THE EFFECT OF SPELLING BEE GAME TECHNIQUE ON STUDENTS' VOCABULARY MASTERY

AT GRADE VII SMP NEGERI 5
PADANGSIDIMPUAN

A THESIS

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

Written By :
DEWI WAHYUNI
Reg. Number : 1520300028

## ENGLISH EDUCATION DEPARTMENT

# TARBIYAH AND TEACHER TRAINING FACULTY THE STATE INSTITUTE FOR ISLAMIC STUDIES PADANGSIDIMPUAN <br> 2020 



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2020

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Written By :

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## ENGLISH EDUCATION DEPARTMENT

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## LETTER OF AGREEMENT

## Term S thesis <br> Hem 17 (Seven) examplars

Padangsidimpuan, March 2020
an. Dewi Wahyuni
To:
Dean Tarbiyah and
Teacher Training Faculty
In-
Padangsidimpuan

Assalamu'alaikum Wt, Wb,

After reading, studying and giving advice for necessary revision on thesis belongs to Dewi Wahyuni entitled "The Effect of Spelling Bee Game Techniue on Students Vocabulary Mastery at Grade VII SMP N 5 Padangsidimpuan", we approved that the thesis has been acceptable to complete therequirement to fulfill for the degree of Graduate of Education (S.Pd.) in English.

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

Wassalamu'alaikum Nr. Wb.

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## LEGALIZATION

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| :--- | :--- | :--- | :--- | :--- | :--- | :--- |
|  | TECHNIQUE ON STUDENTS' VOCABULARY |  |  |  |
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#### Abstract

This research focused on the effect of Spelling Bee Game Technique on Students' Vocabulary Mastery at Grade VII SMP Negeri 5 Padangsidimpuan. Teacher's technique became a problem in learning vocabulary. The teacher still used the conventional technique and did not have variation in teaching vocabulary. The students' problem in vocabulary mastery were: 1) students were difficult in remembering new vocabulary, 2) students were bored in learning vocabulary, 3) students were lack motivation in learning vocabulary, and 4) students seldom practice the new vocabulary. The purpose of this research was to examine the effect of spelling bee game technique on students' vocabulary mastery before and after using the technique at grade VII SMP Negeri 5Padangsidimpuan.

The method used in this research was experimental research where the researcher chose two classes as the sample. They were VII-5 as experimental class that consisted of 31 students and VII-6 as control class that consisted of 30 students. The data was derived from pre-test, and post-test. To analyze the data, the researcher used t -test formula.

After the data have been analyzed, the researcher found that there was the difference of mean score after using spelling bee game technique. Mean score of experimental class before using spelling bee game technique was 68.35 and mean score after using spelling bee game technique was 90.20 . The effect of spelling bee game technique on students' vocabulary mastery was 1.873 with $t_{0}$ is higher than $t_{t}(1.873>1.671)$. It means $H_{a}$ was accepted and $\mathrm{H}_{0}$ was rejected. So, there was a significant effect of spelling bee game technique on students' vocabulary mastery at grade VII SMP Negeri 5 Padangsidimpuan.


Keyword: Spelling Bee, Game, Techique, Vocabulary Mastery

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#### Abstract

ABSTRAK

Penelitian ini difokuskan pada pengaruh Teknik Game Spelling Bee terhadap Penguasaan Kosakata Siswa di Kelas VII SMP Negeri 5 Padangsidimpuan. Tehnik guru menjadi masalah dalam belajar kosa kata. Guru masih menggunakan tehnik konvensional dan tidak memiliki variasi dalam pengajaran kosa kata. Masalah siswa dalam penguasaan kosa kata adalah: 1) siswa sulit mengingat kosa kata baru, 2) siswa bosan dalam belajar kosa kata, 3) siswa kurang motivasi dalam belajar kosa kata, dan 4) siswa jarang berlatih kosa kata baru. Tujuan dari penelitian ini adalah untuk menguji pengaruh teknik permainan ejaan lebah pada penguasaan kosakata siswa sebelum dan sesudah menggunakan teknik di kelas VII SMP Negeri 5 Padangsidimpuan.

Metode yang digunakan dalam penelitian ini adalah penelitian eksperimental di mana peneliti memilih dua kelas sebagai sampel. Mereka adalah VII-5 sebagai kelas eksperimen yang terdiri dari 31 siswa dan VII-6 sebagai kelas kontrol yang terdiri dari 30 siswa. Data berasal dari pre-test, dan post-test. Untuk menganalisis data, peneliti menggunakan rumus ujit.

Setelah data dianalisis, peneliti menemukan bahwa ada perbedaan skor rata-rata setelah menggunakan teknik permainan ejaan lebah. Nilai rata-rata kelas eksperimen sebelum menggunakan teknik permainan ejaan lebah adalah 68,35 dan skor rata-rata setelah menggunakan teknik Game Spelling Bee adalah 90,20. Efek dari teknik permainan ejaan lebah pada penguasaan kosakata siswa adalah 1,873 dengan $t 0$ lebih tinggi dari $t \neg t(1,873>$ 1,671). Itu berarti Ha diterima dan H0 ditolak. Jadi, ada efek yang signifikan dari teknik permainan ejaan lebah pada penguasaan kosakata siswa di kelas VII SMP Negeri 5 Padangsidimpuan.


Kata kunci: Spelling Bee, Game, Teknik, Penguasaan Kosakata

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I realize this thesis cannot be considered perfect without critiques and suggestions. Therefore, it is such a pleasure for me to get critiques and suggestions from the readers to make this thesis be better.

Padangsidimpuan, February 2020

Researcher

## Dewi Wahyuni <br> Reg. Num. 1420300028

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## CHAPTER I

## INTRODUCTION

## A. Background of the Problem

Human needs language to communicate each other. English is one of the international language used as a tool for communication in daily life and in academic activities. In Indonesia, English as a foreign language is formally teach in schools from junior high school until university. It is one of obligatory subject and as one of the subjects examined in the National Examination. Furthermore, there are so many elements in English such as grammar, pronounciation, and vocabulary.

Vocabulary is an important aspect in learning language. The first thing that human learn in mastering the language is vocabulary. In learning English, the students must know about the vocabulary to make them easier. Vocabulary will help them in comprehending English because vocabulary has link to each skill. English as foreingn language has four skills. They are listening, speaking, reading, and writing. By mastering the vocabulary, the students will be easier in learning English.

Vocabulary will be necessary for human to build a good communication. The placing of the words must be suitable and it must have the suitable meaning with what will be said. The students must have a rich enough vocabulary to support them in understanding a text. It will impact the students' achievement in language learning.

In the English Curriculum for Junior High School and Senior High School are emphasize the importance of vocabulary mastery. In the 2006 English Curriculum is explained the purpose of teaching English is so that students are able to communicate in English with 1000 vocabularies for Junior High School and 2500 vocabularies for Senior High School. In the 2013 English Language Curriculum does not include the number of vocabularies that students must master for each level of education. ${ }^{1}$

Based on above explanation, it has been sure that vocabulary is important. Vocabulary has a significant role in human life, especially in learning language process. But, it still becomes a problem in schools especially in junior high school students as the beginner in learning English.

The first problems is there are many errors especially in vocabulary, spelling and pronunciation. The reason for this problem is that many English words are not spelled as they are spoken. This differences between pronounciation and spelling causes a lot of confusion for students.

The second problem is most of students do not know the meaning of words that is said by the teacher. Students do not know the meaning of vocabulary because they do not know the word itself. This circumstance happens in many occasions for instance, in reading or listening section. How can they catch the meaning if the word itself they do not know at all.

Another problem is the students' interest in learning vocabulary. The students' interest in learning vocabulary is very low. They also feel bored,

[^1]lack of motivation and lazy to practice the new vocabularies they have got. That lack of interest, self confidence, motivation, teacher and environment are factors that hamper students to master English vocabulary.It gives the big influence for their achievement in English.

On the other hand, teaching vocabulary is very hard, because the teachers had to choose an appropriate ways in order to make the learning process effectively. So, the students enjoy and relaxe learning vocabulary and they can master it. There are many factors that make the students difficult in mastering vocabulary.

Based on the interview with an English teacher ${ }^{2}$ in SMP Negeri 5 Padangsidimpuan, she said that there are some problems on students' vocabulary mastery. The students are difficult in remembering new vocabulary because of the differences between what is written and what is spoken. It makes them confused of remembering the vocabulary.

The students also are easy to feel bored in learning vocabulary because the teacher does not have variation in teaching vocabulary. The teacher still use the common way in teaching vocabulary such as giving them a list of vocabulary and asks the students to remember it.

The students are lack motivation in learning vocabulary. The teacher seldom tell them that vocabulary is the important aspect in learning English. So, they do not learn the vocabulary seriously. They are less practice so they

[^2]cannot use the vocabulary they have got. It makes them easy to forget the vocabulary they have learned.

The teacher said that she still use the common strategy in teaching vocabulary. She teaches the vocabulary by giving them the list of vocabulary and its meaning. After that, the teacher asks them to read it and memorize it. The teacher does not have any variation to teach the vocabulary. Of course, it will make the students easy to feel bored.

There are some strategies to help students in mastering the vocabularies, one of them is by spelling. Teaching vocabulary accompanied by spelling helps the students to master the four language skills. In learning a foreign language, vocabulary plays an important role because it is one element that links the four skills. The target of teaching and learning English in the classroom is students' ability to produce spoken and written text.

Therefore, the product of spoken and written texts is inseparable from the knowledge that has been gained through listening and reading comprehension that includes in them the process of mastering the vocabularies.

Moreover, one of the ways to improve the students' ability on vocabulary mastery is through games. Using games gives a special chance to students to self-assess their progress in learning vocabulary and to a teacher to assess students' progress. Games help the teacher to create contexts in which the language is useful and meaningful. Even though games are often associated with fun, we should not lose sight of their pedagogical value,
particularly in foreign language teaching and learning. Games are effective as they create motivation, lower students' stress, and give language learners the opportunity for real communication. One of the ways that is appropriate in teaching vocabulary through spelling is by using Spelling Bee game since the purpose of this game is in line with two of language components of English, vocabulary and pronunciation.

Spelling Bee is one of the interesting games to teach English vocabulary. According to Uranga in Rahayu Spelling Bee is a kind of competition where the competitors have to compete to spell the words given correctly. Spelling Bee is more than a memorizing activity, students are also introduced to a complicated thinking process, when they receive several clues to spell the word correctly. Such as, definition, alternative pronounciation, kinds of words (noun, adjective, verb), and the use of word in a sentence. ${ }^{3}$ So, spelling bee game is one of interesting way for students to learn vocabulary.

By using Spelling Bee, students are helped in building their vocabulary. They can remember the words that teacher used in that games. In addition, this game can help the students think actively and creatively. For example, the teacher gives the students a collection of words, asks them to remember and tests their capability in mastering those words by using Spelling Bee. Furthermore, they can think creatively when the teacher provides some clues such as the use of the word in a sentence, etc.

[^3]
## B. Identification of Problem

Based on above background of problem, there were some problems in students' vocabulary mastery at VII grade of SMP Negeri 5 Padangsidimpuan:

1. The students are difficult in remembering new vocabulary.
2. The students are easy to feel bored in learning vocabulary.
3. The students are lack of motivation in learning vocabulary.
4. The students seldom practice the new vocabularies.

Beside of the problems in students' vocabulary mastery, there are also some problems in teacher's strategy in teaching vocabulary:

1. The teacher still use the conventional strategy in teaching vocabulary.
2. The teacher does not has the variation in teaching vocabulary.

## C. Limitation of the Problem

In this research, the researcher limited the problem of the research on Vocabulary specially in Noun as found in their syllabus.

## D. Formulation of the Problem

The formulations of the problem in this research are:

1. How was students' vocabulary mastery before using Spelling Bee game at grade VII SMP Negeri 5 padangsidimpuan?
2. How was students' vocabulary mastery after using Spelling Bee game at grade VII SMP Negeri 5 padangsidimpuan?
3. Was there any significant effect of Spelling Bee game on students' vocabulary mastery at grade VII SMP Negeri 5 padangsidimpuan?

## E. Purposes of the Research

From formulation of the problem above, the purposes of this research are:

1. To know how is the students' vocabulary mastery before learning Spelling Bee game at grade VII SMP Negeri 5 padangsidimpuan.
2. To know how is the students' vocabulary mastery after learning Spelling Bee game at grade VII SMP Negeri 5 padangsidimpuan.
3. To know whether there is or there is not any significant effect of using Spelling Bee Game on students’ vocabulary mastery at grade VII of SMP Negeri 5 Padangsidimpuan.

## F. Significances of the Research

1. Theoritically :
a. Result of this research is expected to be useful information for all reader
b. To give contribution to the students of English in general especially for students at SMPN 5 Padangsidimpuan
2. Practically:
a. Headmaster

In order to develope and encourage English teacher in teaching English language.

## b. English Teacher

Spelling Bee Game gives a good contribution in teaching learning and can be used as a reference and additional source in teaching especially for vocabulary.
c. Researcher

The result may serve as guidelines for the future research related to the subject.

## G. Definition of Operational Variables

1. Spelling Bee game

Spelling Bee game is an activity in which participants compete with each other and they are asked to spell words or form words with the correct letters in correct order, where each person gets a turn to spell a word that is suitable for his or her level which is the winner is the person or group who is able to form correctly the highest number of the words according to agreed rules
2. Students' Vocabulary Mastery

Students' vocabulary mastery is the students' ability in comprehending the vocabulary. It means the students can comprehend the meaning of the vocabulary. Noun, verb, adjective, adverb, pronoun are some kinds of vocabularies in English.

## H. Systematic of the Thesis

This research organizes into five chapters. Every chapter subdivide into subtopics to elaborate the given issue. Chapter one discussed about introduction, consists of background of the problem, identification of the problem, formulation of the problem, limitation of the problem, purpose of research, significances of the research, definition of operational variables, and the systematic of the thesis.

Chapter two discussed about the theoretical description. It divided into subchapters which consist of description of Spelling Bee Game and description of vocabulary. Second chapter also consisted of related findings, conceptual framework and hypothesis.

Chapter three discussed about research methodology which divide into sub chapter; time and place of the research, research methodology, population and sample, instrument of research, procedure of data collection, techniques of analyzing data.

Chapter four discussed data description, hypothesis testing, discussion and the threats of research.

Chapter five discussed about conclusion of the result of this research and suggestions that are given by the researcher.

## CHAPTER II

## THEORETICAL DESCRIPTION

## A. Theoretical Description

## 1. Vocabulary

## a. Definition of Vocabulary

In every language there must be vocabulary. Vocabulary is the words in a language. The learners should master it firstly for mastering the four skills in English; speaking, listening, reading, writing. According to Jack. C. Richard and Willy A. Renandya, Vocabulary is a core component of language proficiency and provides much of the basis for how learners speak, listen, read and write. ${ }^{4}$ Its mean vocabulary is very important aspect in language. Someone can speak, listen read and write by using a language because they have had, known and master much of vocabulary.

Hornby stated that vocabulary is all the words that a person knows or use, the words that people use when they are telling about particular subject. ${ }^{5}$ Lines defined vocabulary as "the collection of words that an individual's knows". ${ }^{6}$ It means vocabulary as the number of words that people already have known which is used for communication. Vocabulary is one of the language aspects that is supposed to be learnt

[^4]when learning a language since there is a belief that learning a foreign language is similar to learn its vocabulary.
b. Kinds of Vocabulary

According to Aebersold and Field, there are two kind of vocabulary, they are receptive vocabulary or passive vocabulary is vocabulary that readers recognize when they see it but do not use when they speak or write while productive vocabulary or active vocabulary is the vocabulary that people uses to speak and write. ${ }^{7}$

According to Hiebert, there are two kinds of vocabulary: ${ }^{8}$

1) Productive vocabulary

It is the set of words that an individual can use when writing or speaking. They are words that are well-known, familiar and used frequently.
2) Receptive or recognition vocabulary

It is the set of words for which an individual can assign meanings when listening or reading. These are words that are often less well-known to students and less frequent in use. When individuals encounter these words, they recognize them, even if imperfectly.

It can be concluded that productive vocabulary is the words that are often used by human and sometimes it is used spontaneously. It will be easier for the students to know the productive vocabulary in

[^5]writing or speaking. While, receptive vocabulary is the words that are not often used by human in writing or speaking, but in listening or reading. It is the words that are not used spontaneously.

## c. Vocabulary Mastery

In order to understand the language, vocabulary is crucial to be mastered by the learner. Vocabulary mastery is needed to express our ideas and to be able to understand others people saying. Hornby defines mastery as complete knowledge or complete skill. ${ }^{9}$ While Hatch and Brown state vocabulary mastery is specificity of any individual's vocabulary knowledge depends on the person and his motivation, desires, and need for the words. ${ }^{10}$ From that definition, mastery means complete knowledge or great skill that makes someone master in a certain subject depends on the person and his motivation, desires, and need for the words.

According to Michael J. Wallace, mastering vocabulary is quantity numbers of words to counting a lesson. In the minimal numbers of words for junior high school is around 1500 words, while senior high school is around 4000 words. ${ }^{11}$ Vocabulary mastery refers to the great skill in processing words of a language. It is an individual achievement and possession. ${ }^{12}$ For that reason, the biggest responsibility in increasing the knowledge is in the individual. The success in widening

[^6]the vocabulary mastery requires their own motivation and interest on the words of a language.

From the definition above, the writer concluded that vocabulary mastery is an individual's great skill in using words of a language which is acquired. Vocabulary mastery plays an important role in the four language skills and it has to be considered that vocabulary mastery is one of the needed components of language.

## d. Material in Teaching Vocabulary

There are many materials in teaching vocabulary especially for grade seventh students of SMP 5 Padangsidimpuan. The syllabus that is used in this school is curriculum 2013 and the English book that is used is "When English Rings The Bell". This book is divided into eight chapters.

In the research, to know the students' vocabulary mastery, the researcher limits the materials of vocabulary into basic vocabulary includes the occupation, hobby and publics places based on the vocabulary that students need to master at the English book by using spelling bee game technique.

There are some examples of vocabulary materials at junior high school students: ${ }^{13}$

[^7]1. Talking about "Occupations"

He's a $\qquad$


She's a $\qquad$


She's a


1. A person who flies an aeroplane is a $\qquad$
2. A person who sets electric systems is an $\qquad$
3. A person who takes pictures is a $\qquad$ .
4. A person who drives for someone else is a $\qquad$ .
5. A person who answers the phone and receives guests in a hotel or in an office is a $\qquad$
6. A person who serves passengers on a flight is
7. A person who makes furniture is a $\qquad$
8. A person who makes our clothes is a $\qquad$ .

## 2. Talking about "Hobbies"



We will use a dictionary. We will spell the words and use the punctuation marks correctly. While we are writing, we will say the sentences loudly, clearly, and correctly. If we have any problems, we will go to our teacher for help.

| No. | Name | Areas / Fields |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | English | Music | Sports | Housework | Others |
| 1. | Wina | - readstory <br> - answer questions <br> - not ask question | - play flute <br> - sing English songs <br> - sing folk songs | -swim <br> -run <br> - not basketball | -fry eggs <br> - cookrice <br> - fry banana | - knit <br> -draw |
| 2. |  |  |  |  |  |  |
| 3. |  |  |  |  |  |  |
| 4. |  |  |  |  |  |  |

## 3. List of Vocabulary "Public Places"

$\qquad$
:-observing andaskingquestions;


| A | B |
| :---: | :---: |
| 1. department store | a. sells flowers |
| 2. grocery | b. sells meat, chicken and eggs |
| 3. florist | c. sells medicines and toilet articles |
| 4. greengrocery | d. sells fish |
| 5. baker | e. sells clothes and other things |
| 6. stationery | f. sells cars or motorcycles |
| 7. drugstore | g. sells sugar, flour, canned foods, etc |
| 8. fishmonger | h. sells bread, cakes, pies |
| 9. butcher | i. sells things for writing |
| 10. dealer | j. sells fruit and vegetables |

## 2. Spelling Bee Game Technique

## a. Definition of Spelling Bee Game Technique

According to Brown, technique is any of a wide variety of exercises, activities, or tasks used in the language classroom for realizing lesson objectives. ${ }^{14}$ It is the way that used by the teacher in teaching the lesson.

