:

- 1) The resaercher prepares the test 50 items.
- 2) The researcher distributes the paper of the test to students of experimental class and control class.
- 3) The researcher explains what the students to do.
- 4) Giving time to students.
- 5) The students answer the question .
- 6) The researcher collcect the test paper
- 7) The researcher checks the answer question of students.
- 8) Then, the researcher find the mean score of control and experimental class.

## H. Technique of Analyzing Data

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

### 1. Requirement test

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

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

Where:

$\chi^2$  = Chi-Quadrate

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

$f_h$  = Frequency is get from the sample as image from frequency is hope from the population.<sup>15</sup>

## b) Homogeneity test

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

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

Hypothesis is accept if  $F_{count} \leq F_{able}$

Hypotheses is reject if  $F_{count} \geq F_{able}$ .<sup>16</sup>

## 2. Technique of Hypothesis

Based on the hypotesis, the analysis of the data will be do to fint out the ability of two group that is devide into experiment class and control class. From the hypotesis is to answer the result of the research. So, the data will be analaysis by use the follow t-test formula:

$$H_a : \mu_1 > \mu_2$$

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

$$\text{If } H_a : \mu_1 > \mu_2,^{17}$$

---

<sup>15</sup> Agus Irianto, *Op.Cit.*, p. 276

<sup>16</sup> Suharsismi Arikunto, *Op.Cit.*, p. 311

it is mean the result of students vocabulary mastery by use concept circle strategy at grade VII MTs N 2 Padangsidimpuan is better than conventional strategy. But, if the  $H_0 : \mu_1 \leq \mu_2$ , it is mean the result of students vocabulary mastery by use concept circle strategy at grade VII MTs N 2 Padangsidimpuan is not better than conventional strategy. To test the hypothesis, researcher use the formula as follow:

$$t - test : t = \frac{X_1 - X_2}{\sqrt{\frac{X_1^2}{X_1} - \frac{X_2^2}{X_2} - \frac{1}{n_1} - \frac{1}{n_2}}}$$

*t-test* is used to know the significant effect of the application of treatment in vocabulary teaching. As Scott explains that a *t-test* is used to determine if two groups of an independent variable differ on a dependent variable. If a *t-test* is found to be statistically significant, we would say that two groups differ on the dependent variable.<sup>18</sup> So, based on the kind of research, this research used *t-test* to analyzing the data and also as the end of measurement.

---

<sup>17</sup> Scott W. Vanderstoep and Deirdre D. Johnston, *Research Methods for Everyday Life: Blending Qualitative and Quantitative Approaches*, (San Fransisco: Jossey Bass, 2009) p. 122

<sup>18</sup> *Ibid.* p.125

## **CHAPTER IV**

### **RESULT OF THE RESEARCH**

To analyze the data, the researcher has collected data through giving a test, they were: pre-test and post-test in the both classes, experimental class and control class. To find out the effect of concept circle strategy on students' vocabulary mastery at grade VII MTs N 2 Padangsidempuan. The researcher has calculated the data by using quantitative analysis. The researcher used the formulation of t-test to test the hypothesis. Next, the researcher described the data as follow:

#### **A. Description of Data**

##### **1. Description of Data before Using Concept Circle Strategy**

##### **a. Score of Pre-Test Experimental Class**

In pre- test experimental class, the researcher calculated the result that got by the students in answering the multiple choice test. The scores pre-test experiential class could be seen in thefollowing table.

**Table 5. The Score of Experimental Class in Pre-test**

Total	1333
Highest score	79
Lowest score	33
Mean	55.62
Median	54.89
Modus	53
Range	46
Interval	9
Standard deviation	11.43
Variant	3170.23

Based on the table above the total score of experimental class in pre test was 1333, mean was 55.62, standard deviation was 11.43, variants was 3170.23, median was 54.89, range was 46, modus was 53, interval was 9.

The researcher got the highest score was 79 and the lowest score was 33. It can be seen on Appendix 18. Then, the computed of the frequency distribution of the students' score of experiment class could be applied into table frequency distribution as follow:

**Table 6. Frequency Distribution of Experimental Class (Pre-test)**

No	Interval	Mid Point	F	Percentages
1	36 – 44	40	5	20.83 %
2	45 – 53	49	7	29.16%
3	54 – 62	58	5	20.83%
4	63 – 71	67	4	16.66%
5	72 – 80	76	3	12.5 %
<i>i</i> = 9			24	100%

From the table above, it can be concluded that the most students are in interval 45 – 53 (7 students/29.16%). The least of students is 72 – 80 (3 students/12.5%). Clear description of the data is presented in histogram on the following figure:

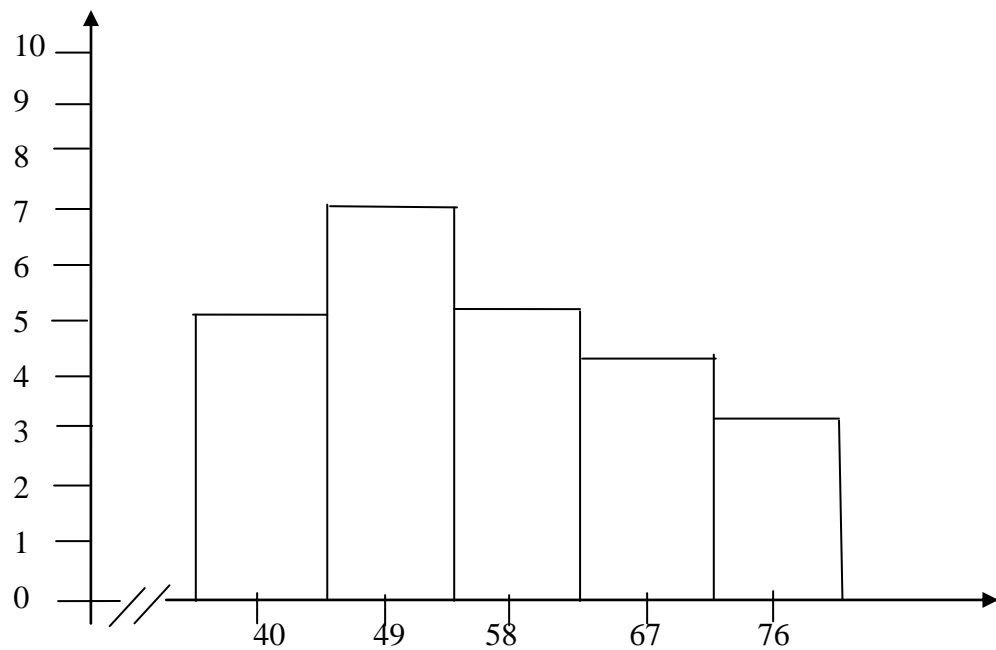


Figure.1:Histogram Results Score of the Students' Vocabulary Mastery in Experimental Class in Pre test.

Based on the histogram above, the frequency of students' score from 36 up to 44 was 5; 45 up to 53 was 7; 54 up to 62 was 5; 63 up to 71 was 4; 72 up to 80 was 3.

#### **b. Pre-test Score of Control Class**

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

**Table 7. The Score of Control Class in Pre-Test**

Total	1247
Highest score	74
Lowest score	30
Mean	53.22
Median	53.49
Modus	51.46
Range	44
Interval	9
Standard deviation	11.60
Variant	3281.49

Based on the table above the total score of control class in pre-test was 1247, mean was 53.22, standard deviation was 11.60, variant was 3281.49, range was 44, interval was 9, median was 53.49, and modus was 51.46. The researcher got the highest score was 74 and the lowest score was 30. It can be seen on appendix 19. Then, the computed of the frequency distribution of the students' score of control class can be applied into table frequency distribution as follow:

**Table 8. Frequency Distribution of Control Class (Pre-Test)**

No	Interval	Mid Point	Frequency	Percentages
1	30 – 38	34	3	13.63%
2	39 – 47	43	4	18.18%
3	48 – 57	52	6	27.27%
4	58 – 66	62	5	22.72%
5	67 – 75	71	4	18.18 %
$i=9$			22	100 %



From the table above, it can be concluded that the most students are in interval 48 – 57 (6 students/27.27%). The least of students is 30 – 38 (3 students/13.63%). Clear description of the data is presented in histogram on the following figure:

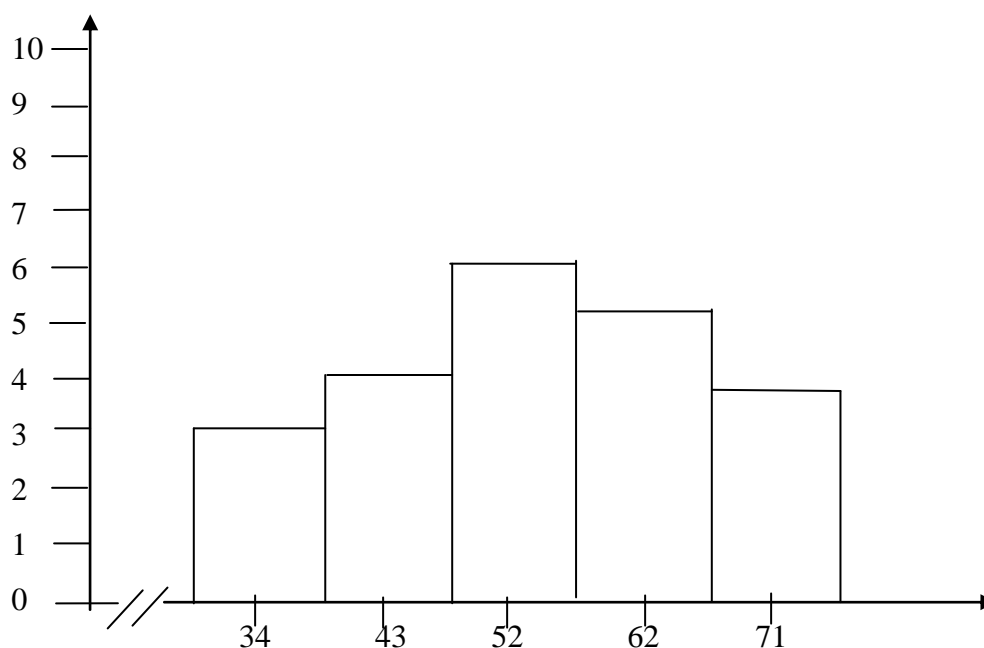


Figure.2: Histogram Score Result of the Students' Vocabulary Mastery in Control Class in Pre test.

Based on the histogram above, the frequency of students' score from 30 up to 38 was 3; 39 up to 47 was 4; 48 up to 57 was 6; 58 up to 66 was 5; 67 up to 75 was 4.

## 2. Description of Data After Using Concept Circle Strategy

### a. Score of Experimental Class in Post-test

The calculation of the result that had been gotten by the students in answering the multiple choice (test) after the researcher did

the treatment by using concept circle strategy can be seen in the following table:

**Table 9. Score of Experimental Class in Post Test**

Total	1960
Highest score	94
Lowest score	60
Mean	82.62
Median	82.66
Modus	80
Range	34
Interval	7
Standard deviation	7.763
Variant	6891.26

Based on the table above the total score of experiment class in post-test was 1960, mean was 82,62, median was 82.66, modus was 80, range was 34, interval was 7, standard deviation was 7.763, variants was 6891.26. the researcher got the highest score was 94 and the lowest score was 60. The calculation can be seen on the appendix 20. Then, the computed of the frequency distribution of the students' score of experiment class could be applied into table frequency distribution as follow:

**Table 10. The Frequency Distribution of Students' Score**

No	Interval	Mid Point	Frequency	Percentages
1	60 – 69	63	2	8.33%
2	70 – 76	73	4	8.33%
3	77 – 83	80	9	37.5%
4	84 – 90	87	7	29.16%
5	91 – 97	94	2	16.66%
$i = 7$			24	100%

Based on the table above, it can be drawn at histogram as follow :

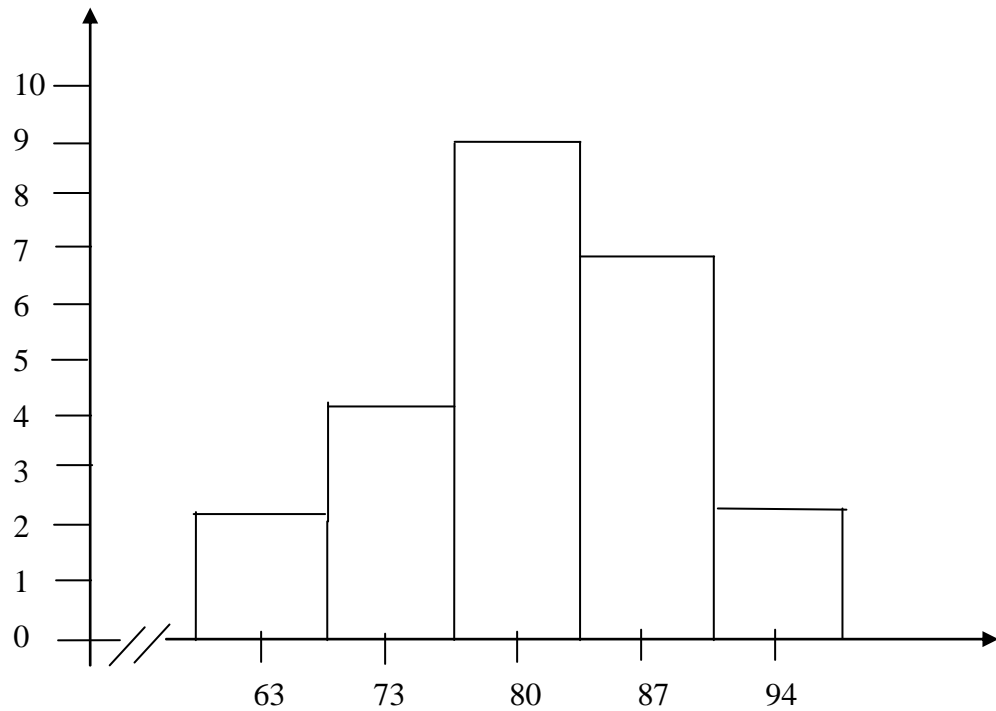


Figure.3: Histogram Score Result of the Students' Vocabulary Mastery by Using Concept Circle Strategy in Experimental Class Post Test.

Based on the histogram above, the frequency of students' score from 60 up to 69 was 2; 70 up to 76 was 4; 77 up to 83 was 9; 84 up to 90 was 7; 91 up to 97 was 2. Then, the interval which had highest frequency was 77 – 83(9 students) and the interval which had lowest frequency was 60 – 69 (2 students).

### b. Score of Control Class in Post Test

As the control class, the researcher took class VIII-3. The result that had been gotten by the students in answering multiple choice (test) after the researcher taught the vocabulary by using conventional strategy can be seen in the following table:

**Table 11. The Score of Control Class in Post-Test**

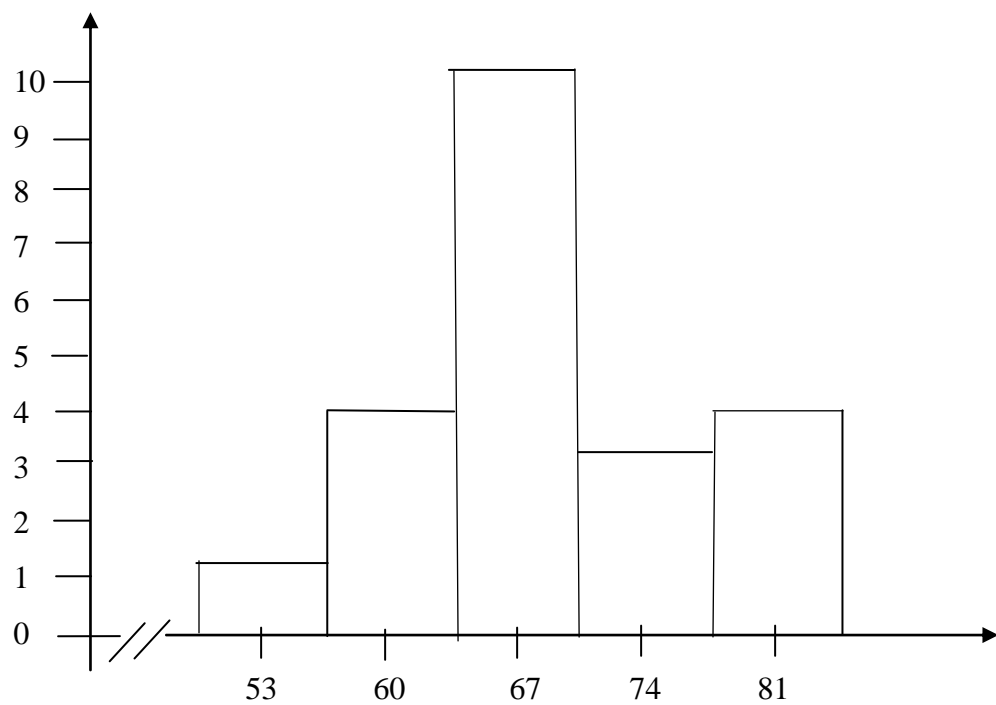
Total	1760
Highest score	84
Lowest score	50
Mean	68.58
Median	67.70
Modus	67.50
Range	34
Interval	7
Standard deviation	7.588
Variant	5224.79

Based on the above table the total score of control class in post-test was 1760, mean was 68.58, standard deviation was 7.588, variant was 5224.79, median was 67.70, range was 34, modus was 67.50, and interval was 7. The researcher got the highest score was 84 and the lowest score was 50. It can be seen on appendix 21. Then, the computed of the frequency distribution of the students' score of control class can be applied into table frequency distribution as follow:

**Table 12. Frequency Distribution of Students' Score**

No	Interval	Mid Point	Frequency	Percentages
1	50 – 56	53	1	4.54%
2	57 – 63	60	4	18.18%
3	64 – 70	67	10	45.45%
4	71 – 77	74	3	13.63%
5	78 – 84	81	4	18.18%
<i>i</i> = 7			22	100%

For the clear description of the data, the researcher presents them in histogram on the following figure:

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

Based on the figure above, the frequency of students' score from 50 up to 56 was 1; 57 up to 63 was 4; 64 up to 70 was 10 ; 71 up to 77 was 3; 78 up to 84 was 4. Then, the interval which had highest

frequency was 64 – 70(10 students) and the interval which had lowest frequency was 50 – 56 (1 students).

### 3. Description of Comparison Score of Pre-Test and Post Test

#### a. The Comparison Score of Pre-test in Experimental Class and Control Class

In pre test, the researcher did not apply treatment to experimental and control class. By giving pre test to both of the classes, the researcher knew the students' vocabulary mastery before gave a treatment.

Based on the students result in pre test, the researcher has calculated the students' score and made a comparison score of students' vocabulary mastery before giving a treatment. Experimental class consisted of 24 students (VII-2) and the control class also consisted of 22 students (VII-2). The comparison score of students result in test pre can be seen in the table below:

**Table 13. Comparison Score on Students' Vocabulary Mastery of Pre-test in Experimental Class and Control Class**

<b>Pre- Test in Experimetal Class</b>				
No	Interval	Mid-Point	F	Percentages
1	36 – 44	40	5	20.83 %
2	45 – 53	49	7	29.16%
3	54 – 62	58	5	20.83%
4	63 – 71	67	4	16.66%

5	72 – 80	76	3	12.5 %
<b>Pre-test in Control Class</b>				
No	Interval	Mid-Point	F	Percentages
1	30 – 38	34	3	13.63%
2	39 – 47	43	4	18.18%
3	48 – 57	52	6	27.27%
4	58 – 66	62	5	22.72%
5	67 – 75	71	4	18.18 %

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

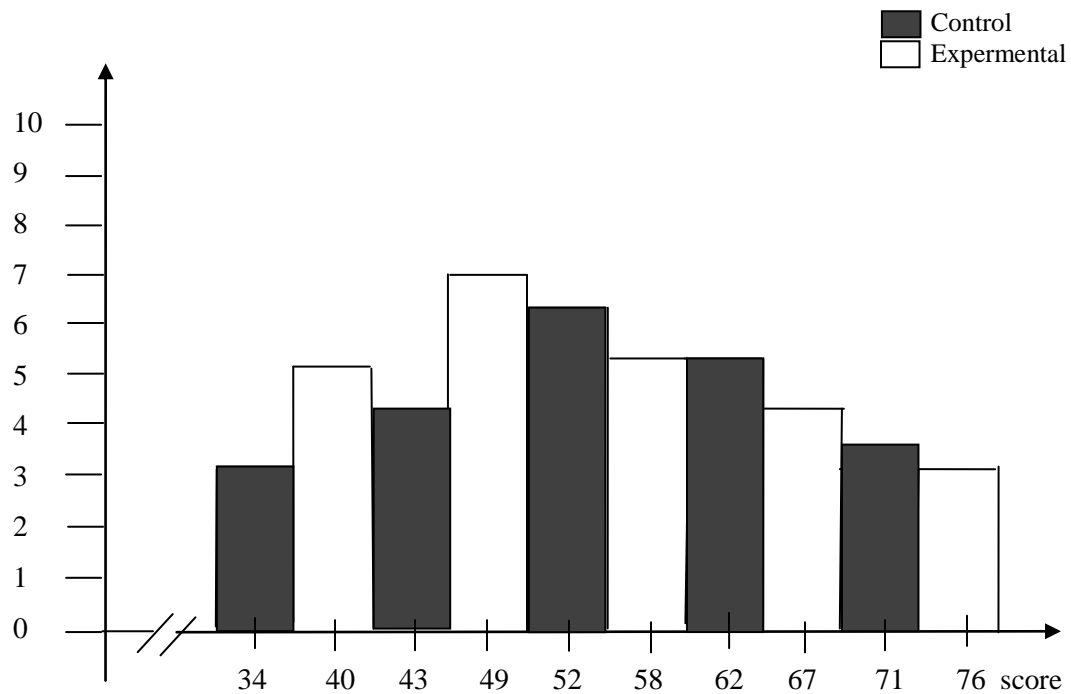


Figure.5 Comparison Score in Experimental and Control Class (Pre-Test)

From the table above, it can be concluded that score of Experimental and control class in pre-test was interval 36-44 (5 students/20.83%) in

experimental class and interval 30-38 (3 students/13.63%) in control class. Interval Experimental class was 45-53 (7 students/29.16%) and in control class was 39-47 (4 students/18.18%). Interval experimental class was 54-62 (5 students/20.83%) and interval in control class was 48-57 (6 students/27.27%). Experimental class 63-71 (4 students/16.66%) and control class 58-66 (5 students/ 22.72%). The last, experimental class 72-80 (3 students/12.5%) and also control class 67-75 (4 students/18.18 %).

**b. Comparison Score of Post-test in Experimental Class and Control Class**

In post test, the researcher applied the treatment only to experimental class. By giving post test to both of the classes the researcher knew the differences between students' vocabulary mastery after gave a treatment and without gave a treatment.