In teaching language we need to make sure that students consider the teacher's explanation for meaning or definition, pronunciation, spelling and grammatical functions accurately presented and learned. Thus, once the students learn vocabulary, the spelling aspect is needed to be concerned or vice versatile. Spelling itself is a system in using symbols of the alphabet to pronounce a word in speaking and writing. Besides, the teaching of vocabulary accompanied by spelling helps the students to master the four language skills.

Game is element of fun activity with rules and goals. ${ }^{15}$ By adapting and using it for educational purposes, aim to have the students reach the target of learning process as same as the goal of game it self. It means that teaching by using game will make the learning activity more fun and and the goal of it can bee reached without making them stress.

[^8]The same thing is also says by Andrew Wright that game to mean an activity which is entertaining and enganging, often challenging, and activity in which the learners play and usually interact with others. ${ }^{16}$ It means that playing games is an innovative way to engange students in learning vocabulary words. Teaching vocabulary by using game will make students participate in learing without feeling bored.

Spelling Bee Game is one of the games that can be applied in teaching vocabulary. According to Sebba, Spelling Bee game is a kind of competition where participants are required to spell words and it can be held at any qqlevels of each school to the national. ${ }^{17}$ This game comes from the Spelling Bee Competition, a kind of competition where participants are required to spell words and it can be held at anylevels of each school to the national.

Payra and Cardona stated that spelling bee game is an educational technique for teaching the English language because it can enriching students experiece in learning vocabulary. ${ }^{18}$ Spelling Bee is a spelling competition for languages students. Participants are usually given the question of a word they should spell appropriately. They can ask the

[^9]definition of the word, the original word and place of origin if the word is an absorption word.

Based on explanation above the researcher conclude that spelling bee game is a good technique for teaching English vocabulary especially by applying the creative-activity one.

## b. Procedure of Spelling Bee Game

The procedure of playing Spelling Bee Game in the classroom for this research is taken from the Spelling Bee Handbook, published by Macmillan. For treatment meeting, the procedures are as below: ${ }^{19}$

1. Teacher prepared collection of words on paper that put it in a box for the students to spell based on the topic of the lesson
2. The teacher created a deck of alphabet cards. On each card the teacher writes the letters of alphabet and leave the opposite blank.
3. The teacher placed the deck of the card face down on a table.
4. Students need to be separated into small teams (four or five people per team) and stand in a row.
5. The first student choosed the paper from the box, say the word and pronounce the word clearly.
6. The member of the groups try to find the letters of the word.
7. The second students now says the first letter, the third students says the second letters, and so on.

[^10]8. The last students said the meaning of the words.
9. Teams who mumble the words or pronounce them badly lose the point.
10. Teacher keep the score on the board to avoid problems.
11. Teacher can stop the game when a word is misspelled, and pass the word on to the next team to see if they can spell it.

From the explanation above it can be conclude that the teacher must prepare the tools and the topic of the lesson well so the learning process can be more focus.

## c. Advantage and disadvantage of spelling bee game

In Teaching learning processes using game as a technique have several advantages and disadvantages. Game facilitate language learning because they help language learning to be ${ }^{20}$
a. More meaningful, for example by showing how words relate to each other.
b. More memorable. For example by involving as many approaches to how language is "stored" as possible, such as mime and movement, that use of color and patterns, personalization.

The advantages using spelling bee game in learning vocabulary; First, games bring in relaxation and fun for students' thus help them and retain new words more easily. Second, spelling bee game involve

[^11]friendly competition and keep learners interested. These create the motivation for learners of English to involved and participated actively in the learning activities. Third, learning vocabulary using spelling bee games was brought real world context into the classroom, and enhances students' use of English in a flexible, communicative way. Therefore, the role of spelling bee games in learning vocabulary cannot be denied.

Disadvantages of spelling bee games as a technique of learning vocabulary. The researcher found some problems when implementing spelling bee in classroom. The first disadvantage of applying the game in teaching vocabulary is by attracting students' interest to game, all of them are active and made noisy. Sometimes they too much moved and spoke. That condition made the teacher difficult to control them.

The second disadvantage of applying this game in teaching vocabulary is by doing it the teacher only had a little time to explain the material and give some new vocabulary. So there is no longer time for teacher to explain more and help them to memorize all the new vocabulary.

From all the explanation above, it shows that the using of Spelling Bee game is good technique for teaching English vocabulary especially by applying the creative-activity one, but there are also some disadvantages in using this game in teaching English vocabulary.To overcome the disadvantages of this technique, the teacher can create a
good vocabulary with the certain theme which is interesting for the students. In addition, the teacher can use a supporting sound such as music to make the learning process more exciting when the students playing the game. In the end of the learning process, the teacher can give the reward for the best team in order to motivate the students to be better in the next time.

## 3. Conventional Technique

## a. Definition of Conventional

Conventional teaching is a method that used by the teachers based on mutual agreement in a school. ${ }^{21}$ It uses traditional way in teaching and learning process where the teacher will uses the common way in teaching and learning. Conventional or traditional teaching is concerned with the teacher being the controller of the learning environment. The teacher actually is the leader in the class.

## b. Classification of Conventional Technique

There are many teaching technique that teacher can used in teaching and learning process. One of the teaching technique is conventional or traditional technique. Conventional technique can be divided into some kinds, such as: lecturer, project, catechize, discuss, problem solving, homework, recitation, demonstration and

[^12]experiment, role play, and so on. ${ }^{22}$ From those strategies, there is a strategy that is often used by the teacher, such as lecturer method.

## c. Lecturer Method

Lecturer method is a traditional method because it has been used for a long time in teaching and learning process since it is an oral communication tools between teacher and students. ${ }^{23}$ In this method, the teacher usually gives all of the explanation of the materials or it is a teacher centered.

There are some steps before showing this method, they are:
a) Preparation, create learning condition to students.
b) Implementation, teacher convoys material then give opportunities to the students for connecting and comparing material of lecturer that accepted through catechizing.
c) Evaluation, give test to students for looking students comprehension about material that learned ${ }^{24}$

From the explanation above, conventional teaching method is a traditional teaching method that often applied by the teacher. One of convention teaching method is lecturer method with a teaching style that used for convey information about some subject. So, researcher conclude that conventional technique is way that is used by the teacher in teaching a material based on the agreement of the teacher at the school.

[^13]Based on the researcher observation, the researcher conclude that procedure that used by teacher at SMP Negeri 5 Padangsidimpuan are as follows:
a) Explain the subject matter
b) Identify difficult words
c) Ask the students to memorize the words.

## B. Review of Related Findings

Research is the study about certain object to find out facts about it. There have been many researchers done regard to thus research problem, vocabularies improvement. They are shown the present related elements with the research topic in order that researcher here needs to conduct another research to complete an empty side of the research focus the related findings.

There were some researches that related to this research:

1. Iin Inayatullah in her concluded that there is influence of spelling bee game on students' achievement in english vocabulary. The result of the research is known that mean of the students‘ post test (75.69) is bigger than mean of the students‘ pre-test (37.67). The influence of students‘ achievement in English vocabulary can be known by using t-test at the significance level 0.05 , is gotten tvalue is bigger than ttable, that is tvalue $=2.18>$ ttable $=1.68$. it means that Ha is accepted and Ho is rejected. ${ }^{25}$

[^14]2. Dwi Arumningsih in her thesis concluded that "spelling bee games is effective in teaching vocabulary at the seventh grade students of MTs AlHidayah Nusawungu. The result shows that the result of $t$-test is 2.091 in the significant 2 tailed level 0.041 , the critical value on the $t$-table using $5 \%$ (0.05) alpha level significance and the degree of freedom is 2.000 , in which the t -value is higher than t -table $(2.091>2.000)$. The mean score of the post-test experimental group is higher than the mean score of post-test control group ( $68.30>62.87$ ). ${ }^{26}$
3. Yunisrina Qismullah Yusuf et.al. in their concluded that Spelling Bee game can improve students' vocabulary. The results showed that the average post-test score is higher (88.76) than the pre-test score (62.52), so the difference between the scores of both tests is 26.24 . Moreover, thest also showed that t -score $>\mathrm{t}$-table or $10.826>1.71$ at the level of significance 0.05 with the degree of freedom (df) $24 .{ }^{27}$
4. Ni'matul Wafaa in her thesis concluded that that using Spelling Bee Game was effective to improve the students vocabulary at the second Year Students of SMPN 3 Sungguminasa Gowa. The finding indicated that there was a significant difference between students' pre-test and post-tes in experimental class and controlled class. The mean score of pre-test in

[^15]experimental class was (48.96) which was slassified as poor but the mean score of post-test was (77.76) which was classified as good. The mean score of pre-test in controlled class was (39.04) which was classified as very poor but the mean score of post-test was (56.32) which was classified as fair. Moreover, the result of the $t$-test also shown that there was significant from the students, the $t$-test (6.617) was higher than $t$-table (2.021) at the level of significance 0.05 with degree of freedom $(\mathrm{df})=48 .{ }^{28}$ The defferences between those researches with this research are the place of the research, the level of the subject; the subject of the first research is elementary school, the subject of the second research is MTs and the subject of this research is junior high school. Also, the similarity between the first research and this research is the purpose of the research wich is to find out the effectiveness of Spelling Bee Game to increase vocabulary and the similarity between the second research and this reserach is using Spelling Bee Game.

## C. Conceptual Framework

Technique in teaching vocabulary is the important thing that must be considered by the teacher to succeed the learning vocabulary. The teacher must choose the suitable technique for the students so they are not easy to feel bored when following the vocabulary lesson. For junior high school's students, the

[^16]teacher can choose the technique which does not only ask them to learn but also they can play. By mixing learning and playing, the students will be more enthusiasm in learning vocabulary and it will make them easier in remembering the vocabulary.

The conceptual framework that was done is as below:


## D. Research Hypothesis

The hyphothesis of this research was " There was significant effect of Spelling Bee Game Technique on Students’ Vocabulary Mastery at Grade VII SMP N 5 Padangsidimpuan"

## CHAPTER III

## RESEARCH METHODOLOGY

## B. Research Methodology

## 1. Place and Schedule of the Research

The location of this research is SMP Negeri 5 Padangsidimpuan. It is located on Jln.Perintis Kemerdekaan no. 65 Padangsidimpuan. This research had been done from January 2019 up to December 2019. The subject of this research was the seventh grade of the students..

## 2. Research Design

This research was conducted by using an experimental research. As L.R Gay says, "Experimental research is the only type of research that can test hypothesis to establish cause and effect ${ }^{" 29}$. Next, according to John W. Creswell, "Experimental research includes true experiment with the random assignment of subject to treatment condition as well as quasi experiment the use none randomized" ${ }^{30}$. In addition, Sugiyono said that Experimental research is a research that is used to find the effect of treatment, different with the other research do not use treatment. ${ }^{31}$

So the researcher concluded that the experimental research is a kind of research which has the aim to know causal's effect relationship between one variable and more to other variable. The experimental research controls the selection of participant for the study and divides the

[^17]selection participants into more group having similar characteristics at the stars of experiment.

In this research, the researcher chosed two classes as experiment class and control class. The classes were VII-5 as experimental class and VII-6 as control class. For VII-5 class as experiment class, they had been taught by using spelling bee game technique and VII-6 class as control class had been taught by using conventional technique. The research design of this research can be seen in the following table:

Table 4
Research Design

| Class |  | Pre-test | Treatment |
| :---: | :---: | :---: | :---: |
| Post-test |  |  |  |
| Experiment Class (VII-5) | $\sqrt{ }$ | $\sqrt{ }$ | $\sqrt{ }$ |
| Control Class (VII-6) | $\sqrt{ }$ | $\times$ | $\sqrt{ }$ |

## 3. Population and Sample

## a. Population

Population is the universe of people to which the study could be generalized. ${ }^{32}$ The population is the group of interest to the researcher, the group to which she or he would like the result of study to be generalizable. Generalizability is the extent to which the result of the study can be applied to other populations or situations. ${ }^{33}$ The population of this research was all of VIII classes in SMPN 5 Padangsidimpuan. Based on the information from English teacher, it

[^18]is amount to nine classes, and there are in round of thirties students in each classes and all classes have same levels in English ability. ${ }^{34}$

Table 5
Population of the Research

| No | Class | Students |
| :---: | :---: | :---: |
| 1 | VII-1 | 32 |
| 2 | VII-2 | 31 |
| 3 | VII-3 | 31 |
| 4 | VII-4 | 31 |
| 5 | VII-5 | 31 |
| 6 | VII-6 | 30 |
| 7 | VII-7 | 30 |
| 8 | VII-8 | 30 |
| 9 | VII-9 | 29 |
| TOTAL |  | 275 |

## b. Sample

Sample is two or more classes that represent the population to be given the treatment or test. According to Gay and Airasian, sample comprises the individuals, items or events selected from a larger group referred to as a population. ${ }^{35}$

In this research, the researcher chose two classes as a sample. They were been divided into experiment class and control class. The researcher used 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

[^19]chance of being selected for the sample. ${ }^{36}$ Some ways that can be used to select a random sample are the fishbowl draw, computer program, or a table of randomly generated numbers. ${ }^{37}$

Before using random sampling, first, the researcher used normality and homogeneity test.

Normality test is used to know whether the data of research is normal or not. To know the normality, the researcher use ChiQuadrate formula. The formula is as follow: ${ }^{38}$

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

Where:
$\mathrm{x}^{2}=$ Chi-Quadrate
$\mathrm{f}_{\mathrm{o}}=$ Frequency is gotten from the sample/result of observation (questioner).
$\mathrm{f}_{\mathrm{h}}=$ Frequency is gotten from the sample as image from frequency is hoped from the population.

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

[^20]Homogeneity test is used to know whether control class and experimental class have the same variant or not. If both classes are same, it can be called homogenous. To find the homogeneity, the researcher use Harley test. The formula is as follow: ${ }^{39}$
$\mathrm{F}=\frac{\text { The biggest variant }}{\text { The smallest variant }}$
Hypotheses is accepted if $F_{(\text {count })} \leq F_{(\text {table })}$
Hypotheses is rejected if $F_{(\text {count })} \geq F_{(\text {(abble) }}$
Hypothesis is rejected if $\mathrm{F} \leq \mathrm{F} \frac{1}{2} a\left(\mathrm{n}_{1}-1\right)\left(1=\mathrm{n}_{2}-1\right)$, while if $\mathrm{F}_{\text {count }}>\mathrm{F}_{\text {table }}$ hypothesis is accepted. It determined with significant level 5\% (0.05) and dk numerator was ( $\mathrm{n}_{1}-1$ ), while dk detominators is $\left(\mathrm{n}_{2}-1\right)$.

Based on above explanation, to know the normality and homogeneity of the sample, the researcher had given the pre-test to the three classes (VII-5, VII-6, and VII-7).

After calculate the data, the researcher had found that the three classes were homogenous. So, the researcher chose two classes as a sample. They were VII-5 and VII-6. VII-5 class consisted of 31 students and VII-6 class consisted of 30 students.

Table 6
Sample of the Research

| Experiment Class | Control Class | Total |
| :---: | :---: | :---: |
| VII-5 $=31$ | VII-6 $=30$ | 61 |

[^21]
## 4. Instrument of Collecting Data

Instrument is a tool that can be used by the researcher to collect the valid and reliable data. In this research, the researcher will use a test. Test is done based on the assumption that human have the differences in ability, personality, and behavior and it can be measured by appropriate way. ${ }^{40}$

The test that was used in this research was fill-in-the blank form. Before validity, the test consisted of 100 questions. 50 questions were for pre-test and 50 questions were for post-test. This test had been given to experiment and control class. Each question had been given 2 score to get the students' score in answering the questions. So, total score of the questions was 100 .

After validity the test consisted of 60 question. 30 questions were for pre-test and . 30 questions were for post test. This test had been given to experiment and control class.

Table 7
Indicators of Vocabulary Mastery in Pre-test

| NO | Indicators | Topic | Number of Items | Items |
| :---: | :---: | :---: | :---: | :---: |
| 1 | Meaning of words | Occupations | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 | 10 |
| 2 |  | Hobbies | $\begin{gathered} 11,12,13,14,15,16,17, \\ 18,19,20 \end{gathered}$ | 10 |
| 3 |  | Public Places | $\begin{gathered} 21,22,23,24,25,26,27, \\ 28,29,30 \\ \hline \end{gathered}$ | 10 |
|  | OTAL |  |  | 30 |

[^22]Table 8
Indicators of Vocabulary Mastery in Post-test

| NO | Indicators | Items | Number of Items | Items |
| :---: | :---: | :---: | :---: | :---: |
| 1 | Meaning of words | Occupations | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 | 10 |
| 2 |  | Hobbies | $\begin{gathered} 11,12,13,14,15,16,17 \\ 18,19,20 \end{gathered}$ | 10 |
| 3 |  | Public Places | $\begin{gathered} 21,22,23,24,25,26,27, \\ 28,29,30 \\ \hline \end{gathered}$ | 10 |
|  | OTAL |  |  | 30 |

## 5. Validity and Reliability Instrument

## a. Validity

Gay and Airasian stated that validity is the most important characteristic a test or measuring instrument can possess. ${ }^{41}$ Besides, Kumar stated that validity is the ability of an instrument to measure what it is designed to measure. ${ }^{42}$

In this research, the researcher had used content and item validity to find out the validity of instrument. It is equally important that the items and questions cover the full range of the issue or attitude being measure. ${ }^{43}$ The test had been consisted of 100 questions of fill in the blank questions. It had been divided into two groups: 50 for pretest and 50 for post-test.

To know the validity of the each question will be refer to list $r$ biserial with $r_{t}$ in 5\% significant: 0,396 and $1 \%$ significant: 0,463 . So, if $r_{\text {count }}>r_{\text {table }}$ the test is classified valid.

[^23]To get the validity of the test, the formula of $r$ pointbiserial can be used as follow:
$r_{p b i}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
Where:
$\mathrm{r}_{\mathrm{pbi}}$ : coefficient item validity
$\mathrm{M}_{\mathrm{p}} \quad$ : mean score of the total sore
$\mathrm{SD}_{\mathrm{t}}$ : Standard Deviation of the total score
$p$ : presentation of the right answer of the item tested validity.
$q$ : presentation of the wrong answer of the item tested validity.

## b. Reliability

Reliability is the degree of accuracy or precision in the measurements made by a research instrument. ${ }^{44}$ Reliability of an instrument can be found by using K-R 20 formula. ${ }^{45}$ The formula is as follow:
$\mathrm{R}_{11}=\left(\frac{n}{n-1}\right) \quad\left(\frac{s_{t^{2}}-\sum p q}{s_{t^{2}}}\right)$

Where:
$R_{11}$ : Reliability of the Instrument
N : Total of Question
$\mathrm{St}^{2}$ : Variants Total

[^24]$p \quad: \quad$ Proporsi Subject who is right Answer(1)
N
$q \quad: \quad$ Proporsi Subject who is Wrong Answer (0)
N
Reliability is a good character of the test that refers to the consistency of the measurement. The test is reliable if $r_{\text {count }}>r_{\text {table }}$ by using formulation KR-20.

## 6. Procedures of Data Collection

To collect the data, the researcher had used test. In giving the test, it was divided into two kinds; pre-test and post-test.
a. Pre-test

It is a test that is given before doing the treatment to the students. It is needed to know the students' ability in experiment and control class before the researcher gives the treatment to experiment class. It is also used to find out the homogeneity and normality level of the sample. The researcher used some steps in giving pre-test. They were:

1) The researcher prepared the test that would be filled by the students. It consisted of 30 questions.
2) The researcher distributed the test paper to both class; experiment and control class.
3) The researcher explained what the students need to do.
4) The researcher gave the times to the students to answer the questions.
5) The researcher collected the test paper.
6) The researcher checked the answer and counts the students' score.
b. Treatment

In the treatment, the researcher did the different way in teaching vocabulary between experimental and control class. Treatment would be given to experimental class by using spelling bee game technique. The researcher used some steps, they were:
12. Teacher prepared collection of words on paper that put it in a box for the students to spell based on the topic of the lesson
13. The teacher created a deck of alphabet cards. On each card the teacher writes the letters of alphabet and leave the opposite blank.
14. The teacher placed the deck of the card face down on a table.
15. Students need to be separated into small teams (four or five people per team) and stand in a row.
16. The first student chose the paper from the box, say the word and pronounce the word clearly.
17. The member of the groups try to find the letters of the word.
18. The second students now says the first letter, the third students says the second letters, and so on.
19. The last students said the meaning of the words.
20. Teams who mumble the words or pronounce them badly lose the point.
21. Teacher keep the score on the board to avoid problems.
22. Teacher can stop the game when a word is misspelled, and pass the word on to the next team to see if they can spell it.
c. Post-test

It is a test that is given after the researcher gives the treatment to experiment class. It is used to know the difference score of experiment and control class and the effect of treatment, whether it has an effect or not. The researcher used some steps in giving post-test. They were:

1) The researcher prepared the test that will be filled by the students. It consists of 30 questions.
2) The researcher distributed the test paper to both class; experiment and control class.
3) The researcher explained what the students need to do.
4) The researcher gave the times to the students to answer the questions.
5) The researcher collected the test paper.
6) The researcher checked the answer and counts the students' score.