Based on the students result in post test, the researcher has calculated the students' score and made a comparison score of students' vocabulary mastery after giving a treatment and without giving a treatment. Experimental class consisted of 24 students (VII-2) and the control class also consisted of 22 students (VII-3). The comparison score of students result in post test can be seen in the table below:



**Table 14. Comparison Score of Students Vocabulary Mastery in Post test (Experimental and Control Class)**

<b>Post- Test in Experimetal Class</b>				
No	Interval	Mid-Point	F	Percentages
1	60 – 69	63	2	8.33%
2	70 – 76	73	4	8.33%
3	77 – 83	80	9	37.5%
4	84 – 90	87	7	29.16%
5	91 – 97	94	2	16.66%
<b>Post-test in Control Class</b>				
No	Interval	Mid-Point	F	Percentages
1	50 – 56	53	1	4.54%
2	57 – 63	60	4	18.18%
3	64 – 70	67	10	45.45%
4	71 – 77	74	3	13.63%
5	78 – 84	81	4	18.18%

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

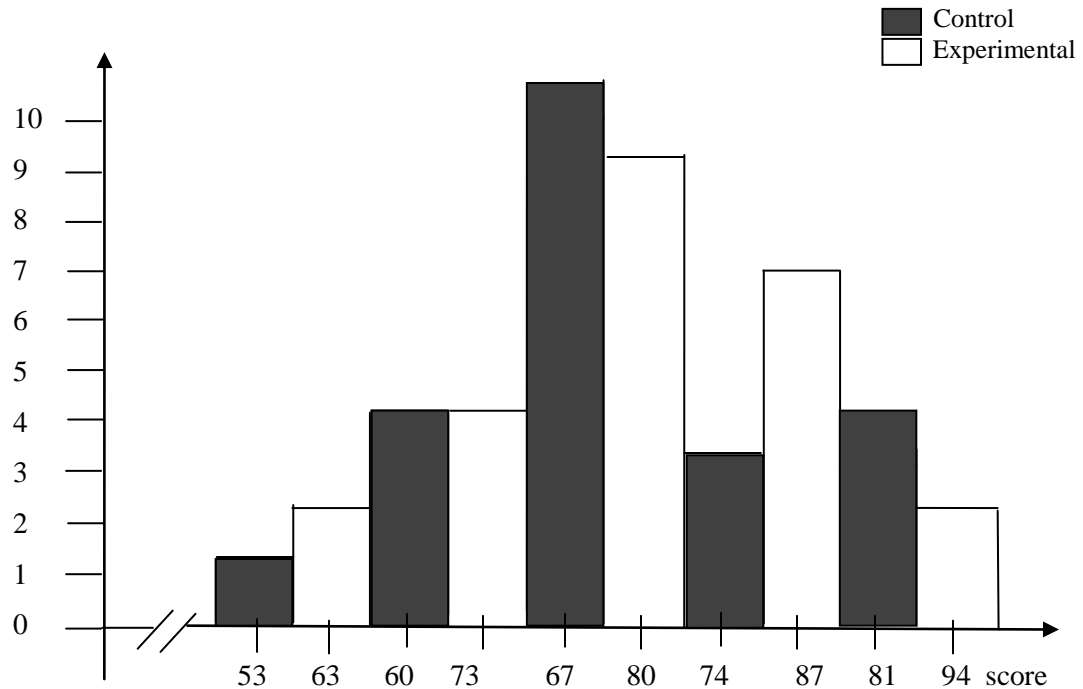


Figure.6 Comparison Score in Experimental and Control Class (Post-Test)

From the table above, it can be concluded that score of Experimental and control class in post-test was interval 60-69 (2 students/8.33%) in experimental class and interval 50-56 (1 students/4.54%) in control class. Interval Experimental class was 70-76 (4 students/8.33%) and in control class was 57-63 (4 students/18.18%). Interval experimental class was 77-83 (9 students/37.5%) and interval in control class was 64-70 (10 students/45.45%). Experimental class 84-90 (7 students/29.16%) and control class 71-77 (3 students/13.63 %). The last, experimental class 91-97 (2 students/16.66%) and also control class 78-84 (4 students/18.18 %).

## B. Testing of Hypothesis

### 1. Requirement test

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

**Table 15. Normality and Homogeneity in Pre-Test**

Class	Normality Test		Homogeneity Test	
	$t_{\text{count}}$	$t_{\text{table}}$	$F_{\text{count}}$	$F_{\text{table}}$
Experimental Class	3.39	9.488	1.02 < 2.02	
Control Class	3.37	9.488		

Based on the table above researcher calculation, the score of experiment class  $Lo = 3.39 < Lt = 9.488$  with  $n = 24$  and control class  $Lo = 1.02 < Lt = 9.488$  with  $n = 24$ , and real level  $\alpha 0.05$ . Because  $Lo < Lt$  in the both class, it means  $H_a$  was accepted. It meant that experiment class and control class were distributed normal. The calculation can be seen in appendix 18 and appendix 19.

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

**Table 16. Normality and Homogeneity in Post-Test**

Class	Normality Test		Homogeneity Test	
	$t_{\text{count}}$	$t_{\text{table}}$	$F_{\text{count}}$	$F_{\text{table}}$
Experimental Class	82.62	9.488	4.025 < 2.021	
Control Class	68.58	9.488		

The previous table shows that the score of experimental class  $Lo = 82.62 < Lt = 9.488$  with  $n = 24$  and control class  $Lo = 68.58 < Lt = 9.488$  with  $n = 22$ , and real level  $\alpha 0.05$ . Because  $Lo < Lt$  in the both class, it means  $H_a$  was accepted. It meant that experiment class and control class were distributed normal. The calculation can be seen in appendix 23.

The coefficient of  $F_{count} = 1.02$  was compared with F table. Where F table was determined at real  $\alpha = 0.05$ , and the different numerator  $dk = N - 1 = 24 - 1 = 23$  and denominator  $dk = N - 1 = 22 - 1 = 21$ . So, by using the list of critical value at F distribution is got  $F_{0.05} = 2.02$ . It showed that  $F_{count} 1.02 < F_{table} 2.02$ . So, the researcher concluded that the variant from the data of the students' vocabulary mastery at MTs N 2 Padangsidempuan in experimental and control class was homogenous. The calculation can be seen on the appendix 19.

## 2. Hypothesis Test

After calculating the data of post-test, researcher has found that post-test result of experimental and control class is normal and homogenous. The data would be analyzed to prove the hypothesis. It used formula of t-test. Hypothesis of the research was "Concept Circle

strategy has significant effect toward vocabulary mastery at grade VII students of MTs N 2 Padangsidempuan”. The calculation can be seen on the appendix 23. The result of t-test was as follow:

**Table 17. Result of T-test from the Both Averages**

Pre-test		Post-test	
$t_{\text{count}}$	$t_{\text{table}}$	$t_{\text{count}}$	$t_{\text{table}}$
0.144	2.021	4.205	2.021

The test hypothesis have two criteria. First, if  $t_{\text{count}} < t_{\text{table}}$ ,  $H_0$  is accepted. Second,  $t_{\text{count}} > t_{\text{table}}$ ,  $H_a$  is accepted. Based on researcher calculation in pre test, researcher found that  $t_{\text{count}} 0.144$  while  $t_{\text{table}} 2.021$  with opportunity  $(1 - \alpha) = 1 - 5\% = 95\%$  and  $dk = n_1 + n_2 - 2 = 24 + 22 - 2 = 44$ . Cause  $t_{\text{count}} < t_{\text{table}} (0.144 < 2.021)$ , it means that hypothesis  $H_a$  was rejected and  $H_0$  was accepted.

So, in pre test, the two classes were same. There is no difference in the both classes. But, in post test, researcher found that  $t_{\text{count}} 4.205$  while  $t_{\text{table}} 2.021$  with opportunity  $(1 - \alpha) = 1 - 5\% = 95\%$  and  $dk = n_1 + n_2 - 2 = 24 + 22 - 2 = 44$ . Cause  $t_{\text{count}} > t_{\text{table}} (4.205 > 2.021)$ , it means that hypothesis  $H_a$  was accepted and  $H_0$  was rejected. So, there was the significant effect of Concept Circle strategy on Students' Vocabulary Mastery at grade VII at MTs N 2 Padangsidempuan. In this case, the mean score of experimental class by using concept circle strategy was 82.62 and mean score of control

class was 68.58 that was taught by using conventional strategy. The calculation can be seen on the appendix 23 and 24.

### C. Discussion

Based on the related findings, the researcher discussed the result of this research and compared with the related findings. It also discussed with the theory that has been stated by the researcher. First, Sri Mujiyatmi Wulan Mei<sup>1</sup> showed that the experimental group got 70.5. Second, Chairunnisa<sup>2</sup> showed that the experimental group got 63 for the mean score of pre-test. Sri Mujiyatmi's pre-test result was higher than Chairunnisa's result. The last, Latifah Annur Nasution<sup>3</sup> showed that the experimental group got 61.87 for the mean score of pre-test. Latifah Annur's pre-test result was higher than Chairunnisa. Then, Sri Mujiyatmi's pre-test result was higher than Latifah Annur.

Meanwhile, the researcher got the mean score of pre-test of the experimental group was 68.58 and it was the lowest pre-test result than Sri Mujiyatmi's and Sri Mujiyatmi's result but highest pre-test result than

---

<sup>1</sup> Sri Mujiyatmi Wulan Mei, The Use of Circle Game as a Strategy to Improve the Students' Mastery in English Vocabulary to the Fourth Grade of SDN 01 Sumarjalak Plumpang, Unpublished Thesis, Faculty of Education Department of Mansoura University, accessed on <http://files.eric.ed.gov/fulltext/ED539137.pdf>, retrieved on June 5<sup>th</sup> 2017 at 8.05 pm.

<sup>2</sup> Chairunnisa, The Effect of Concept Circle Strategy on Students' Vocabulary Achievement in Reading Descriptive Texts, *Unpublished Thesis, The Journal Faculty of Education Department of UNIMED University*, assessed on <http://journal.academic.edu/pdf>. Retrieved on march 10<sup>th</sup> march 2017 at 9.10 pm.

<sup>3</sup> Latifah Annur Nasution, The Effect of Frayer Model on Students' Vocabulary Matery at X Grade of SMA N 6 Padangsidempuan in Academic year 2015/2016, Thesis, Padangsidempuan: Faculty and Teacher Training, STAIN Padangsidempuan, 2015.

Chairunnisa's and Latifah's result of the related findings. From the above description, it can be seen that the highest mean score of pre-test of the experimental group was gotten by the researcher where the mean score of pre-test was 70.5 and the lowest mean score of pre-test of the experimental group was gotten by Latifah's in her thesis where the mean score of pre-test was 61.87. It means, before using concept circle strategy, students' score was low and for the researcher, the mean score of pre-test of the experimental group was under the standardization where the standardization mark is 75.

Then, for the post-test result, Sri Mujiyatmi<sup>4</sup> got the experimental class' score was 80.3. Chairunnisa<sup>5</sup> got the experimental class' score was 76, and it was lower than Sri's result. Latifah Annur<sup>6</sup> got the experimental class' score was 80.20, and it higher than Sri's and Chairunnisa's result. Beside, the researcher got the mean score for experimental class after using concept circle strategy was 82.62 and it was the highest score among the related findings.

From the description, it can be seen that the highest mean score of post-test of the experimental group was gotten by the researcher where the mean score of post-test was 82.62 and the lowest mean score of post-test was gotten by Chairunnisa in her thesis where the mean score of post-test was 76. So, among the mean scores of post-test, the mean scores have increased than

---

<sup>4</sup>Sri Mujiyatmi Wulan Mei, *Op.Cit.*

<sup>5</sup>Chairunnisa, *Op.Cit.*

<sup>6</sup>Latifah Annur Nasution, *Op.Cit.*

pre-test. Where, for the researcher result, the mean score of post-test was passed the standardization where the standardization mark is 75.

Based on the result, the researcher has got the significant effect of Concept Circle Strategy, so have the researchers who mentioned in related finding. Sri Mujiyatmi found that  $t_0$  was higher than  $t_t$  ( $1.69 > 1.66$ ).<sup>7</sup> Chairunnisa found that  $t_0$  was higher than  $t_t$  ( $2.41 > 1.92$ ).<sup>8</sup> Latifah Annur found that  $t_0$  was higher than  $t_t$  ( $3.47 > 1.67$ ).<sup>9</sup>

From the description, t-test result from Latifah Annur was the highest between Sri Mujiyati's and Chairunnisa's result and t-test result from Sri Mujiyatmi was lowest among them.

Beside, the researcher also found that  $t_0$  is higher than  $t_t$  where  $t_0$  was 4.205 and  $t_t$  was 2.021 ( $4.205 > 2.021$ ). Where, the researcher result of t-test was the highest among the related findings result. So, the result of t-test of Concept Circle Strategy highest than the result t-test of related findings. It can be seen that among the researches, the using of Concept Circle gave the effect to students' vocabulary mastery especially at grade VII MTs N 2 Padangsidempuan where it is suitable with the theory from Janet Allen states

---

<sup>7</sup>Sri Mujiyatmi Wulan Mei, The Use of Circle Game as a Strategy to Improve the Students' Mastery in English Vocabulary to the Fourth Grade of SDN 01 Sumarjalak Plumpang,...

<sup>8</sup>Chairunnisa, The Effect of Concept Circle Strategy on Students' Vocabulary Achivement in Reading Descriptive Texts...

<sup>9</sup>Latifah Annur Nasution, The Effect of Frayer Model on Students' Vocabulary...



that, concept circle can enrich students' vocabulary<sup>10</sup> Besides that, the students could active in their class, so that students easy in remembering what students werelearned. This proofs show that concept circle is suitable to be applied in teaching Vocabulary because it has been proven by the previous researchesand the theory. So, concept circle strategy has given the significant effect to the research that has been done by the researcher or the other researcher who mentioned in related finding.

From the result of the research that is previously stated, it was proved that the students of the experimental group who were taught vocabulary mastery by using concept circle stratey got better result than the control group that were taught vocabulary mastery by using conventional method.

#### **D. Limitation of the Research**

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

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

---

<sup>10</sup>Allen, Janet, *Word, Word, Word, Teaching Vocabulary in Grades 4-12*( Portlandmaine: Sthenhouse, 1999), p. 101

2. Some of students were not too serious in answering the pre-test and post-test. It may caused by the test, because they knew before that the test would not influence their score in school. It made them answer the test without thinking hard and the answer of the test was not pure because they did not do it seriously.

## **CHAPTER V**

### **CONCLUSION AND SUGGESTION**

#### **A. Conclusion**

Based on the result of the research, the conclusions of this research is there was a significant effect concept circle strategy on students' vocabulary mastery at grade VII MTs N 2 Padangsidimpuan. The researcher found the result of t-test where  $t_0$  was higher than  $t_t$ .  $t_0$  was 4.205 and  $t_t$  was 2.021 ( $4.205 > 2.021$ ). It means that where  $H_a$  was accepted and  $H_0$  was rejected. Before using concept circle strategy the mean score of experimental class was 55.62 and the mean score of control class which was taught by conventional strategy was 53.22. After using concept circle strategy the mean score of experimental class was 82.62 and the mean score of control class which was taught by conventional strategy was 68.58.

#### **B. Suggestion**

After finishing this research, the researcher got much information in English teaching and learning process. Therefore, the writer has suggestion to:

1. The principal of MTs N 2 Padangsidimpuan, to motivate the teacher, especially English teachers to teach as well as possible by maximizing the using concept circle strategy in teaching english.
2. English teacher, from the research result it can be seen that the students' score were unsatisfied. So, the researcher hopes to English teacher of MTs N 2 Padangsidimpuan apply various innovative

strategy in teaching English. It also can be supported by choosing right strategy and good class management. Besides it, it is also important for students to follow learning process seriously because the success of learning is in students' result.

3. Other researcher, the researcher hopes that the others researchers who want to conduct a research related to this research to find the others influence of these strategies deeply.

## REFERENCES

- Agus Irianto. *Statistik Konsep Dasar dan Aplikasinya*. Padang: P2LPTK Departemen Pendidikan Nasional. 2003.
- Annur, Latifah. "The Effect of Verbal and Visual Word Association Strategy toward Vocabulary Mastery at Grade VIII Students of SMPN 1 Panyabungan Selatan 2015/2016 Academic Year" Unpublished Thesis: IAIN Padangsidempuan 2016.
- Allen, Janet, *Word, Word, Word, Teaching Vocabulary in Grades 4-12*, Portland maine: Sthenhouse, 1999.
- Arikunto, Suharsimi, *Prosedur Penelitian Suatu Pendekatan Praktik*, Jakarta: Rineka Cipta, 2006.
- Bishop, Ashley, et. al., *Vocabulary Instruction for Academic Purpose*, USA: Shell Education, 2009.
- Creswell, John W., *Research Design: Qualitative, Quantitative and Mixed Method Approaches 2<sup>nd</sup> Edition*, California; Sage Publication, 2003.
- Deriden, Jhon. "Conventional Strategy" retrieved from: <http://www.Britania.com/Ebchecked/topicIc/421797/nuclear-strategy/52993/conventional-strategy> May 7<sup>th</sup> 2017 at 10.00 p.m.
- Dunlap, Carmen Zuñiga and Evelyn Marino Weisman, *Helping English Language Learners Succeed: Practical Strategies for Successful Classrooms*, U.S.A: Shell Education 2006.
- Gay, L.R & Peter Airasian, *Educational Research: Competent for Analysis and Application*, New Jersey: Prentice Hall, 2000.
- Gattegno, Caleb. *Teaching Foreign Language in Schools*, New York: Educational Solution, 1972.
- Harmer, Jeremy, *The Practical of English Language Teaching*, New York: Longman, 2000.
- Hiebert, Elfrieda H. and Michael L. Kamil, *Teaching and Learning Vocabulary: Bringing Research To Practice*. New Jersey: Lawrence Erlbaum Associates, Publishers, 2005.

- Hornby, A.S. *Oxford Advanced Learner's Dictionary*, New York: Oxford University Press, 1995.
- Hudson, The Meaning of Conventional Strategy, retrieved from: <http://www.conventional-strategy/topic/54372-strategy> on October 7<sup>th</sup> 2016 at 10.00 p.m.
- Inbaraj, J., *English Language Teaching*, Chennai, India: Tamilnadu Textbook Corporation 2008.
- Johnston, Deirdre D, Scott W. Vanderstoep, *Research Methods for Everyday Life: Blending Qualitative and Quantitative Approaches*, San Fransisco: Jossey Bass, 2009.
- Jackson, Howard and Etienne Ze Amvela , *Words, Meaning, and Vocabulary: An Introduction to Modern Lexicology*, London: Cassel, 2000.
- Kasbolah, Kasihani. *Teaching Learning Strategy*, Malang: IKIP Malang, 1993.
- Lopez-Kimbell, Kimberly. *Teaching Vocabulary Material and Methods for Teaching Reading*, 2009 from <http://hlperson.com/mt/archives/vocabulary.gif>.
- Meltzer, Julie and Edmund T. Hamann, *Meeting the Literacy Development Needs of Adolescent English Language Learners Through Content Area Learning: Focus on Classroom Teaching and Learning Strategies*, The Education Alliance at Brown University, 2005.
- Mukarto, et. al., *English on Sky for Junior High School Students Year VIII*, Penerbit Erlangga, 2007.
- Nunan, David. *Practical English Language Teaching*, New York: Mc.Grow Hill, 2003.
- Nelson, Thomas. *The Award Compact English Dictionary*, London: Award Publication, 1985.
- Pikulski, John J. and Shane Templeton, *Teaching and Developing Vocabulary: Key to Long-Term Reading Success*, USA: Houghton Mifflin Company, 2004.
- Prime, Andrean. Steps Implementing Teaching Method, Available at <http://materiinside/2014/12/langkah-zmelaksanakan-metode-ceramah.html>, Accessed on January, 20, 2017 at 11.00 am.
- Richard, Jack C. and Richard Schmidt, *Longman Dictionary of Language Teaching and Applied Linguistics, Third Edition*, Harlow: Pearson Education, 2002.

- Setiawan, DodikHeru. Defenition, Adventages and Disadvantages Lecture Method, Avaiable at <http://zonainfosemua./2011/01/pengertian-kelebihan-dan-kekurangan.html>. Accessed on, January, 20, 2017 at 10.15 a.m.
- Sudijono, Anas, *Pengantar Statistik Pendidikan* Jakarta: Raja Grafindo Persada, 2005.
- \_\_\_\_\_. *Pengantar Evaluasi Pendidikan*, Jakarta: PT. Raja Grafindo Persada, 1996.
- Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*, Bandung: Alfabeta, 2013.
- Susan, Hanson and Jennifer F.M. Padua. *Teaching Vocabulary Explicitly*, U.S.: Institute of Education Sciences, 2011.
- Think works: *Vocabulary Stratey*, Teaching Comprehension, retrieved from <http://oame.on.ca/main/files/thinklit/conceptcircle.pdf> on january 20<sup>th</sup>,2017 at 10.15 p.m.
- Think Literacy: *Mathematics Subject-Specific Examples Grades 7-9* retrieved from <http://oame.on.ca/main/files/thinklit/conceptcircle.pdf> on September 20<sup>th</sup>2016, at 10.15p.m.
- Ur, Penny. *A Course in Language Teaching*, United Kingdom: University Press, 2000.

## Appendix 1

### Experiment Class

#### RENCANA PELAKSANAAN PEMBELAJARAN (RPP)

Nama Sekolah : MTs Modern Baharuddin Batang Angkola  
Mata Pelajaran : Bahasa Inggris  
Kelas/Semester : VII-2 / II  
Alokasi Waktu : 2 x 40 menit

---

**Standar Kompetensi:** Memahami arti dari kosakata yang dipraktekkan dengan bentuk circle atau lingkaran.

**Kompetensi Dasar :** - Siswa mampu mengisi dan memahami kosakata yang dipraktekkan melalui bentuk circle.  
- Siswa mampu menjelaskan mengapa mereka memilih kata tersebut.

**Indikator :** Siswa mampu menentukan kosakata yang tepat di dalam kalimat sesuai dengan defenisi, deskripsi dan simbolnya.

**Tujuan Pembelajaran:** Siswa mampu mengisi kata yang kosong dan mengetahui makna kata yang di berikan.

**Teknik Pembelajaran :** Concept Circle Strategy.

#### Langkah-langkah Pembelajaran

##### 1. Kegiatan Pendahuluan :

- Guru memasuki kelas dengan mengucapkan salam dan menyapa siswa dengan menggunakan bahasa inggris.
- Guru meminta siswa untuk membuka kelas dengan berdo'a.



- Guru mengabsen siswa.
- Guru menjelaskan secara ringkas tentang materi yang akan dipelajari.

2. Kegiatan Inti :

- Guru menjelaskan vocabulary yang akan dipelajari siswa dengan menggunakan concept circle strategy.
- Guru menjelaskan concept circle strategi kepada siswa.

**Prosedur Strategi Concept Circle :**

1. Guru menyiapkan beberapa concept circle yang berisi tentang materi atau topik pembelajaran.
2. Guru membagi concept circle pada empat bagian atau lebih.
3. Guru memberikan setiap kelompok concept circle template.
4. Guru memberikan intruksi bagaimana menggunakan concept circle.
5. Dalam concept circle strategi ada bagian yang kosong, siswa diminta untuk mengisi bagian yang kosong yang sesuai dengan simbol atau karakteristik yang terdapat dalam concept circle template.
6. Dalam concept circle template, setiap pasangan juga harus menjawab apa topik yang sesuai berdasarkan ciri-ciri yang ada dalam concept circle.
7. Lalu, siswa menjelaskan mengapa mereka memilih kata tersebut.

3. Kegiatan Penutup :

- Guru menanyakan kesulitan selama kegiatan pembelajaran.
- Guru mengkonfirmasi jawaban/hasil kerja siswa dan memberikan kesimpulan tentang materi yang telah diajarkan.
- Guru meminta siswa mengakhiri kelas dengan berdo'a.
- Salam

**Sumber Belajar** :

- Buku bahasa inggris siswa SMP/MTs
- Internet
- Kamus bahasa inggris.

**Media** :

- Papan tulis
- Spidol
- Cocept circle strategy

**Penilaian**

No	Indicators	Topik	Items	Number of items	Score	Total score
1.	Identfy the meaning of the words ( noun)	Fruits	5	2,5,20,23,24	4	20
		Animals	5	3,4,21,22,25	4	20
		Part of body	5	1,6,17,18,19	4	20
		Frofession	5	7,8,9,11,13	4	20
		Classroom object	5	10,12,14,15,16	4	20
TOTAL			25			100

1. Jumlah skor maksimal keseluruhan adalah 100.
2. Jawaban benar diberi skor 2 dan jawaban salah diberi skor 0. Jumlah skor keseluruhan  $2 \times 50 = 100$ .
3. Nilai maksimal =  $\frac{\text{Jumlah jawaban yang benar}}{\text{Jumlah soal}}$

Padangsidempuan, 2017

Mengetahui

Validator

Peneliti

**Sojuangon Rambe, S.S., M.Pd**

NIP. 19790815 200604 1 003

**Rahmi Pu'adi Siregar**

Nim. 13 340 0026

**Appendix 2**  
**Control Class**

**RENCANA PELAKSANAAN PEMBELAJARAN**  
**(RPP)**

Nama Sekolah : MTs Modern Baharuddin Batang Angkola  
Mata Pelajaran : Bahasa Inggris  
Kelas/Semester : VII-2 / II  
Alokasi Waktu : 2 x 40 menit

---

**Standar Kompetensi:** Memahami kosakata yang sering dijumpai pada lingkungan sekitar.

**Kompetensi Dasar** : - Siswa mampu mengucapkan kosakata dengan baik.  
- Siswa memahami arti dari kosakata tersebut.  
- Siswa mampu menggunakan kosakata yang telah dipelajari.