## 7. Technique of Analyzing Data

The techniques of analyzing data that was used by the researcher were:
a. Requirement test

1) Normality test

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

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

Where:
$x^{2}=$ Chi-Quadrate
$f_{0}=$ Frequency is gotten from the sample/result of observation (questioner).
$f_{h}=$ Frequency is gotten from the sample as image from frequency is hoped from the population.
2) Homogeneity Test

To find the homogeneity, the researcher use Harley test. The formula is as follow:
$\mathrm{F}=\frac{\text { The biggest variant }}{\text { The smallest variant }}$
Hypotheses is accepted if $F_{(\text {count })} \leq F_{(\text {table })}$
Hypotheses is rejected if $F_{(\text {count })} \geq F_{(\text {(abble) }}$
Hypothesis is rejected if $\mathrm{F} \leq \mathrm{F} \frac{1}{2} a\left(\mathrm{n}_{1}-1\right)\left(1=\mathrm{n}_{2}-1\right)$, while if $\mathrm{F}_{\text {count }}>$ $\mathrm{F}_{\text {table }}$ hypothesis is accepted. It determined with significant level
$5 \%$ ( 0.05 ) and dk numerator was ( $\mathrm{n}_{1}-1$ ), while dk detominators is $\left(\mathrm{n}_{2}-1\right)$.

## b. Hypothesis test

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

Before analyze the data to find the hypothesis, the researcher had calculate the normality and homogeneity of the post-test. It is used to know whether the data is normal and homogenous or not. If the data is normal and homogenous, the formula that must be used to test hypothesis is t -test but if the data is not normal and homogenous, the formula that must be used to test hypothesis is Chi-Quadrate. Because the result of post-test in this research was normal and homogenous, the data had been analyzed by using $t$-test formula. The formula is as follow: ${ }^{46}$

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

[^25]Where:
t : the value which the statistical significance
$\overline{\mathrm{X}}_{1} \quad$ : the average score of the experimental class
$\bar{X}_{2} \quad$ : the average score of the control class
$\mathrm{s}_{1}{ }^{2}$ : deviation of the experimental class
$\mathrm{s}_{2}{ }^{2} \quad$ : deviation of the control class
$\mathrm{n}_{1} \quad$ : number of experimental
$\mathrm{n}_{2} \quad$ : number of control class

## CHAPTER IV

## DATA ANALYSIS

As mentioned is earlier chapter, in order to evaluate the effect of using spelling bee game technique on students' vocabulary mastery, the researcher has calculated the data using pre-test and post-test. The researcher used the formulation of T-test to test the hypothesis. Next, the researcher described the data as follow:

## A. Description of Data

## 1. Description of Data before Using Spelling Bee Game Technique

## a. Score of Pre-test Experimental Class

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

Table 9
The Score of Expeqrimental Class in Pre-test

| Total | 1907 |
| :---: | :---: |
| Highest score | 86 |
| Lowest score | 33 |
| Mean | 68.35 |
| Median | 69.06 |
| Modus | 61.75 |
| Range | 53 |
| Interval | 9 |
| Standard deviation | 12.91 |
| Varians | 187.12 |

Based on the above table the total score of experiment class in pre-test was 1907, mean was 68.35 , standard deviation was 12.91 , varians was 187.12 , median was 69.06 , range was 53 , modus was 61.75, interval was 9 . The researcher got the highest score was 86 and the lowest score was 33 . It can be seen on appendix 19. Then, the computed of the frequency distribution of the students' score of experiment class can be applied into table frequency distribution as follow:

Table 10
Frequency Distribution of Students' Score

| No | Interval | Mid Point | Frequency | Percentages |
| :---: | :---: | :---: | :---: | :---: |
| 1 | $33-41$ | 37 | 3 | $9.68 \%$ |
| 2 | $42-50$ | 46 | 5 | $16.13 \%$ |
| 3 | $51-59$ | 55 | 7 | $22.58 \%$ |
| 4 | $60-68$ | 64 | 8 | $25.80 \%$ |
| 5 | $69-77$ | 73 | 5 | $16.13 \%$ |
| 6 | $78-86$ | 82 | 3 | $9.68 \%$ |
| $\quad i=9$ |  |  | 31 | $100 \%$ |

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


Figure 1: Description Data Pre Test of Experimental Class

## b. Score of Pre-Test Control Class

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

Table 11
The Score of Control Class in Pre-test

| Total | 1722 |
| :---: | :---: |
| Highest score | 83 |
| Lowest score | 30 |
| Mean | 66.1 |
| Median | 63.5 |
| Modus | 58 |
| Range | 53 |
| Interval | 9 |
| Standard deviation | 12.01 |
| Varians | 103.86 |

Based on the above table the total score of experiment class in pre-test was 1722 , mean was 66.1 , standard deviation was 12.01 , varians was 103.86 , median was 63.5 , range was 53 , modus was 58 , interval was 9 . The researcher got the highest score was 83 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 12

## Frequency Distribution of Students' Score

| No | Interval | Mid Point | Frequency | Percentages |
| :---: | :---: | :---: | :---: | :---: |
| 1 | $30-38$ | 34 | 3 | $10 \%$ |
| 2 | $39-47$ | 43 | 4 | $13.33 \%$ |
| 3 | $48-56$ | 52 | 8 | $26.67 \%$ |
| 4 | $57-65$ | 61 | 9 | $30 \%$ |
| 5 | $67-75$ | 71 | 4 | $13.33 \%$ |
| 6 | $76-84$ | 80 | 2 | $6.67 \%$ |
| $i=9$ |  |  | 30 | $100 \%$ |

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


Figure 2: Description Data Pre Test of Control Class

## 2. Description of Data After Using Spelling Bee Game Technique

## a. Score of Post-Test Experimental Class

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

Table 13

## The Score of Experimental Class in Pre-test

| Total | 2631 |
| :---: | :---: |
| Highest score | 100 |
| Lowest score | 67 |
| Mean | 90.20 |
| Median | 89 |
| Modus | 86 |
| Range | 33 |
| Interval | 6 |
| Standard deviation | 8.46 |
| Varians | 70.58 |

Based on the above table the total score of experiment class in post-test was 2631 , mean was 90.20 , standard deviation was 8.46 , varians was 70.58 , median was 89 , range was 33 , modus was 86 , interval was 6 . The researcher got the highest score was 100 and the lowest score was 67. It can be seen on appendix 20.

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

Table 14
Frequency Distribution of Students' Score

| No | Interval | Mid Point | Frequency | Percentages |
| :---: | :---: | :---: | :---: | :---: |
| 1 | $67-72$ | 69.5 | 4 | $12.90 \%$ |
| 2 | $73-78$ | 75.5 | 2 | $6.45 \%$ |
| 3 | $79-84$ | 81.5 | 8 | $25.81 \%$ |
| 4 | $85-90$ | 87.5 | 10 | $32.26 \%$ |
| 5 | $91-96$ | 93.5 | 4 | $12.90 \%$ |
| 6 | $97-102$ | 99.5 | 3 | $9.68 \%$ |
| $i=6$ |  |  | 31 | $100 \%$ |

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


Figure 3: Description Data Post-Test of Experimental Class

## b. Score of Post-Test Control Class

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

Table 15
The Score of Control Class in Pre-test

| Total | 2431 |
| :---: | :---: |
| Highest score | 92 |
| Lowest score | 63 |
| Mean | 81.5 |
| Median | 81.38 |
| Modus | 78.5 |
| Range | 29 |
| Interval | 5 |
| Standard deviation | 6.7 |
| Varians | 58.31 |

Based on the above table the total score of control class in posttest was 2431 , mean was 81.5 , standard deviation was 6.7 , varians was 58.31 , median was 81.38 , range was 29 , modus was 78.5 , interval was 5. The researcher got the highest score was 92 and the lowest score was 63 . It can be seen on appendix 20.

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

## Table 16

Frequency Distribution of Students' Score

| No | Interval | Mid Point | Frequency | Percentages |
| :---: | :---: | :---: | :---: | :---: |
| 1 | $63-67$ | 65 | 2 | $6.67 \%$ |
| 2 | $68-72$ | 70 | 3 | $10 \%$ |
| 3 | $73-77$ | 75 | 8 | $26.67 \%$ |
| 4 | $78-82$ | 80 | 9 | $30 \%$ |
| 5 | $83-87$ | 85 | 5 | $16.67 \%$ |
| 6 | $88-92$ | 90 | 3 | $10 \%$ |
| $i=5$ |  |  | 30 | $100 \%$ |

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


Figure 4: Description Data Post-Test of Control Class

## B. Technique of Data Analysis

1. Requirement Test

## a. Normality and Homogeneity Pre-Test

1) Normality of Experimental and Control Class in Pre-Test

Table 17
Normality and Homogeneity in Pre-Test

| Class | Normality <br> Test |  | Homogeneity <br> Test |  |
| :---: | :---: | :---: | :---: | :---: |
|  | $\mathrm{t}_{\text {count }}$ | $\mathrm{t}_{\text {table }}$ | $\mathrm{t}_{\text {count }}$ | $\mathrm{t}_{\text {table }}$ |
| Experiment Class | 4.08 | 11.070 | $1.80<1.85$ |  |
| Control Class | 9.43 | 11.070 |  |  |  |

Based on the above table researcher calculation, the score of experiment class Lo $=4.08<\mathrm{Lt}=11.070$ with $\mathrm{n}=31$ and control class $\mathrm{Lo}=9.43<\mathrm{Lt}=11.070$ with $\mathrm{n}=30$, and real level $\alpha 0.05$. Cause Lo < Lt in the both class. So, $\mathrm{H}_{\mathrm{a}}$ was accepted. It means that experiment class and control class were distributed normal. It can be seen in appendix 19.
2) Homogeneity of Experimental and Control Class in Pre-test

The coefficient of $\mathrm{F}_{\text {count }}=1.80$ was compared with $\mathrm{F}_{\text {table }}$. Where $\mathrm{F}_{\text {table }}$ was determined at real $\alpha 0.05$, and the different numerator $\mathrm{dk}=\mathrm{N}-1=31-1=30$ and denominator $\mathrm{dk} \mathrm{N}-1=30-1=$ 29. So, by using the list of critical value at F distribution is got $\mathrm{F}_{0.05}$ $=1.85$. It showed that $\mathrm{F}_{\text {count }} 1.80<\mathrm{F}_{\text {table }} 1.85$. So, the researcher concluded that the variant from the data of the Students' Vocabulary Mastery at SMPN 5 Padangsidimpuan by experimental
and control class was homogenous. The calculation can be seen on the appendix 17.

## b. Normality and Homogeneity Post-Test

## 1) Normality of Experimental and Control Class in Post-Test

Table 18
Normality and Homogeneity in Post-Test

| Class | Normality <br> Test |  | Homogeneity <br> Test |  |
| :---: | :---: | :---: | :---: | :---: |
|  | $\mathrm{t}_{\text {count }}$ | $\mathrm{t}_{\text {table }}$ | $\mathrm{t}_{\text {count }}$ | $\mathrm{t}_{\text {table }}$ |
| Experiment Class | 3.44 | 11.070 | $1.21<1.85$ |  |
| Control Class | 0.22 | 11.070 |  |  |  |

Based on the table above researcher calculation, the score of experiment class $\mathrm{Lo}=3.44<\mathrm{Lt}=11.070$ with $\mathrm{n}=31$ and control class $\mathrm{Lo}=0.22<\mathrm{Lt}=11.070$ with $\mathrm{n}=30$, and real level $\alpha 0.05$. Cause Lo < Lt in the both class. So, $\mathrm{H}_{\mathrm{a}}$ was accepted. It means that experiment class and control class were distributed normal. It can be seen in appendix 20.
2) Homogeneity of Experimental and Control Class in Post-test

The coefficient of $\mathrm{F}_{\text {count }}=1.21$ was compared with $\mathrm{F}_{\text {table }}$. Where $\mathrm{F}_{\text {table }}$ was determined at real $\alpha 0.05$, and the different numerator $\mathrm{dk}=\mathrm{N}-1=31-1=30$ and denominator $\mathrm{dk} \mathrm{N}-1=30-1=$ 29. So, by using the list of critical value at F distribution is got $\mathrm{F}_{\mathbf{0 . 0 5}}$ $=1.85$. It showed that $\mathrm{F}_{\text {count }} 1.21<\mathrm{F}_{\text {table }} 1.85$. So, the researcher concluded that the variant from the data of the Students' Vocabulary Mastery at SMPN 5 Padangsidimpuan by experimental
and control class was homogenous. The calculation can be seen on the appendix 18.

## 2. Hypothesis Test

After calculated the data of post-test, researcher has found that post-test result of experiment and control class is normal and homogenous. Based on the result, researcher used parametric test by using T-test to analyze the hypothesis. Hypothesis alternative $\left(\mathrm{H}_{\mathrm{a}}\right)$ of the research was "There was The Effect of Spelling Bee Game Technique on Students' Vocabulary Mastery". The calculation can be seen on the appendix 21.

Table 19
Result of T-test from the Both Averages

| Pre-test |  | Post-test |  |
| :---: | :---: | :---: | :---: |
| $\mathrm{t}_{\text {count }}$ | $\mathrm{t}_{\text {table }}$ | $\mathrm{t}_{\text {count }}$ | $\mathrm{t}_{\text {table }}$ |
| 1.33 | 1.671 | 1.873 | 1.671 |

$\mathrm{H}_{\mathrm{a}}: \mu_{1}>\mu_{2}$

Where:
$\mathrm{H}_{\mathrm{a}}: \mu_{1}>\mu_{2}$ "There was a significant effect of spelling bee game technique on students' vocabulary mastery."

Based on researcher calculation, researcher found that $\mathrm{t}_{\text {count }} 1.873$ while $\mathrm{t}_{\text {table }} 1.671$ with opportunity $(1-\alpha)=1-5 \%=95 \%$ and $\mathrm{dk}=\mathrm{n}_{1}+$ $\mathrm{n}_{2}-2=31+30-2=59$. Cause $\mathrm{t}_{\text {count }}>\mathrm{t}_{\text {table }}(1.873>1.671)$, it means that hypothesis $\mathrm{H}_{\mathrm{a}}$ was accepted and $\mathrm{H}_{0}$ was rejected. So, There was The

Significant Effect of Spelling Bee Game Technique on Students' Vocabulary Mastery.

## C. Comparison Result of Mean Score in Pre-Test and Post Test

In pre-test and post test of experimental and control class, the researcher calculated the result that had been gotten by the students in answering the test. To see the difference result of the mean score of experimental class and control class of students vocabulary mastery in pre-test and post test, the researcher describe as following table

Table 20
Experimental and Control Class Students' Mean Score in Vocabulary Mastery in Pre-Test and Post Test

| No. | Class | Mean Score in <br> Pre- test | Mean Score in <br> Post test |
| :---: | :---: | :---: | :---: |
| 1. | Experimental | 68.35 | 90.20 |
| 2. | Control | 66.1 | 81.5 |

From above data, the mean score of experimental class in pre-test by using spelling bee game technique was 68.35 and mean score of control class in pre-test was 66.1 by using conventional technique. The mean score of experimental class in post test by using spelling bee game technique was 90.20 and mean score of control class in post test was 81.5 by using conventional technique. To make be clear the comparison between mean score of the students in experimental and control class in pre-test and post test, the researcher would describe it in the following figure


Figure 5.

## Comparison mean score in pre-test and post test

Based on the result of data analysis and research finding, it could be summarize that students' vocabulary mastery increased in post test. From the test in pre-test the students mean score in experimental class was 68.35 increased to be 90.20 in post test. It means that there was effect of spelling bee game on students' vocabulary mastery.

## D. Discussion

Based on above result of the research, the researcher will compare the researcher's result with the related finding. First, Iin Inayatullah ${ }^{47}$ in her thesis showed that there was significant effect of Spelling Bee Game on students vocabulary mastery. Second, Dwi Arumningsih ${ }^{48}$ who also concluded that that there was significant effect of Spelling Bee Game on students vocabulary mastery. Third, Yunisrina QismullahYusuf et.al. ${ }^{49}$ in their research showed that there was effect of Spelling Bee Game on students vocabulary mastery. The last is Ni'matul Wafaa ${ }^{50}$ in her thesis showed that the using of spelling bee game technique gave effect to students' vocabulary mastery.

In summary, the researcher by using spelling bee game technique found the mean score in pre-test in experimental class was 68.35 and in post test the mean score of experimental class was 90.20 . it means that the mean

[^26]score of the students in experimental class improve and there was significant effect of spelling bee game technique on students' vocabulary mastery at grade VII SMP N 5 Padangsidimpuan.

So, the researcher concluded that spelling bee game technique is suitable to be applied in teaching vocabulary. So, spelling bee game technique has given the effect to the research that has been done by the researcher or the other researcher who mentioned in related finding.

## C. Threats of the Research

The researcher found the threats of the research as follows:

1. The students were not serious in answering the pre-test and post-test. Some of them still did cheating. It made the answer of the test was not pure because they did not do it by themselves.
2. The students were noisy while the learning process. They were not concentrating in following the learning process. Some of them talked to their friends. It made them can not get the teacher's explanation well and gave the impact to the post-test answer.
3. The students were too enthusiastic in following the Spelling Bee Game and it made them be not followed the rules. When the teacher asked the volunteers to spell the words and find the letters of the words, the other group could not keep their self to not answer until the teacher gave them the chance. So, it would disturb the volunteers' group and it made the group could not answer the word given.

## CHAPTER V

## CONCLUSION AND SUGGESTION

## A. Conclusion

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

1. Before using spelling bee game technique, the mean score of experimental class was 68.35 and the mean score of control class which was taught by conventional strategy was 66.1 .
2. After using spelling bee game technique, the mean score of experimental class was 90.20 and the mean score of control class which was taught by conventional strategy was 81.5 .
3. The researcher found the result of $t$-test where $t_{0}$ was higher than $t_{t} \cdot t_{0}$ was 1.873 and $t_{t}$ was 1.671 ( $1.873>1.671$ ). It means that there was a significant effect of spelling bee game technique on students' vocabulary mastery at grade VII SMP Negeri 5 Padangsidimpuan where $H_{a}$ was accepted and $\mathrm{H}_{0}$ was rejected.

## B. Suggestion

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

1. From the first conclusion it can be seen that the students' score were unsatisfied. So, the researcher suggest to the English teacher of SMP Negeri 5 Padangsidimpuan to apply the innovative technique such as spelling bee game technique in teaching vocabulary.
2. From the second conclusion, it can be seen that the experimental class which was taught by spelling bee game technique got the improvement from 68.35 to 90.20 meanwhile the control class which was not taught by spelling bee game technique only got the improvement until 81.5. So, the researcher suggests to the English teacher of SMP Negeri 5 Padangsidimpuan to use this technique in teaching vocabulary where by using this technique the students' will be more active and feel fun in learning vocabulary. Beside, the teacher and the other researcher who wants to apply this technique are hoped to manage the class well during the application of spelling bee game technique so the students' can be follow the rules well.

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## CURRICULUM VITAE

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1. Elementary School : SD Negeri 200219 Sitamiang baru (2008)
2. Junior High School : SMP Negeri 11 Padangsidimpuan (2011)
3. Senior High School : SMA Negeri 3 Padangsidimpuan (2014)
4. Institute : IAIN Padangsidimpuan (2020)

## Appendix 1

## Experiment Class

# RENCANA PELAKSANAAN PEMBELAJARAN 

(RPP)

| Sekolah | $:$ SMP Negeri 5 Padangsidimpuan |
| :--- | :--- |
| Mata Pelajaran | $:$ Bahasa Inggris |
| Kelas/Semester | $:$ VII/1 |
| Alokasi Waktu | $: 2 \mathrm{X} 40 \mathrm{~m}$ |
| Topik | $:$ Vocabulary (Occupations, Hobbies, And Public |
| Places) |  |

## A. Kompetensi Inti

KI-1 Menghargai dan menghayati ajaran agama yang dianutnya

KI-2 Menghargai dan menghayati perilaku jujur, disiplin, tanggungjawab, peduli (toleransi, gotong royong), percaya diri, percaya diri, dalam berinteraksi secara efektif dengan lingkungan sosial dan alam dalam jangkauan pergaulan dan keberadaannya.

KI-3 Memahami pengetahuan (faktual, konseptual, dan prosedural) berdasarkan rasa ingin tahunya tentang ilmu pengetahuan, teknologi, seni, budaya terkait fenomena dan kejadian tampak mata.

KI-4 Mencoba, mengolah, dan menyaji dalam ranah konkret (menggunakan, mengurai, merangkai, memodifikasi, dan membuat) dan ranah abstrak (menulis, membaca, menghitung, menggambar, dan mengarang) sesuai dengan yang dipelajari di sekolah dan sumber lain yang sama dalam sudut pandang/teori.

| B. Kompetensi Dasar | C. Indikator Pencapaian Kompetensi |
| :--- | :--- |
| 3.4 Mengidentifikasi fungsi sosial, | 3.4.1 Mengidentifikasi cara menyatakan |

struktur teks, dan unsur kebahasaan jenis-jenis pekerjaan, hobby dan bangunan teks interaksi transaksional lisan dan tulis terkait jenis pekerjaan, hobby dan bangunan publik yang dekat dengan kehidupan publik dalam bahasa inggris.
3.4.2 Mengidentifikasi huruf-huruf yang terdapat dalam jenis-jenis pekerjaan, hobby dan bangunan publik yang sesuai dengan kata yang dimaksud dalam bahasa inggris.

## D. Tujuan Pembelajaran

Dilandasi dengan mensyukuri kesempatan dapat mempelajari bahasa Inggris, peserta didik memahami, membedakan dan mampu menyebutkan huruf-huruf yang terdapqat dalam jenis-jenis pekerjaan, hobby dan bangunan publik yang terdapat dalam bahsa inggris untuk melaksanakan komunikasi menggunakan ungkapan dengan struktur teks yang runtut dengan unsur kebahasaan yang benar dan sesuai konteks secara jujur, disiplin, dan percaya diri.

## E. Materi Pembelajaran

Lists of vocabulary with topics
Occupations: Fireman ,Pianist, Dentist, Barber, Chef, Doctor, Fisherman, Teacher, Photographer, Singer

Hobbies : Cooking, Fishing, Swimming, Writing, Playing piano, Cycling, Running, Drawing, Travelling, Singing

Public places : Airport, Book Store, Bus Stop, Hospital Bakery, Barber Shop, Groceries Shop, Bank, Library, Hotel .
F. Metode Pembelajaran: Spelling Bee Game Technique

## G. Langkah-langkah Kegiatan Pembelajaran

| Kegiatan | Deskripsi Kegiatan | Alokasi waktu |
| :---: | :--- | :---: |
| Pendahuluan | 1. Guru memberi salam (greeting) | (10 menit) |
|  | 2. Berdo'a |  |
|  | 3. Guru memeriksa kehadiran peserta didik |  |
|  | 4. Guru memberi motivasi belajar peserta |  |
|  | didik secara kontekstual sesuai manfaat |  |
|  | dan aplikasi materi ajar dalam kehidupan |  |


| sehari- hari dengan memberikan |
| :--- | :---: | :---: | :--- |
| contohnya. |
| 5. Guru mengajukan pertanyaan tentang |
| kaitan antara pengetahuan sebelumnya |
| dengan materi yang akan dipelajari. |,


|  | 1. Guru menyiapkan kartu yang berisikan kata- <br> kata yang akan di eja oleh siswa sesuai <br> dengan topik pembahasan pelajaran dan <br> meletakkan nya kedalam sebuah kotak |
| :---: | :---: | :---: |
| 2. Guru menyiapkan tumpukan kartu lain yang |  |
| berisikan huruf-huruf alphabet di setiap |  |
| kartunya kemudian guru meletakkan kartu- |  |
| kartu tersebut di atas meja dengan sisi kartu |  |
| yang memiliki huruf-huruf alphabet |  |
| menghadap permukaan meja |  |$|$


|  | 2. Guru meminta siswa mengakhiri kelas <br> dengan berdo'a. <br> 3. Salam |  |
| :--- | :--- | :--- |

## H. Media dan Sumber Belajar

$$
\begin{array}{ll}
\text { Media } & \text { : papan tulis dan word cards } \\
\text { Sumber Belajar }: ~ B u k u ~ " W h e n ~ E n g l i s h ~ R i n g s ~ a ~ B e l l " ~
\end{array}
$$

## I. Penilaian

| Indikator | Teknik <br> Penilaian | Bentuk <br> Instrumen | Instrument Soal |
| :--- | :---: | :---: | :---: |
| The meaning of <br> occupations |  | Fill in the | Fill in the blanks with <br> the suitable letters and <br> suitable meaning to <br> sorm correct words and <br> bomplete sentences. |
| The meaning of <br> hobbies | Tes tertulis | blank <br> vocabulary task <br> for meaning of | The <br> public places |

1. Jumlah skor maksimal keseluruhan adalah 100.
2. Nilai maksimal $=\frac{\text { Jumlah jawaban yang benar }}{3} \times 10$

Padangsidimpuan,
2019

Mengetahui
Validator Peneliti

## Marlina Hasibuan, S.Pd

NIP. 1978092120006042017

Dewi Wahyuni
Nim. 122030028

## Appendix 2

## Control Class

## RENCANA PELAKSANAAN PEMBELAJARAN

(RPP)

| Sekolah | $:$ SMP Negeri 5 Padangsidimpuan |
| :--- | :--- |
| Mata Pelajaran | $:$ Bahasa Inggris |
| Kelas/Semester | $:$ VII/1 |
| Alokasi Waktu | $: 2 \mathrm{X} 40 \mathrm{~m}$ |
| Topik | Vocabulary (Occupations, Hobbies, And Public |
| Places) |  |

## A. KompetensiInti

KI-1 Menghargai dan menghayati ajaran agama yang dianutnya
KI-2 Menghargai dan menghayati perilaku jujur, disiplin, tanggungjawab, peduli (toleransi, gotong royong), percaya diri, percaya diri, dalam berinteraksi secara efektif dengan lingkungan sosial dan alam dalam jangkauan pergaulan dan keberadaannya.

KI-3 Memahami pengetahuan (faktual, konseptual, dan prosedural) berdasarkan rasa ingin tahunya tentang ilmu pengetahuan, teknologi, seni, budaya terkait fenomena dan kejadian tampak mata.

KI-4 Mencoba, mengolah, dan menyaji dalam ranah konkret (menggunakan, mengurai, merangkai, memodifikasi, dan membuat) dan ranah abstrak (menulis, membaca, menghitung, menggambar, dan mengarang) sesuai dengan yang dipelajari di sekolah dan sumber lain yang sama dalam sudut pandang/teori.

| B. Kompetensi Dasar | C. IndikatorPencapaianKompetensi |
| :--- | :--- |
| Mengidentifikasifungsisosial, <br> strukturteks, | 1. Siswa mampu mengucapkan kosakata <br> dengan benar. |

danunsurkebahasaanteksinteraksitrans aksionallisandantulisterkaitjenispekerj aan, hobbydanbangunanpublik yang dekatdengankehidupan
2. Siswa memahami arti dari kosakata tersebut.
3. Siswa mampu menggunakan kosakata yang telah dipelajari.

## D. Tujuan Pembelajaran

Dilandasi dengan mensyukuri kesempatan dapat mempelajari bahasa Inggris, peserta didik Siswa mampu mengucapkan dan mengetahui makna dari kosakata yang dipelajariuntuk melaksanakan komunikasi menggunakan dengan unsur kebahasaan yang benar dan sesuai konteks secara jujur, disiplin, dan percaya diri.

## E. Materi Pembelajaran

Lists of vocabulary with topics
Occupations: Fireman ,Pianist, Dentist, Barber, Chef, Doctor, Fisherman, Teacher, Photographer, Singer

Hobbies : Cooking, Fishing, Swimming, Writing, Playing piano, Cycling, Running, Drawing, Travelling, Singing

Public places : Airport, Book Store, Bus Stop, HospitalBakery, Barber Shop, Groceries Shop, Bank, Library, Hotel .
F. Metode Pembelajaran: Conventional Technique(Lecturer Method)

## G. Langkah-langkahKegiatanPembelajaran

| Kegiatan | DeskripsiKegiatan | AlokasiW <br> aktu |
| :--- | :--- | :---: |
|  | 1. Guru <br> memasukikelasdenganmengucapkansalamdanmenyap |  |
| PendahuasiswadenganbahasaInggris. | 2. Guru <br> memintasiswauntukmembukakelasdenganberdo'a. | 10 menit |
|  | 3. Guru mengabsensiswa. <br> 4. Guru menjelaskansecararingkastentangmateri yang |  |


|  | akandipelajari. |  |
| :--- | :--- | :--- |
|  | 1. Guru menjelaskan vocabulary yang <br> Kegiatan <br> Inti | 2. Guru memberikandaftar vocabulary. <br> 3. Guru memintasiswauntukmencariartidari vocabulary <br> tersebut di dalamkamus. <br> 4. Guru memintasiswauntukmenghapal vocabulary <br> tersebut. <br> 5. Guru memberikanlatihankepadasiswatentang <br> vocabulary yang dipelajari. |

## H. Media danSumberBelajar

Media : papan tulis dan word cards
SumberBelajar :Buku "When English Rings a Bell"

## I. Penilaian

| Indikator | TeknikPenilaian | BentukInstrumen | Instrument Soal |
| :--- | :--- | :--- | :--- |
| The meaning of <br> occupations |  |  | Fill in the <br> blanks with the <br> suitable letters <br> and suitable <br> meaning to <br> The meaning of <br> fobbies |
| The meaning of public <br> places | Testertulis |  |  |
| words and |  |  |  |
| complete |  |  |  |
| sentences. |  |  |  |

3. Jumlahskormaksimalkeseluruhanadalah 100.
4. Nilaimaksimal $=\frac{\text { Jumlah jawaban yang benar }}{3} \times 10$

Mengetahui

Validator Peneliti

## MarlinaHasibuan, S.Pd

NIP. 1978092120006042017

## DewiWahyuni

Nim. 122030028

## APPENDIX 4

## INSTUMENT FOR PRE-TEST

1. Pengantar

Tes ini bertujuan untuk menjaring data dari siswa/i mengenai vocabulary mastery dan jawaban anda tidak mempengaruhi niai anda di sekolah ini
2. Petunjuk
a. Bacalah pertanyaan berikut dengan teliti
b. Jawablah pertanyaan berikut dengan benar
c. Apabila ada pertanyaan yang kurang jelas, tanyakan langsung kepada pengawas
d. Waktuyang di berikan untuk menjawab soal adalah 60 menit

Name :
Class :
Fill in the blanks with the suitable letters to form complete sentences.

## A. Occupations

1. I help doctors heal people. I am a n $\qquad$ e
2. I deliver mail. I ama $\mathrm{p}_{-} \mathrm{s} \mathrm{m}_{-} \mathrm{n}$
3. Mrs. Raisya cooks in a restaurant. She is a c _ _ q
4. I teach children at school. I am a t _ _ c _ _r
5. I serve food at a restaurant. I am a w _ $\mathrm{t} \_{ }_{-}$
6. Mr. Ahmad flies a plane. He is a $\mathrm{p}_{\ldots} ~_{~} \mathrm{t}$
7. A person that can fix problems you have with your teeth is a $\mathrm{d}_{\__{-}} \mathrm{t}_{\ldots} \mathrm{t}^{\mathrm{t}}$
8. Mr. Hamdi is a $\mathrm{f}_{-} \quad \mathrm{m} \_$r. He works on a farm.
9. My aunty works in a library. She is a $1_{\__{-}} r_{\_} \quad \mathrm{i}_{\_} \mathrm{n}$
10. A person that acts in a play or movie is an $a_{-} t_{-} r$

## B. Hobbies


12. I can draw a good picture. That is why $\mathrm{d}_{\ldots} \mathrm{w}_{\ldots} \mathrm{g}$ is my favorite actiqvity.
13. My sister loves $\mathrm{c}_{\ldots} \mathrm{k}_{\ldots} \mathrm{g}$ so much. That is why she opens a restaurant.
14. My little brother is naughty. He likes c _ i _ b _ g many trees.
15. A sport or an activity of riding a bicycle is called c _ _ _i _g.
16. Eva likes to borrow and buy many kind of books. Her hobby is $r_{~_{-}} d_{~_{~}}$ g.
17. My mother likes planting flowers. Her hobby is $\mathrm{g}_{-} \mathrm{r}_{-} \mathrm{e}_{-{ }_{-}} \mathrm{g}$.
18. Aisyah likes $\mathrm{d}_{\ldots}$ _ $\mathrm{c}_{\text {_ }} \mathrm{g}$ to her favorite song.



## C. Public Places

21. We can see a movie at a c _ $e_{\_}$a
22. You can borrow the books from our $1_{\_} b_{-} ~_{-} y$
23. A place where you can send letters is a $p_{-} \mathrm{s}_{-} \mathrm{o}_{-} \mathrm{i}_{-}$
 sunday
24. Aini and Wahyu are classmates. They go to the same s _ _o _ 1
25. Sometimes, our family have a dinner in a $r_{-} t_{-} u_{-} a_{-} t$.
26. Ria's mother goes to the $\mathrm{m}_{-} \mathrm{k}_{\mathrm{f}} \mathrm{t}$. She buys meat, fish, vegetables and fruits.
27. A place where people board planes is a $\mathrm{a}_{-} \mathrm{p}_{-_{-}} \mathrm{t}$
28. Rian visits the $\mathrm{b}_{\mathrm{r}} \mathrm{r} \mathrm{e}_{\mathrm{f}} \mathrm{s}{ }_{-} \mathrm{p}$ when his hair gets long.
29. Children go to $\mathrm{p}_{-} \mathrm{a}_{-} \mathrm{g}_{-} \mathrm{o}_{-} \mathrm{n}_{-}$to play swings, see-saw and slides

## APPENDIX 3

## INSTUMENT FOR POST-TEST

1. Pengantar

Tes ini bertujuan untuk menjaring data dari siswa/i mengenai vocabulary mastery dan jawaban anda tidak mempengaruhi niai anda di sekolah ini
2. Petunjuk
a. Bacalah pertanyaan berikut dengan teliti
b. Jawablah pertanyaan berikut dengan benar
c. Apabila ada pertanyaan yang kurang jelas, tanyakan langsung kepada pengawas
d. Waktu yang diberikan untuk menjawab soal adalah 60 menit

Name :
Class :
Fill in the blanks with the suitable lettersto form complete sentences.

## A. Occupations

1. A person that can make clotches for others is a $\mathrm{t}_{-} \mathrm{y}_{-} \mathrm{o}_{-}$
2. The $w_{~}$ i _ _r writes a fantastic book about the history of islam.
3. My sister sells flowers. She is a $\mathrm{f}_{-} \mathrm{o}_{\ldots} \quad \mathrm{Z}_{\mathrm{t}}$
4. A s _ $n \_e_{-}$is a person who sings songs for a living
5. Mr. Hamzah is $p_{-} 1_{\_} c_{-} m_{~_{~}}$. He fights crimes and save citizens.
6. My brother meets $\operatorname{ab} \mathrm{b}_{-} \mathrm{r}_{-}$r to cut his hair
7. This person fights fire and drives a fiqre engine. He is a $f_{-} e_{f_{-}} h_{-} e$ -
8. My uncle is in the army. He carries a gun. He is a $s_{-} 1_{\_} i_{\_} r$
9. He brings you your dinner in a restaurant. He is a w _ i _ e _
10. If you have problem with your car, they can help you. they are $\mathrm{m}_{-} \mathrm{c} \mathrm{c}_{\mathrm{a}} \mathrm{a}_{-}$
$\qquad$

## B. Hobbies

11. C $\qquad$ is my cousin's hobby. She can make delicious cake.
12. Kholijah likes $\mathrm{r}_{-} \mathrm{a}_{~_{-}} \mathrm{n}_{\text {_ }}$ books. That is why she knows much information.
13. My family has s _ _m _ i _ _activity every Saturday. We always visit the different pool.
14. My mother's hobby is $\mathrm{s}_{\ldots}$ _ $\mathrm{p}_{-} \mathrm{i}_{-}$even she already has a lot of clothes .
15. I think Dani's hobby is $s_{-} e^{\prime} \mathrm{p}_{-} \ldots_{-}$. I always see he sleeps in the class.
16. Rodiah likes w_r_i_ . She had written a book when I was 15 years old.
17. $\mathrm{C}_{\ldots} \mathrm{l}_{\ldots}$ g can burn our fat. That is why I save my money to buy a bicycle.
18. My friend and I have a sport schedule every Sunday. We choose $\mathrm{p}_{-} \mathrm{y}_{\text {_ }}$ ${ }_{-} \mathrm{g} \mathrm{t}_{\ldots} \mathrm{n}_{-} \mathrm{s}$ as the first activity.
19. $\mathrm{F}_{-} \mathrm{s}_{-} \mathrm{i}_{-}$is my brother's favorite activity. He always get many fishes.
 from many palces

## C. Public Places

21. Annisa is at $b_{-} s_{-} o_{-}$. She waits for the bus.
22. My faher is a doctor. He works in a h_s _ $t{ }_{-}$l.
23. A place where we can see ocean and play sand the sand is called ab $\qquad$ h
24. Lets go to the $\mathrm{b}_{-} \mathrm{k} \mathrm{s}_{\mathrm{K}_{-}} \mathrm{p}$. I want to buy some book.
25. $\mathrm{Ag}_{\mathrm{I}_{-}} \mathrm{s}_{\__{-}} \mathrm{t} \mathrm{o}_{\mathrm{o}}$ is a place where you can buy fuel for your car.
26. $\mathrm{Z}_{\text {_ _ }}$ is a place where we can see many kinds of animals.
27. A place where we can watch sports tournament is called a s _ $a_{-} i_{-} m$
28. Miss wina goes to the $b$ $\qquad$ to save her money.
29. $\mathrm{M}_{-} \mathrm{q}_{-}$_ is a place of worship for the moslems.
30. A policeman works in a p _ $1_{\_}$c _ o _ _ i e e.