**Indikator** : Siswa mampu menentukan kosakata yang tepat di dalam kalimat sesuai dengan deskripsinya.

**Tujuan Pembelajaran:** Siswa mampu mengucapkan dan mengetahui makna dari kosakata yang dipelajari.

**Teknik Pembelajaran** : Conventional Strategy

## Langkah-langkah Pembelajaran

### 1. Kegiatan Pendahuluan :

- Guru memasuki kelas dengan mengucapkan salam dan menyapa siswa dengan bahasa Inggris.
- Guru meminta siswa untuk membuka kelas dengan berdo'a.
- Guru mengabsen siswa.
- Guru menjelaskan secara ringkas tentang materi yang akan dipelajari.

### 2. Kegiatan Inti :

- Guru menjelaskan vocabulary yang akan dipelajari siswa.
- Guru memberikan daftar vocabulary.
- Guru meminta siswa untuk mencari arti dari vocabulary tersebut di dalam kamus.
- Guru meminta siswa untuk menghafal vocabulary tersebut.
- Guru memberikan latihan kepada siswa tentang vocabulary yang dipelajari

### 3. Kegiatan Penutup :

- Guru membuat kesimpulan pelajaran.
- Guru meminta siswa mengakhiri kelas dengan berdo'a.
- Salam

**Sumber Belajar** : Buku bahasa Inggris siswa, kamus bahasa Inggris, dan internet.

**Media** : Papan tulis dan daftar vocabulary

## Penilaian

No	Indicators	Topik	Items	Number of items	Score	Total score
2.	Identfy the	Fruits	5	2,5,20,23,24	4	20

	meaning of the words ( noun)	Animals	5	3,4,21,22,25	4	20
		Part of body	5	1,6,17,18,19	4	20
		Frofession	5	7,8,9,11,13	4	20
		Classroom object	5	10,12,14,15,16	4	20
TOTAL			25			100

4. Jumlah skor maksimal keseluruhan adalah 100.
5. Jawaban benar diberi skor 2 dan jawaban salah diberi skor 0. Jumlah skor keseluruhan 2 x 50 = 100.
6. Nilai maksimal =  $\frac{\text{Jumlah jawaban yang benar}}{\text{Jumlah soal}}$

Padangsidimpun, 2017

Mengetahui

Validator

Peneliti

**Ilham Qadir Nasution, S.Pd**

**Rahmi Puadi Siregar**

Nim. 13 340 0026

## Appendix 2

### Control Class

#### RENCANA PELAKSANAAN PEMBELAJARAN(RPP)

**Sekolah** : MTS N 2 PADANGSIDIMPUAN

**Mata Pelajaran** : Bahasa Inggris

**Kelas/Semester** : VII/Ganjil

**Alokasi Waktu** : 2 Pertemuan (4x45 Menit)

#### A. StandarKompetensi:

Memahami makna kosakata yang berkaitan dengan lingkungan sekitar.

#### B. Kompetensi Dasar

Mengungkapkan makna dari kosakata secara akurat, lancar dan berterima dalam konteks kehidupan sehari-hari.

#### C. Indikator

1. Mengidentifikasi defenisi kosakata dengan topik:*profession/job,things in my kicthen, job:work place.*
2. Mengidentifikasi definition, words association dan memorise kosakata dengan topik:*profession/job,things in my kitchen,job:work place.*

#### D. Tujuan Pembelajaran

Pada akhir pembelajaran siswa dapat:

1. Mengidentifikasi defenisi singkat dari kosakata tersebut.
2. Mengungkapkan defenisi words association dari sebuah kosakata.
3. Menggunakan kosakata yang dipelajari dalam kalimat.

#### E. Materi Pembelajaran

List of vocabulary with topic:

1. Profession/job:Police, Dentist, Sailor, Lawyer, Tailor, Teacher and Baker.
2. Things in my kitchen: Fork, Blender, Mixer, Bowl, Freezer, Kettle. Ect.
3. Job: work place: Hospital, Hotel, School, Bank, Restaurant, Saloon, ect.

#### F. Metode Pembelajaran

1. *Conventional strategy*

## **G. Media, dan Sumber Belajar**

1. Media
  - a. *Boardmarker*
  - b. *Whiteboard*
2. Sumber Belajar
  - a. Buku yang relevan
  - b. Kamus
  - c. Internet

## **H. Langkah-Langkah Kegiatan Pembelajaran**

### **Pertemuan 1**

1. Pendahuluan
  - a. Guru menyiapkan peserta didik untuk mengikuti proses pembelajaran dengan memberi salam, mengajak peserta didik untuk mengawali kegiatan dengan berdo'a, dan membangkitkan semangat peserta didik untuk belajar.
  - b. Absensi
2. Inti
  - a. Menjelaskan topik kosakata yang akan dipelajari.
  - b. Guru memberikan contoh kosakata.
  - c. Gurumeminta siswa mencari kosakata dalam kamus sesuai topik dan menuliskannya beserta artinya.
  - d. Guru mengawasi siswa selama melakukan tugas dan member arahan.
  - e. Guru memberi siswa waktu untuk menghafalkan kosakata tersebut.
3. Kegiatan Penutup
  - a. Guru beserta siswa membuat kesimpulan tentang materi yang sudah dipelajari.
  - b. Guru menutup pertemuan dengan *hamdalah* dan salam

### **Pertemuan 2**

1. Pendahuluan
  - a. Salam
  - b. Absensi
  - c. Do'a
2. Inti



- a. Menjelaskan atau mengingatkan kembali pelajaran mengenai kosakata yang sudah dipelajari.
  - b. Menyimak hafalan siswa.
  - c. Siswa menjawab soal yang diberikan guru.
3. Kegiatan Penutup
- a. Guru beserta siswa membuat kesimpulan tentang materi yang sudah dipelajari.
  - b. Guru menutup pertemuan dengan *hamdalah* dan salam.

### I. Evaluasi

The amount of correct answer in matching test.

No	Indicator	Topic	Teknik Penilaian	Bentuk Instrumen	Instrument Soal
1	Identifying the definition of words	Profession/job	Test Tulisan	Test	Matching Test
		Job: work place			
		Things in my kitchen			
2	Identifying the word association of words	Things in my kitchen			
		Job: work place			
3	To memorise the words	Profession/job			
		Things in my kitchen			

1. Jumlah skor maksimal keseluruhan adalah 100
2. Jawaban benar diberi skor 2 dan jawaban salah diberi skor 0. Jumlah skor  $2 \times 50 = 100$ .
3. Nilai maksimal =  $\frac{\text{jumlah jawaban yang benar}}{\text{Jumlah soal}}$

Padangsidempuan, Juli 2017

**Mengetahui**  
**Validator**

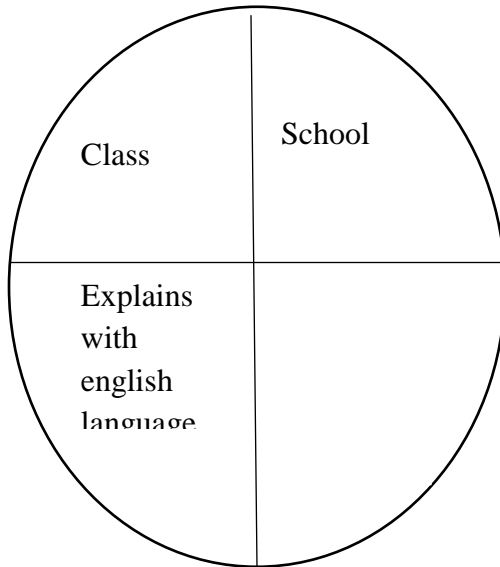
**Peneliti**

**Rafni Dewiyanti., S.Pd**  
**NIP.**

**Rahmi Pu'adi Siregar**  
**NIM. 13 340 0026**

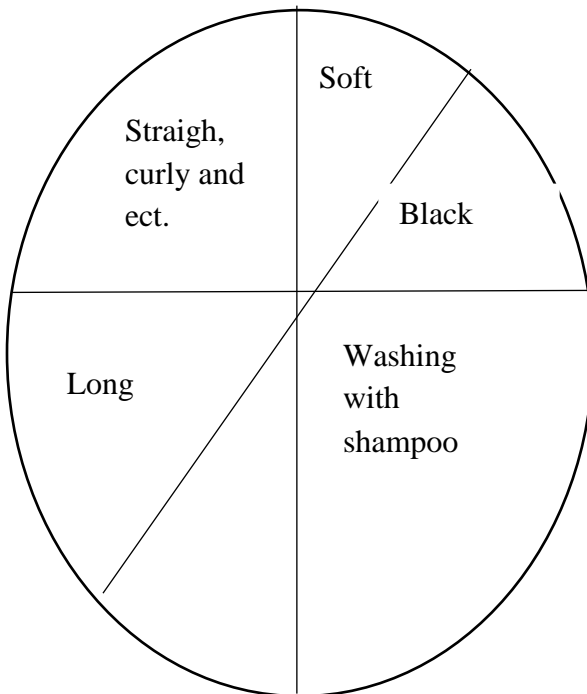
## LEARNING MATERIAL

1. Direction : in the concept circle describe about profession, answer the question based on the characteristic or clues.



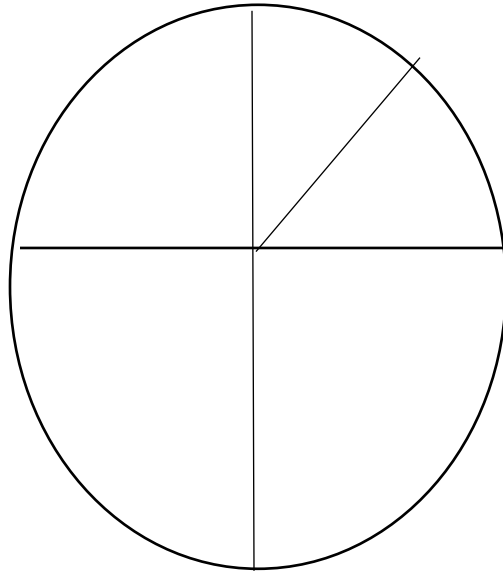
Answer : \_\_\_\_\_

2. Deriction : answer the question based on the definition in the concept circle.



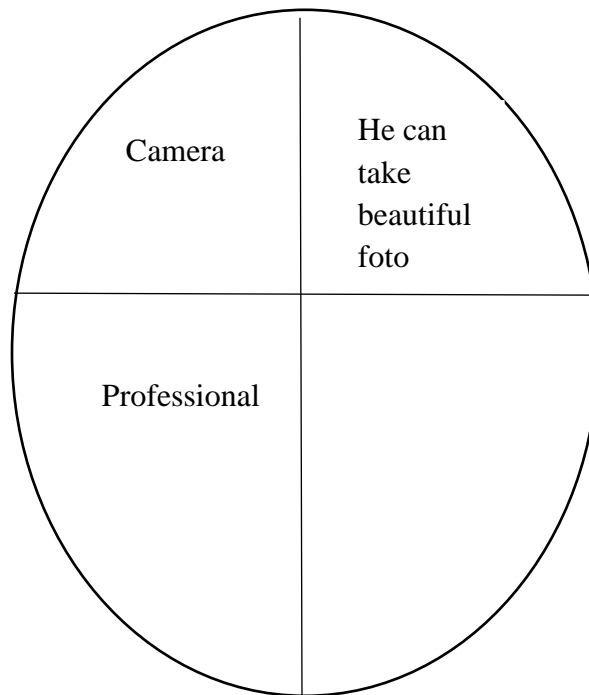
Answer : \_\_\_\_\_

3. Direction : describe things in the concept circle about hospital or the topic.



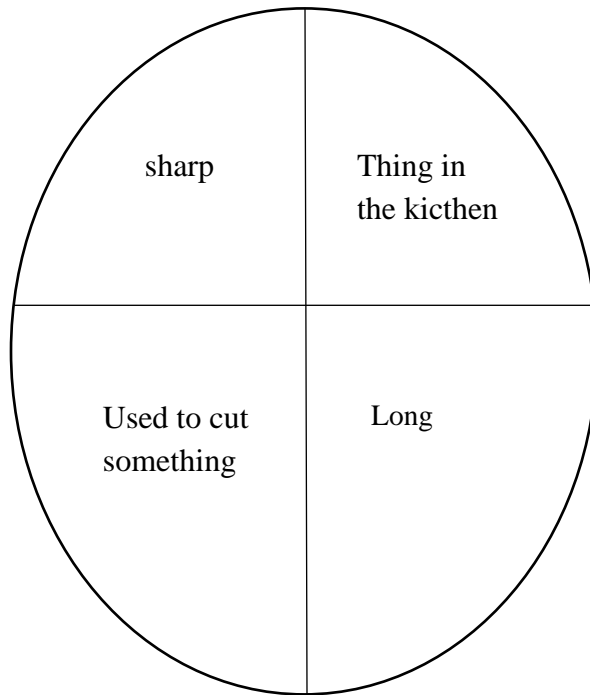
Topic : Hospital

4. Direction : give the answer based on clues in the concept circle.



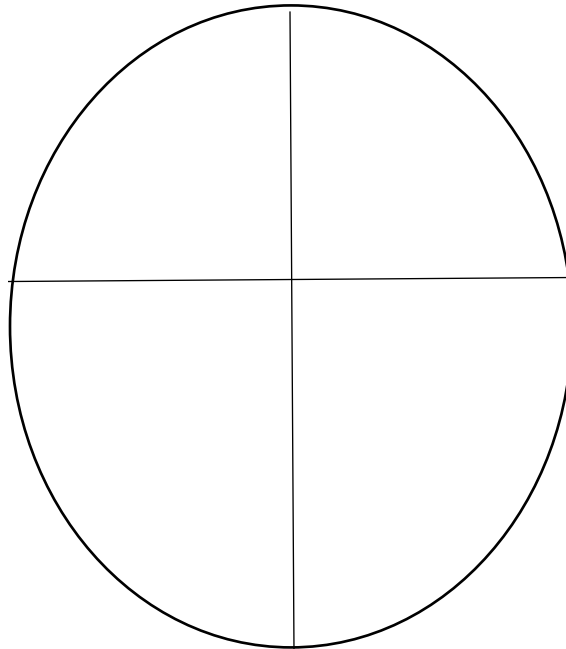
Answer : \_\_\_\_\_

5. Direction : the characteristic in the concept circle is things in my kitchen. Answer it's based on characteristic.



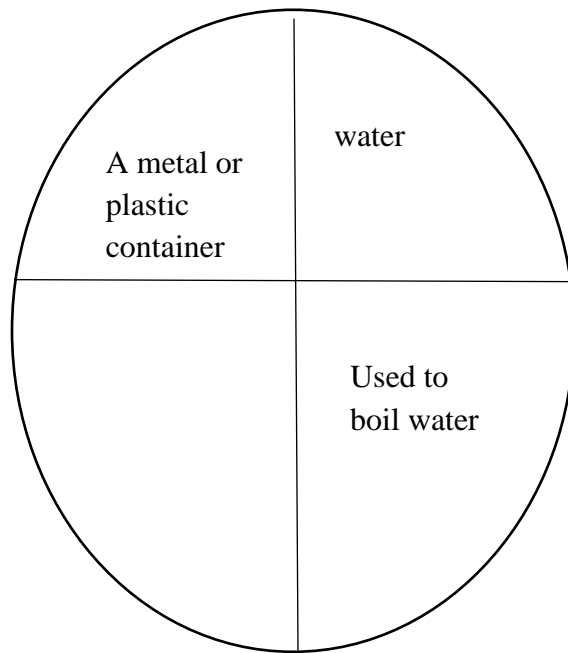
Answer : \_\_\_\_\_

6. Direction : fill in the blank in the concept circle based on about topics.



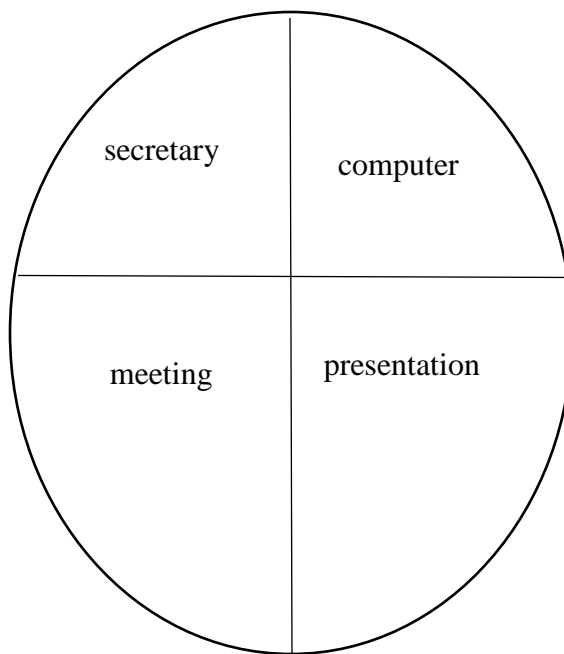
Topic : Restaurant

7. Direction : in the concept circle does the characteristic, please answer it based on appropriate word.



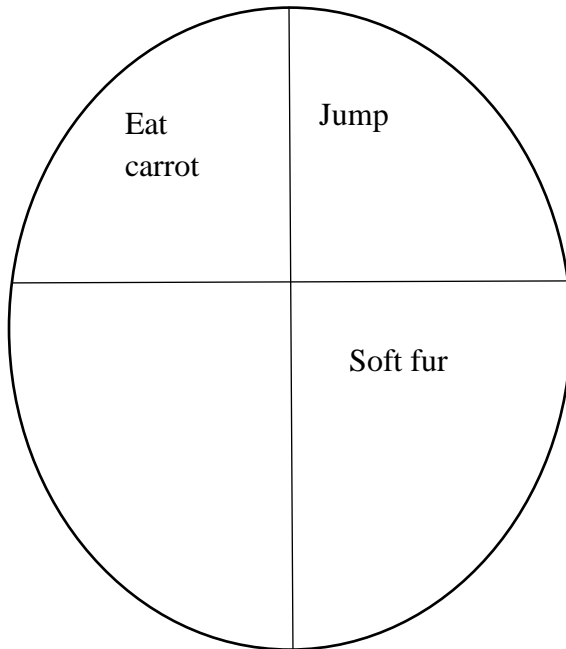
Answer : \_\_\_\_\_

8. Direction : the characteristics in the concepts circle is works place. answer the question based on characteristic in the concept circle.



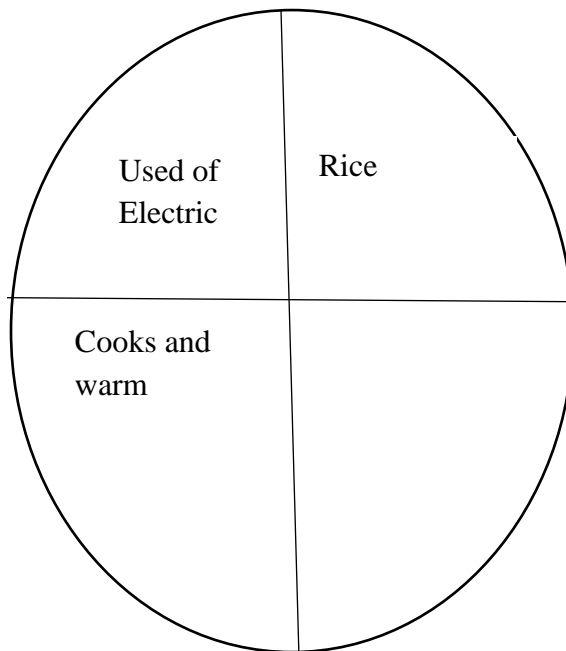
What is this : \_\_\_\_\_

9. Direction : It's about animal. Please give the answer based on the clues in the concept circle.



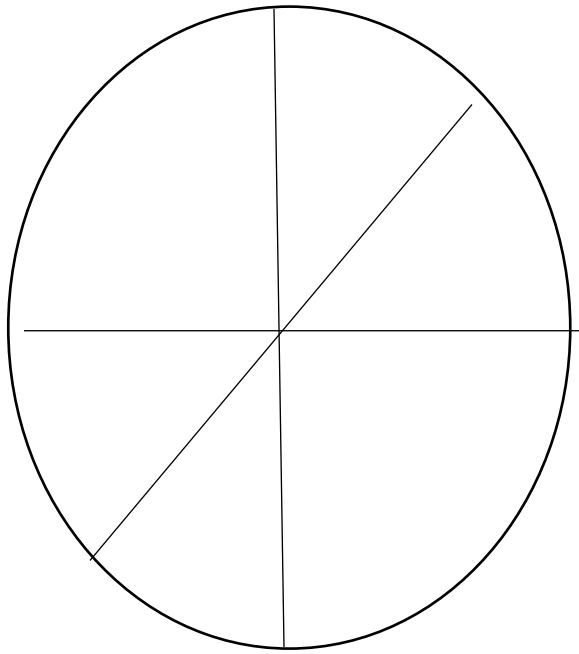
Answer : \_\_\_\_\_

10. Direction : It's thing about things in my kitchen. Please answer based on characteristic in the concept circle.



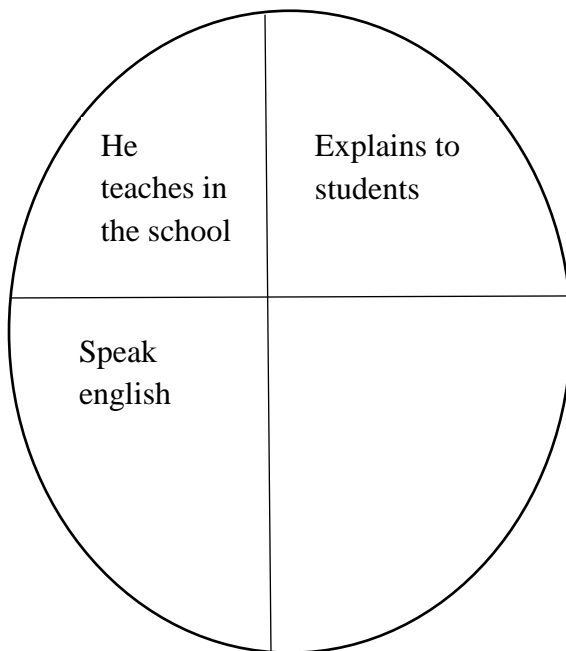
Answer : \_\_\_\_\_

11. Direction : Please, describe it in the concept circle based on the topic.



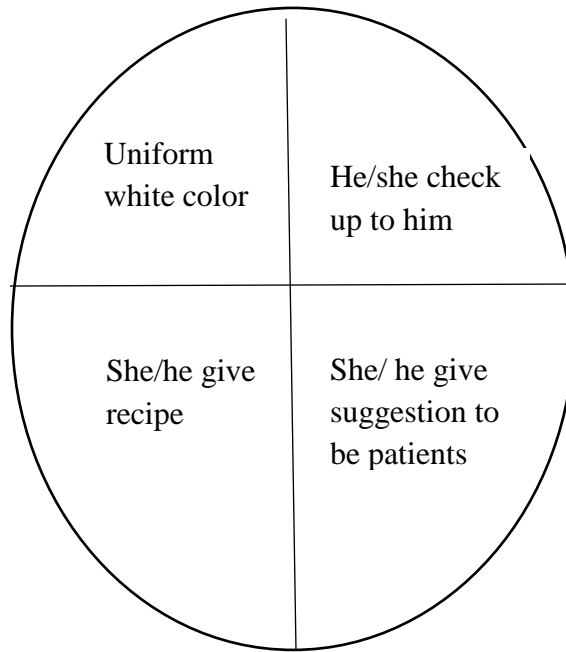
Topic : Pianist

12. Direction : In the concept circle is characteristic about proffession. Please, answer it based on clues.



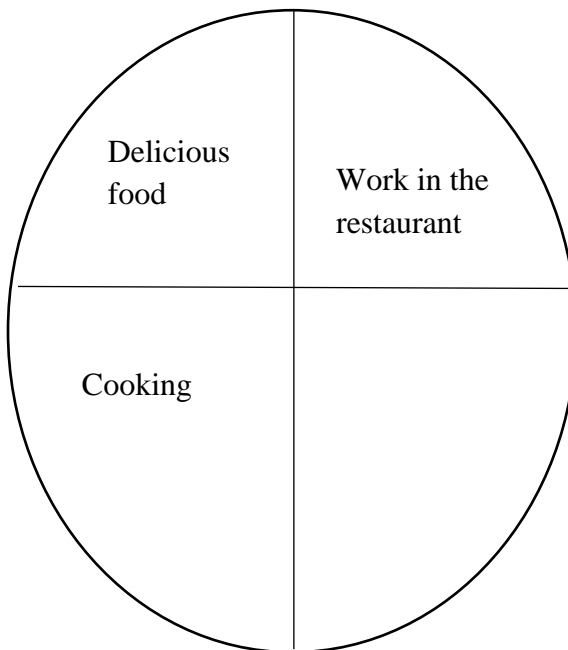
Answer : \_\_\_\_\_

13. Direction : in the cocept circle are explain about profession. Please answer based on criteria.



Answer : \_\_\_\_\_

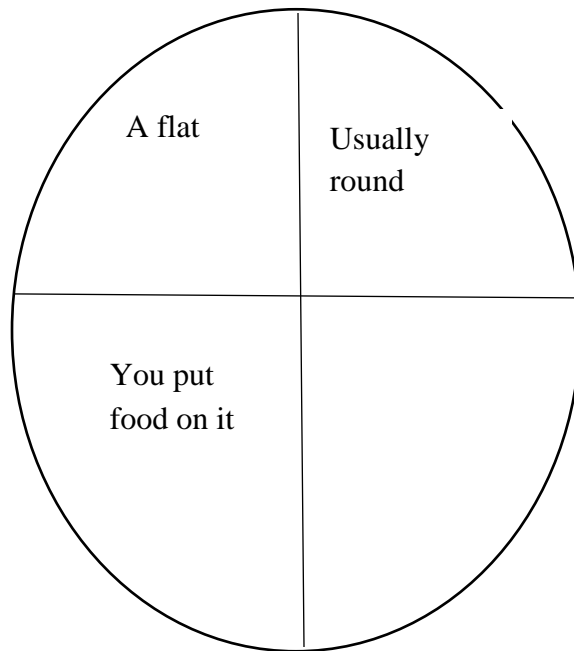
14. Direction : It's describe about profession. Please, answer based on appropriate word in the concept circle.



Answer : \_\_\_\_\_



15. Direction : It's about things in my kitchen. Please, answer based on characteristic in the concept circle.



Answer : \_\_\_\_\_

## Pre - Test

### Appendix 3

Name :

Class :

**Choose the best answer (a, b, c, d) !**

1. What is the meaning of fisherman ?  
a. Petani                      c. Pedagang  
b. Nelayan                  d. Perawat
2. .... works in restaurant. He cooks some food in the restaurant.  
a. Tailor                      c. Farmer  
b. Fisherman              d. Chef
3. What is the English of Tukang cukur/pangkas ?  
a. Barber                    c. Dentist  
b. Merchant                d. Trader
4. Kettle the meaning is .....  
a. Ceret                      c. Kompor  
b. Sendok                   d. Cangkir
5. .... a machine that mixes things.  
a. Bowl                      c. Blender  
b. Chopstick               d. Mixer
6. What is the meaning of freezer ?  
a. Kompor                   c. Mangkuk  
b. Kulkas                    d. Cangkir teh
7. You bake food in it. What is it ?  
a. Freezer                   c. Blender  
b. Mixer                     d. Oven
8. Kompor in English is .....  
a. Grater                    c. Knife  
b. Microwave              d. Stove
9. .... works in a hospital. she wears a white uniform and helps a doctor.  
a. Nurse                    c. Patient  
b. Doctor                    d. Teacher
10. Mr. Ilham ia an ..... at MTs N 2 Padangsidempuan.  
a. Tailor                     c. Police  
b. Sailor                     d. Teacher
11. What is the meaning of Tailor ?  
a. Penjahit                  c. Pelaut  
b. Pedagang                d. Petani
12. Grater the meaning is .....  
a. Pisau                      c. Mangkuk

- b. Parutan                      d. Mesin pencuci piring
13. What is the meaning of dishwasher ?
- a. Mesin pencuci piring
  - b. Mesin pencuci mobil
  - c. Alat memasak nasi
  - d. Panggangan
14. Pelaut in English is .....
- a. Fisherman                      c. Sailor
  - b. Tailor                              d. Lawyer
15. A person who keeps people safe from crime. What it is ?
- a. Doctor                              c. Pilot
  - b. Police                              d. Teacher
16. What is the meaning of sieve ?
- a. Ayakan/saringan                      c. Parutan
  - b. Pemasak nasi                              d. Mangkuk
17. Thin sticks use for eating food in east Asia. It is .....
- a. Chopstick                              c. Bowl
  - b. Spoon                                      d. Knife
18. Grater used for.....
- a. Noodles                              c. Rice
  - b. Soup                                      d. Cheese
19. Doctor it is .....
- a. Profession                              c. Hobby
  - b. Sport                                      d. Fashion
20. Usually receptionist works in the .....
- a. School                                      c. Hotel
  - b. Bank                                      d. Saloon
21. She is hair dresser. She works in the .....
- a. Restaurant                              c. Hospital
  - b. Saloon                                      d. Bank
22. A tool used for soup. It is .....
- a. Oven                                      c. Cup
  - b. Blender                                      d. Bowl
23. He/she works in the restaurant. Who it is?
- a. Driver                                      c. Chef
  - b. Hair dresser                              d. Accountant
24. .... a tool that blends things
- a. Mixer                                      c. Oven
  - b. Knife                                      d. Blender
25. He is driver. He works in the.....
- a. Taxi                                      c. Bank
  - b. School                                      d. Restaurant
26. Accountant works in the .....

- a. Hospital                      c. Saloon
- b. Taxi                          d. Bank
- 27. She is a teacher. She works in the .....
- a. Bank                          c. Saloon
- b. School                      d. Hotel
- 28. Coffeemaker used for .....
- a. Coffee                      c. Tea
- b. Cheese                      d. Juice
- 29. A tool for rice cooking. It is....
- a. Rice cooker      c. Kettle
- b. Pan                      d. Oven
- 30. You keep food frozen with in it. What it is ?
- a. Oven                          c. Bowl
- b. Freezer                      d. Dishwasher

31.



In english is .....

- a. Freezer      c. Bowl
- b. Stove      d. Mixer

32. The picture of *kettle* is .....

a.



c.



b.



d.



33.



In english is .....

- a. Blender                      c. Mixer
- b. Knife                      d. Stove

34. The picture of *lawyer* is .....

a.



c.



b. d.

d.

35.



In english is .....

a. Farmer

b. Lawyer

c. Baker

d. Tailor

36. post man works place in the post office. The picture of post office is .....

a.



c.



b.



d.



37.



In english is.....

a. Hospital c. Post office

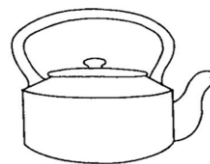
b. Hotel d. school

38. My mother washes plates, glasses. Ect with used dishwasher. The picture of dishwasher is .....

a.



c.



b.



d.



39.



The picture is .....

- a. Chopstick      c. Knife
- b. Spoon          d. fork

40.



The picture in english is .....

- a. Bowl              c. Glass
- b. Pan               d. Spoon

41. She is a trader. The work place in the market. The picture of the market is....

a.



c.



b.



d.



42.



In english is .....

- a. Glass      c. Bowl
- b. Teacup   d. Spoon

43.



In english is .....

- a. Baker      c. Saloon
- b. Trader    d. Tailor

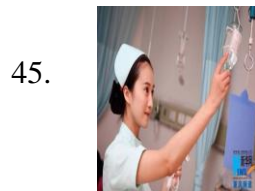
44. The picture of trader is....

a.



c.

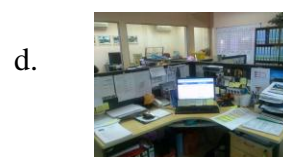




what the profession in the picture .....

- |           |              |
|-----------|--------------|
| a. Nurse  | c. Police    |
| b. farmer | d. Fisherman |

46. he is farmer. He works in the wet rice field. The picture of *wet rice field* is ....



in english is .....

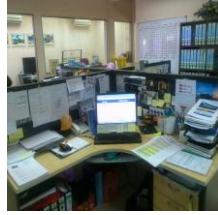
- |           |               |
|-----------|---------------|
| a. Home   | c. Restaurant |
| b. Market | d. Office     |



the profession of the picture is ...

- |            |           |
|------------|-----------|
| a. Teacher | c. Police |
| b. Farmer  | d. Pilot  |

49.



it is work place. What it is ?

- a. Restaurant
- b. Office
- c. Market
- d. School

50. The picture of school is ...

a.



c.



b.



d.



Padangsidimpuan, Juli 2017

**Validator**

**Rafni Dewiyanti., S.Pd**  
**NIP.**



## Post – Test

### Appendix 4

Name :


Class :


**Choose the best answer (a, b, c, d) !**

1. Trader the meaning is .....
  - a. Pelaut
  - b. Petani
  - c. Pedagang
  - d. Pemain sulap
2. Pengacara in english is .....
  - a. Tailor
  - b. Sailor
  - c. Lawyer
  - d. Baker
3. Tukang roti in english is .....
  - a. Baker
  - b. Lawyer
  - c. Trader
  - d. Barber
4. What is the meaning of stove ?
  - a. Kompor
  - b. Mangkuk
  - c. Kulkas
  - d. Sendok
5. What is the meaning of pianist ?
  - a. Pemain sulap
  - b. Pemain piano
  - c. Pemain bola
  - d. Pemain bulu tangkis
6. Dokter gigi in english is .....
  - a. Pianist
  - b. Nurse
  - c. Trader
  - d. Dentist
7. Kulkas in english is .....
  - a. Freezer
  - b. Dishwasher
  - c. stove
  - d. Spoon
8. My mother washes plates, glass.ect with used.....
  - a. Microwave
  - b. Mixer
  - c. Kettle
  - d. Dishwasher
9. What is the meaning of knife ?
  - a. Sendok
  - b. Pisau
  - c. Mangkuk
  - d. Piring
10. Piring in english is .....
  - a. Knife
  - b. Plate
  - c. Bowl
  - d. Spoon
11. What is the english of garpu ?
  - a. Fork
  - b. Plate
  - c. Spoon
  - d. Bowl
12. My brother cooks some food in the restaurant. He is a .....
  - a. Police
  - b. Barber
  - c. Pilot
  - d. Chef
13. *Sekretaris* in english is ....
  - a. Secretary
  - b. Director
  - c. Accountant
  - d. Secretaries
14. The meaning of *pan* is ...

- a. Mangkuk                      c. Panci
  - b. Gelas                        d. Pemanas nasi
15. My sister work in the school. She is a .....
- a. Teacher                      c. Accountant
  - b. Police                        d. Tailor
16. She is a teacher. She works in the....
- a. School                        c. Hospital
  - b. Office                        d. Saloon
17. He is a post man. He works in the.....
- a. Office police                c. Bank
  - b. Post office                  d. hotel
18. The meaning of office police is .....
- a. Kantor pos                  c. Kantor kelurahan
  - b. Kantor bupati              d. kantor polisi
19. Bandara in english is.....
- a. Airport                        c. Plane
  - b. Hospital                      d. ships
20. Secretary works in .....
- a. Hospital                      c. Office
  - b. Post office                  d. airport
21. The meaning of market is ....
- a. Pasar                        c. Kantor
  - b. Bandara                    d. Rumah sakit
22. Rumah sakit in english is ...
- a. Office                        c. Market
  - b. Hospital                    d. Home
23. .... is a tool used for soup.
- a. Teapot                        c. Glass
  - b. Sieve                         d. Bowl
24. You heat food with using energy waves. What it is ?
- a. Mixer                        c. Blender
  - b. Dishwasher                d. Microwave
25. She is a singer. She always show in ....
- a. Television                  c. Office
  - b. School                        d. market
26. Accountant works in.....
- a. Hotel                         c. Hospital
  - b. School                        d. Bank
27. He is a pilot. He works in ....
- a. Airport                        c. Ships
  - b. Market                        d. Hospital
28. Hair dresser works in .....
- a. Office                        c. Salon
  - b. Saloon                        d. Market
29. a metal or plastic container, used to boil water. It is ....
- a. Kettle                         c. Teacup

- b. Microwave                      d. Blender
30. Nurse works in .....
- a. Hospital                      c. Office
- b. Bank                      d. Hotel
31. A tool with handle and three sharp point used with spoon. It is ....
- a. Spoon                      c. Bowl
- b. Plate                      d. Fork
32. *Knife* used to...
- a. Cut                      c. Eat
- b. Drink                      d. washed
33. Fisherman works in the ....
- a. Wet rice field                      c. Market
- b. Sea                      d. airport
34. Glass used to place...
- a. Water                      c. Rice
- b. Cake                      d. bread
35. Trader works in the ....
- a. Bank                      c. School
- b. Hotel                      d. Market
36. A tool that sieves flour. What it is ?
- a. Fork                      c. Spoon
- b. Plate                      d. sieve

37.  The picture is ....
- a. Doctor
- b. Police
- c. Nurse
- d. Teacher

38.  The picture is.....
- a. Nurse
- b. Chef
- c. Police
- d. Doctor

39. The picture of stove is ....
- a.



c.



b.



d.



40.



The picture is .....

- a. Fork
- b. Spoon
- c. Plate
- d. Cup

41. The picture of pianist is ....

a.



c.



b.



d.



42. Th



- a. Pianist
- b. Dentist
- c. Barber
- d. Baker

43.

The picture is ....



- a. Fork
- b. Spoon
- c. Knife
- d. Plate

44. The picture of dentist is .....

a.



c.



b.



d.



45. In english is .....



a. Glass

b. Cup

c. Plate

d. Fork

46.



The picture is ....

a. Farmer

b. Fisherman

c. Trader

d. Baker

47. The picture of Bowl is .....

a.



c.



b.



d.



48.



The picture is .....

a. Fisherman

b. Pilot

c. Lawyer

d. Farmer

49.



Profession in the picture is ....

- a. Teacher
- b. Nurse
- c. Tailor
- d. Sailor

50.



The picture is .....

- a. Freezer
- b. Oven
- c. Grater
- d. Sieve

Padangsidimpuan, Juli 2017

**Validator**

**Rafni Dewiyanti., S.Pd**  
**NIP.**

## Appendix 5

### Key Answer

#### Pre-test

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

#### Post-test

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

Appendix 6

Validity of Pre-test

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



Cont....

Validity of Pre Test

No	NUMBER OF ITEMS																												Xt	Xt²			
	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68			69	70	
1	1	0	1	0	1	1	1	1	1	1	0	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	0	0	0	1	48	2304	
2	0	1	1	0	1	1	1	1	0	1	0	1	0	0	0	0	1	0	1	0	1	0	0	1	1	0	1	0	0	0	37	1369	
3	1	0	0	0	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	0	0	0	1	0	1	1	1	0	1	48	2304	
4	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	0	1	1	1	1	0	1	1	1	1	1	1	0	1	52	2704	
5	0	0	0	1	1	0	0	1	0	0	0	1	0	0	1	0	0	0	1	1	0	0	1	1	1	0	0	0	1	0	26	676	
6	1	1	1	0	1	1	1	1	1	1	0	1	1	1	1	0	1	1	0	1	0	1	1	1	0	0	1	1	0	1	48	2304	
7	1	1	1	0	0	1	1	1	1	1	0	1	1	1	1	0	1	0	1	0	0	0	1	1	1	1	1	1	0	1	48	2304	
8	1	1	0	0	1	1	0	1	1	1	1	1	1	1	1	0	1	1	1	1	1	0	1	1	1	1	1	1	0	1	51	2601	
9	1	1	1	0	1	1	1	0	0	1	0	0	0	1	1	0	1	0	1	0	1	0	1	0	1	0	0	1	0	0	39	1521	
10	0	0	1	0	1	0	1	1	1	1	0	1	1	0	1	1	1	1	1	1	1	0	0	0	0	1	1	1	0	1	43	1849	
11	1	1	1	0	0	1	1	1	0	0	0	1	0	0	0	0	1	1	0	1	0	0	1	0	1	1	1	0	0	0	24	576	
12	0	1	1	0	1	0	1	0	1	1	1	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	0	1	0	1	51	2601	
13	1	0	0	0	1	1	1	1	1	1	0	0	1	1	0	0	1	1	1	1	1	0	0	1	0	1	1	0	1	1	40	1600	
14	1	1	1	0	0	0	0	1	1	0	0	1	1	0	1	0	1	0	1	0	1	0	1	1	1	1	1	1	0	1	43	1849	
15	0	1	1	0	0	1	1	1	0	1	0	1	0	1	1	0	1	1	0	1	1	0	1	1	1	0	1	0	0	1	46	2116	
16	1	0	0	0	1	1	0	1	1	1	0	1	0	0	1	0	1	1	0	1	0	1	1	0	1	1	1	1	0	0	38	1444	
17	1	1	1	0	1	1	0	1	1	1	0	0	1	1	0	0	1	1	1	1	1	0	0	0	0	0	0	1	1	0	1	41	1681
18	1	0	0	0	1	0	1	1	1	0	1	0	0	1	0	0	1	1	1	0	1	0	1	0	1	1	1	0	0	1	40	1600	
19	0	1	1	0	0	0	1	1	1	1	0	1	1	1	1	1	0	0	1	1	1	0	1	1	1	1	1	1	1	1	50	2500	
20	1	1	1	0	1	1	1	1	0	0	0	1	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	33	1089	
21	1	1	0	1	0	1	0	1	1	1	0	0	1	0	0	0	1	1	1	1	1	0	1	1	1	1	1	0	0	1	41	1681	
22	1	1	0	0	0	1	1	1	1	1	0	1	1	1	1	0	1	1	1	1	0	1	0	0	0	0	1	1	0	1	43	1849	
23	0	0	0	0	1	1	0	1	0	1	0	1	1	1	0	0	0	0	1	1	1	0	1	1	1	0	1	1	0	1	40	1600	
N=23	17	15	15	2	18	17	16	21	16	18	4	17	15	15	16	3	18	15	17	15	15	5	16	17	16	14	18	15	3	17	Σxt=970	Σxt²=41852	
p	0,7	0,7	0,7	0,1	0,8	0,7	0,7	0,9	0,7	0,8	0,1	0,7	0,7	0,7	0,7	0,1	0,8	0,7	0,7	0,7	0,7	0,2	0,7	0,7	0,7	0,6	0,8	0,7	0,1	0,7			
q	0,3	0,3	0,3	0,9	0,2	0,3	0,3	0,1	0,3	0,2	0,9	0,3	0,3	0,3	0,3	0,9	0,2	0,3	0,3	0,3	0,3	0,8	0,3	0,3	0,3	0,4	0,2	0,3	0,9	0,3			

## Appendix 7

Calculation of  $r_{pbi} = \frac{M_p - M_t}{SD_t} \frac{\bar{p}_q}{q}$  in Pre Test

### A. Calculation of Pre Test

#### 1. Means score from score total ( $M_t$ )

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

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

#### 2. Standard Deviation ( $SD_t$ )

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

$$SD_t = \sqrt{\frac{46202}{23} - \frac{1022^2}{23^2}}$$

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

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

#### 3. Means Score ( $M_p$ )

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

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

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

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

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

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

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

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

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

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

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

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

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

$$M_{p5} = \frac{50+40+51+52+47+49+54+42+51+44+47+41+44+38+43+44+40}{17}$$

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

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

$$M_{p6} = \frac{50+40+51+52+47+49+42+44+51+44+47+42+51+38+44}{15}$$

$$= \frac{692}{15} = 46.13$$

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

$$M_{p7} = \frac{40+52+47+54+42+51+44+45+47+41+51+38+43+44+40}{15}$$

$$= \frac{679}{15} = 46.25$$

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

$$M_{p8} = \frac{50+40+51+52+33+47+49+54+42+44+51+44+47+41+42+51+43+44}{18}$$

$$M_{p8} = \frac{825}{18} = 45.83$$

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

$$M_{p9} = \frac{51+52+49+45+51+44}{6}$$

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

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

$$M_{p10} = \frac{50+40+51+52+33+47+49+54+42+44+51+45+47+41+51+43+44+40}{18}$$

$$M_{p10} = \frac{824}{18} = 45.78$$

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

$$M_{p11} = \frac{51+54+51+42}{4}$$

$$M_{p11} = \frac{198}{4} = 49.5$$

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

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

$$\text{Item 13 } M_{p13} = \frac{50+40+51+52+49+54+42+51+44+47+41+44+44+51+43+44+40}{17}$$

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

$$\text{Item 14 } M_{p14} = \frac{50+40+51+52+47+49+54+42+51+44+45+47+44+51+38+43+44+40}{18}$$

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

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

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

$$\text{Item 16 } M_{p16} = \frac{50+51+52+47+49+42+44+51+45+47+44+42+51+44+40}{15}$$

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

$$\text{Item 17 } M_{p17} = \frac{50+40+51+47+49+54+42+51+45+47+44+51+38+43+44}{15}$$

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

$$\text{Item 18 } M_{p18} = \frac{50+40+51+52+33+47+49+54+42+44+51+44+45+47+41+44+42+51+38+43+44+40}{22}$$

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

$$\text{Item 19 } M_{p19} = \frac{50+40+51+52+47+49+54+42+51+44+45+47+41+44+42}{15}$$

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

$$\text{Item 20 } M_{p20} = \frac{51+52+47+54+44+51+44+47+41+44+51+38+43+44}{14}$$

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

$$\text{Item 21 } M_{p21} = \frac{50+40+52+54+42+44+51+44+45+47+44+42+51+43+44}{15}$$

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

$$\text{Item 22 } M_{p22} = \frac{50+40+51+52+47+49+54+42+44+51+44+45+41+44+42+51+38+44}{18}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$\text{Item 32 } M_{p32} = \frac{50+40+51+52+33+47+49+54+42+44+51+44+45+47+41+44+42+51+43+40}{19}$$