Padangsidimpuan,

Validator

Marlina Hasibuan, S.Pd
NIP. 1978092120006042
017

## Appendix 5

## A. Key Answer For Pre-Test

## Occuptions

1. Nurse
2. Postman
3. Chef
4. Teacher
5. Waiter
6. Pilot
7. Dentist
8. Farmer
9. Librrian
10. Actor

## Hobbies

11. Playing football
12. Drawing
13. Cooking
14. Climbing
15. Cycling
16. Reading
17. Gardening
18. Dancing
19. Watching movie
20. Traveling
B. Key Answer For Post-Test

Occuptions

1. Taylor
2. Writer
3. Florist
4. Singer
5. Policeman
6. Barbr
7. Fir fighter
8. Soldier
9. Waiter
10. Mechanic

Hobbies
11. Cooking
12. Reading
13. Swimming
14. Shoppin
15. Sleeping
16. Writing
17. Cycling
18. Plying tennis
19. Fishing
20. Collecting

## Public palces

21. Cinema
22. Library
23. Post office
24. Swimming pool
25. School
26. Restaurant
27. Market
28. Airport
29. Barber shop
30. Playground

## Public palces

21. Bus stop
22.Hospital
23.Beach
24.Book shop
25.Gas station
26.Zoo
27.Stadium
22. Bank
29.Mosque
23. Police office

Appendix 7
Validity of Post Test

| NO | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 |
| 3 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 4 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 6 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| 7 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 8 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| 10 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 11 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 |
| 12 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 13 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 14 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 15 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 16 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| 17 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 18 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 |
| 19 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| 20 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| 21 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 |  |
| 22 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 23 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 |
| 24 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 25 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| $\mathrm{N}=25$ | 18 | 14 | 22 | 22 | 17 | 16 | 13 | 20 | 17 | 19 | 19 | 17 | 17 | 18 | 16 | 18 | 18 | 13 | 20 | 17 | 20 | 12 | 21 | 17 | 19 |
| p | 0,7 | 0,6 | 0,9 | 0,9 | 0,7 | 0,6 | 0,5 | 0,8 | 0,7 | 0,8 | 0,8 | 0,7 | 0,7 | 0,7 | 0,6 | 0,7 | 0,7 | 0,5 | 0,8 | 0,7 | 0,8 | 0,5 | 0,8 | 0,7 | 0,8 |
| q | 0,3 | 0,4 | 0,1 | 0,1 | 0,3 | 0,4 | 0,5 | 0,2 | 0,3 | 0,2 | 0,2 | 0,3 | 0,3 | 0,3 | 0,4 | 0,3 | 0,3 | 0,5 | 0,2 | 0,3 | 0,2 | 0,5 | 0,2 | 0,3 | 0,2 |


| 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | Xt | Xt2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 33 | 1089 |
| 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 41 | 1763 |
| 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 40 | 1480 |
| 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 36 | 1188 |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 40 | 2000 |
| 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 38 | 1330 |
| 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 22 | 396 |
| 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 37 | 1480 |
| 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 39 | 1599 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 42 | 1596 |
| 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 26 | 130 |
| 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 36 | 1476 |
| 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 40 | 1520 |
| 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 25 | 550 |
| 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 40 | 1160 |
| 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 40 | 1680 |
| 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 37 | 1406 |
| 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 33 | 1056 |
| 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 14 | 154 |
| 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 38 | 1672 |
| 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 39 | 1404 |
| 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 41 | 1476 |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 38 | 1596 |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 37 | 1332 |
| 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 28 | 756 |
| 19 | 16 | 11 | 19 | 21 | 17 | 14 | 18 | 18 | 16 | 20 | 18 | 14 | 21 | 19 | 15 | 17 | 18 | 19 | 12 | 22 | 19 | 19 | 17 | 21 | 880 | 31289 |
| 0,8 | 0,6 | 0,4 | 0,8 | 0,8 | 0,7 | 0,6 | 0,7 | 0,7 | 0,6 | 0,8 | 0,7 | 0,6 | 0,8 | 0,8 | 0,6 | 0,7 | 0,7 | 0,8 | 0,5 | 0,9 | 0,8 | 0,8 | 0,7 | 0,8 | \Xt | $\sum \mathrm{Xt} 2$ |
| 0,2 | 0,4 | 0,6 | 0,2 | 0,2 | 0,3 | 0,4 | 0,3 | 0,3 | 0,4 | 0,2 | 0,3 | 0,4 | 0,2 | 0,2 | 0,4 | 0,3 | 0,3 | 0,2 | 0,5 | 0,1 | 0,2 | 0,2 | 0,3 | 0,2 |  |  |



Validity of pre test

| N0 | 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 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 |
| 2 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| 3 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 |
| 4 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
| 5 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| 6 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 |
| 7 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| 8 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 9 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 10 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 |
| 11 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 12 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| 13 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 14 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 |
| 15 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 |
| 16 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 17 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
| 18 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 |
| 19 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 20 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 |
| 21 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 |
| 22 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 |
| 23 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 |
| 24 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 |
| 25 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 |
| $\mathrm{N}=25$ | 19 | 19 | 16 | 17 | 22 | 17 | 16 | 12 | 20 | 17 | 18 | 16 | 18 | 18 | 14 | 22 | 18 | 18 | 22 | 17 | 14 | 18 | 14 | 20 | 18 |
| P | 0,8 | 0,8 | 0,6 | 0,7 | 0,9 | 0,7 | 0,6 | 0,5 | 0,8 | 0,7 | 0,7 | 0,6 | 0,7 | 0,7 | 0,6 | 0,9 | 0,7 | 0,7 | 0,9 | 0,7 | 0,6 | 0,7 | 0,6 | 0,8 | 0,7 |
| q | 0,2 | 0,2 | 0,4 | 0,3 | 0,1 | 0,3 | 0,4 | 0,5 | 0,2 | 0,3 | 0,3 | 0,4 | 0,3 | 0,3 | 0,4 | 0,1 | 0,3 | 0,3 | 0,1 | 0,3 | 0,4 | 0,3 | 0,4 | 0,2 | 0,3 |


| 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | Xt | $\mathrm{X} \mathrm{t}^{2}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 33 | 1089 |
| 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 41 | 1763 |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 40 | 1600 |
| 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 36 | 1476 |
| 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 40 | 1600 |
| 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 38 | 1368 |
| 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 22 | 484 |
| 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 37 | 1406 |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 39 | 1521 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 42 | 1764 |
| 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 10 | 1 | 1 | 1 | 1 | 0 | 25 | 625 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 36 | 1476 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 40 | 1600 |
| 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 25 | 625 |
| 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 39 | 1131 |
| 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 40 | 1600 |
| 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 37 | 1406 |
| 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 33 | 1056 |
| 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 14 | 154 |
| 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 38 | 1368 |
| 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 38 | 1368 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 41 | 1476 |
| 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 38 | 1596 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 38 | 1368 |
| 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 28 | 756 |
| 20 | 12 | 21 | 17 | 19 | 19 | 16 | 10 | 19 | 15 | 17 | 18 | 0 | 12 | 22 | 19 | 19 | 17 | 21 | 16 | 1 | 18 | 14 | 22 | 19 | Xt= 87 | ${ }^{2}=3125:$ |
| 0,8 | 0,5 | 0,8 | 0,7 | 0,8 | 0,8 | 0,6 | 0,4 | 0,8 | 0,6 | 0,7 | 0,8 | 0,8 | 0,5 | 0,9 | 0,8 | 0,8 | 0,7 | 0,8 | 0,6 | 0,8 | 0,7 | 0,6 | 0,9 | 0,8 |  |  |
| 0,2 | 0,5 | 0,2 | 0,3 | 0,2 | 0,2 | 0,4 | 0,6 | 0,2 | 0,4 | 0,3 | 0,2 | 0,2 | 0,5 | 0,1 | 0,2 | 0,2 | 0,3 | 0,2 | 0,4 | 0,2 | 0,3 | 0,4 | 0,1 | 0,2 |  |  |

## B. Calculation of Post-test

1. Mean score from score total $\left(\mathrm{M}_{\mathrm{t}}\right)$
$\mathrm{M}_{\mathrm{t}}=\frac{\sum x_{t}}{N}$
$\mathrm{M}_{\mathrm{t}}=\frac{880}{25}=35.2$
2. Standard Deviation $\left(\mathrm{SD}_{\mathrm{t}}\right)$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{\frac{\sum X_{t^{2}}}{N}-\left(\frac{\sum X_{t}}{N}\right)^{2}}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{\frac{31289}{25}-\left(\frac{880}{25}\right)^{2}}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{1251.56-35.2^{2}}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{1251.56-1239.04}$
$\mathrm{SD}_{\mathrm{t}}=\sqrt{12.52}=3.53$
3. Mean Score $\left(\mathrm{M}_{\mathrm{p}}\right)$

## Item 1

$\mathrm{M}_{\mathrm{pl} 1}=\frac{\text { total score of students'score that true item answer }}{n 14}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+39+42+36+40+40+40+37+33+39+41+38+28}{18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{681}{18}=37.83$

## Item 2

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 15}$
$\mathrm{M}_{\mathrm{pl}=} \frac{33+41+36+40+38+37+39+36+25+40+37+38+39+28}{14}$
$\mathrm{M}_{\mathrm{pl}}=\frac{507}{14}=36.21$

## Item 3

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 16}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+22+37+39+42+26+36+40+40+40+37+33+39+41+38+27+28}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{803}{22}=36.5$

## Item 4

$\mathrm{M}_{\mathrm{pl} 1}=\frac{\text { total score of students'score that true item answer }}{n 5}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+37+39+42+36+40+25+40+40+37+33+38+39+41+38+37+28}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{818}{22}=37.18$

## Item 5

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 6}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+37+39+42+40+40+38+39+41+38+37+28}{17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{647}{17}=38.05$

## Item 6

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 7}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+36+40+38+39+42+36+25+40+40+37+33+38+39+41+38}{16}$
$\mathrm{M}_{\mathrm{pl}}=\frac{603}{16}=37.68$

## Item 7

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 8}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+40+26+36+40+40+40+37+33+14+38+41+38}{13}$
$\mathrm{M}_{\mathrm{pl}}=\frac{456}{13}=35.07$

## Item 8

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 9}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+22+39+26+36+40+25+40+37+33+14+38+39+41+38}{20}$
$M_{p l}=\frac{696}{20}=34.8$

## Item 9

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students' } \text { score that true item answer }}{n 10}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+36+38+39+36+40+25+40+40+37+33+38+39+41+38+37}{18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{631}{18}=37.11$

## Item 10

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 1}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+37+39+42+36+40+40+37+14+38+39+41+38+37}{19}$
$\mathrm{M}_{\mathrm{pl}}=\frac{706}{19}=37.15$

## Item 11

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 2}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+40+40+22+39+42+26+36+40+25+40+40+37+33+14+38+39+38+37}{19}$
$\mathrm{M}_{\mathrm{pl}}=\frac{659}{19}=34.68$

## Item 12

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 3}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+37+39+40+25+40+40+37+33+14+38+39+38}{17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{610}{17}=35.88$

## Item 13

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 4}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+36+40+38+39+42+36+40+25+40+40+38+39+38+37+28}{17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{630}{17}=37.05$

## Item 14

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 11}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+40+38+37+39+42+26+25+40+40+33+14+39+41+37+28}{18}$
$M_{p l}=\frac{633}{18}=35.16$

## Item 15

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 12}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+36+40+38+39+40+40+40+37+33+38+39+41+37+28}{16}$
$\mathrm{M}_{\mathrm{pl}}=\frac{607}{16}=37.93$

## Item 16

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 13}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+36+40+22+37+39+42+26+36+40+25+40+40+41+38+37}{18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{658}{18}=36.55$

## Item 17

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+36+40+38+22+37+42+26+36+40+40+40+37+38+39+37+28}{18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+36+40+38+22+37+42+26+36+40+40+40+37+38+39+37+28}{18}=$
$\mathrm{M}_{\mathrm{pl}}=\frac{657}{18}=36.5$

## Item 18

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 23}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+40+36+40+38+42+25+40+37+33+38+39+37}{13}$
$\mathrm{M}_{\mathrm{pl}}=\frac{478}{13}=36.76$

## Item 19

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 24}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+22+37+39+42+26+36+40+40+40+37+38+39+38+28}{20}$
$\mathrm{M}_{\mathrm{pl}}=\frac{730}{20}=36.5$

## Item 20

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 25}$
$\mathrm{M}_{\mathrm{pl}}=\frac{40+36+22+37+39+42+36+40+25+40+40+37+33+41+38+37+28}{17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{611}{17}=35.94$

## Item 21

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 26}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+40+36+40+38+37+39+42+26+36+40+40+40+37+14+38+39+41+38+37}{20}$
$\mathrm{M}_{\mathrm{pl}}=\frac{731}{20}=36.55$

## Item 22

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 27}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+22+37+39+42+36+40+40+38+41+38+37}{12}$
$\mathrm{M}_{\mathrm{pl}}=\frac{451}{12}=37.58$

## Item 23

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 28}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+40+38+22+37+42+26+36+40+25+40+37+33+14+38+39+41+38+37}{21}$
$\mathrm{M}_{\mathrm{pl}}=\frac{737}{21}=35.09$

## Item 24

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 29}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+36+22+37+39+42+36+40+25+40+40+37+33+41+37+28}{17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{614}{17}=36.11$

## Item 25

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 30}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+40+36+40+38+22+39+42+36+40+40+40+37+33+38+39+41+37+28}{19}$
$\mathrm{M}_{\mathrm{pl}}=\frac{699}{19}=36.78$

## Item 26

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 31}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+40+36+40+38+37+39+42+26+36+40+40+40+33+38+39+41+38+28}{19}$
$M_{p l}=\frac{704}{19}=37.05$

## Item 27

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 32}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+38+22+37+39+42+26+36+40+40+40+38+41+38+37}{16}$
$M_{p l}=\frac{595}{16}=37.18$

## Item 28

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 33}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+22+37+39+42+26+36+40+41+37}{11}$
$\mathrm{M}_{\mathrm{pl}}=\frac{401}{11}=36.45$

## Item 29

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 34}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+22+37+39+42+36+40+37+33+39+41+28+37+28}{19}$
$\mathrm{M}_{\mathrm{pl}}=\frac{697}{19}=36.68$

## Item 30

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 18}$
$\mathrm{M}_{\mathrm{pl}=} \frac{33+41+40+36+40+38+37+39+42+36+40+25+40+37+33+38+39+41+38+37+28}{21}$
$\mathrm{M}_{\mathrm{pl}}=\frac{778}{21}=37.04$

## Item 31

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 11}$
$\mathrm{M}_{\mathrm{pl}}=\frac{36+40+22+39+42+26+40+25+40+33+14+38+39+41+38+37+28+34}{18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{612}{18}=34$

## Item 32

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 20}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+40+38+37+42+36+33+14+38+39+38+37}{14}$
$\mathrm{M}_{\mathrm{pl}}=\frac{506}{14}=36.14$

## Item 33

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 21}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+40+40+38+22+37+39+26+40+25+40+40+37+38+41+38+37+28}{18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{639}{18}=35.5$

## Item 34

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+36+38+37+39+26+36+40+25+40+40+37+33+38+39+41+38}{18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{664}{18}=36.88$

## Item 35

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 45}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+40+38+22+37+39+42+26+40+40+40+37+33+39+41}{16}$
$\mathrm{M}_{\mathrm{pl}}=\frac{595}{16}=37.18$

## Item 36

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 46}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+37+42+26+40+25+40+40+33+38+39+41+38+37+28}{20}$
$M_{p l}=\frac{732}{20}=36.6$

Item 37
$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 47}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+37+39+42+26+36+40+40+37+14+39+41+37}{18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{656}{18}=36.44$

## Item 38

$\mathrm{M}_{\mathrm{pl} 1} \frac{\text { total score of students'score that true item answer }}{n 48}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+38+22+37+42+26+36+40+40+40+38+41+37}{14}$
$\mathrm{M}_{\mathrm{pl}}=\frac{518}{14}=37$

## Item 39

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 49}$
$\mathrm{M}_{\mathrm{pl}=} \frac{39+42+26+40+40+40+37+38+38+39+41+38+28}{13}$
$\mathrm{M}_{\mathrm{pl}}=\frac{481}{13}=37$

## Item 40

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 50}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+37+39+42+40+40+40+37+33+38+39+41+38+28}{19}$
$\mathrm{M}_{\mathrm{pl}}=\frac{720}{19}=37.89$

## Item 41

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 35}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+39+42+25+40+37+33+38}{15}$
$M_{p l}=\frac{551}{15}=36.73$

## Item 42

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 36}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+39+42+26+36+40+37+14+39+41+38+37}{17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{617}{17}=36.29$

## Item 43

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 37}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+36+40+22+37+39+42+40+25+40+40+37+33+41+38+37+28}{18}$
$\mathrm{M}_{\mathrm{pl}}=\frac{656}{18}=36.44$

## Item 44

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 38}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+40+38+37+42+36+40+25+40+37+33+14+38+39+41+38+37}{19}$
$\mathrm{M}_{\mathrm{pl}}=\frac{689}{19}=36.26$

Item 45
$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 39}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+38+37+42+36+14+38+39+38+37}{12}$
$\mathrm{M}_{\mathrm{pl}}=\frac{433}{12}=36.08$

## Item 46

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 40}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+40+38+37+39+42+26+40+25+40+40+37+33+38+39+41+38+37+28}{22}$
$\mathrm{M}_{\mathrm{pl}}=\frac{808}{22}=36.72$

## Item 47

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 41}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+40+36+40+22+37+39+42+36+40+25+40+40+37+33+41+38+37+28}{19}$
$M_{p l}=\frac{692}{19}=36.42$

## Item 48

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 42}$
$\mathrm{M}_{\mathrm{pl}}=\frac{33+41+40+36+38+37+42+26+36+40+40+40+37+33+38+39+41+38+28}{19}$
$\mathrm{M}_{\mathrm{pl}}=\frac{703}{19}=37$

## Item 49

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 43}$
$\mathrm{M}_{\mathrm{pl}}=\frac{41+36+38+37+39+42+26+36+25+40+40+37+38+39+41+37+28}{17}$
$\mathrm{M}_{\mathrm{pl}}=\frac{620}{17}=36.47$

## Item 50

$\mathrm{M}_{\mathrm{pl}}=\frac{\text { total score of students'score that true item answer }}{n 44}$
$\mathrm{M}_{\mathrm{pl}=} \frac{41+40+36+40+38+22+37+42+26+36+40+40+40+37+33+38+39+41+38+37+28}{21}$
$M_{p l}=\frac{769}{21}=36.61$
4. Calculation of the formulation $\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$

## Item 1

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37.83-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.63}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.745 \times 1.52=1.132$

## Item 2

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.21-35.2}{3.53} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.01}{3.53} \sqrt{1.50}$
$\mathrm{r}_{\mathrm{pbi}}=0.286 \times 1.22=0.349$

## Item 3

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.5-35.2}{3.53} \sqrt{\frac{0.9}{0.1}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.3}{3.53} \sqrt{9}$
$r_{p b i}=0.368 \times 3=1.105$

## Item 4

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37.18-35.2}{3.53} \sqrt{\frac{0.9}{0.1}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.98}{3.53} \sqrt{9}$
$\mathrm{r}_{\mathrm{pbi}}=0.560 \times 3=1.122$

## Item 5

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{38.05-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.85}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.807 \times 1.52=1.227$

## Item 6

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37.68-35.2}{3.53} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.48}{3.53} \sqrt{1.50}$
$\mathrm{r}_{\mathrm{pbi}}=0.702 \times 1.22=0.857$

## Item 7

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{35.07-35.2}{3.53} \sqrt{\frac{0.5}{0.5}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{-0.13}{3.53} \sqrt{1}$
$\mathrm{r}_{\mathrm{pbi}}=-0.037 \times 1=-0.037$

## Item 8

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\text {pbi }}=\frac{34.8-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{-0.4}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=-0.113 \times 2=-0.227$

## Item 9

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37.11-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.91}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.541 \times 1.52=0.822$

## Item 10

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37.15-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.95}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.552 \times 2=1.105$

## Item 11

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{\mathrm{pbi}}=\frac{34.68-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{-0.52}{3.53} \sqrt{4}$
$r_{p b i}=-0.147 \times 2=-0.295$

## Item 12

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{35.88-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.68}{3.53} \sqrt{2.33}$
$r_{p b i}=0.192 \times 1.52=0.293$

## Item 13

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{p b i}=\frac{37.05-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$r_{p b i}=\frac{1.85}{3.53} \sqrt{2.33}$
$r_{p b i}=0.524 \times 1.52=0.797$

## Item 14

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{\mathrm{pbi}}=\frac{35.16-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$r_{p b i}=\frac{-0.04}{3.53} \sqrt{2.33}$
$r_{\mathrm{pbi}}=-0.011 \times 1.52=-0.017$

## Item 15

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37.93-35.2}{3.53} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.73}{3.53} \sqrt{1.50}$
$r_{p b i}=0.773 \times 1.22=0.944$

## Item 16

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.55-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.35}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.382 \times 1.52=0.581$

## Item 17

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.5-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.52}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.368 \times 1.52=0.560$

## Item 18

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.76-35.2}{3.53} \sqrt{\frac{0.5}{0.5}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.56}{3.53} \sqrt{1}$
$\mathrm{r}_{\mathrm{pbi}}=0.441 \times 1=0.441$

## Item 19

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.5-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.3}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.368 \times 2=0.737$

## Item 20

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{35.94-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.74}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.209 \times 1.52=0.319$

## Item 21

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.55-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.35}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.382 \times 2=0.765$

## Item 22

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37.58-35.2}{3.53} \sqrt{\frac{0.5}{0.5}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.38}{3.53} \sqrt{1}$
$\mathrm{r}_{\mathrm{pbi}}=0.674 \times 1=0.674$

## Item 23

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{\mathrm{pbi}}=\frac{35.09-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{-0.11}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=-0.031 \times 2=-0.062$

## Item 24

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{p b i}=\frac{36.11-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.91}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.257 \times 1.52=0.392$

## Item 25

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.78-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.58}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.447 \times 2=0.895$

## Item 26

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37.05-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.85}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.524 \times 2=1.048$