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

$$\text{Item 33 } M_{p33} = \frac{50+40+51+52+33+49+54+44+51+44+45+47+41+44+42+51+43+44+40}{19}$$

$$M_{p33} = \frac{865}{19} = 45.53$$

$$\text{Item 34 } M_{p34} = \frac{50+51+52+54+42+44+51+44+45+47+44+42+51+43+40}{15}$$

$$M_{p34} = \frac{700}{15} = 46.66$$

$$\text{Item 35 } M_{p35} = \frac{50+40+51+52+47+54+44+51+44+45+41+44+42+51+44+40}{16}$$

$$M_{p35} = \frac{740}{16} = 46.25$$

$$\text{Item 36 } M_{p36} = \frac{50+40+51+52+33+47+49+54+42+44+30+51+44+45+47+41+44+42+51+38+43+40}{22}$$

$$M_{p36} = \frac{978}{22} = 44.45$$

$$\text{Item 37 } M_{p37} = \frac{40+51+52+33+47+49+54+42+44+51+45+47+44+51+43+44+40}{17}$$

$$M_{p37} = \frac{778}{17} = 45.8$$

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

$$M_{p38} = \frac{709}{15} = 47.26$$

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

$$M_{p39} = \frac{780}{17} = 45.88$$

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

$$M_{p40} = \frac{741}{16} = 46.31$$

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

$$M_{p41} = \frac{799}{17} = 47$$

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

$$M_{p42} = \frac{691}{15} = 46.06$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$M_{p60} = \frac{696}{15} = 46.4$$

$$\textbf{Item 61 } M_{p61} = \frac{50+40+52+54+42+44+51+44+45+47+44+42+51+43+40}{15}$$

$$M_{p61} = \frac{689}{15} = 45.93$$

$$\textbf{Item 62 } M_{p62} = \frac{50+47+51+41+44}{5}$$

$$M_{p62} = \frac{233}{5} = 46.6$$

$$\textbf{Item 63 } M_{p63} = \frac{50+52+33+47+49+54+44+30+51+45+47+41+44+51+43+40}{16}$$

$$M_{p63} = \frac{745}{16} = 46.56$$

$$\textbf{Item 64 } M_{p64} = \frac{50+40+51+52+33+47+49+54+44+51+44+47+51+44+40}{15}$$

$$M_{p64} = \frac{697}{15} = 46.46$$

$$\textbf{Item 65 } M_{p65} = \frac{50+40+52+47+49+54+42+44+51+45+47+41+42+51+43+40}{16}$$

$$M_{p65} = \frac{738}{16} = 46.12$$

$$\textbf{Item 66 } M_{p66} = \frac{50+51+52+49+54+44+30+51+44+45+47+44+51+43}{14}$$

$$M_{p66} = \frac{655}{14} = 46.78$$

$$\textbf{Item 67 } M_{p67} = \frac{40+51+52+47+49+54+44+51+44+45+47+41+44+42+51+43+44+40}{18}$$

$$M_{p67} = \frac{829}{18} = 46.05$$

$$\textbf{Item 68 } M_{p68} = \frac{51+52+47+49+54+42+44+51+45+41+44+51+38+44+40}{15}$$

$$M_{p68} = \frac{693}{15} = 46.2$$

$$\textbf{Item 69 } M_{p69} = \frac{33+44+51}{3}$$

$$M_{p69} = \frac{128}{3} = 42.66$$

$$\textbf{Item 70 } M_{p70} = \frac{49+47+42+43}{4}$$

$$M_{p70} = \frac{181}{4} = 45.25$$



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

**Item 1**  $r_{pbi} = \frac{M_p - M_t}{SD_t} \frac{\bar{p}}{q}$

$$r_{pbi} = \frac{46.46 - 44.43}{5.89} \frac{0.7}{0.3}$$

$$r = \frac{2.03}{5.89} \frac{2.33}{1.5}$$

$$r = 0.334 \times 1.52 = 0.522$$

**Item 2**  $r_{pbi} = \frac{46.62 - 44.43}{5.28} \frac{0.6}{0.4}$

$$r = \frac{2.19}{5.89} \frac{1.5}{1.5}$$

$$r = 0.38 \times 1.2 = 0.456$$

**Item 3**  $r_{pbi} = \frac{46.29 - 44.43}{5.89} \frac{0.7}{0.3}$

$$r = \frac{1.86}{5.89} \frac{2.33}{1.5}$$

$$r = 0.32 \times 1.52 = 0.486$$

**Item 4**  $r_{pbi} = \frac{46.43 - 44.43}{5.89} \frac{0.7}{0.3}$

$$r = \frac{2}{5.89} \frac{2.33}{1.5}$$

$$r = 0.34 \times 1.52 = 0.516$$

**Item 5**  $r_{pbi} = \frac{46.29 - 44.43}{5.89} \frac{0.7}{0.3}$

$$r = \frac{1.86}{5.89} \frac{2.33}{1.5}$$

$$r = 0.32 \times 1.52 = 0.486$$

**Item 6**  $r_{pbi} = \frac{46.13 - 44.43}{5.89} \frac{0.7}{0.3}$

$$r = \frac{1.7}{5.89} \frac{2.33}{1.5}$$

$$r = 0.288 \times 1.52 = 0.437$$

**Item 7**  $r_{pbi} = \frac{46.25 - 44.43}{5.89} \frac{0.7}{0.3}$

$$r = \frac{1.82}{5.89} \frac{2.33}{1.5}$$

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

$$\text{Item 8 } r_{\text{pbi}} = \frac{45.83 - 44.43}{5.89} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.4}{5.89} \quad \overline{4}$$

$$r = 0.24 \times 2 = 0.48$$

$$\text{Item 9 } r_{\text{pbi}} = \frac{48.66 - 44.43}{5.89} \quad \frac{0.2}{0.8}$$

$$r = \frac{4.23}{5.89} \quad \overline{0.25}$$

$$r = 0.71 \times 0.5 = 0.355$$

$$\text{Item 10 } r_{\text{pbi}} = \frac{45.78 - 44.43}{5.89} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.35}{5.89} \quad \overline{4}$$

$$r = 0.229 \times 2 = 0.458$$

$$\text{Item 11 } r_{\text{pbi}} = \frac{49.5 - 44.43}{5.89} \quad \frac{0.1}{0.9}$$

$$r = \frac{5.07}{5.89} \quad \overline{0.1}$$

$$r = 0.86 \times 0.3 = 0.258$$

$$\text{Item 12 } r_{\text{pbi}} = \frac{49.29 - 44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{4.86}{5.89} \quad \overline{2.33}$$

$$r = 0.825 \times 1.52 = 0.542$$

$$\text{Item 13 } r_{\text{pbi}} = \frac{46.29 - 44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{1.86}{5.28} \quad \overline{2.33}$$

$$r = 0.315 \times 1.52 = 0.4788$$

$$\text{Item 14 } r_{\text{pbi}} = \frac{46.22 - 44.43}{5.89} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.79}{5.89} \quad \overline{4}$$

$$r = 0.303 \times 2 = 0.606$$

$$\text{Item 15 } r_{\text{pbi}} = \frac{48.33 - 44.43}{5.89} \quad \frac{0.1}{0.9}$$

$$r = \frac{3.9}{5.89} \quad \overline{0.11}$$

$$r = 0.662 \times 0.33 = 0.2184$$

$$\text{Item 16 } r_{\text{pbi}} = \frac{46.6-44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{2.17}{5.89} \quad \overline{2.33}$$

$$r = 0.368 \times 1.52 = 0.5593$$

$$\text{Item 17 } r_{\text{pbi}} = \frac{46.4-44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{1.97}{5.83} \quad \overline{2.33}$$

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

$$\text{Item 18 } r_{\text{pbi}} = \frac{45.09-44.43}{5.89} \quad \frac{0.9}{0.1}$$

$$r = \frac{0.66}{5.89} \quad \overline{9}$$

$$r = 0.112 \times 3 = 0.336$$

$$\text{Item 19 } r_{\text{pbi}} = \frac{46.6-44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{2.17}{5.89} \quad \overline{2.33}$$

$$r = 0.368 \times 1.52 = 0.5593$$

$$\text{Item 20 } r_{\text{pbi}} = \frac{46.5-44.43}{5.89} \quad \frac{0.6}{0.4}$$

$$r = \frac{2.07}{5.89} \quad \overline{1.5}$$

$$r = 0.351 \times 1.22 = 0.428$$

$$\text{Item 21 } r_{\text{pbi}} = \frac{46.2-44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{1.77}{5.89} \quad \overline{2.33}$$

$$r = 0.300 \times 1.52 = 0.456$$

$$\text{Item 22 } r_{\text{pbi}} = \frac{46.05-44.43}{5.89} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.62}{5.89} \quad \overline{4}$$

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

$$\text{Item 23 } r_{\text{pbi}} = \frac{46-44.43}{5.89} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.57}{5.89} \quad \overline{4}$$

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

$$\text{Item 24 } r_{\text{pbi}} = \frac{45.53-44.43}{5.89} \quad \frac{0.9}{0.1}$$

$$r = \frac{1.1}{5.89} \quad \overline{9}$$

$$r = 0.187 \times 3 = 0.561$$

$$\text{Item 25 } r_{\text{pbi}} = \frac{42.4 - 44.43}{5.89} \quad \frac{\overline{0.1}}{0.9}$$

$$r = \frac{-2.03}{5.89} \quad \overline{0.1}$$

$$r = -0.344 \times 0.3 = -0.103$$

$$\text{Item 26 } r_{\text{pbi}} = \frac{49.5 - 44.43}{5.89} \quad \frac{\overline{0.1}}{0.9}$$

$$r = \frac{5.07}{5.89} \quad \overline{0.1}$$

$$r = 0.86 \times 0.3 = 0.258$$

$$\text{Item 27 } r_{\text{pbi}} = \frac{46 - 44.43}{5.89} \quad \frac{\overline{0.8}}{0.2}$$

$$r = \frac{1.57}{5.89} \quad \overline{4}$$

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

$$\text{Item 28 } r_{\text{pbi}} = \frac{48.66 - 44.43}{5.89} \quad \frac{\overline{0.2}}{0.8}$$

$$r = \frac{4.23}{5.89} \quad \overline{0.25}$$

$$r = 0.718 \times 0.5 = 0.359$$

$$\text{Item 29 } r_{\text{pbi}} = \frac{46 - 44.43}{5.89} \quad \frac{\overline{0.8}}{0.2}$$

$$r = \frac{1.57}{5.89} \quad \overline{4}$$

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

$$\text{Item 30 } r_{\text{pbi}} = \frac{46.33 - 44.43}{5.89} \quad \frac{\overline{0.7}}{0.3}$$

$$r = \frac{1.9}{5.89} \quad \overline{2.33}$$

$$r = 0.322 \times 1.52 = 0.4894$$

$$\text{Item 31 } r_{\text{pbi}} = \frac{44.23 - 44.43}{5.89} \quad \frac{\overline{0.9}}{0.1}$$

$$r = \frac{-0.2}{5.89} \quad \overline{9}$$

$$r = -0.033 \times 3 = -0.1018$$

$$\text{Item 32 } r_{\text{pbi}} = \frac{46 - 44.43}{5.89} \quad \frac{\overline{0.8}}{0.2}$$

$$r = \frac{1.57}{5.89} \quad \overline{4}$$

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

$$\text{Item 33 } r_{\text{pbi}} = \frac{45.53 - 44.43}{5.89} \quad \frac{0.9}{0.3}$$

$$r = \frac{1.1}{5.89} \quad \overline{9}$$

$$r = 0.186 \times 3 = 0.5093$$

$$\text{Item 34 } r_{\text{pbi}} = \frac{46.66 - 44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{2.23}{5.89} \quad \overline{2.33}$$

$$r = 0.378 \times 1.52 = 0.5745$$

$$\text{Item 35 } r_{\text{pbi}} = \frac{46.25 - 44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{1.82}{5.89} \quad \overline{2.33}$$

$$r = 0.308 \times 1.52 = 0.4681$$

$$\text{Item 36 } r_{\text{pbi}} = \frac{44.45 - 44.43}{5.89} \quad \frac{0.9}{0.1}$$

$$r = \frac{0.02}{5.89} \quad \overline{9}$$

$$r = 0.0034 \times 3 = 0.0102$$

$$\text{Item 37 } r_{\text{pbi}} = \frac{45.8 - 44.43}{5.89} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.37}{5.89} \quad \overline{4}$$

$$r = 0.232 \times 2 = 0.465$$

$$\text{Item 38 } r_{\text{pbi}} = \frac{47.26 - 44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{2.83}{5.89} \quad \overline{2.33}$$

$$r = 0.480 \times 1.52 = 0.7296$$

$$\text{Item 39 } r_{\text{pbi}} = \frac{45.88 - 44.43}{5.89} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.45}{5.89} \quad \overline{4}$$

$$r = 0.246 \times 2 = 0.492$$

$$\text{Item 40 } r_{\text{pbi}} = \frac{46.31 - 44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{1.88}{5.89} \quad \overline{2.33}$$

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

$$\text{Item 41 } r_{\text{pbi}} = \frac{47 - 44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{2.57}{5.89} \quad \overline{2.33}$$

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

$$\text{Item 42 } r_{\text{pbi}} = \frac{46.06 - 44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{1.63}{5.89} \quad \overline{2.33}$$

$$r = 0.276 \times 1.52 = 0.4206$$

$$\text{Item 43 } r_{\text{pbi}} = \frac{46.6 - 44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{2.17}{5.89} \quad \overline{2.33}$$

$$r = 0.368 \times 1.52 = 0.559$$

$$\text{Item 44 } r_{\text{pbi}} = \frac{38 - 44.43}{5.89} \quad \frac{0.1}{0.9}$$

$$r = \frac{-6.43}{5.89} \quad \overline{0.11}$$

$$r = -1.09 \times 0.33 = -0.359$$

$$\text{Item 45 } r_{\text{pbi}} = \frac{49.5 - 44.43}{5.89} \quad \frac{0.1}{0.9}$$

$$r = \frac{5.07}{5.89} \quad \overline{0.11}$$

$$r = 0.860 \times 0.33 = 0.2838$$

$$\text{Item 46 } r_{\text{pbi}} = \frac{46.29 - 44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{1.86}{5.89} \quad \overline{2.33}$$

$$r = 0.315 \times 1.52 = 0.4788$$

$$\text{Item 47 } r_{\text{pbi}} = \frac{46.62 - 44.43}{5.89} \quad \frac{0.7}{0.3}$$

$$r = \frac{2.19}{5.89} \quad \overline{2.33}$$

$$r = 0.371 \times 1.52 = 0.5639$$

$$\text{Item 48 } r_{\text{pbi}} = \frac{44.23 - 44.43}{5.89} \quad \frac{0.8}{0.2}$$

$$r = \frac{-0.2}{5.89} \quad \overline{9}$$

$$r = -0.033 \times 3 = -0.099$$

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

$$r = \frac{2.57}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{1.9}{5.89} \quad \overline{4}$$

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

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

$$r = \frac{5.07}{5.89} \quad \overline{0.25}$$

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

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

$$r = \frac{1.6}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{2.83}{5.89} \quad \overline{1.5}$$

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

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

$$r = \frac{1.97}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{1.88}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{3.9}{5.89} \quad \overline{0.11}$$

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

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

$$r = \frac{1.4}{5.89} \quad \overline{4}$$

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

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

$$r = \frac{2.57}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{1.57}{5.89} \quad \overline{4}$$

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

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

$$r = \frac{1.97}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{1.53}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{2.17}{5.89} \quad \overline{0.25}$$

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

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

$$r = \frac{2.13}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{2.03}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{1.7}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{2.35}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{1.62}{5.89} \quad \overline{4}$$

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

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

$$r = \frac{1.77}{5.89} \quad \overline{2.33}$$

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

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

$$r = \frac{-1.77}{5.89} \quad \overline{0.11}$$

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

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

$$r = \frac{0.82}{5.89} \quad \overline{0.25}$$

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



## Appendix 8

**Table of Pre Test Validity**

Number of Item	$M_p$	$M_t$	$SD_t$	P	Q	$r_{pbi} = \frac{M_p - M_t}{SD_t} \sqrt{\frac{p}{q}}$	$r_t$ on 5% significant	Interpretation
1.	46.46	44.43	5.89	0.7	0.3	0.522	0.413	Valid
2.	46.62	44.43	5.89	0.6	0.4	0.456	0.413	Valid
3.	46.29	44.43	5.89	0.8	0.2	0.486	0.413	Valid
4.	46.43	44.43	5.89	0.6	0.4	0.516	0.413	Valid
5.	46.29	44.43	5.89	0.7	0.3	0.486	0.413	Valid
6.	46.13	44.43	5.89	0.7	0.3	0.437	0.413	Valid
7.	46.25	44.43	5.89	0.7	0.3	0.471	0.413	Valid
8.	45.83	44.43	5.89	0.8	0.2	0.48	0.413	Valid
9.	46.88	44.43	5.89	0.2	0.8	0.355	0.413	Invalid
10.	45.78	44.43	5.89	0.8	0.2	0.458	0.413	Valid
11.	49.5	44.43	5.89	0.2	0.8	0.258	0.413	Invalid
12.	49.29	44.43	5.89	0.8	0.2	0.542	0.413	Valid
13.	46.29	44.43	5.89	0.7	0.3	0.478	0.413	Valid
14.	46.22	44.43	5.89	0.8	0.2	0.606	0.413	Valid
15.	48.33	44.43	5.89	0.1	0.9	0.218	0.413	Invalid
16.	46.6	44.43	5.89	0.7	0.3	0.559	0.413	Valid
17.	46.4	44.43	5.89	0.7	0.3	0.507	0.413	Valid
18.	45.09	44.43	5.89	0.9	0.1	0.336	0.413	Invalid
19.	46.6	44.43	5.89	0.7	0.3	0.559	0.413	Valid
20.	46.5	44.43	5.89	0.6	0.4	0.428	0.413	Valid
21.	46.2	44.43	5.89	0.7	0.3	0.456	0.413	Valid
22.	46.05	44.43	5.89	0.8	0.2	0.55	0.413	Valid
23.	46	44.43	5.89	0.7	0.3	0.532	0.413	Valid
24.	45.53	44.43	5.89	0.8	0.2	0.561	0.413	Valid
25.	42.4	44.43	5.89	0.2	0.8	-0.103	0.413	Invalid
26.	49.5	44.43	5.89	0.2	0.8	0.258	0.413	Invalid
27.	46	44.43	5.89	0.8	0.2	0.532	0.413	Valid
28.	48.66	44.43	5.89	0.2	0.8	0.359	0.413	Invalid
29.	46.41	44.43	5.89	0.7	0.3	0.532	0.413	Valid
30.	46.33	44.43	5.89	0.7	0.3	0.489	0.413	Valid
31.	46.23	44.43	5.89	0.9	0.1	-0.101	0.413	Invalid
32.	46	44.43	5.89	0.8	0.2	0.532	0.413	Valid
33.	45.53	44.43	5.89	0.7	0.3	0.509	0.413	Valid
34.	46.66	44.43	5.89	0.7	0.3	0.574	0.413	Valid
35.	46.25	44.43	5.89	0.7	0.3	0.468	0.413	Valid
36.	44.45	44.43	5.89	0.9	0.1	0.010	0.413	Invalid
37.	45.8	44.43	5.89	0.7	0.3	0.465	0.413	Valid
38.	47.26	44.43	5.89	0.7	0.3	0.729	0.413	Valid

39.	45.88	44.43	5.89	0.7	0.3	0.492	0.413	Valid
40.	46.31	44.43	5.89	0.7	0.3	0.484	0.413	Valid
41.	47	44.43	5.89	0.7	0.3	0.662	0.413	Valid
42.	46.06	44.43	5.89	0.7	0.3	0.420	0.413	Valid
43.	46.6	44.43	5.89	0.7	0.3	0.559	0.413	Valid
44.	38	44.43	5.89	0.1	0.9	-0.359	0.413	Invalid
45.	49.5	44.43	5.89	0.1	0.9	0.283	0.413	Invalid
46.	46.29	44.43	5.89	0.7	0.3	0.478	0.413	Valid
47.	46.62	44.43	5.89	0.7	0.3	0.563	0.413	Valid
48.	44.23	44.43	5.89	0.9	0.1	-0.099	0.413	Invalid
49.	47	44.43	5.89	0.7	0.3	0.662	0.413	Valid
50.	46.33	44.43	5.89	0.8	0.2	0.644	0.413	Valid
51.	49.5	44.43	5.89	0.1	0.9	0.532	0.413	Valid
52.	46	44.43	5.89	0.7	0.3	0.419	0.413	Valid
53.	47.26	44.43	5.89	0.7	0.3	0.576	0.413	Valid
54.	46.4	44.43	5.89	0.7	0.3	0.507	0.413	Valid
55.	46.31	44.43	5.89	0.7	0.3	0.484	0.413	Valid
56.	48.33	44.43	5.89	0.1	0.9	0.218	0.413	Invalid
57.	45.83	44.43	5.89	0.8	0.2	0.474	0.413	Valid
58.	47	44.43	5.89	0.7	0.3	0.662	0.413	Valid
59.	46	44.43	5.89	0.7	0.3	0.532	0.413	Valid
60.	46.4	44.43	5.89	0.7	0.3	0.507	0.413	Valid
61.	45.93	44.43	5.89	0.7	0.3	0.414	0.413	Valid
62.	46.6	44.43	5.89	0.2	0.8	0.184	0.413	Invalid
63.	46.56	44.43	5.89	0.7	0.3	0.548	0.413	Valid
64.	46.46	44.43	5.89	0.7	0.3	0.522	0.413	Valid
65.	46.12	44.43	5.89	0.7	0.3	0.445	0.413	Valid
66.	46.78	44.43	5.89	0.6	0.4	0.604	0.413	Valid
67.	46.05	44.43	5.89	0.8	0.2	0.55	0.413	Valid
68.	46.2	44.43	5.89	0.7	0.3	0.456	0.413	Valid
69.	42.66	44.43	5.89	0.1	0.9	-0.099	0.413	Invalid
70.	45.25	44.43	5.89	0.1	0.9	0.069	0.413	Invalid

From the table above, it can be seen that 16 items was invalid and 54 items was valid. So, the researcher took 50 items for pre test.

Appendix 9

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



23	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	1	1	0	1	0	0	25	625
N= 23	16	15	14	13	12	5	16	19	16	17	16	18	14	15	4	16	18	15	4	4	14	6	15	14	7	6	18	15	16	14	Σxt= 902	Σxt² = 36248
p	0,7	0,7	0,6	0,6	0,5	0,2	0,7	0,8	0,7	0,7	0,7	0,8	0,6	0,7	0,2	0,7	0,8	0,7	0,2	0,2	0,6	0,3	0,7	0,6	0,3	0,3	0,8	0,7	0,7	0,6		
q	0,3	0,3	0,4	0,4	0,5	0,8	0,3	0,2	0,3	0,3	0,3	0,2	0,4	0,3	0,8	0,3	0,2	0,3	0,8	0,8	0,4	0,7	0,3	0,4	0,7	0,7	0,2	0,3	0,3	0,4		

## Appendix 10

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

### B. Calculation of Post Test

#### 4. Means score from score total ( $M_t$ )

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

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

#### 5. Standard Deviation ( $SD_t$ )

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

$$SD_t = \sqrt{\frac{36248}{23} - \frac{902^2}{23^2}}$$

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

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

#### 6. Means Score ( $M_p$ )

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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



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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

a

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

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

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

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

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

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

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

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

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

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

#### 4. Calculation of the Formulation r

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

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

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

$$r = 0.338 \times 1.52 = 0.5137$$

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

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

$$r = 0.277 \times 1.52 = 0.421$$

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

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

$$r = -0.061 \times 0.5 = -0.0305$$

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

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

$$r = 0.243 \times 2 = 0.486$$

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

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

$$r = 0.348 \times 1.52 = 0.528$$

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

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

$$r = 0.329 \times 1.52 = 0.500$$

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

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

$$r = 0.298 \times 1.52 = 0.452$$

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

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

$$r = 0.269 \times 2 = 0.538$$

$$\text{Item 9 } r_{\text{pbi}} = \frac{41.66 - 39.21}{6.2} \quad \frac{0.7}{0.3}$$

$$r = \frac{2.45}{6.2} \quad \overline{2.33}$$

$$r = 0.395 \times 1.52 = 0.6004$$

$$\text{Item 10 } r_{\text{pbi}} = \frac{40.56 - 39.21}{6.2} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.35}{6.2} \quad \overline{4}$$

$$r = 0.217 \times 2 = 0.434$$

$$\text{Item 11 } r_{\text{pbi}} = \frac{41.05 - 39.21}{6.2} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.84}{6.2} \quad \overline{4}$$

$$r = 0.296 \times 2 = 0.592$$

$$\text{Item 12 } r_{\text{pbi}} = \frac{40.77 - 39.21}{6.2} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.56}{6.2} \quad \overline{4}$$

$$r = 0.251 \times 2 = 0.502$$

$$\text{Item 13 } r_{\text{pbi}} = \frac{39.62 - 39.21}{6.2} \quad \frac{0.3}{0.7}$$

$$r = \frac{0.41}{6.2} \quad \overline{0.42}$$

$$r = 0.066 \times 0.64 = 0.042$$

$$\text{Item 14 } r_{\text{pbi}} = \frac{40.68 - 39.21}{6.2} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.47}{6.2} \quad \overline{4}$$

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

$$\text{Item 15 } r_{\text{pbi}} = \frac{41.56 - 39.21}{6.2} \quad \frac{0.7}{0.3}$$

$$r = \frac{2.35}{6.2} \quad \overline{2.33}$$

$$r = 0.379 \times 1.52 = 0.576$$

$$\text{Item 16 } r_{\text{pbi}} = \frac{41.43 - 39.21}{6.2} \quad \frac{0.7}{0.3}$$

$$r = \frac{2.22}{6.2} \quad \overline{2.33}$$

$$r = 0.358 \times 1.52 = 0.544$$

$$\text{Item 17 } r_{\text{pbi}} = \frac{41 - 39.21}{6.2} \quad \frac{0.7}{0.3}$$

$$r = \frac{1.79}{6.2} \quad \overline{2.33}$$

$$r = 0.288 \times 1.52 = 0.437$$

$$\textbf{Item 18} \quad r_{\text{pbi}} = \frac{37-39.21}{6.2} \quad \frac{\overline{0.3}}{0.7}$$

$$r = \frac{-2.21}{6.2} \quad \overline{0.42}$$

$$r = -0.356 \times 0.64 = -0.227$$

$$\textbf{Item 19} \quad r_{\text{pbi}} = \frac{41-39.21}{6.2} \quad \frac{\overline{0.7}}{0.3}$$

$$r = \frac{1.79}{6.2} \quad \overline{2.33}$$

$$r = 0.288 \times 1.52 = 0.437$$

$$\textbf{Item 20} \quad r_{\text{pbi}} = \frac{41.31-39.21}{6.2} \quad \frac{\overline{0.7}}{0.3}$$

$$r = \frac{2.1}{6.2} \quad \overline{2.33}$$

$$r = 0.338 \times 1.52 = 0.513$$

$$\textbf{Item 21} \quad r_{\text{pbi}} = \frac{41.33-39.21}{6.2} \quad \frac{\overline{0.7}}{0.3}$$

$$r = \frac{2.12}{6.2} \quad \overline{2.33}$$

$$r = 0.341 \times 1.52 = 0.518$$

$$\textbf{Item 22} \quad r_{\text{pbi}} = \frac{41.27-39.21}{6.2} \quad \frac{\overline{0.8}}{0.2}$$

$$r = \frac{2.06}{6.2} \quad \overline{4}$$

$$r = 0.332 \times 2 = 0.664$$

$$\textbf{Item 23} \quad r_{\text{pbi}} = \frac{41.18-39.21}{6.2} \quad \frac{\overline{0.7}}{0.3}$$

$$r = \frac{1.97}{6.2} \quad \overline{2.33}$$

$$r = 0.317 \times 1.52 = 0.4818$$

$$\textbf{Item 24} \quad r_{\text{pbi}} = \frac{40.94-39.21}{6.2} \quad \frac{\overline{0.8}}{0.2}$$

$$r = \frac{1.73}{6.2} \quad \overline{4}$$

$$r = 0.279 \times 2 = 0.558$$

$$\textbf{Item 25} \quad r_{\text{pbi}} = \frac{40.15-39.21}{6.2} \quad \frac{\overline{0.9}}{0.3}$$

$$r = \frac{0.94}{6.2} \quad \overline{9}$$

$$r = 0.151 \times 3 = 0.454$$

$$\text{Item 26 } r_{\text{pbi}} = \frac{40.72 - 39.21}{6.2} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.51}{6.2} \quad \overline{4}$$

$$r = 0.243 \times 2 = 0.487$$

$$\text{Item 27 } r_{\text{pbi}} = \frac{40.61 - 39.21}{6.2} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.4}{6.2} \quad \overline{4}$$

$$r = 0.225 \times 2 = 0.45$$

$$\text{Item 28 } r_{\text{pbi}} = \frac{38.4 - 39.21}{6.2} \quad \frac{0.2}{0.8}$$

$$r = \frac{-0.81}{6.2} \quad \overline{0.25}$$

$$r = -0.1306 \times 0.5 = -0.065$$

$$\text{Item 29 } r_{\text{pbi}} = \frac{43.07 - 39.21}{6.2} \quad \frac{0.6}{0.4}$$

$$r = \frac{3.86}{6.2} \quad \overline{1.5}$$

$$r = 0.622 \times 1.2 = 0.746$$

$$\text{Item 30 } r_{\text{pbi}} = \frac{42.42 - 39.21}{6.2} \quad \frac{0.6}{0.4}$$

$$r = \frac{3.21}{6.2} \quad \overline{1.5}$$

$$r = 0.517 \times 1.2 = 0.621$$

$$\text{Item 31 } r_{\text{pbi}} = \frac{41.11 - 39.21}{6.2} \quad \frac{0.7}{0.3}$$

$$r = \frac{1.9}{6.2} \quad \overline{2.33}$$

$$r = 0.306 \times 1.52 = 0.465$$

$$\text{Item 32 } r_{\text{pbi}} = \frac{40.31 - 39.21}{6.2} \quad \frac{0.8}{0.2}$$

$$r = \frac{1.63}{6.2} \quad \overline{4}$$

$$r = 0.262 \times 2 = 0.524$$

$$\text{Item 33 } r_{\text{pbi}} = \frac{37.57 - 39.21}{6.2} \quad \frac{0.3}{0.7}$$

$$r = \frac{-1.638}{6.2} \quad \overline{0.42}$$

$$r = -0.264 \times 0.64 = -0.168$$



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

$$r = \frac{1.79}{6.2} \quad \overline{2.33}$$

$$r = 0.288 \times 1.52 = 0.4388$$

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

$$r = \frac{2.16}{6.2} \quad \overline{2.33}$$

$$r = 0.348 \times 1.52 = 0.529$$

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

$$r = \frac{1.29}{6.2} \quad \overline{4}$$

$$r = 0.208 \times 2 = 0.416$$

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

$$r = \frac{1.97}{6.2} \quad \overline{2.33}$$

$$r = 0.317 \times 1.52 = 0.4818$$

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

$$r = \frac{-0.71}{6.2} \quad \overline{0.42}$$

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

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

$$r = \frac{1.85}{6.2} \quad \overline{2.33}$$

$$r = 0.298 \times 1.52 = 0.4529$$

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

$$r = \frac{2.54}{6.2} \quad \overline{2.33}$$

$$r = 0.409 \times 1.52 = 0.621$$

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

$$r = \frac{1.72}{6.2} \quad \overline{2.33}$$

$$r = 0.277 \times 1.52 = 0.421$$

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

$$r = \frac{2.32}{6.2} \quad \overline{2.33}$$

$$r = 0.374 \times 1.52 = 0.568$$

$$\text{Item 43 } r_{\text{pbi}} = \frac{41.57-39.21}{6.2} \quad \frac{0.6}{0.4}$$

$$r = \frac{3.36}{6.2} \quad \overline{1.5}$$

$$r = 0.380 \times 1.2 = 0.456$$

$$\text{Item 44 } r_{\text{pbi}} = \frac{42-39.21}{6.2} \quad \frac{0.5}{0.5}$$

$$r = \frac{2.79}{6.2} \quad \overline{1}$$

$$r = 0.45 \times 1 = 0.45$$

$$\text{Item 45 } r_{\text{pbi}} = \frac{42.33-39.21}{6.2} \quad \frac{0.5}{0.5}$$

$$r = \frac{3.12}{6.2} \quad \overline{1}$$

$$r = 0.503 \times 1 = 0.503$$

$$\text{Item 46 } r_{\text{pbi}} = \frac{35.8-39.21}{6.2} \quad \frac{0.2}{0.8}$$

$$r = \frac{-3.41}{6.2} \quad \overline{0.25}$$

$$r = -0.55 \times 0.5 = -0.275$$

$$\text{Item 47 } r_{\text{pbi}} = \frac{41-39.21}{6.2} \quad \frac{0.7}{0.3}$$

$$r = \frac{1.79}{6.2} \quad \overline{2.33}$$

$$r = 0.288 \times 1.52 = 0.437$$

$$\text{Item 48 } r_{\text{pbi}} = \frac{41.21-39.21}{6.2} \quad \frac{0.8}{0.2}$$

$$r = \frac{2}{6.2} \quad \overline{4}$$

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

$$\text{Item 49 } r_{\text{pbi}} = \frac{42.62-39.21}{6.2} \quad \frac{0.7}{0.3}$$

$$r = \frac{3.41}{6.2} \quad \overline{2.33}$$

$$r = 0.55 \times 1.52 = 0.836$$

$$\text{Item 50 } r_{\text{pbi}} = \frac{41.88-39.21}{6.2} \quad \frac{0.7}{0.3}$$

$$r = \frac{2.67}{6.2} \quad \overline{2.33}$$

$$r = 0.430 \times 1.52 = 0.653$$

$$\text{Item 51 } r_{\text{pbi}} = \frac{41.12-39.21}{6.2} \quad \frac{0.7}{0.3}$$

$$r = \frac{1.91}{6.2} \overline{2.33}$$

$$r = 0.308 \times 1.52 = 0.468$$

$$\text{Item 52 } r_{\text{pbi}} = \frac{41.05-39.21}{6.2} \overline{0.8}$$

$$r = \frac{1.84}{6.2} \overline{4}$$

$$r = 0.296 \times 2 = 0.592$$

$$\text{Item 53 } r_{\text{pbi}} = \frac{43.5-39.21}{6.2} \overline{0.6}$$

$$r = \frac{4.29}{6.2} \overline{1.5}$$

$$r = 0.691 \times 1.2 = 0.829$$

$$\text{Item 54 } r_{\text{pbi}} = \frac{41.53-39.21}{6.2} \overline{0.7}$$

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

$$r = 0.374 \times 1.52 = 0.568$$

$$\text{Item 55 } r_{\text{pbi}} = \frac{42.5-39.21}{6.2} \overline{0.2}$$

$$r = \frac{3.29}{6.2} \overline{0.25}$$

$$r = 0.530 \times 0.5 = 0.265$$

$$\text{Item 56 } r_{\text{pbi}} = \frac{41-39.21}{6.2} \overline{0.7}$$

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

$$r = 0.288 \times 1.52 = 0.437$$

$$\text{Item 57 } r_{\text{pbi}} = \frac{40.77-39.21}{6.2} \overline{0.8}$$

$$r = \frac{1.56}{6.2} \overline{4}$$

$$r = 0.251 \times 2 = 0.502$$

$$\text{Item 58 } r_{\text{pbi}} = \frac{41.13-39.21}{6.2} \overline{0.7}$$

$$r = \frac{1.92}{6.2} \overline{2.33}$$

$$r = 0.309 \times 1.52 = 0.469$$

$$\text{Item 59 } r_{\text{pbi}} = \frac{40.5-39.21}{6.2} \overline{0.2}$$

$$r = \frac{1.29}{6.2} \overline{0.25}$$

$$r = 0.208 \times 0.5 = 0.104$$

$$\text{Item 60 } r_{\text{pbi}} = \frac{39.75-39.21}{6.2} \overline{0.2}$$

$$r = \frac{0.54}{6.2} \overline{0.25}$$

$$r = 0.087 \times 0.5 = 0.0435$$

$$\text{Item 61 } r_{\text{pbi}} = \frac{42.07-39.21}{6.2} \overline{0.6}$$

$$r = \frac{2.86}{6.2} \overline{1.5}$$

$$r = 0.461 \times 1.2 = 0.553$$

$$\text{Item 62 } r_{\text{pbi}} = \frac{39.33-39.21}{6.2} \overline{\frac{0.3}{0.7}}$$

$$r = \frac{0.12}{6.2} \overline{0.42}$$

$$r = 0.0193 \times 0.64 = 0.0123$$

$$\text{Item 63 } r_{\text{pbi}} = \frac{41.66-39.21}{6.2} \overline{\frac{0.7}{0.3}}$$

$$r = \frac{2.45}{6.2} \overline{2.33}$$

$$r = 0.395 \times 1.52 = 0.6004$$

$$\text{Item 64 } r_{\text{pbi}} = \frac{42.35-39.21}{6.2} \overline{\frac{0.6}{0.4}}$$

$$r = \frac{3.14}{6.2} \overline{1.5}$$

$$r = 0.506 \times 1.2 = 0.6072$$

$$\text{Item 65 } r_{\text{pbi}} = \frac{39.85-39.21}{6.2} \overline{\frac{0.3}{0.7}}$$

$$r = \frac{0.64}{6.2} \overline{0.42}$$

$$r = 0.1032 \times 0.64 = 0.0660$$

$$\text{Item 66 } r_{\text{pbi}} = \frac{36-39.21}{6.2} \overline{\frac{0.3}{0.7}}$$

$$r = \frac{-0.321}{6.2} \overline{0.42}$$

$$r = -0.517 \times 0.64 = -0.3308$$

$$\text{Item 67 } r_{\text{pbi}} = \frac{40.55-39.21}{6.2} \overline{\frac{0.8}{0.2}}$$

$$r = \frac{1.34}{6.2} \overline{4}$$

$$r = 0.216 \times 2 = 0.432$$

$$\text{Item 68 } r_{\text{pbi}} = \frac{41.33-39.21}{6.2} \overline{\frac{0.7}{0.3}}$$

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

$$r = 0.341 \times 1.52 = 0.518$$

$$\text{Item 69 } r_{\text{pbi}} = \frac{41-39.21}{6.2} \overline{\frac{0.7}{0.3}}$$

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

$$r = 0.288 \times 1.52 = 0.437$$

$$\text{Item 70 } r_{\text{pbi}} = \frac{41.78-39.21}{6.2} \overline{\frac{0.6}{0.4}}$$

$$r = \frac{2.57}{6.2} \overline{1.5}$$

$$r = 0.414 \times 1.2 = 0.496$$

## Appendix 11

**Table of Post Test Validity**

Number of Item	$M_p$	$M_t$	$SD_t$	P	Q	$r_{pbi} = \frac{M_p - M_t}{SD_t} \sqrt{\frac{p}{q}}$	$r_t$ on 5% significant	Interpretation
1.	41.31	39.21	6.21	0.7	0.3	0.513	0.413	Valid
2.	40.93	39.21	6.21	0.7	0.3	0.421	0.413	Valid
3.	48.83	39.21	6.21	0.2	0.8	-0.0305	0.413	Invalid
4.	40.72	39.21	6.21	0.8	0.2	0.486	0.413	Valid
5.	41.37	39.21	6.21	0.7	0.3	0.528	0.413	Valid
6.	41.25	39.21	6.21	0.7	0.3	0.500	0.413	Valid
7.	41.06	39.21	6.21	0.7	0.3	0.452	0.413	Valid
8.	40.88	39.21	6.21	0.8	0.2	0.538	0.413	Valid
9.	41.66	39.21	6.21	0.7	0.3	0.6004	0.413	Valid
10.	40.56	39.21	6.21	0.8	0.2	0.434	0.413	Valid
11.	41.05	39.21	6.21	0.8	0.2	0.592	0.413	Valid
12.	40.77	39.21	6.21	0.8	0.2	0.502	0.413	Valid
13.	39.62	39.21	6.21	0.3	0.7	0.042	0.413	Invalid
14.	40.68	39.21	6.21	0.8	0.2	0.474	0.413	Valid
15.	41.56	39.21	6.21	0.7	0.3	0.576	0.413	Valid
16.	41.43	39.21	6.21	0.7	0.3	0.544	0.413	Valid
17.	41	39.21	6.21	0.7	0.3	0.437	0.413	Valid
18.	37	39.21	6.21	0.3	0.7	-0.227	0.413	Invalid
19.	41	39.21	6.21	0.7	0.3	0.437	0.413	Valid
20.	41.31	39.21	6.21	0.7	0.3	0.513	0.413	Valid
21.	41.33	39.21	6.21	0.7	0.3	0.518	0.413	Valid
22.	41.27	39.21	6.21	0.8	0.2	0.664	0.413	Valid
23.	41.18	39.21	6.21	0.7	0.3	0.481	0.413	Valid
24.	40.94	39.21	6.21	0.8	0.2	0.558	0.413	Valid
25.	40.15	39.21	6.21	0.9	0.1	0.454	0.413	Valid
26.	40.72	39.21	6.21	0.8	0.2	0.487	0.413	Valid
27.	40.61	39.21	6.21	0.8	0.2	0.45	0.413	Valid
28.	38.4	39.21	6.21	0.2	0.8	-0.065	0.413	Invalid
29.	43.07	39.21	6.21	0.6	0.4	0.746	0.413	Valid
30.	42.42	39.21	6.21	0.6	0.4	0.621	0.413	Valid
31.	41.11	39.21	6.21	0.8	0.2	0.465	0.413	Valid
32.	40.84	39.21	6.21	0.8	0.2	0.524	0.413	Valid
33.	37.57	39.21	6.21	0.3	0.7	-0.168	0.413	Invalid
34.	41	39.21	6.21	0.7	0.3	0.438	0.413	Valid
35.	41.37	39.21	6.21	0.7	0.3	0.529	0.413	Valid
36.	40.5	39.21	6.21	0.8	0.2	0.416	0.413	Valid
37.	41.18	39.21	6.21	0.7	0.3	0.481	0.413	Valid
38.	38.5	39.21	6.21	0.3	0.7	-0.073	0.413	Invalid

39.	41.06	39.21	6.21	0.7	0.3	0.452	0.413	Valid
40.	41.75	39.21	6.21	0.7	0.3	0.621	0.413	Valid
41.	40.93	39.21	6.21	0.7	0.3	0.421	0.413	Valid
42.	41.53	39.21	6.21	0.7	0.3	0.568	0.413	Valid
43.	41.57	39.21	6.21	0.6	0.4	0.456	0.413	Valid
44.	42	39.21	6.21	0.6	0.4	0.45	0.413	Valid
45.	42.33	39.21	6.21	0.5	0.5	0.503	0.413	Valid
46.	35.8	39.21	6.21	0.2	0.8	-0.275	0.413	Invalid
47.	41	39.21	6.21	0.7	0.3	0.437	0.413	Valid
48.	41.21	39.21	6.21	0.8	0.2	0.644	0.413	Valid
49.	42.62	39.21	6.21	0.7	0.3	0.836	0.413	Valid
50.	41.88	39.21	6.21	0.7	0.3	0.653	0.413	Valid
51.	41.12	39.21	6.21	0.7	0.3	0.468	0.413	Valid
52.	41.05	39.21	6.21	0.8	0.2	0.592	0.413	Valid
53.	43.5	39.21	6.21	0.6	0.4	0.829	0.413	Valid
54.	41.53	39.21	6.21	0.7	0.3	0.568	0.413	Valid
55.	42.5	39.21	6.21	0.2	0.8	0.265	0.413	Invalid
56.	41	39.21	6.21	0.7	0.3	0.437	0.413	Valid
57.	40.77	39.21	6.21	0.8	0.2	0.502	0.413	Valid
58.	41.13	39.21	6.21	0.7	0.3	0.469	0.413	Valid
59.	40.5	39.21	6.21	0.2	0.8	0.104	0.413	Invalid
60.	39.75	39.21	6.21	0.2	0.8	0.043	0.413	Invalid
61.	42.07	39.21	6.21	0.6	0.4	0.553	0.413	Valid
62.	39.33	39.21	6.21	0.3	0.7	0.012	0.413	Invalid
63.	41.66	39.21	6.21	0.7	0.3	0.600	0.413	Valid
64.	42.35	39.21	6.21	0.6	0.4	0.607	0.413	Valid
65.	39.85	39.21	6.21	0.3	0.7	0.066	0.413	Invalid
66.	36	39.21	6.21	0.3	0.7	-0.330	0.413	Invalid
67.	40.55	39.21	6.21	0.8	0.2	0.432	0.413	Valid
68.	41.33	39.21	6.21	0.7	0.3	0.518	0.413	Valid
69.	41	39.21	6.21	0.7	0.3	0.437	0.413	Valid
70.	41.78	39.21	6.21	0.6	0.4	0.496	0.413	Valid

From the table above, it can be seen that 12 items was invalid and 58 items was valid. So, the researcher took 50 items for post test.

## Appendix 12

### Calculation Reliability Pre Test

$$R_{11} = \frac{n}{n-1} \frac{S_{t^2} - \sum pq}{S_{t^2}}$$

$$N = 23$$

$$\sum X_t = 1022$$

$$\sum X_t^2 = 46202$$

$$\sum pq = 8.41$$

$$\begin{aligned} X^2 &= \sum X_t^2 - \frac{\sum X_t^2}{N} \\ &= 46202 - \frac{1022^2}{23} = 46202 - \frac{1044484}{23} = 46202 - 45412.348 = 789.65 \end{aligned}$$

$$S_t^2 = \frac{X^2}{N} = \frac{789.65}{23}$$

$$S_t^2 = 34.33$$

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

$$R_{11} = \frac{23}{23-1} \frac{34.33-8.41}{34.33} = \frac{23}{22} \frac{25.92}{34.33}$$

$$= (1.045) (0.75)$$

$$= 0.78 \text{ (} r_{11} > 0.70 = \text{reliable)}$$

Test is reliable if  $r_{\text{count}} > r_{\text{tabel}}$ . Based on calculation above, the test have very high reliable.

## Appendix 13

### Reliability Post Test

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

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

$$N = 22$$

$$\sum X_t = 902$$

$$\sum X_t^2 = 36248$$

$$\sum pq = 9.16$$

$$\begin{aligned} X^2 &= \sum X_t^2 - \frac{\sum x_t^2}{N} \\ &= 36248 - \frac{902^2}{22} = 36248 - \frac{813604}{22} = 36248 - 35374.08 = 873.92 \end{aligned}$$

$$S_t^2 = \frac{X^2}{N} = \frac{873.92}{22}$$

$$S_t^2 = 39.72$$

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

$$R_{11} = \frac{22}{22-1} \frac{39.72-9.16}{39.72} = \frac{22}{21} \frac{30.56}{39.72}$$

$$= (1.047) (0.769)$$

$$= .80 \text{ (} r_{11} > 0.70 = \text{reliable)}$$

Test is reliable if  $r_{\text{count}} > r_{\text{tabel}}$ . Based on calculation above, the test have very high reliable.



## Appendix 14

### Score of Experimental Class and Control Class Pre- Test

#### 1. Score of Experimental Class Pre Test before using Concept Circle Strategy

No	The Initial Name of Students(n)	Pre-Test
1	AYH	75
2	ASR	68
3	AF	50
4	AH	50
5	AA	55
6	AML	48
7	AS	44
8	CA	57
9	DA	60
10	DE	60
11	DS	70
12	ES	40
13	FH	62
14	FA	48
15	HA	35
16	IR	33
17	JA	50
18	LM	57
19	MJ	68
20	MR	75
21	NA	50
22	NH	74
23	PM	40
24	RAM	64
		<b>1333</b>

#### 2. Score of Control Class Pre Test

No	The Initial Name of Students(n)	Pre-Test
1	AG	35
2	AI	55
3	AA	50
4	AAR	64
5	AA	52
6	AM	60
7	DS	45
8	DRS	42

9	DREH	55
10	EP	60
11	FR	40
12	FZ	45
13	HP	65
14	IPSH	65
15	JH	38
16	MH	69
17	MS	57
18	MA	35
19	MB	45
20	NK	75
21	RA	70
22	SS	75
		<b>1247</b>

## Appendix 15

### Score of Experimental Class and Control Class Post Test

#### 1. Post Test Score of Experimental Class (after Using Concept Circle Strategy)

No	The Initial Name of Students(n)	Pre-Test
1	AYH	65
2	ASR	80
3	AF	80
4	AH	77
5	AA	79
6	AML	90
7	AS	85
8	CA	80
9	DA	94
10	DE	90
11	DS	75
12	ES	60
13	FH	78
14	FA	92
15	HA	77
16	IR	70
17	JA	82
18	LM	90
19	MJ	92
20	MR	92
21	NA	82
22	NH	85
23	PM	85
24	RAM	84
<b>Total</b>		<b>1964</b>

#### 2. Post Test Score of Control Class (Using Conventional Strategy)

No	The Initial Name Of Students(N)	Post-Test
1	AG	56

2	AIS	60
3	AA	60
4	AAR	70
5	AA	65
6	AM	80
7	DS	70
8	DRS	63
9	DREH	75
10	EP	70
11	FR	70
12	FZ	75
13	HP	75
14	IPSH	84
15	JH	80
16	MH	75
17	MS	84
18	MA	70
19	MB	65
20	NK	60
21	RA	70
22	SS	68
<b>Total</b>		<b>1760</b>

## Appendix 16

### RESULT OF THE NORMALITY TEST OF VII-1 IN PRE-TEST

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

36	36	38	40	40	45	45	45	50	50
50	52	55	55	60	60	62	64	65	70
70	75	80	80						

2. High = 80

Low = 36

Range = High – Low

= 80 – 36

= 44

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

=  $1 + 3,3 \log (24)$

=  $1 + 3,3 (1,38)$

=  $1 + 4,55$

=  $5,55 / 5$

4. Length of Classes =  $\frac{\text{range}}{\text{total of class}} = \frac{44}{5} = 8.8 = 9$

5. Mean and Deviation Standard

Interval Class	F	X	x	fx	x <sup>2</sup>	fx <sup>2</sup>
36- 44	5	40	+2	10	4	20
45- 53	7	49	+1	7	1	7
54- 62	<b>5</b>	<b>58</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
63- 71	4	67	-1	-4	1	4
72-80	3	76	-2	-6	4	12
	24	-	-	7	-	43

$$Mx = M^1 + i \frac{\sum fx^1}{N}$$

$$= 58 + 9 \left( \frac{7}{24} \right)$$

$$= 58 + 9 (0.29)$$

$$= 58 + 2.61$$

$$= 60.61$$

$$\begin{aligned} SD_t &= i \sqrt{\frac{fx^2}{n} - \frac{fx^2}{n^2}} \\ &= 9 \sqrt{\frac{43}{24} - \frac{7}{24}} \\ &= 9 \sqrt{1.79 - 0.29} \\ &= 9 \sqrt{1.79 - 0.084} \\ &= 9 \sqrt{1.706} \\ &= 9 \times 1.306 \\ &= 11.75 \end{aligned}$$

**Table of Normality Data Test with Chi Kuadrad Formula**

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f <sub>h</sub>	f <sub>0</sub>	$\frac{(f_0-f_h)^2}{f_h}$
72-80	80.5	1.69	0.4545	0.13	3.10	3	- 0.003
63-71	71.5	0.92	0.3212	0.25	6	4	- 0.66
54-62	62.5	0.16	0.0636	0.21	4.6	5	0.76
45-53	53.5	-0.60	0.27425	0.18	4.30	7	1.69
36-44	44.5	-1.37	0.08534	0.006	1.42	5	9.01
	35.5	-2.13	0.01659				
X <sup>2</sup>							12.13

Based on the table above, the researcher found that  $x^2_{\text{count}} = 12.13$  while  $x^2_{\text{table}} = 9.488$ . Because  $x^2_{\text{count}} < x^2_{\text{table}}$  ( $12.13 < 9.488$ ) with degree of freedom (dk) =  $5 - 1 = 4$  and significant level  $\alpha = 5\%$ , distribution of VII-1 class (pre-test) is not normal.