## Item 27

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37.18-35.2}{3.53} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.98}{3.53} \sqrt{1.50}$
$\mathrm{r}_{\mathrm{pbi}}=0.560 \times 1.22=0.684$

## Item 28

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.45-35.2}{3.53} \sqrt{\frac{0.4}{0.6}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.25}{3.53} \sqrt{0.67}$
$\mathrm{r}_{\mathrm{pbi}}=0.354 \times 0.81=0.287$

## Item 29

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.68-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.48}{3.53} \sqrt{4}$
$r_{p b i}=0.419 \times 2=0.839$

## Item 30

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37.04-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.84}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.521 \times 2=1.042$

## Item 31

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{34-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{-1.2}{3.53} \sqrt{2.33}$
$r_{p b i}=-0.339 \times 1.52=-0.517$

## Item 32

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.14-35.2}{3.53} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.94}{3.53} \sqrt{1.50}$
$\mathrm{r}_{\mathrm{pbi}}=0.266 \times 1.22=0.325$

## Item 33

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{35.5-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.3}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.084 \times 1.52=0.129$

## Item 34

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.88-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.68}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.475 \times 1.52=0.723$

## Item 35

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{\mathrm{pbi}}=\frac{37.18-35.2}{3.53} \sqrt{\frac{0.6}{0.4}}$
$r_{\mathrm{pbi}}=\frac{1.98}{3.53} \sqrt{1.50}$
$\mathrm{r}_{\mathrm{pbi}}=0.560 \times 1.22=0.684$

## Item 36

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.6-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.4}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.396 \times 2=0.793$

## Item 37

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.44-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.24}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.351 \times 1.52=0.534$

## Item 38

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37-35.2}{3.53} \sqrt{\frac{0.6}{0.4}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.8}{3.53} \sqrt{1.50}$
$\mathrm{r}_{\mathrm{pbi}}=0.509 \times 1.22=0.622$

## Item 39

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$r_{p b i}=\frac{1.8}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.509 \times 2=1.020$

## Item 40

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37.89-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{2.69}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.762 \times 2=1.524$

## Item 41

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{\mathrm{pbi}}=\frac{36.73-35.2}{3.53} \sqrt{\frac{0.6}{0.4}}$
$r_{\mathrm{pbi}}=\frac{1.53}{3.53} \sqrt{1.50}$
$r_{p b i}=0.433 \times 1.22=0.529$

Item 42
$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.29-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.09}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.308 \times 1.52=0.469$

## Item 43

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.44-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.24}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.351 \times 1.52=0.534$

## Item 44

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$r_{p b i}=\frac{36.26-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.06}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.300 \times 2=0.601$

## Item 45

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.08-35.2}{3.53} \sqrt{\frac{0.5}{0.5}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{0.88}{3.53} \sqrt{1}$
$\mathrm{r}_{\mathrm{pbi}}=0.249 \times 1=0.249$
Item 46
$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.72-35.2}{3.53} \sqrt{\frac{0.9}{0.1}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.52}{3.53} \sqrt{9}$
$\mathrm{r}_{\mathrm{pbi}}=0.430 \times 3=1.292$

## Item 47

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.42-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.22}{3.53} \sqrt{4}$
$r_{p b i}=0.345 \times 2=0.691$

## Item 48

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{37-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.8}{3.53} \sqrt{4}$
$r_{p b i}=0.509 \times 2=1.020$

## Item 49

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.47-35.2}{3.53} \sqrt{\frac{0.7}{0.3}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.27}{3.53} \sqrt{2.33}$
$\mathrm{r}_{\mathrm{pbi}}=0.359 \times 1.52=0.547$

## Item 50

$\mathrm{r}_{\mathrm{pbi}}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{36.61-35.2}{3.53} \sqrt{\frac{0.8}{0.2}}$
$\mathrm{r}_{\mathrm{pbi}}=\frac{1.41}{3.53} \sqrt{4}$
$\mathrm{r}_{\mathrm{pbi}}=0.399 \times 2=0.799$

## Appendix 11

Table Validity of test

| No | $\mathrm{M}_{\mathrm{p}}$ | $\mathrm{M}_{\mathrm{t}}$ | $\mathrm{SD}_{\mathrm{t}}$ | P | Q | $r_{p b i}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$ | $r_{t}$ on 5\% |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1. | 37.15 | 35.12 | 4.09 | 0.8 | 0.2 | 0.993 | 0.2 |
| 2. | 34.57 | 35.12 | 4.09 | 0.8 | 0.2 | -0.269 | 0.2 |
| 3. | 35.62 | 35.12 | 4.09 | 0.6 | 0.4 | 0.149 | 0.2 |
| 4. | 36.23 | 35.12 | 4.09 | 0.7 | 0.3 | 0.413 | 0.2 |
| 5. | 37.13 | 35.12 | 4.09 | 0.9 | 0.1 | 1.474 | 0.2 |
| 6. | 38.05 | 35.12 | 4.09 | 0.7 | 0.3 | 1.089 | 0.2 |
| 7. | 37.56 | 35.12 | 4.09 | 0.6 | 0.4 | 0.728 | 0.3 |
| 8. | 34.58 | 35.12 | 4.09 | 0.5 | 0.5 | -0.132 | 0.2 |
| 9. | 34.7 | 35.12 | 4.09 | 0.8 | 0.2 | -0.205 | 0.2 |
| 10. | 37.05 | 35.12 | 4.09 | 0.7 | 0.3 | 0.717 | 0.3 |
| 11. | 35.05 | 35.12 | 4.09 | 0.7 | 0.3 | -0.026 | 0.2 |
| 12. | 37.87 | 35.12 | 4.09 | 0.6 | 0.4 | 0.820 | 0.2 |
| 13. | 36.5 | 35.12 | 4.09 | 0.7 | 0.3 | 0.513 | 0.2 |
| 14. | 37.72 | 35.12 | 4.09 | 0.7 | 0.3 | 0.966 | 0.3 |
| 15. | 36.14 | 35.12 | 4.09 | 0.6 | 0.4 | 0.304 | 0.2 |
| 16. | 36.4 | 35.12 | 4.09 | 0.9 | 0.1 | 0.939 | 0.2 |
| 17. | 36.38 | 35.12 | 4.09 | 0.7 | 0.3 | 0.468 | 0.2 |
| 18. | 37 | 35.12 | 4.09 | 0.8 | 0.2 | 0.919 | 0.3 |
| 19. | 33.88 | 35.12 | 4.09 | 0.7 | 0.3 | -0.461 | 0.3 |
| 20. | 36.14 | 35.12 | 4.09 | 0.6 | 0.4 | 0.304 | 0.3 |
| 21. | 35.44 | 35.12 | 4.09 | 0.7 | 0.3 | 0.119 | 0. |
| 22. | 36.72 | 35.12 | 4.09 | 0.7 | 0.3 | 0.595 | 0.2 |
| 23. | 36.69 | 35.12 | 4.09 | 0.5 | 0.5 | 0.384 | 0.2 |
| 24. | 36.35 | 35.12 | 4.09 | 0.8 | 0.2 | 0.601 | 0.2 |
| 25. | 35.94 | 35.12 | 4.09 | 0.7 | 0.3 | 0.305 | 0.3 |
| 26. | 36.45 | 35.12 | 4.09 | 0.8 | 0.2 | 0.650 | 0.2 |
| 27. | 37.66 | 35.12 | 4.09 | 0.5 | 0.5 | 0.621 | 0.2 |
| 28. | 35 | 35.12 | 4.09 | 0.8 | 0.2 | -0.059 | 0.2 |
| 29. | 35.11 | 35.12 | 4.09 | 0.7 | 0.3 | -0.004 | 0.2 |
| 30. | 36.73 | 35.12 | 4.09 | 0.8 | 0.2 | 0.787 | 0.3 |
| 31. | 36.89 | 35.12 | 4.09 | 0.8 | 0.2 | 0.866 | 0.2 |
| 32. | 37.12 | 35.12 | 4.09 | 0.6 | 0.4 | 0.597 | 0. |
| 33. | 37.6 | 35.12 | 4.09 | 0.4 | 0.6 | 0.491 | 0.2 |
| 34. | 36.63 | 35.12 | 4.09 | 0.8 | 0.2 | 0.738 | 0.2 |
| 35. | 36.66 | 35.12 | 4.09 | 0.6 | 0.4 | 0.459 | 0.2 |
| 36. | 34.45 | 35.12 | 4.09 | 0.7 | 0.3 | -0.249 | 0.2 |
| 37. | 36.44 | 35.12 | 4.09 | 0.7 | 0.3 | 0.491 | 0.2 |
| 38. | 36.21 | 35.12 | 4.09 | 0.8 | 0.2 | 0.533 | 0.2 |
| 39. | 36.08 | 35.12 | 4.09 | 0.5 | 0.5 | 0.235 | 0.2 |
| 40. | 36.63 | 35.12 | 4.09 | 0.9 | 0.1 | 1.108 | 0.3 |
| 41. | 36.42 | 35.12 | 4.09 | 0.8 | 0.2 | 0.636 | 0.3 |
| 42. | 36.84 | 35.12 | 4.09 | 0.8 | 0.2 | 0.841 | 0.2 |
| 43. | 36.35 | 35.12 | 4.09 | 0.7 | 0.3 | 0.457 | 0.3 |


| 44. | 36.52 | 35.12 | 4.09 | 0.8 | 0.2 | 0.685 | 0.2 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 45. | 37 | 35.12 | 4.09 | 0.6 | 0.4 | 0.561 | 0.3 |
| 46. | 36.5 | 35.12 | 4.09 | 0.8 | 0.2 | 0.675 | 0.2 |
| 47. | 36.38 | 35.12 | 4.09 | 0.7 | 0.3 | 0.468 | 0.3 |
| 48. | 36.92 | 35.12 | 4.09 | 0.6 | 0.4 | 0.537 | 0.3 |
| 49. | 36.5 | 35.12 | 4.09 | 0.9 | 0.1 | 1.012 | 0.3 |
| 50. | 37.8 | 35.12 | 4.09 | 0.8 | 0.2 | 1.311 | 0.3 |

From the table above, it can be seen that 15 items was in valid and 35 items was valid. So, the researcher took 30 items for pre-test

## Appendix 12

## Table Validity of Post-test

| No | $\mathrm{M}_{\mathrm{p}}$ | $\mathrm{M}_{\mathrm{t}}$ | $\mathrm{SD}_{\mathrm{t}}$ | P | Q | $r_{p b i}=\frac{M_{p-M_{t}}}{S D_{t}} \sqrt{\frac{p}{q}}$ | $\begin{gathered} r_{t} \text { on } 5 \% \\ \text { significant } \end{gathered}$ | Interpretation |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1. | 37.83 | 35.2 | 3.53 | 0.7 | 0.3 | 1.132 | 0.396 | Valid |
| 2. | 36.21 | 35.2 | 3.53 | 0.6 | 0.4 | 0.349 | 0.396 | Invalid |
| 3. | 36.5 | 35.2 | 3.53 | 0.9 | 0.1 | 1.105 | 0.396 | Valid |
| 4. | 37.18 | 35.2 | 3.53 | 0.9 | 0.1 | 1.122 | 0.396 | Valid |
| 5. | 38.05 | 35.2 | 3.53 | 0.7 | 0.3 | 1.227 | 0.396 | Valid |
| 6. | 37.68 | 35.2 | 3.53 | 0.6 | 0.4 | 0.857 | 0.396 | Valid |
| 7. | 35.07 | 35.2 | 3.53 | 0.5 | 0.5 | -0.037 | 0.396 | Invalid |
| 8. | 34.8 | 35.2 | 3.53 | 0.8 | 0.2 | -0.227 | 0.396 | Invalid |
| 9. | 37.11 | 35.2 | 3.53 | 0.7 | 0.3 | 0.822 | 0.396 | Valid |
| 10. | 37.15 | 35.2 | 3.53 | 0.8 | 0.2 | 1.105 | 0.396 | Valid |
| 11. | 34.68 | 35.2 | 3.53 | 0.8 | 0.2 | -0.295 | 0.396 | Invalid |
| 12. | 35.88 | 35.2 | 3.53 | 0.7 | 0.3 | 0.293 | 0.396 | Invalid |
| 13. | 37.05 | 35.2 | 3.53 | 0.7 | 0.3 | 0.797 | 0.396 | Valid |
| 14. | 35.16 | 35.2 | 3.53 | 0.7 | 0.3 | -0.017 | 0.396 | Invalid |
| 15. | 37.93 | 35.2 | 3.53 | 0.6 | 0.4 | 0.944 | 0.396 | Valid |
| 16. | 36.55 | 35.2 | 3.53 | 0.7 | 0.3 | 0.581 | 0.396 | Valid |
| 17. | 36.5 | 35.2 | 3.553 | 0.7 | 0.3 | 0.560 | 0.396 | Valid |
| 18. | 36.76 | 35.2 | 3.53 | 0.5 | 0.5 | 0.442 | 0.396 | Valid |
| 19. | 36.5 | 35.2 | 3.53 | 0.8 | 0.2 | 0.737 | 0.396 | Valid |
| 20. | 35.94 | 35.2 | 3.53 | 0.7 | 0.3 | 0.319 | 0.396 | Invalid |
| 21. | 36.55 | 35.2 | 3.53 | 0.8 | 0.2 | 0.765 | 0.396 | Valid |
| 22. | 37.58 | 35.2 | 3.53 | 0.5 | 0.5 | 0.674 | 0.396 | Valid |
| 23. | 35.09 | 35.2 | 3.53 | 0.8 | 0.2 | -0.062 | 0.396 | Invalid |
| 24. | 36.11 | 35.2 | 3.53 | 0.7 | 0.3 | 0.392 | 0.396 | Valid |
| 25. | 36.78 | 35.2 | 3.53 | 0.8 | 0.2 | 0.895 | 0.396 | Valid |
| 26. | 37.05 | 35.2 | 3.53 | 0.8 | 0.2 | 1.048 | 0.396 | Valid |
| 27. | 37.18 | 35.2 | 3.53 | 0.6 | 0.4 | 0.684 | 0.396 | Valid |
| 28. | 36.45 | 35.2 | 3.53 | 0.4 | 0.6 | 0.287 | 0.396 | Invalid |
| 29. | 36.68 | 35.2 | 3.53 | 0.8 | 0.2 | 0.839 | 0.396 | Valid |
| 30. | 37.04 | 35.2 | 3.53 | 0.8 | 0.2 | 1.042 | 0.396 | Valid |
| 31. | 34 | 35.2 | 3.53 | 0.7 | 0.3 | -0.517 | 0.396 | Invalid |
| 32. | 36.14 | 35.2 | 3.53 | 0.6 | 0.4 | 0.325 | 0.396 | Invalid |
| 33. | 35.5 | 35.2 | 3.53 | 0.7 | 0.3 | 0.129 | 0.396 | Invalid |
| 34. | 36.88 | 35.2 | 3.53 | 0.7 | 0.3 | 0.723 | 0.396 | Valid |
| 35. | 37.18 | 35.2 | 3.53 | 0.6 | 0.4 | 0.684 | 0.396 | Valid |
| 36. | 36.6 | 35.2 | 3.53 | 0.8 | 0.2 | 0.793 | 0.396 | Valid |
| 37. | 36.44 | 35.2 | 3.53 | 0.7 | 0.3 | 0.534 | 0.396 | Valid |
| 38. | 37 | 35.2 | 3.53 | 0.6 | 0.4 | 0.622 | 0.396 | Valid |
| 39. | 37 | 35.2 | 3.53 | 0.8 | 0.2 | 1.020 | 0.396 | Valid |
| 40. | 37.89 | 35.2 | 3.53 | 0.8 | 0.2 | 1.524 | 0.396 | Valid |
| 41. | 36.73 | 35.2 | 3.53 | 0.6 | 0.4 | 0.529 | 0.396 | Valid |
| 42. | 36.29 | 35.2 | 3.53 | 0.7 | 0.3 | 0.469 | 0.396 | Valid |


| 43. | 36.44 | 35.2 | 3.53 | 0.7 | 0.3 | 0.534 | 0.396 | Valid |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 44. | 36.26 | 35.2 | 3.53 | 0.8 | 0.2 | 0.601 | 0.396 | Valid |
| 45. | 36.08 | 35.2 | 3.53 | 0.5 | 0.5 | 0.249 | 0.396 | Invalid |
| 46. | 36.72 | 35.2 | 3.53 | 0.9 | 0.1 | 1.292 | 0.396 | Valid |
| 47. | 36.42 | 35.2 | 3.53 | 0.8 | 0.2 | 0.691 | 0.396 | Valid |
| 48. | 37 | 35.2 | 3.53 | 0.8 | 0.2 | 1.020 | 0.396 | Valid |
| 49. | 36.47 | 35.2 | 3.53 | 0.7 | 0.3 | 0.547 | 0.396 | Valid |
| 50. | 36.61 | 35.2 | 3.53 | 0.8 | 0.2 | 0.799 | 0.396 | Valid |

From the table above, it can be seen that 13 items was invalid and 37 items was valid. So, the researcher took 30 items for post-test

## Appendix 13

## Reliability Pre Test

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

$$
\begin{aligned}
& \mathrm{R}_{11}=\left(\frac{n}{n-1}\right)\left(\frac{s_{t^{2}}-\sum p q}{S_{t^{2}}}\right) \\
& \mathrm{N}=25 \\
& \sum \mathrm{Xt}=878 \\
& \sum \mathrm{Xt}^{2}=31255 \\
& \sum \mathrm{pq}=9.830 \\
& \mathrm{~S}_{\mathrm{t}}^{2}=\sum \mathrm{Xt}^{2}-\left(\frac{\sum \mathrm{xt}}{N}\right)^{2} \\
&=31255-\left(\frac{878}{25}\right)^{2}=31255-35.12^{2}=31255-1233.41=1891.59 \\
& \mathrm{~S}_{\mathrm{t}}^{2}=\frac{\sum \mathrm{Xt} 2}{N}=\frac{1891.59}{25} \\
& \mathrm{~S}_{\mathrm{t}}^{2}=75.66 \\
& \mathrm{R}_{11}=\left(\frac{n}{n-1}\right)\left(\frac{s_{t^{2}}-\sum p q}{S_{t^{2}}}\right) \\
& \mathrm{R}_{11}=\left(\frac{25}{25-1}\right)\left(\frac{75.66-9.830}{75.66}\right)=\left(\frac{25}{24}\right)\left(\frac{65.83}{75.66}\right) \\
&=(1.04)(0.87) \\
&=0.90\left(\mathrm{r}_{11}>0.70=\text { reliable }\right)
\end{aligned}
$$

Test is reliable if $\mathrm{r}_{\text {count }}>\mathrm{r}_{\text {tabel }}$. Based on calculation above, the test have very high reliable.

## Appendix 14

## Reliability Post Test

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

$$
\begin{aligned}
& \mathrm{R}_{11}=\left(\frac{n}{n-1}\right)\left(\frac{s_{t^{2}}-\sum p q}{s_{t^{2}}}\right) \\
& \mathrm{N}=25 \\
& \sum \mathrm{Xt}=880 \\
& \sum \mathrm{Xt}^{2}=31289 \\
& \sum \mathrm{pq}=9.853 \\
& \mathrm{~S}_{\mathrm{t}}^{2}=\sum \mathrm{Xt}^{2}-\left(\frac{\sum \mathrm{xt}}{N}\right)^{2} \\
& \quad=31289-\left(\frac{880}{25}\right)^{2}=31289-35.2^{2}=31289-1239.04=30049.96 \\
& \mathrm{~S}_{\mathrm{t}}^{2}=\frac{\sum \mathrm{Xt} 2}{N}=\frac{30049.96}{25} \\
& \mathrm{~S}_{\mathrm{t}}^{2}=1201.99 \\
& \mathrm{R}_{11}=\left(\frac{n}{n-1}\right)\left(\frac{s_{t^{2}}-\sum p q}{s_{t^{2}}}\right) \\
& \mathrm{R}_{11}=\left(\frac{25}{25-1}\right)\left(\frac{1201.99-9.853}{1202.99}\right)=\left(\frac{25}{24}\right)\left(\frac{1192.13}{1201.99}\right) \\
&=(1.04)(0.99) \\
&=1.02\left(\mathrm{r}_{11}>0.70=\text { reliable }\right)
\end{aligned}
$$

Test is reliable if rcount > rtabel. Based on calculation above, the test have very high reliable.