## 6. Median

No	Interval	f	Fk
----	----------	---	----

1	36 – 44	5	<b>5</b>
2	<b>45 – 53</b>	<b>7</b>	12
<b>3</b>	54 – 62	5	17
4	63 – 71	4	21
5	72 – 80	3	24

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

$$Bb = 44.5$$

$$F = 5$$

$$Fm = 7$$

$$i = 9$$

$$n = 24$$

$$1/2n = 12$$

So :

$$\begin{aligned}
 Me &= Bb + i \left( \frac{\frac{n}{2} - F}{fm} \right) \\
 &= 44.5 + 9 \frac{12-5}{7} \\
 &= 44.5 + 9 (1) \\
 &= 44.5 + 9 \\
 &= 53.5
 \end{aligned}$$

## 7. Modus

No	Interval	F	Fk
1	36 – 44	5	5
2	<b>45 – 53</b>	<b>7</b>	12
3	54 – 62	5	17
4	63 – 71	4	21
5	72 – 80	3	24

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 44.5$$

$$d_1 = 5$$

$$d_2 = 5$$

$$i = 9$$

So,

$$\begin{aligned} M_0 &= 44.5 + \frac{5}{5+5} 9 \\ &= 44.5 + 0.5 (9) \\ &= 44.5 + 4.5 \\ &= 49 \end{aligned}$$

### RESULT OF NORMALITY TEST IN PRE TEST

#### RESULT OF THE NORMALITY TEST OF VII-2 IN PRE-TEST

1. The score of VII-2 class in pre test from low score to high score:

33	35	40	40	44	48	48	50	50	50
50	55	57	57	60	60	62	64	68	68
70	74	75	79						

2. High = 79

$$\text{Low} = 33$$

$$\text{Range} = \text{High} - \text{Low}$$

$$= 79 - 33$$

$$= 46$$

3. Total of Classes =  $1 + 3,3 \log (n)$   
 $= 1 + 3,3 \log (24)$   
 $= 1 + 3,3 (1.38)$   
 $= 1 + 4.55$   
 $= 5.55$   
 $= 5$

4. Length of Classes =  $\frac{\text{range}}{\text{total of class}}$

$$= \frac{46}{5}$$

$$= 9.2 = 9$$



## 5. Mean and Deviation Standard

Interval Class	F	X	x	fx	x <sup>2</sup>	fx <sup>2</sup>
33 – 39	2	37	+2	4	4	8
40 – 48	5	44	+1	5	1	5
49 – 57	7	<b>53</b>	0	0	0	0
58 – 66	4	62	-1	-4	1	4
67 – 75	6	71	-2	-12	4	24
	24	-	-	7	-	41

$$\begin{aligned}
 Mx &= M^1 + i \frac{\sum fx^1}{N} \\
 &= 53 + 9\left(\frac{7}{24}\right) \\
 &= 53 + 9(0.292) \\
 &= 53 + 2.62 \\
 &= 55.62
 \end{aligned}$$

$$\begin{aligned}
 SD_t &= i \sqrt{\frac{fx'^2}{n} - \frac{fx'}{n}^2} \\
 &= 9 \sqrt{\frac{41}{24} - \left(\frac{7}{24}\right)^2} \\
 &= 9 \sqrt{1.708 - 0.292^2} \\
 &= 9 \sqrt{1.708 - 0.085} \\
 &= 9 \sqrt{1.623} \\
 &= 9 \times 1.273 \\
 &= 11.43
 \end{aligned}$$

Table of Normality Data Test with Chi Kuadrad Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f <sub>h</sub>	f <sub>0</sub>	$\frac{(f_0 - f_h)^2}{f_h}$
67 – 75	75.5	1.69	0.4545	0.17	3.11	6	1.372
58 – 66	66.5	0.78	0.2823	0.21	3	4	0.666
49 – 57	57.5	0.16	0.0636	0.20	4.7	7	1.125
40 – 48	48.5	-0.61	0.27093	0.18	4.33	5	0.003

33 – 39	39.5	-1.35	0.08851	0.02	1.43	2	0.227
	32.5	-2.11	0.11314				
$\chi^2$							3.393

Based on the table above, the researcher found that  $\chi^2_{\text{count}}=3.393$  while  $\chi^2_{\text{table}}= 9.488$ . Because  $\chi^2_{\text{count}} < \chi^2_{\text{table}}$  ( $3.393 < 9.488$ ) with degree of freedom (dk) =  $5 - 1 = 4$  and significant level  $\alpha = 5\%$ , distribution of VII-2 class (pre-test) is normal.

#### 6. Median

No	Interval	F	Fk
1	33 – 39	2	2
2	40 – 48	5	7
3	<b>49 – 57</b>	<b>7</b>	14
4	58 – 66	4	18
5	67 – 65	6	24

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

$$Bb = 48.5$$

$$F = 7$$

$$fm = 7$$

$$i = 9$$

$$n = 24$$

$$1/n = 12$$

So :

$$Me = Bb + i \left( \frac{n/2 - F}{fm} \right)$$

$$= 48.5 + 9 \frac{12-7}{7}$$

$$= 48.5 + 9 (0.714)$$

$$= 48.5 + 6.42$$

$$= 54.92$$

## 7. Modus

No	Interval	F	Fk
1	33 – 39	2	2
2	40 – 48	5	7
3	<b>49 – 57</b>	<b>7</b>	14
4	58 – 66	4	18
5	67 – 65	6	24

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 48.5$$

$$d_1 = 5$$

$$d_2 = 4$$

$$i = 9$$

So,

$$\begin{aligned}
 M_o &= 48.5 + \frac{5}{5+4} 9 \\
 &= 48.5 + \frac{5}{9} 9 \\
 &= 48.5 + 0.5 (9) \\
 &= 48.5 + 4.5 \\
 &= 53
 \end{aligned}$$

## RESULT OF NORMALITY TEST IN PRE TEST

### RESULT OF THE NORMALITY TEST OF VII-3IN PRE-TEST

1. The score of VII-3 class in pre test from low score to high score:

35	35	38	40	42	45	45	50	50	52
55	55	57	60	60	64	65	65	69	70
74	74								

$$2. \text{ High} = 74$$

$$\text{Low} = 30$$

$$\text{Range} = \text{High} - \text{Low}$$

$$= 74 - 30$$

$$= 44$$

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

$$= 1 + 3,3 \log (22)$$

$$= 1 + 3,3 (1.34)$$

$$= 1 + 4.42$$

$$= 5.42$$

$$= 5$$

$$4. \text{ Length of Classes} = \frac{\text{range}}{\text{total of class}} = \frac{44}{5} = 8.8 = 9$$

#### 5. Mean and Standard Deviation

Interval Class	F	X	x	fx	x <sup>2</sup>	fx <sup>2</sup>
67 – 75	4	71	+2	8	4	16
58 – 66	5	62	+1	5	1	5
<b>48 – 57</b>	<b>6</b>	<b>52</b>	0	0	0	0
39 – 47	4	43	-1	-4	1	4
30 – 38	3	34	-2	-6	4	12
i = 9	22	-	-	3	-	37

$$\begin{aligned}
 Mx &= M^1 + i \frac{\sum fx^1}{N} \\
 &= 52 + 9 \left( \frac{3}{22} \right) \\
 &= 52 + 9 (0.136) \\
 &= 52 + 1.22 \\
 &= 53.22
 \end{aligned}$$

$$\begin{aligned}
 SD_t &= i \sqrt{\frac{fx^2}{n} - \frac{fx^1^2}{n}} \\
 &= 9 \sqrt{\frac{37}{22} - \frac{3}{22}^2}
 \end{aligned}$$

$$\begin{aligned}
&= 9 \sqrt{1.681 - 0.136^2} \\
&= 9 \sqrt{1.681 - 0.018} \\
&= 9 \sqrt{1.662} \\
&= 9 \times 1.289 \\
&= 11.60
\end{aligned}$$

Table of Normality Data Test with Chi Kuadrad Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f <sub>h</sub>	f <sub>0</sub>	$\frac{(f_0-f_h)^2}{f_h}$
67 – 75	75.5	1.92	0.4726	0.09	2.40	4	1.066
58 – 66	66.5	1.14	0.3729	0.23	5.3	5	0.016
48 – 57	57.5	0.36	0.1406	0.17	4.13	6	0.846
39 – 47	47.5	-0.49	0.31207	0.20	4.2	4	0.009
30 - 38	38.5	-1.26	0.10383	0.08	1.52	3	1.44
	29.5	-2.04	0.02068				
X <sup>2</sup>							3.377

Based on the table above, the researcher found that  $x^2_{\text{count}} = 3.377$  while  $x^2_{\text{table}} = 9.488$ . Because  $x^2_{\text{count}} < x^2_{\text{table}}$  ( $3.377 < 9.488$ ) with degree of freedom (dk) =  $5 - 1 = 4$  and significant level  $\alpha = 5\%$ , distribution of VII-3 class (pre-test) is normal.

## 6. Median

No	Interval	F	Fk
1	30 – 38	3	3
2	39 – 47	4	<b>7</b>
3	<b>48 – 57</b>	<b>6</b>	13
4	58 – 66	5	18
5	67 – 75	4	22

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

$$Bb = 47.5$$

$$F = 7$$

$$fm = 6$$

$$i = 9$$

$$n = 22$$

$$1/2n = 11$$

So :

$$Me = Bb + i \left( \frac{\frac{n}{2} - F}{fm} \right)$$

$$= 47.5 + 9 \frac{11-7}{6}$$

$$= 47.5 + 9 (0.666)$$

$$= 47.5 + 5.99$$

$$= 53.49$$

## 7. Modus

No	Interval	F	Fk
1	30 – 38	3	3
2	39 – 47	4	<b>7</b>
3	<b>48 – 57</b>	<b>6</b>	13
4	58 – 66	5	18
5	67 – 75	4	22

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 47.5$$

$$d_1 = 4$$

$$d_2 = 5$$

$$i = 9$$

So,

$$M_o = 47.5 + \frac{4}{4+5} 9$$

$$= 47.5 + 0.44 (9)$$

$$= 47.5 + 3.96$$

$$= 51.46$$

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

$$S^2 = \frac{n \sum xi^2 - (\sum xi)^2}{n(n-1)}$$

Hypotheses:

$$H_0 : \sigma_1^2 = \sigma_2^2$$

$$H_1 : \sigma_1^2 \neq \sigma_2^2$$

A. Variant of the VII-1 class is:

NO	Xi	Xi <sup>2</sup>
1.	36	1296
2.	36	1296
3.	38	1444
4.	40	1600
5.	40	1600
6.	45	2025
7.	45	2025
8.	45	2025
9.	50	2500
10.	50	2500
11.	50	2500
12.	52	2704
13.	55	3025
14.	55	3025
15.	60	3600
16.	60	3600
17.	62	3844
18.	64	4096
19.	65	4225
20.	70	4900
21.	70	4900
22.	75	5625
23.	80	6400



24.	80	6400
<b>Total</b>	<b>1323</b>	<b>77155</b>

$$n = 24$$

$$\sum x_i = 1323$$

$$\sum x_i^2 = 77155$$

So:

$$\begin{aligned}
 S^2 &= \frac{n \sum x_i^2 - (\sum x_i)^2}{n(n-1)} \\
 &= \frac{24 \cdot 77155 - (1323)^2}{24(24-1)} \\
 &= \frac{1851720 - 1323^2}{24 \cdot 23} \\
 &= \frac{1850397}{552} \\
 &= 3352.16
 \end{aligned}$$

B. Variant of the VII-2 class is:

NO	Xi	Xi <sup>2</sup>
1.	33	1089
2.	35	1225
3.	40	1600
4.	40	1600
5.	44	1936
6.	48	2304
7.	48	2304
8.	50	2500
9.	50	2500
10.	50	2500
11.	50	2500
12.	55	3025
13.	57	3249
14.	57	3249
15.	60	3600
16.	60	3600
17.	62	3844
18.	64	4096
19.	68	4624
20.	68	4624
21.	70	4900
22.	74	5476

23.	75	5625
24.	75	5625
<b>Total</b>	<b>1333</b>	<b>72971</b>

$$n = 24$$

$$\sum x_i = 1333$$

$$\sum x_i^2 = 72971$$

So:

$$\begin{aligned}
 S^2 &= \frac{n \sum x_i^2 - (\sum x_i)^2}{n-1} \\
 &= \frac{24 \cdot 72971 - (1333)^2}{24-1} \\
 &= \frac{1751304 - 1333^2}{23} \\
 &= \frac{1749971}{23} \\
 &= 3170.23
 \end{aligned}$$

C. Variant of the VII-3 class is:

NO	Xi	Xi <sup>2</sup>
1.	35	1225
2.	35	1225
3.	38	1444
4.	40	1600
5.	42	1764
6.	45	2025
7.	45	2025
8.	50	2500
9.	50	2500
10.	52	2704
11.	55	3025
12.	55	3025
13.	57	3249
14.	60	3600
15.	60	3600
16.	64	4096
17.	65	4225
18.	65	4225
19.	69	4761
20.	70	4900
21.	75	5625

22.	75	5625
<b>Total</b>	<b>1247</b>	<b>68968</b>

$$n = 22$$

$$\sum x_i = 1247$$

$$\sum x_i^2 = 68968$$

So:

$$\begin{aligned}
 S^2 &= \frac{n \sum x_i^2 - (\sum x_i)^2}{n-1} \\
 &= \frac{22 \cdot 68968 - (1247)^2}{22-1} \\
 &= \frac{1517296 - 1553009}{21} \\
 &= \frac{-35713}{21} \\
 &= -1700.62
 \end{aligned}$$

The Formula was used to test hypothesis was;

1. VII-1 and VII-2.

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

So:

$$F = \frac{3352.16}{3170.24}$$

$$= 1.05$$

After doing the calculation, researcher found that  $F_{\text{count}} = 1.05$  with  $\alpha 5\%$  and  $dk = 23$  and  $23$  from the distribution list  $F$ , researcher found that  $F_{\text{table}} = 2.02$ , cause  $F_{\text{count}} < F_{\text{table}}$  ( $1.05 < 2.02$ ). So, there is no difference in variant between the VII-1 class and VII-2 class. It means that the variant is homogenous.

2. VII-1 and VII-3

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

So:

$$F = \frac{3352.16}{3281.49} = 1.02$$

After doing the calculation, researcher found that  $F_{\text{count}} = 1.02$  with  $\alpha 5\%$  and  $dk = 23$  and  $22$  from the distribution list  $F$ , researcher found that  $F_{\text{table}} = 2.04$ , cause  $F_{\text{count}} < F_{\text{table}}$  ( $1.02 < 2.04$ ). So, there is no difference in variant between the VII-1 class and VII-3 class. It means that the variant is homogenous.

### 3. VII-2 and VII-3

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

So:

$$\begin{aligned} F &= \frac{3281.49}{3170.23} \\ &= 1.035 \end{aligned}$$

After doing the calculation, researcher found that  $F_{\text{count}} = 1.03$  with  $\alpha 5\%$  and  $dk = 23$  and  $21$  from the distribution list  $F$ , researcher found that  $F_{\text{table}} = 2.04$ , cause  $F_{\text{count}} < F_{\text{table}}$  ( $1.03 < 2.04$ ). So, there is no difference the variant between the VII-2 class and VII-3 class. It means that the variant is homogenous.

## Appendix 18

### RESULT OF NORMALITY TEST IN POST TEST

#### RESULT OF THE NORMALITY TEST OF VII-2IN POST-TEST

1. The score of VII-2 class in post test from low score to high score:

60	65	70	75	77	77	78	79	80	80
80	82	82	84	85	85	85	90	90	90
92	92	92	94						

2. High = 94

Low = 60

Range = High – Low

= 94 – 60

= 34

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

=  $1 + 3,3 \log (24)$

=  $1 + 3,3 (1.38)$

=  $1 + 4.55$

=  $5.55 / 5$

4. Length of Classes =  $\frac{\text{range}}{\text{total of class}} = \frac{34}{5} = 6.8 = 7$

5. Mean

Interval Class	F	X	x'	fx'	x' <sup>2</sup>	fx' <sup>2</sup>
91 – 97	4	94	+2	8	4	16
84 – 90	7	87	+1	7	1	7
<b>77 – 83</b>	<b>9</b>	<b>80</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
70 – 76	2	73	-1	-2	1	2
60 – 69	2	63	-2	-4	4	8
<i>i=7</i>	24	-	-	9		33

$$Mx = M^1 + i \frac{\sum fx^1}{N}$$

$$= 80 + 7 \left( \frac{9}{24} \right)$$

$$= 80 + 7 (0.375)$$

$$= 80 + 2.625$$

$$= 82.625$$

$$\begin{aligned} SD_t &= i \sqrt{\frac{fx'^2}{n} - \frac{fx'}{n}^2} \\ &= 7 \sqrt{\frac{33}{24} - \frac{9}{24}^2} \\ &= 7 \sqrt{1.37 - 0.375^2} \\ &= 7 \sqrt{1.37 - 0.140} \\ &= 7 \sqrt{1.23} \\ &= 7 \times 1.109 \\ &= 7.763 \end{aligned}$$

Table of Normality Data Test with Chi Kuadrad Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f <sub>h</sub>	f <sub>0</sub>	$\frac{(f_0-f_h)}{f_h}$
91 – 97	97.5	1.91	0.4719	0.12	2.4	4	0.666
84 - 90	90.5	1.01	0.3438	0.3	3.6	7	0.944
77 – 83	83.5	0.11	0.0438	-0.17	1.4	9	5.428
70 – 76	76.5	-0.78	0.21770	0.17	2.6	2	0.230
60 – 69	69.5	-1.69	0.04551		0.72	2	1.777
	59.5	-2.97					
							9.045

Based on the table above, the researcher found that  $x^2_{\text{count}} = 9.045$  while  $x^2_{\text{table}} = 9.488$ . Because  $x^2_{\text{count}} < x^2_{\text{table}}$  ( $9.045 < 9.488$ ) with degree of freedom (dk) =  $5 - 1 = 4$  and significant level  $\alpha = 5\%$ , distribution of VII-2 class (post-test) is normal.

## 6. Median

No	Interval	F	Fk
1	60 – 69	2	2
2	70 – 76	2	<b>4</b>
3	<b>77 – 83</b>	<b>9</b>	13
4	84 – 90	7	20
5	91 - 97	4	24

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

$$Bb = 76.5$$

$$F = 4$$

$$fm = 9$$

$$i = 7$$

$$n = 24$$

$$1/2n = 12$$

So :

$$Me = Bb + i \left( \frac{n/2 - F}{fm} \right)$$

$$= 76.5 + 7 \frac{12-4}{9}$$

$$= 76.5 + 7 (0.88)$$

$$= 76.5 + 6.16$$

$$= 82.66$$

7. Modus

No	Interval	F	Fk
1	60 – 69	2	2
2	70 – 76	2	<b>4</b>
3	<b>77 – 83</b>	<b>9</b>	13
4	84 – 90	7	20
5	91 - 97	4	24

$$M_0 = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 76.5$$

$$d_1 = 4$$

$$d_2 = 7$$

$$i = 7$$

So,

$$\begin{aligned} M_0 &= 76.5 + \frac{4}{4+7} 7 \\ &= 76.5 + 0.50 (7) \\ &= 76.5 + 3.5 \\ &= 80 \end{aligned}$$



## Appendix 19

### RESULT OF NORMALITY TEST IN POST TEST

#### RESULT OF THE NORMALITY TEST OF VII-3 IN POST-TEST

1. The score of VII-3 class in post test from low score to high score:

56	60	60	60	63	65	65	68	70	70
70	70	70	70	75	75	75	75	80	80
84	84								

2. High = 84

Low = 50

Range = High – Low

= 84 - 50

= 34

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

=  $1 + 3,3 \log (24)$

=  $1 + 3,3 (1.38)$

=  $1 + 4.55$

=  $5.55 / 5$

4. Length of Classes =  $\frac{range}{total\ of\ class} = \frac{34}{5} = 6.8 = 7$

5. Mean

Interval Class	F	X	x'	fx'	x' <sup>2</sup>	fx' <sup>2</sup>
78 – 84	4	81	+2	8	4	16
71 – 77	3	74	+1	3	1	3
<b>64 – 70</b>	<b>10</b>	<b>67</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
57 – 63	4	60	-1	-4	1	4
50 – 56	1	53	-2	-2	4	4
	22	-	-	5	-	27

$$Mx = M^1 + i \frac{\sum fx^1}{N}$$

$$= 67 + 7\left(\frac{5}{22}\right)$$

$$= 67 + 7(0.227)$$

$$= 67 + 1.589$$

$$= 68.58$$

$$\begin{aligned} SD_t &= i \sqrt{\frac{fx'^2}{n} - \frac{fx'}{n}^2} \\ &= 7 \sqrt{\frac{27}{22} - \frac{5}{22}^2} \\ &= 7 \sqrt{1.227 - (0.227)^2} \\ &= 7 \sqrt{1.227 - 0.051} \\ &= 7 \sqrt{1.176} \\ &= 7 \times 1.084 \\ &= 7.588 \end{aligned}$$

Table of Normality Data Test with Chi Kuadrat Formula

Interval of Score	Real Upper Limit	Z – Score	Limit of Large of the Area	Large of area	f <sub>h</sub>	f <sub>0</sub>	$\frac{(f_0-f_h)}{f_h}$
78 – 84	84.5	2.09	0.4817	0.10	0.21	4	0.226
71 – 77	77.5	1.17	0.3790	0.28	6.42	3	0.532
64 – 70	70.5	0.25	0.0987	-0.15	0.96	10	0.378
57 – 63	63.5	-0.66	0.25463	0.19	2.12	4	0.886
50 – 56	56.5	-1.59	0.05592	0.55	0.24	1	3.166
	49.5	-2.51	0.00621				
X <sup>2</sup>							7.188

Based on the table above, the reseracher found that  $x^2_{count} = 7.188$  while  $x^2_{table} = 9.488$ , because  $x^2_{count} < x^2_{table}$  ( $7.188 < 9.488$ ) with degree of freedom (dk) =  $5 - 1 = 4$  and significant level  $\alpha = 5\%$ , so distribution of VII-3 class (post-test) is normal.