## Appendix 15

## Score of Experimental Class and Control Class on Pre Test

1. Score of Experimental Class Pre Test before using Spelling Bee Game Technique

| No | The Inisial Name of Students (n) | Pre-Test |
| :---: | :---: | :---: |
| 1. | A H | 59 |
| 2. | A H S | 67 |
| 3. | D A M | 46 |
| 4. | E A | 40 |
| 5. | FR A S | 76 |
| 6. | FH N | 86 |
| 7. | HN | 63 |
| 8. | H A R | 49 |
| 9. | H | 53 |
| 10. | I Z K | 59 |
| 11. | K A | 67 |
| 12. | L S | 86 |
| 13. | M S | 49 |
| 14. | M S S | 76 |
| 15. | M A F | 76 |
| 16. | N R B | 83 |
| 17. | P A | 67 |
| 18. | P R T | 63 |
| 19. | Q O S | 50 |
| 20. | R A | 49 |
| 21. | R M H | 63 |
| 22. | R H P | 76 |
| 23. | R A S | 63 |
| 24. | S S S | 59 |
| 25. | S A P | 59 |
| 26. | S | 59 |
| 27. | T D S S | 39 |
| 28. | W A S | 76 |
| 29. | W A | 63 |
| 30. | Y A S | 33 |
| 31. | Z S | 53 |
| TOTAL |  | 1907 |

## 2. Score of Control Class Pre Test

| No | The Initial Name of Students ( n ) | Pre-Test |
| :---: | :---: | :---: |
| 1. | A H B | 53 |
| 2. | A O S | 37 |
| 3. | A N A | 63 |
| 4. | A V G | 47 |
| 5. | CEH | 57 |
| 6. | C I P | 73 |
| 7. | C E T | 73 |
| 8. | F W | 53 |
| 9. | F B B | 53 |
| 10. | J P | 83 |
| 11. | J G | 47 |
| 12. | L H | 63 |
| 13. | M D | 53 |
| 14. | M P | 53 |
| 15. | M E P | 53 |
| 16. | M S | 63 |
| 17. | M F A | 30 |
| 18. | M A | 50 |
| 19. | N R F | 47 |
| 20. | N A W | 63 |
| 21. | N F L | 60 |
| 22. | O M | 73 |
| 23. | R K S | 63 |
| 24. | R L | 73 |
| 25. | S H | 53 |
| 26. | V A S | 37 |
| 27. | W P | 40 |
| 28. | W J S | 83 |
| 29. | W A M | 63 |
| 30. | Z A | 63 |
|  | TOTAL | 1722 |

## Appendix 16

## Score of Experimental Class and Control Class on Post Test

1. Score of Experimental Class Post Test after Using Spelling Bee Game Technique

| No | The Name of Students (n) | Post-Test |
| :---: | :---: | :---: |
| 1 | A H | 83 |
| 2 | A H S | 83 |
| 3 | D A M | 70 |
| 4 | E A | 80 |
| 5 | F R A S | 87 |
| 6 | F H N | 90 |
| 7 | H N | 93 |
| 8 | H A R | 97 |
| 9 | H | 70 |
| 10 | I Z K | 80 |
| 11 | K A | 97 |
| 12 | L S | 80 |
| 13 | M S | 87 |
| 14 | M S S | 93 |
| 15 | M A F | 87 |
| 16 | N R B | 90 |
| 17 | P A | 90 |
| 18 | P R T | 90 |
| 19 | Q O S | 77 |
| 20 | R A | 77 |
| 21 | R M H | 87 |
| 22 | R H P | 90 |
| 23 | R A S | 80 |
| 24 | S S S | 83 |
| 25 | S A P | 80 |
| 26 | S | 90 |
| 27 | T D S S | 70 |
| 28 | W A S | 97 |
| 29 | W A | 93 |
| 30 | Y A S | 67 |
| 31 | Z S | 93 |
|  | TOTAL | 2631 |

## 2. Score of Control Class Post Test

| No | The Initial Name of Students (n) | Pre-Test |
| :---: | :---: | :---: |
| 1 | A H B | 70 |
| 2 | A O S | 83 |
| 3 | A N A | 90 |
| 4 | A V G | 80 |
| 5 | C E H | 70 |
| 6 | C I P | 90 |
| 7 | C E T | 83 |
| 8 | F W | 80 |
| 9 | F B B | 80 |
| 10 | J P | 92 |
| 11 | J G | 92 |
| 12 | L H | 77 |
| 13 | M D | 83 |
| 14 | M P | 83 |
| 15 | M E P | 80 |
| 16 | M S | 73 |
| 17 | M F A | 63 |
| 18 | M A | 83 |
| 19 | N R F | 83 |
| 20 | N A W | 87 |
| 21 | N F L | 77 |
| 22 | O M | 83 |
| 23 | R K S | 83 |
| 24 | R L | 87 |
| 25 | S H | 77 |
| 26 | V A S | 77 |
| 27 | W P | 63 |
| 28 | W J S | 87 |
| 29 | W A M | 83 |
| 30 | Z A | 92 |
|  | TOTAL | 2431 |

## APPENDIX 23

Chi-Square Table

| $\mathbf{d k}$ | Significant level |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\mathbf{5 0 \%}$ | $\mathbf{3 0 \%}$ | $\mathbf{2 0 \%}$ | $\mathbf{1 0 \%}$ | $\mathbf{5 \%}$ | $\mathbf{1 \%}$ |
| $\mathbf{1}$ | 0,455 | 1,074 | 1,642 | 2,706 | 3,841 | 6,635 |
| $\mathbf{2}$ | 1,386 | 2,408 | 3,219 | 4,605 | 5,991 | 9,210 |
| $\mathbf{3}$ | 2,366 | 3,665 | 4,642 | 6,251 | 7,815 | 11,341 |
| $\mathbf{4}$ | 3,357 | 4,878 | 5,989 | 7,779 | 9,488 | 13,277 |
| $\mathbf{5}$ | 4,351 | 6,064 | 7,289 | 9,236 | 11,070 | 15,086 |
| $\mathbf{6}$ | 5,348 | 7,231 | 8,558 | 10,645 | 12,592 | 16,812 |
| $\mathbf{7}$ | 6,346 | 8,383 | 9,803 | 12,017 | 14,067 | 18,475 |
| $\mathbf{8}$ | 7,344 | 9,524 | 11,030 | 13,362 | 15,507 | 20,090 |
| $\mathbf{9}$ | 8,343 | 10,656 | 12,242 | 14,684 | 16,919 | 21,666 |
| $\mathbf{1 0}$ | 9,342 | 11,781 | 13,442 | 15,987 | 18,307 | 23,209 |
| $\mathbf{1 1}$ | 10,341 | 12,899 | 14,631 | 17,275 | 19,675 | 24,725 |
| $\mathbf{1 2}$ | 11,340 | 14,011 | 15,812 | 18,549 | 21,026 | 26,217 |
| $\mathbf{1 3}$ | 12,340 | 15,119 | 16,985 | 19,812 | 22,362 | 27,688 |
| $\mathbf{1 4}$ | 13,339 | 16,222 | 18,151 | 21,064 | 23,685 | 29,141 |
| $\mathbf{1 5}$ | 14,339 | 17,222 | 19,311 | 22,307 | 24,996 | 30,578 |
| $\mathbf{1 6}$ | 15,338 | 18,418 | 20,465 | 23,542 | 26,296 | 32,000 |
| $\mathbf{1 7}$ | 16,338 | 19,511 | 21,615 | 24,769 | 27,587 | 33,409 |
| $\mathbf{1 8}$ | 17,338 | 20,601 | 22,760 | 25,989 | 28,869 | 34,805 |
| $\mathbf{1 9}$ | 18,338 | 21,689 | 23,900 | 27,204 | 30,144 | 36,191 |
| $\mathbf{2 0}$ | 19,337 | 22,775 | 25,038 | 28,412 | 31,410 | 37,566 |
| $\mathbf{2 1}$ | 20,337 | 23,858 | 26,171 | 29,615 | 32,671 | 38,932 |
| $\mathbf{2 2}$ | 21,337 | 24,939 | 27,301 | 30,813 | 33,924 | 40,289 |
| $\mathbf{2 3}$ | 22,337 | 26,018 | 28,429 | 32,007 | 35,172 | 41,638 |
| $\mathbf{2 4}$ | 23,337 | 27,096 | 29,553 | 33,196 | 35,415 | 42,980 |
| $\mathbf{2 5}$ | 24,337 | 28,172 | 30,675 | 34,382 | 37,652 | 44,314 |
| $\mathbf{2 6}$ | 25,336 | 29,246 | 31,795 | 35,563 | 38,885 | 45,642 |
| $\mathbf{2 7}$ | 26,336 | 30,319 | 32,912 | 36,741 | 40,113 | 46,963 |
| $\mathbf{2 8}$ | 27,336 | 31,391 | 34,027 | 37,916 | 41,337 | 48,278 |
| $\mathbf{2 9}$ | 28,336 | 32,461 | 35,139 | 39,087 | 42,557 | 49,588 |
| $\mathbf{3 0}$ | 29,336 | 33,530 | 36,250 | 40,256 | 43,773 | 50,892 |
|  |  |  |  |  |  |  |

## APPENDIX 24

Z-Table


| 3. $2$ | 9 | 6 | 4 | 2 | 0 | 8 | 6 | 4 | 2 | 0 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| - 3. 1 | $0.0009$ <br> 7 | $\begin{gathered} 0.0009 \\ 4 \end{gathered}$ | $\begin{gathered} 0.0009 \\ 0 \end{gathered}$ | $\begin{gathered} 0.0008 \\ 7 \end{gathered}$ | $\begin{gathered} 0.0008 \\ 4 \end{gathered}$ | $\begin{gathered} 0.0008 \\ 2 \end{gathered}$ | $\begin{gathered} 0.0007 \\ 9 \end{gathered}$ | $\begin{gathered} 0.0007 \\ 6 \end{gathered}$ | $\begin{gathered} 0.0007 \\ 4 \end{gathered}$ | $\begin{gathered} 0.0007 \\ 1 \end{gathered}$ |
| - 3. 0 | $0.0013$ $5$ | $0.0013$ $1$ | $\begin{gathered} 0.0012 \\ 6 \end{gathered}$ | $\begin{gathered} 0.0012 \\ 2 \end{gathered}$ | $\begin{gathered} 0.0011 \\ 8 \end{gathered}$ | $\begin{gathered} 0.0011 \\ 4 \end{gathered}$ | $\begin{gathered} 0.0011 \\ 1 \end{gathered}$ | $\begin{gathered} 0.0010 \\ 7 \end{gathered}$ | $\begin{gathered} 0.0010 \\ 4 \end{gathered}$ | $\begin{gathered} 0.0010 \\ 0 \end{gathered}$ |
| - 2. 9 | $0.0018$ <br> 7 | $0.0018$ <br> 1 | $0.0017$ <br> 5 | $0.0016$ <br> 9 | $0.0016$ <br> 4 | $0.0015$ <br> 9 | 0.0015 <br> 4 | $0.0014$ | $0.0014$ <br> 4 | $0.0013$ <br> 9 |
| - 2. 8 | $0.0025$ $6$ | $\begin{gathered} 0.0024 \\ 8 \end{gathered}$ | $\begin{gathered} 0.0024 \\ 0 \end{gathered}$ | $\begin{gathered} 0.0023 \\ 3 \end{gathered}$ | $\begin{gathered} 0.0022 \\ 6 \end{gathered}$ | $\begin{gathered} 0.0021 \\ 9 \end{gathered}$ | $\begin{gathered} 0.0021 \\ 2 \end{gathered}$ | $\begin{gathered} 0.0020 \\ 5 \end{gathered}$ | $\begin{gathered} 0.0019 \\ 9 \end{gathered}$ | $\begin{gathered} 0.0019 \\ 3 \end{gathered}$ |
| - 2. 7 | $0.0034$ | 0.0033 <br> 6 | $0.0032$ | $0.0031$ | $0.0030$ | $0.0029$ <br> 8 | 0.0028 <br> 9 | $0.0028$ | $0.0027$ <br> 2 | $0.0026$ <br> 4 |
| - 2. 6 | $\begin{gathered} 0.0046 \\ 6 \end{gathered}$ | $\begin{gathered} 0.0045 \\ 3 \end{gathered}$ | $\begin{gathered} 0.0044 \\ 0 \end{gathered}$ | $0.0042$ <br> 7 | $0.0041$ | $\begin{gathered} 0.0040 \\ 2 \end{gathered}$ | $0.0039$ $1$ | $\begin{gathered} 0.0037 \\ 9 \end{gathered}$ | $\begin{gathered} 0.0368 \\ 0 \end{gathered}$ | $0.0035$ <br> 7 |
| - 2. 5 | $\begin{gathered} 0.0062 \\ 1 \end{gathered}$ | $\begin{gathered} 0.0060 \\ 4 \end{gathered}$ | $\begin{gathered} 0.0058 \\ 7 \end{gathered}$ | $\begin{gathered} 0.0057 \\ 0 \end{gathered}$ | $\begin{gathered} 0.0055 \\ 4 \end{gathered}$ | $\begin{gathered} 0.0053 \\ 9 \end{gathered}$ | $\begin{gathered} 0.0052 \\ 3 \end{gathered}$ | $\begin{gathered} 0.0050 \\ 8 \end{gathered}$ | $\begin{gathered} 0.0049 \\ 4 \end{gathered}$ | $\begin{gathered} 0.0048 \\ 0 \end{gathered}$ |
| 2. | $\begin{gathered} 0.0082 \\ 0 \end{gathered}$ | $\begin{gathered} 0.0079 \\ 8 \end{gathered}$ | $0.0077$ | $0.0075$ | $\begin{gathered} 0.0073 \\ 4 \end{gathered}$ | $\begin{gathered} 0.0071 \\ 4 \end{gathered}$ | $\begin{gathered} 0.0069 \\ 5 \end{gathered}$ | $0.0067$ <br> 6 | $0.0065$ <br> 7 | $\begin{gathered} 0.0063 \\ 9 \end{gathered}$ |


| 4 |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| - |  |  |  |  |  |  |  |  |  |  |
| 2. | 0.0107 | 0.0104 | 0.0101 | 0.0099 | 0.0096 | 0.0093 | 0.0091 | 0.0088 | 0.0086 | 0.0084 |
| 3 | 2 | 4 | 7 | 0 | 4 | 9 | 4 | 9 | 6 | 2 |
| - |  |  |  |  |  |  |  |  |  |  |
| 2. | 0.0139 | 0.0135 | 0.0132 | 0.0128 | 0.0125 | 0.0122 | 0.0119 | 0.0116 | 0.0113 | 0.0110 |
| 2 | 0 | 5 | 1 | 7 | 5 | 2 | 1 | 0 | 0 | 1 |
| - |  |  |  |  |  |  |  |  |  |  |
| 2. | 0.0178 | 0.0174 | 0.0170 | 0.0165 | 0.0161 | 0.0157 | 0.0153 | 0.0150 | 0.0146 | 0.0142 |
| 1 | 6 | 3 | 0 | 9 | 8 | 8 | 9 | 0 | 3 | 6 |
| - |  |  |  |  |  |  |  |  |  |  |
| 2. | 0.0227 | 0.0222 | 0.0216 | 0.0211 | 0.0206 | 0.0201 | 0.0197 | 0.0192 | 0.0187 | 0.0183 |
| 0 | 5 | 2 | 9 | 8 | 8 | 8 | 0 | 3 | 6 | 1 |
| - |  |  |  |  |  |  |  |  |  |  |
| 1. | 0.0287 | 0.0280 | 0.0274 | 0.0268 | 0.0261 | 0.0255 | 0.0250 | 0.0244 | 0.0238 | 0.0233 |
| 9 | 2 | 7 | 3 | 0 | 9 | 9 | 0 | 2 | 5 | 0 |
| - |  |  |  |  |  |  |  |  |  |  |
| 1. | 0.0359 | 0.0351 | 0.0343 | 0.0336 | 0.0328 | 0.0321 | 0.0314 | 0.0307 | 0.0300 | 0.0293 |
| 8 | 3 | 5 | 8 | 2 | 8 | 6 | 4 | 4 | 5 | 8 |
| - |  |  |  |  |  |  |  |  |  |  |
| 1. | 0.0445 | 0.0436 | 0.0427 | 0.0418 | 0.0409 | 0.0400 | 0.0392 | 0.0383 | 0.0375 | 0.0367 |
| 7 | 7 | 3 | 2 | 2 | 3 | 6 | 0 | 6 | 4 | 3 |
| - |  |  |  |  |  |  |  |  |  |  |
| 1. | 0.0548 | 0.0537 | 0.0526 | 0.0515 | 0.0505 | 0.0494 | 0.0484 | 0.0474 | 0.0464 | 0.0455 |
| 6 | 0 | 0 | 2 | 5 | 0 | 7 | 6 | 6 | 8 | 1 |


| 1. 5 | $\begin{gathered} 0.0668 \\ 1 \end{gathered}$ | $\begin{gathered} 0.0655 \\ 2 \end{gathered}$ | $\begin{gathered} 0.0642 \\ 6 \end{gathered}$ | $\begin{gathered} 0.0630 \\ 1 \end{gathered}$ | $\begin{gathered} 0.0617 \\ 8 \end{gathered}$ | $\begin{gathered} 0.0605 \\ 7 \end{gathered}$ | $0.0593$ | $\begin{gathered} 0.0582 \\ 1 \end{gathered}$ | $\begin{gathered} 0.0570 \\ 5 \end{gathered}$ | $\begin{gathered} 0.0559 \\ 2 \end{gathered}$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1. <br> 4 | $\begin{gathered} 0.0807 \\ 6 \end{gathered}$ | $0.0792$ <br> 7 | $\begin{gathered} 0.0778 \\ 0 \end{gathered}$ | $\begin{gathered} 0.0763 \\ 6 \end{gathered}$ | $\begin{gathered} 0.0749 \\ 3 \end{gathered}$ | $\begin{gathered} 0.0735 \\ 3 \end{gathered}$ | $0.0721$ <br> 5 | $\begin{gathered} 0.0707 \\ 8 \end{gathered}$ | $\begin{gathered} 0.0694 \\ 4 \end{gathered}$ | $\begin{gathered} 0.0681 \\ 1 \end{gathered}$ |
| 1. $3$ | $\begin{gathered} 0.0968 \\ 0 \end{gathered}$ | $\begin{gathered} 0.0951 \\ 0 \end{gathered}$ | $\begin{gathered} 0.0934 \\ 2 \end{gathered}$ | $\begin{gathered} 0.0917 \\ 6 \end{gathered}$ | $\begin{gathered} 0.0901 \\ 2 \end{gathered}$ | $0.0885$ $1$ | $0.0869$ $1$ | $\begin{gathered} 0.0853 \\ 4 \end{gathered}$ | $0.0837$ $9$ | $\begin{gathered} 0.0822 \\ 6 \end{gathered}$ |
| 1. <br> 2 | $\begin{gathered} 0.1150 \\ 7 \end{gathered}$ | $\begin{gathered} 0.1131 \\ 4 \end{gathered}$ | $\begin{gathered} 0.1112 \\ 3 \end{gathered}$ | $\begin{gathered} 0.1093 \\ 5 \end{gathered}$ | $\begin{gathered} 0.1074 \\ 9 \end{gathered}$ | $\begin{gathered} 0.1056 \\ 5 \end{gathered}$ | $\begin{gathered} 0.1038 \\ 3 \end{gathered}$ | $\begin{gathered} 0.1020 \\ 4 \end{gathered}$ | $\begin{gathered} 0.1002 \\ 7 \end{gathered}$ | $\begin{gathered} 0.0985 \\ 3 \end{gathered}$ |
| 1. 1 | $0.1356$ | $0.1335$ <br> 0 | 0.1313 <br> 6 | 0.1292 <br> 4 | $0.1271$ <br> 4 | $0.1250$ <br> 7 | $0.1230$ <br> 2 | 0.1210 <br> 0 | 0.1190 <br> 0 | 0.1170 <br> 2 |
| 1. <br> 0 | $\begin{gathered} 0.1586 \\ 6 \end{gathered}$ | $\begin{gathered} 0.1562 \\ 5 \end{gathered}$ | $\begin{gathered} 0.1538 \\ 6 \end{gathered}$ | $0.1515$ <br> 1 | $\begin{gathered} 0.1491 \\ 7 \end{gathered}$ | $0.1468$ $6$ | $0.1445$ $7$ | $0.1423$ $1$ | $\begin{gathered} 0.1400 \\ 7 \end{gathered}$ | $\begin{gathered} 0.1378 \\ 6 \end{gathered}$ |
| 0. 9 | $\begin{gathered} 0.1840 \\ 6 \end{gathered}$ | $\begin{gathered} 0.1814 \\ 1 \end{gathered}$ | $\begin{gathered} 0.1787 \\ 9 \end{gathered}$ | $\begin{gathered} 0.1761 \\ 9 \end{gathered}$ | $\begin{gathered} 0.1736 \\ 1 \end{gathered}$ | $\begin{gathered} 0.1710 \\ 6 \end{gathered}$ | $\begin{gathered} 0.1685 \\ 3 \end{gathered}$ | $\begin{gathered} 0.1660 \\ 2 \end{gathered}$ | $\begin{gathered} 0.1635 \\ 4 \end{gathered}$ | $\begin{gathered} 0.1610 \\ 9 \end{gathered}$ |
| 0. <br> 8 | $0.2118$ <br> 6 | $\begin{gathered} 0.2089 \\ 7 \end{gathered}$ | $\begin{gathered} 0.2061 \\ 1 \end{gathered}$ | $0.2032$ $7$ | $\begin{gathered} 0.2004 \\ 5 \end{gathered}$ | $\begin{gathered} 0.1976 \\ 6 \end{gathered}$ | $\begin{gathered} 0.1948 \\ 9 \end{gathered}$ | $\begin{gathered} 0.1921 \\ 5 \end{gathered}$ | $\begin{gathered} 0.1894 \\ 3 \end{gathered}$ | $\begin{gathered} 0.1867 \\ 3 \end{gathered}$ |
| - | 0.2419 | 0.2388 | 0.2357 | 0.2327 | 0.2296 | 0.2266 | 0.2236 | 0.2206 | 0.2177 | 0.2147 |