## 6. Median

No	Interval	F	Fk
1	50 – 56	1	1
2	57 – 63	4	<b>5</b>
3	<b>64 – 70</b>	<b>10</b>	15
4	71 – 77	3	18
5	78 - 84	4	22

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

$$Bb = 63.5$$

$$F = 5$$

$$fm = 10$$

$$i = 7$$

$$n = 22$$

$$1/2n = 11$$

So :

$$Me = Bb + i \left( \frac{n/2 - F}{fm} \right)$$

$$= 63.5 + 7 \frac{11-5}{10}$$

$$= 63.5 + 7 (0.6)$$

$$= 63.5 + 4.2$$

$$= 67.70$$

## 7. Modus

No	Interval	F	Fk
1	50 – 56	1	1
2	57 – 63	4	<b>5</b>
3	<b>64 – 70</b>	<b>10</b>	15
4	71 – 77	3	18
5	78 - 84	4	22

$$M_o = L + \frac{d_1}{d_1 + d_2} i$$

$$L = 63.5$$

$$d_1 = 4$$

$$d_2 = 3$$

$$i = 7$$

So,

$$M_o = 63.5 + \frac{4}{4+3} 7$$

$$= 63.5 + 0.571 (7)$$

$$= 67.5 + 4$$

$$= 67.50$$

## Appendix 20

### HOMOGENEITY TEST ( POST TEST )

#### 1. EXPERIMENT CLASS

NO	Xi	Xi <sup>2</sup>
25.	60	3600
26.	65	4225
27.	70	4900
28.	75	5625
29.	77	5929
30.	77	5929
31.	78	6084
32.	79	6241
33.	80	6400
34.	80	6400
35.	80	6400
36.	82	6724
37.	82	6724
38.	84	7056
39.	85	7225
40.	85	7225
41.	85	7225
42.	90	8100
43.	90	8100
44.	90	8100
45.	92	8464
46.	92	8464
47.	92	8464
48.	94	8836
<b>Total</b>	<b>1964</b>	<b>156511</b>

$$n = 24$$

$$\sum xi = 1964$$

$$\sum xi^2 = 156511$$

So:

$$S^2 = \frac{n \sum xi^2 - (\sum xi)^2}{n(n-1)}$$

$$\begin{aligned}
&= \frac{24 \cdot 156511 - (1964)}{24(24-1)} \\
&= \frac{3756264 - 1964}{552} \\
&= \frac{3754300}{552} \\
&= 6801.26
\end{aligned}$$

## 2. CONTROL CLASS

NO	Xi	Xi <sup>2</sup>
25.	56	3136
26.	60	3600
27.	60	3600
28.	60	3600
29.	63	3969
30.	65	4225
31.	65	4225
32.	68	4624
33.	70	4900
34.	70	4900
35.	70	4900
36.	70	4900
37.	70	4900
38.	70	4900
39.	75	5625
40.	75	5625
41.	75	5625
42.	75	5625
43.	80	6400
44.	80	6400
45.	84	7056
46.	84	7056
<b>Total</b>	<b>1545</b>	<b>109791</b>

$$n = 22$$

$$\sum xi = 1545$$

$$\sum xi^2 = 109791$$

So:

$$S^2 = \frac{n \sum xi^2 - (\sum xi)^2}{n-1}$$

$$\begin{aligned}
&= \frac{22 \cdot 109791 - (1545)}{22(22-1)} \\
&= \frac{2415402 - 1545}{22 \cdot 21} \\
&= \frac{2413857}{462} \\
&= 5224.79
\end{aligned}$$

The formula was used to test hypothesis was :

4. VII-2 and VII-3.

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

So:

$$F = \frac{6801.26}{5224.79}$$

$$= 1.30$$

After doing the calculation, researcher found that  $F_{\text{count}} = 1.30$  with  $\alpha 5\%$  and  $dk = 23$  and  $23$  from the distribution list  $F$ , researcher found that  $F_{\text{table}} = 2.02$ , cause  $F_{\text{count}} < F_{\text{table}}$  ( $1.30 < 2.02$ ). So, there is no difference in variant between the VII-2 class and VII-3 class. It means that the variant is homogenous.

## Appendix 21

### **T<sub>test</sub> OF THE BOTH AVERAGES IN PRE-TEST**

The formula was used to analyze homogeneity test of the both averages was t-test, that:

So:

$$Tt = \frac{M_1 - M_2}{\frac{\frac{n_1 - 1}{n_1 + n_2 - 2} s_1^2 + \frac{(n_2 - 1)}{n_1 + n_2 - 2} s_2^2}{\frac{1}{n_1} + \frac{1}{n_2}}}$$

$$Tt = \frac{55.62 - 53.22}{\frac{\frac{24 - 1}{24 + 22 - 2} 3170.23 + \frac{22 - 1}{24 + 22 - 2} 3281.49}{\frac{1}{24} + \frac{1}{22}}}$$

$$Tt = \frac{2.4}{\frac{\frac{23}{44} 3170.23 + \frac{21}{44} (3281.49)}{0.041 + 0.045}}$$

$$Tt = \frac{2.4}{\frac{\frac{72915.29 + 68911.29}{44}}{0.086}}$$

$$Tt = \frac{2.4}{\frac{\frac{141826.58}{44}}{0.086}}$$

$$Tt = \frac{2.4}{\frac{3223.33}{0.086}}$$

$$Tt = \frac{2.4}{277.20}$$

$$Tt = \frac{2.4}{16.64}$$

$$Tt = 0.144$$

Based on researcher calculation result of the homogeneity test of the both averages, researcher found that  $t_{\text{count}} = 0.144$  with opportunity  $(1 - \alpha) = 1 - 5\% = 95\%$  and  $dk = n_1 + n_2 - 2 = 24 + 22 - 2 = 44$ , researcher found that  $t_{\text{table}} = 2.021$ , because  $t_{\text{count}} < t_{\text{table}}$  ( $0.144 < 2.021$ ). So,  $H_a$



was rejected, it means that there is no difference in average between experimental class and control class in pre test.

## Appendix 22

### $T_{\text{test}}$ OF THE BOTH AVERAGES IN POST – TEST

The formula was used to analyse homogeneity test of the both averages in post test was t-test, as below:

$$Tt = \frac{M_1 - M_2}{\frac{n_1 - 1 s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2} \quad \frac{1}{n_1} + \frac{1}{n_2}}$$

$$Tt = \frac{86.62 - 68.58}{\frac{24 - 1 \quad 3170.23 + \quad 22 - 1 \quad 3281.49}{24 + 22 - 2} \quad \frac{1}{24} + \frac{1}{22}}$$

$$Tt = \frac{9.83}{\frac{23 \quad 3170.23 \quad + 21 \quad (3281.49)}{44} \quad 0.041 + 0.045}$$

$$Tt = \frac{18.04}{\frac{52715.29 + 48911.29}{44} \quad 0.086}$$

$$Tt = \frac{18.04}{\frac{101626.58}{44} \quad 0.086}$$

$$Tt = \frac{18.04}{2309.69 \quad 0.086}$$

$$Tt = \frac{18.04}{198.63}$$

$$Tt = \frac{18.04}{4.29}$$

$$Tt = 4.205$$

Based on calculation above, the result of the homogeneity test of the both averages, it was found that  $t_{\text{count}} = 4.205$  with opportunity  $(1 - \alpha) = 1 - 5\% = 95\%$  and  $dk = n_1 + n_2 - 2 = 24 + 22$

– 2 = 44 , reseracher found that  $t_{table} = 2.021$ , cause  $t_{count} > t_{table}$  ( $4.205 > 2.021$ ). It means that  $H_a$  was accepted, it means there was the difference average between experimental class and control class in post test. it can be concluded that there was the sifnificant effect of Concept Circle Strategy on students' vocabulary mastery at grade VII of MTS N 2 Padangsidimpuan.

## Appendix23

**Chi-Square Table**

dk	Significant level					
	50%	30%	20%	10%	5%	1%
<b>1</b>	0,455	1,074	1,642	2,706	3,841	6,635
<b>2</b>	1,386	2,408	3,219	4,605	5,991	9,210
<b>3</b>	2,366	3,665	4,642	6,251	7,815	11,341
<b>4</b>	3,357	4,878	5,989	7,779	9,488	13,277
<b>5</b>	4,351	6,064	7,289	9,236	<b>11,070</b>	15,086
<b>6</b>	5,348	7,231	8,558	10,645	12,592	16,812
<b>7</b>	6,346	8,383	9,803	12,017	14,067	18,475
<b>8</b>	7,344	9,524	11,030	13,362	15,507	20,090
<b>9</b>	8,343	10,656	12,242	14,684	16,919	21,666
<b>10</b>	9,342	11,781	13,442	15,987	18,307	23,209
<b>11</b>	10,341	12,899	14,631	17,275	19,675	24,725
<b>12</b>	11,340	14,011	15,812	18,549	21,026	26,217
<b>13</b>	12,340	15,119	16,985	19,812	22,362	27,688
<b>14</b>	13,339	16,222	18,151	21,064	23,685	29,141
<b>15</b>	14,339	17,222	19,311	22,307	24,996	30,578
<b>16</b>	15,338	18,418	20,465	23,542	26,296	32,000
<b>17</b>	16,338	19,511	21,615	24,769	27,587	33,409
<b>18</b>	17,338	20,601	22,760	25,989	28,869	34,805
<b>19</b>	18,338	21,689	23,900	27,204	30,144	36,191
<b>20</b>	19,337	22,775	25,038	28,412	31,410	37,566
<b>21</b>	20,337	23,858	26,171	29,615	32,671	38,932
<b>22</b>	21,337	24,939	27,301	30,813	33,924	40,289
<b>23</b>	22,337	26,018	28,429	32,007	35,172	41,638
<b>24</b>	23,337	27,096	29,553	33,196	35,415	42,980
<b>25</b>	24,337	28,172	30,675	34,382	37,652	44,314
<b>26</b>	25,336	29,246	31,795	35,563	38,885	45,642
<b>27</b>	26,336	30,319	32,912	36,741	40,113	46,963
<b>28</b>	27,336	31,391	34,027	37,916	41,337	48,278
<b>29</b>	28,336	32,461	35,139	39,087	42,557	49,588
<b>30</b>	29,336	33,530	36,250	40,256	43,773	50,892

**APPENDIX 24****Z-Table**

<b>Z</b>	<b>0.00</b>	<b>0.01</b>	<b>0.02</b>	<b>0.03</b>	<b>0.04</b>	<b>0.05</b>	<b>0.06</b>	<b>0.07</b>	<b>0.08</b>	<b>0.09</b>
<b>-3.9</b>	0.00005	0.00005	0.00004	0.00004	0.00004	0.00004	0.00004	0.00004	0.00003	0.00003
<b>-3.8</b>	0.00007	0.00007	0.00007	0.00006	0.00006	0.00006	0.00006	0.00005	0.00005	0.00005
<b>-3.7</b>	0.00011	0.00010	0.00010	0.00010	0.00009	0.00009	0.00008	0.00008	0.00008	0.00008
<b>-3.6</b>	0.00016	0.00015	0.00015	0.00014	0.00014	0.00013	0.00013	0.00012	0.00012	0.00011
<b>-3.5</b>	0.00023	0.00022	0.00022	0.00021	0.00020	0.00019	0.00019	0.00018	0.00017	0.00017
<b>-3.4</b>	0.00034	0.00032	0.00031	0.00030	0.00029	0.00028	0.00027	0.00026	0.00025	0.00024
<b>-3.3</b>	0.00048	0.00047	0.00045	0.00043	0.00042	0.00040	0.00039	0.00038	0.00036	0.00035
<b>-3.2</b>	0.00069	0.00066	0.00064	0.00062	0.00060	0.00058	0.00056	0.00054	0.00052	0.00050
<b>-3.1</b>	0.00097	0.00094	0.00090	0.00087	0.00084	0.00082	0.00079	0.00076	0.00074	0.00071
<b>-3.0</b>	0.00135	0.00131	0.00126	0.00122	0.00118	0.00114	0.00111	0.00107	0.00104	0.00100
<b>-2.9</b>	0.00187	0.00181	0.00175	0.00169	0.00164	0.00159	0.00154	0.00149	0.00144	0.00139
<b>-2.8</b>	0.00256	0.00248	0.00240	0.00233	0.00226	0.00219	0.00212	0.00205	0.00199	0.00193
<b>-2.7</b>	0.00347	0.00336	0.00326	0.00317	0.00307	0.00298	0.00289	0.00280	0.00272	0.00264
<b>-2.6</b>	0.00466	0.00453	0.00440	0.00427	0.00415	0.00402	0.00391	0.00379	0.03680	0.00357
<b>-2.5</b>	0.00621	0.00604	0.00587	0.00570	0.00554	0.00539	0.00523	0.00508	0.00494	0.00480
<b>-2.4</b>	0.00820	0.00798	0.00776	0.00755	0.00734	0.00714	0.00695	0.00676	0.00657	0.00639
<b>-2.3</b>	0.01072	0.01044	0.01017	0.00990	0.00964	0.00939	0.00914	0.00889	0.00866	0.00842
<b>-2.2</b>	0.01390	0.01355	0.01321	0.01287	0.01255	0.01222	0.01191	0.01160	0.01130	0.01101
<b>-2.1</b>	0.01786	0.01743	0.01700	0.01659	0.01618	0.01578	0.01539	0.01500	0.01463	0.01426
<b>-2.0</b>	0.02275	0.02222	0.02169	0.02118	0.02068	0.02018	0.01970	0.01923	0.01876	0.01831
<b>-1.9</b>	0.02872	0.02807	0.02743	0.02680	0.02619	0.02559	0.02500	0.02442	0.02385	0.02330
<b>-1.8</b>	0.03593	0.03515	0.03438	0.03362	0.03288	0.03216	0.03144	0.03074	0.03005	0.02938
<b>-1.7</b>	0.04457	0.04363	0.04272	0.04182	0.04093	0.04006	0.03920	0.03836	0.03754	0.03673
<b>-1.6</b>	0.05480	0.05370	0.05262	0.05155	0.05050	0.04947	0.04846	0.04746	0.04648	0.04551

<b>-1.5</b>	0.06681	0.06552	0.06426	0.06301	0.06178	0.06057	0.05938	0.05821	0.05705	0.05592
<b>-1.4</b>	0.08076	0.07927	0.07780	0.07636	0.07493	0.07353	0.07215	0.07078	0.06944	0.06811
<b>-1.3</b>	0.09680	0.09510	0.09342	0.09176	0.09012	0.08851	0.08691	0.08534	0.08379	0.08226
<b>-1.2</b>	0.11507	0.11314	0.11123	0.10935	0.10749	0.10565	0.10383	0.10204	0.10027	0.09853
<b>-1.1</b>	0.13567	0.13350	0.13136	0.12924	0.12714	0.12507	0.12302	0.12100	0.11900	0.11702
<b>-1.0</b>	0.15866	0.15625	0.15386	0.15151	0.14917	0.14686	0.14457	0.14231	0.14007	0.13786
<b>-0.9</b>	0.18406	0.18141	0.17879	0.17619	0.17361	0.17106	0.16853	0.16602	0.16354	0.16109
<b>-0.8</b>	0.21186	0.20897	0.20611	0.20327	0.20045	0.19766	0.19489	0.19215	0.18943	0.18673
<b>-0.7</b>	0.24196	0.23885	0.23576	0.23270	0.22965	0.22663	0.22363	0.22065	0.21770	0.21476
<b>-0.6</b>	0.27425	0.27093	0.26763	0.26435	0.26109	0.25785	0.25463	0.25143	0.24825	0.24510
<b>-0.5</b>	0.30854	0.30503	0.30153	0.29806	0.29460	0.29116	0.28774	0.28434	0.28096	0.27760
<b>-0.4</b>	0.34458	0.34090	0.33724	0.33360	0.32997	0.32636	0.32276	0.31918	0.31561	0.31207
<b>-0.3</b>	0.38209	0.37828	0.37448	0.37070	0.36693	0.36317	0.35942	0.35569	0.35197	0.34827
<b>-0.2</b>	0.42074	0.41683	0.41294	0.40905	0.40517	0.40129	0.39743	0.39358	0.38974	0.38591
<b>-0.1</b>	0.46017	0.45620	0.45224	0.44828	0.44433	0.44038	0.43644	0.43251	0.42858	0.42465
<b>-0.0</b>	0.50000	0.49601	0.49202	0.48803	0.48405	0.48006	0.47608	0.47210	0.46812	0.46414

**Z-Table**

<b>z</b>	<b>0.00</b>	<b>0.01</b>	<b>0.02</b>	<b>0.03</b>	<b>0.04</b>	<b>0.05</b>	<b>0.06</b>	<b>0.07</b>	<b>0.08</b>	<b>0.09</b>
<b>0.0</b>	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
<b>0.1</b>	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
<b>0.2</b>	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
<b>0.3</b>	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
<b>0.4</b>	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
<b>0.5</b>	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
<b>0.6</b>	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
<b>0.7</b>	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
<b>0.8</b>	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133



[illegible]



## APPENDIX 25

### Percentage Points of the t Distribution

Two Tail Test						
	0,50	0,20	0,10	0,05	0,02	0,01
One Tail Test						
dk	0,25	0,10	0, 005	0,025	0,01	0,05
1	1,000	3,078	6,314	12,706	31,821	63,657
2	0,816	1,886	2,920	4,303	6,965	9,925
3	0,765	1,638	2,353	3,182	4,541	5,841
4	0,741	1,533	2,132	2,776	3,747	4,604
5	0,721	1,486	2,015	2,571	3,365	4,032
6	0,718	1,440	1,943	2,447	3,143	3,707
7	0,711	1,415	1,895	2,365	2,998	3,499
8	0,706	1,397	1,860	2,306	2,896	3,355
9	0,703	1,383	1,833	2,262	2,821	3,250
10	0,700	1,372	1,812	2,228	2,764	3,165
11	0,697	1,363	1,796	2,201	2,718	3,106
12	0,695	1,356	1,782	2,178	2,681	3,055
13	0,692	1,350	1,771	2,160	2,650	3,012
14	0,691	1,345	1,761	2,145	2,624	2,977
15	0,690	1,341	1,753	2,132	2,623	2,947
16	0,689	1,337	1,746	2,120	2,583	2,921
17	0,688	1,333	1,743	2,110	2,567	2,898
18	0,688	1,330	1,740	2,101	2,552	2,878
19	0,687	1,328	1,729	2,093	2,539	2,861
20	0,687	1,325	1,725	2,086	2,528	2,845
21	0,686	1,323	1,721	2,080	2,518	2,831
22	0,686	1,321	1,717	2,074	2,508	2,819
23	0,685	1,319	1,714	2,069	2,500	2,807
24	0,685	1,318	1,711	2,064	2,492	2,797
25	0,684	1,316	1,708	2,060	2,485	2,787
26	0,684	1,315	1,706	2,056	2,479	2,779
27	0,684	1,314	1,703	2,052	2,473	2,771
28	0,683	1,313	1,701	2,048	2,467	2,763
29	0,683	1,311	1,699	2,045	2,462	2,756
30	0,683	1,310	1,697	2,042	2,457	2,750
40	0,681	1,303	1,684	<b>2,021</b>	2,423	2,704
60	0,679	1,296	1,671	2,000	2,390	2,660
120	0,677	1,289	1,658	1,980	2,358	2,617
∞	0,674	1,282	1,645	1,960	2,326	2,576

## Appendix 26

### DOCUMENTATION







## **CURRICULUM VITAE**

### **A. Identity**

Name : Rahmi Pu'adi Siregar  
Reg. No. : 13 340 0026  
Place/Birth : Simatorkis/April, 25<sup>th</sup> 1995  
Sex : Female  
Religion : Islam  
Address : Simatorkis, Padang Lawas Utara

### **B. Parents**

Father's Name : Julhammi Siregar  
Mother's Name : Ruasna Pane

### **C. Educational Background**

1. Elementary School : SD Swasta Al-Ismailiyah (2001-2007)
2. Junior High School : SMP Swasta Al-Ismailiyah (2007-2010)
3. Senior High School : MA Ponpes Modern Baharuddin (2010-2013)
4. Institute : IAIN Padangsidempuan (2013-2017)



**KEMENTERIAN AGAMA**  
**INSTITUT AGAMA ISLAM NEGERI PADANGSIDIMPUAN**  
**FAKULTAS TARBIYAH DAN ILMU KEGURUAN**

Jalan T. Rizal Nurdin Km. 4,5Sihitang 22733  
Telephon 0634- 22080 Faximile 0634-24022

omor : 22./In.14/E.6a/PP.00.9/09/2016

Padangsidimpuan, / September 2016

fat : Biasa

ump : -

il : Pengesahan Judul dan Pembimbing Skripsi

Kepada Yth Bapak/Ibu;

1. Dr. Fitriadi Lubis, M. Pd (Pembimbing I)
2. Sojuangon Rambe, S.S., M.Pd (pembimbing II)

di-  
Padangsidimpuan

*Assalamu 'Alaikum Wr. Wb*

Dengan hormat, sehubungan dengan hasil sidang bersama tim pengkaji judul skripsi jurusan tadaris bahasa inggris (TBI) fakultas tarbiyah dan ilmu keguruan IAIN Padangsidimpuan, maka dengan ini kami mohon kepada Bapak/Ibu agar dapat menjadi pembimbing skripsi, dan melakukan penyempurnaan judul bilamana perlu untuk mahasiswa dibawah ini dengan data sebagai berikut:

Nama/NIM : Rahmi Pu'adi Siregar/ NIM. 13 340 0026

Jurusan : Tadris Bahasa Inggris-1

JudulSkripsi : **THE EFFECT OF CONCEPT CIRCLE STRATEGY ON STUDENTS' VOCABULARY MASTERY AT GRADE VII MTS N 2 PADANGSIDIMPUAN**


Demikian surat ini disampaikan, atas perhatian dan kesediaan Bapak/Ibu kami ucapkan terima kasih.

Wassalamu'alaikum Wr. Wb.

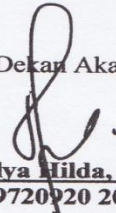
Ketua Jurusan TBI

Sekretaris Jurusan TBI

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

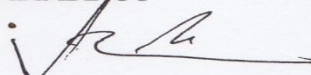
  
**Fitri Rayani Siregar, M. Hum**  
NIP. 19820731 200912 2 004

Wakil Dekan Akademik

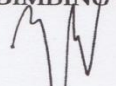
  
**Dr. Lelya Hilda, M.Si**  
NIP.19720920 200003 2 002

**Pernyataan Kesediaan Sebagai Pembimbing**

BERSEDIA/TIDAK BERSEDIA  
PEMBIMBING I

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

BERSEDIA/TIDAK BERSEDIA  
PEMBIMBING II

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





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

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

Nomor : B - 1372/In.14/E.4c/TL.00/08/2017  
Hal : Izin Penelitian  
Penyelesaian Skripsi.

14 Agustus 2017

Yth. Kepala MTs N 2 Padangsidimpuan  
Kota Padangsidimpuan

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

Nama : Rahmi Pu'adi Siregar  
NIM : 13 340 0026  
Fakultas/Jurusan : Tarbiyah dan Ilmu Keguruan/TBI  
Alamat : Desa Simatorkis

adalah benar Mahasiswa IAIN Padangsidimpuan yang sedang menyelesaikan Skripsi dengan Judul **"The Effect of Concept Cirele Strategy on Students' Vocabulary at Grade VII MTs N 2 Padangsidimpuan"**. Sehubungan dengan itu, kami mohon bantuan Bapak/Ibu untuk memberikan data dan informasi sesuai dengan maksud judul diatas.  
Demikian disampaikan, atas kerja sama yang baik diucapkan terimakasih.

a.n. Dekan  
Wakil Dekan Bidang Akademik

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



**KEMENTERIAN AGAMA REPUBLIK INDONESIA**  
**KANTOR KEMENTERIAN AGAMA KOTA PADANGSIDIMPUAN**  
**MADRASAH TSANAWIYAH NEGERI 2**

Jalan H.T Rizai Nurdin Km. 6,5 Gg. Pendidikan Padangsidempuan

Nomor : B- 391/Mts.02.08/TL.00/08/2017  
: Pelaksanaan Riset

Padangsidempuan, 30 Agustus 2017

Kepada Yth :

Dekan Fakultas Tarbiyah dan Ilmu Keguruan  
Institut Agama Islam Negeri (IAIN) Padangsidempuan  
di –  
Padangsidempuan

Dengan Hormat,

Sehubungan dengan Surat Dekan Fakultas Tarbiyah dan Ilmu Keguruan Institut Agama Islam Negeri (IAIN) Padangsidempuan Nomor : B-1372/In.14/E.4c/TL.00/08/2017 tanggal 14 Agustus 2017 hal dipokok surat, maka bersama ini kami beritahukan kepada Bapak bahwa :

Nama	: Rahmi Pu'adi Siregar
N I M	: 13 340 0026
Fakultas/Jurusan	: Tarbiyah dan Ilmu Keguruan/TBI
Alamat	: Desa Simatorkis

Telah melaksanakan riset pada MTsN 2 Padangsidempuan dengan judul :

**“ The Effect of Concept Circle Strategy on Students' Vocabulary at Grade VII MTsN 2 Padangsidempuan”.**

Demikian disampaikan atas perhatiannya diucapkan terima kasih.



Kepala,

Busrro Effendy, S.Ag

NIP. 19600807 199103 1 002