## Z-Table

| z | 0.00 | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 | 0.09 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0.0 | 0.0000 | 0.0040 | 0.0080 | 0.0120 | 0.0160 | 0.0199 | 0.0239 | 0.0279 | 0.0319 | 0.0359 |
| 0.1 | 0.0398 | 0.0438 | 0.0478 | 0.0517 | 0.0557 | 0.0596 | 0.0636 | 0.0675 | 0.0714 | 0.0753 |
| 0.2 | 0.0793 | 0.0832 | 0.0871 | 0.0910 | 0.0948 | 0.0987 | 0.1026 | 0.1064 | 0.1103 | 0.1141 |
| 0.3 | 0.1179 | 0.1217 | 0.1255 | 0.1293 | 0.1331 | 0.1368 | 0.1406 | 0.1443 | 0.1480 | 0.1517 |
| 0.4 | 0.155 | 0.159 | 0.1 | 0. | 0.1700 | 0.1736 | 0. | 0.1808 | 0.1844 | 0.1879 |
| 0.5 | 0.1915 | 0.1950 | 0.198 | 0.2019 | 0.2054 | 0.2088 | 0.2123 | 0.2157 | 0.2190 | 0.2224 |
| 0.6 | 0.2257 | 0.2291 | 0.2324 | 0.2357 | 0.2389 | 0.2422 | 0.2454 | 0.2486 | 0.2517 | 0.2549 |
| 0.7 | 0.2580 | 0.2611 | 0.2642 | 0.2673 | 0.2704 | 0.2734 | 0.2764 | 0.2794 | 0.2823 | 0.2852 |
| 0.8 | 0.288 | 0.2910 | 0.2 | 0.296 | 0.2995 | 0.3023 | 0.3051 | 0.3078 | 0.3106 | 0.3133 |
| 0.9 | 0.3159 | 0.3 | 0.3 | 0.3 | 0.3264 | 0.3289 | 0.3 | 0.3340 | 0.3365 | 9 |
| 1.0 | 0.3413 | 0.3438 | 0.3 | 0.3 | 0.3508 | 0.35 | 0. | 0.3577 | 0.3599 | 0.3621 |
| 1.1 | 0.3643 | 0.3665 | 0.3686 | 0.3708 | 0.3729 | 0.3749 | 0.3770 | 0.3790 | 0.3810 | 0.3830 |
| 1.2 | 0.3849 | 0.3869 | 0.3888 | 0.3907 | 0.3925 | 0.3944 | 0.3962 | 0.3980 | 0.3997 | 0.4015 |
| 1.3 | 0.4032 | 0.4049 | 0.4066 | 0. | 0.4099 | 0.4115 | 0.4131 | 0.4147 | 0.4162 | 0.4177 |
| 1. | 0.419 | 0.4207 | 0.4 | 0.4236 | 0.4251 | 0. | 0.4279 | 0.4292 | 0.4306 | 0.4319 |
| 1.5 | 0.4332 | 0.4345 | 0.435 | 0.4370 | 0.4382 | 0.4394 | 0.440 | 0.4418 | 0.4429 | 0.4441 |
| 1.6 | 0.4452 | 0.4463 | 0.4474 | 0.448 | 0.4495 | 0.4505 | 0.4515 | 0.4525 | 0.4535 | 0.4545 |
| 1.7 | 0.4554 | 0.4564 | 0.457 | 0.458 | 0.4591 | 0.4599 | 0.4608 | 0.4616 | 0.4625 | 0.4633 |
| 1.8 | 0.4641 | 0.4649 | 0.4656 | 0.4664 | 0.4671 | 0.4678 | 0.4686 | 0.4693 | 0.4699 | 0.4706 |
| 1.9 | 0.4713 | 0.4719 | 0.4726 | 0.4732 | 0.4738 | 0.4744 | 0.4750 | 0.4756 | 0.4761 | 0.4767 |
| 2.0 | 0.4772 | 0.4778 | 0.4783 | 0.478 | 0.4793 | 0.4798 | 0.4803 | 0.4808 | 0.4812 | 0.4817 |
| 2.1 | 0.4821 | 0.4826 | 0.4830 | 0.4834 | 0.4838 | 0.4842 | 0.4846 | 0.4850 | 0.4854 | 0.4857 |
| 2.2 | 0.4861 | 0.4864 | 0.4868 | 0.4871 | 0.4875 | 0.4878 | 0.4881 | 0.4884 | 0.4887 | 0.4890 |
| 2.3 | 0.4893 | 0.4896 | 0.489 | 0.490 | 0.4904 | 0.4906 | 0.4909 | 0.4911 | 0.4913 | 0.4916 |
| 2.4 | 0.4918 | 0.4920 | 0.4922 | 0.4925 | 0.4927 | 0.4929 | 0.4931 | 0.4932 | 0.4934 | 0.4936 |
| 2.5 | 0.4938 | 0.4940 | 0.4941 | 0.4943 | 0.4945 | 0.4946 | 0.4948 | 0.4949 | 0.4951 | 0.4952 |
| 2.6 | 0.4953 | 0.4955 | 0.4956 | 0.4957 | 0.4959 | 0.4960 | 0.4961 | 0.4962 | 0.4963 | 0.4964 |
| 2.7 | 0.4965 | 0.4966 | 0.4967 | 0.4968 | 0.4969 | 0.4970 | 0.4971 | 0.4972 | 0.4973 | 0.4974 |
| 2.8 | 0.4974 | 0.4975 | 0.4976 | 0.4977 | 0.4977 | 0.4978 | 0.4979 | 0.4979 | 0.4980 | 0.4981 |


| 2.9 | 0.4981 | 0.4982 | 0.4982 | 0.4983 | 0.4984 | 0.4984 | 0.4985 | 0.4985 | 0.4986 | 0.4986 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 3.0 | 0.4987 | 0.4987 | 0.4987 | 0.4988 | 0.4988 | 0.4989 | 0.4989 | 0.4989 | 0.4990 | 0.4990 |
| 3,1 | 0,4990 | 0,4991 | 0,4991 | 0.4991 | 0,4992 | 0,4992 | 0,4992 | 0,4992 | 0,4993 | 0,4993 |
| 3,2 | 0,4993 | 0,4993 | 0,4994 | 0,4994 | 0,4994 | 0,4994 | 0,4994 | 0,4995 | 0,4995 | 0,4995 |
| 3,3 | 0,4995 | 0,4995 | 0,4995 | 0,4996 | 0,4996 | 0,4996 | 0,4996 | 0,4996 | 0,4997 | 0,4997 |
| 3,4 | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4997 | 0,4998 |
| 3,5 | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 | 0,4998 |
| 3,6 | 0,4998 | 0,4998 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 |
| 3,7 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 |
| 3,8 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 | 0,4999 |
| 3,9 | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 | 0,5000 |

## APPENDIX 25

## Percentage Points of the $\mathbf{t}$ Distribution

|  | $\mathbf{0 . 2 5}$ | $\mathbf{0 . 1 0}$ | $\mathbf{0 . 0 5}$ | $\mathbf{0 . 0 2 5}$ | $\mathbf{0 . 0 1}$ | $\mathbf{0 . 0 0 5}$ | $\mathbf{0 . 0 0 1}$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathbf{P r}$ <br> $\mathbf{d f}$ | $\mathbf{0 . 5 0}$ | $\mathbf{0 . 2 0}$ | $\mathbf{0 . 1 0}$ | $\mathbf{0 . 0 5 0}$ | $\mathbf{0 . 0 2}$ | $\mathbf{0 . 0 1 0}$ | $\mathbf{0 . 0 0 2}$ |
| $\mathbf{1}$ | 1.00000 | 3.07768 | 6.31375 | 12.70620 | 31.82052 | 63.65674 | 318.30884 |
| $\mathbf{2}$ | 0.81650 | 1.88562 | 2.91999 | 4.30265 | 6.96456 | 9.92484 | 22.32712 |
| $\mathbf{3}$ | 0.76489 | 1.63774 | 2.35336 | 3.18245 | 4.54070 | 5.84091 | 10.21453 |
| $\mathbf{4}$ | 0.74070 | 1.53321 | 2.13185 | 2.77645 | 3.74695 | 4.60409 | 7.17318 |
| $\mathbf{5}$ | 0.72669 | 1.47588 | 2.01505 | 2.57058 | 3.36493 | 4.03214 | 5.89343 |
| $\mathbf{6}$ | 0.71756 | 1.43976 | 1.94318 | 2.44691 | 3.14267 | 3.70743 | 5.20763 |
| $\mathbf{7}$ | 0.71114 | 1.41492 | 1.89458 | 2.36462 | 2.99795 | 3.49948 | 4.78529 |
| $\mathbf{8}$ | 0.70639 | 1.39682 | 1.85955 | 2.30600 | 2.89646 | 3.35539 | 4.50079 |
| $\mathbf{9}$ | 0.70272 | 1.38303 | 1.83311 | 2.26216 | 2.82144 | 3.24984 | 4.29681 |
| $\mathbf{1 0}$ | 0.69981 | 1.37218 | 1.81246 | 2.22814 | 2.76377 | 3.16927 | 4.14370 |
| $\mathbf{1 1}$ | 0.69745 | 1.36343 | 1.79588 | 2.20099 | 2.71808 | 3.10581 | 4.02470 |
| $\mathbf{1 2}$ | 0.69548 | 1.35622 | 1.78229 | 2.17881 | 2.68100 | 3.05454 | 3.92963 |
| $\mathbf{1 3}$ | 0.69383 | 1.35017 | 1.77093 | 2.16037 | 2.65031 | 3.01228 | 3.85198 |
| $\mathbf{1 4}$ | 0.69242 | 1.34503 | 1.76131 | 2.14479 | 2.62449 | 2.97684 | 3.78739 |
| $\mathbf{1 5}$ | 0.69120 | 1.34061 | 1.75305 | 2.13145 | 2.60248 | 2.94671 | 3.73283 |


| $\mathbf{1 6}$ | 0.69013 | 1.33676 | 1.74588 | 2.11991 | 2.58349 | 2.92078 | 3.68615 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathbf{1 7}$ | 0.68920 | 1.33338 | 1.73961 | 2.10982 | 2.56693 | 2.89823 | 3.64577 |
| $\mathbf{1 8}$ | 0.68836 | 1.33039 | 1.73406 | 2.10092 | 2.55238 | 2.87844 | 3.61048 |
| $\mathbf{1 9}$ | 0.68762 | 1.32773 | 1.72913 | 2.09302 | 2.53948 | 2.86093 | 3.57940 |
| $\mathbf{2 0}$ | 0.68695 | 1.32534 | 1.72472 | 2.08596 | 2.52798 | 2.84534 | 3.55181 |
| $\mathbf{2 1}$ | 0.68635 | 1.32319 | 1.72074 | 2.07961 | 2.51765 | 2.83136 | 3.52715 |
| $\mathbf{2 2}$ | 0.68581 | 1.32124 | 1.71714 | 2.07387 | 2.50832 | 2.81876 | 3.50499 |
| $\mathbf{2 3}$ | 0.68531 | 1.31946 | 1.71387 | 2.06866 | 2.49987 | 2.80734 | 3.48496 |
| $\mathbf{2 4}$ | 0.68485 | 1.31784 | 1.71088 | 2.06390 | 2.49216 | 2.79694 | 3.46678 |
| $\mathbf{2 5}$ | 0.68443 | 1.31635 | 1.70814 | 2.05954 | 2.48511 | 2.78744 | 3.45019 |
| $\mathbf{2 6}$ | 0.68404 | 1.31497 | 1.70562 | 2.05553 | 2.47863 | 2.77871 | 3.43500 |
| $\mathbf{2 7}$ | 0.68368 | 1.31370 | 1.70329 | 2.05183 | 2.47266 | 2.77068 | 3.42103 |
| $\mathbf{2 8}$ | 0.68335 | 1.31253 | 1.70113 | 2.04841 | 2.46714 | 2.76326 | 3.40816 |
| $\mathbf{2 9}$ | 0.68304 | 1.31143 | 1.69913 | 2.04523 | 2.46202 | 2.75639 | 3.39624 |
| $\mathbf{3 0}$ | 0.68276 | 1.31042 | 1.69726 | 2.04227 | 2.45726 | 2.75000 | 3.38518 |
| $\mathbf{3 1}$ | 0.68249 | 1.30946 | 1.69552 | 2.03951 | 2.45282 | 2.74404 | 3.37490 |
| $\mathbf{3 2}$ | 0.68223 | 1.30857 | 1.69389 | 2.03693 | 2.44868 | 2.73848 | 3.36531 |
| $\mathbf{3 3}$ | 0.68200 | 1.30774 | 1.69236 | 2.03452 | 2.44479 | 2.73328 | 3.35634 |
| $\mathbf{3 4}$ | 0.68177 | 1.30695 | 1.69092 | 2.03224 | 2.44115 | 2.72839 | 3.34793 |
| $\mathbf{3 5}$ | 0.68156 | 1.30621 | 1.68957 | 2.03011 | 2.43772 | 2.72381 | 3.34005 |
| $\mathbf{3 6}$ | 0.68137 | 1.30551 | 1.68830 | 2.02809 | 2.43449 | 2.71948 | 3.33262 |
| $\mathbf{3 7}$ | 0.68118 | 1.30485 | 1.68709 | 2.02619 | 2.43145 | 2.71541 | 3.32563 |
| $\mathbf{3 8}$ | 0.68100 | 1.30423 | 1.68595 | 2.02439 | 2.42857 | 2.71156 | 3.31903 |
| $\mathbf{3 9}$ | 0.68083 | 1.30364 | 1.68488 | 2.02269 | 2.42584 | 2.70791 | 3.31279 |
| $\mathbf{4 0}$ | 0.68067 | 1.30308 | 1.68385 | 2.02108 | 2.42326 | 2.70446 | 3.30688 |

Percentage Points of the $\mathbf{t}$ Distribution

|  | $\mathbf{0 . 2 5}$ | $\mathbf{0 . 1 0}$ | $\mathbf{0 . 0 5}$ | $\mathbf{0 . 0 2 5}$ | $\mathbf{0 . 0 1}$ | $\mathbf{0 . 0 0 5}$ | $\mathbf{0 . 0 0 1}$ |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathbf{P r}$ <br> df | $\mathbf{0 . 5 0}$ | $\mathbf{0 . 2 0}$ | $\mathbf{0 . 1 0}$ | $\mathbf{0 . 0 5 0}$ | $\mathbf{0 . 0 2}$ | $\mathbf{0 . 0 1 0}$ | $\mathbf{0 . 0 0 2}$ |
| $\mathbf{4 1}$ | 0.68052 | 1.30254 | 1.68288 | 2.01954 | 2.42080 | 2.70118 | 3.30127 |
| $\mathbf{4 2}$ | 0.68038 | 1.30204 | 1.68195 | 2.01808 | 2.41847 | 2.69807 | 3.29595 |
| $\mathbf{4 3}$ | 0.68024 | 1.30155 | 1.68107 | 2.01669 | 2.41625 | 2.69510 | 3.29089 |
| $\mathbf{4 4}$ | 0.68011 | 1.30109 | 1.68023 | 2.01537 | 2.41413 | 2.69228 | 3.28607 |
| $\mathbf{4 5}$ | 0.67998 | 1.30065 | 1.67943 | 2.01410 | 2.41212 | 2.68959 | 3.28148 |
| $\mathbf{4 6}$ | 0.67986 | 1.30023 | 1.67866 | 2.01290 | 2.41019 | 2.68701 | 3.27710 |
| $\mathbf{4 7}$ | 0.67975 | 1.29982 | 1.67793 | 2.01174 | 2.40835 | 2.68456 | 3.27291 |
| $\mathbf{4 8}$ | 0.67964 | 1.29944 | 1.67722 | 2.01063 | 2.40658 | 2.68220 | 3.26891 |
| $\mathbf{4 9}$ | 0.67953 | 1.29907 | 1.67655 | 2.00958 | 2.40489 | 2.67995 | 3.26508 |
| $\mathbf{5 0}$ | 0.67943 | 1.29871 | 1.67591 | 2.00856 | 2.40327 | 2.67779 | 3.26141 |
| $\mathbf{5 1}$ | 0.67933 | 1.29837 | 1.67528 | 2.00758 | 2.40172 | 2.67572 | 3.25789 |
| $\mathbf{5 2}$ | 0.67924 | 1.29805 | 1.67469 | 2.00665 | 2.40022 | 2.67373 | 3.25451 |
| $\mathbf{5 3}$ | 0.67915 | 1.29773 | 1.67412 | 2.00575 | 2.39879 | 2.67182 | 3.25127 |
| $\mathbf{5 4}$ | 0.67906 | 1.29743 | 1.67356 | 2.00488 | 2.39741 | 2.66998 | 3.24815 |
| $\mathbf{5 5}$ | 0.67898 | 1.29713 | 1.67303 | 2.00404 | 2.39608 | 2.66822 | 3.24515 |
| $\mathbf{5 6}$ | 0.67890 | 1.29685 | 1.67252 | 2.00324 | 2.39480 | 2.66651 | 3.24226 |


| $\mathbf{5 7}$ | 0.67882 | 1.29658 | 1.67203 | 2.00247 | 2.39357 | 2.66487 | 3.23948 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| $\mathbf{5 8}$ | 0.67874 | 1.29632 | 1.67155 | 2.00172 | 2.39238 | 2.66329 | 3.23680 |
| $\mathbf{5 9}$ | 0.67867 | 1.29607 | 1.67109 | 2.00100 | 2.39123 | 2.66176 | 3.23421 |
| $\mathbf{6 0}$ | 0.67860 | 1.29582 | 1.67065 | 2.00030 | 2.39012 | 2.66028 | 3.23171 |
| $\mathbf{6 1}$ | 0.67853 | 1.29558 | 1.67022 | 1.99962 | 2.38905 | 2.65886 | 3.22930 |
| $\mathbf{6 2}$ | 0.67847 | 1.29536 | 1.66980 | 1.99897 | 2.38801 | 2.65748 | 3.22696 |
| $\mathbf{6 3}$ | 0.67840 | 1.29513 | 1.66940 | 1.99834 | 2.38701 | 2.65615 | 3.22471 |
| $\mathbf{6 4}$ | 0.67834 | 1.29492 | 1.66901 | 1.99773 | 2.38604 | 2.65485 | 3.22253 |
| $\mathbf{6 5}$ | 0.67828 | 1.29471 | 1.66864 | 1.99714 | 2.38510 | 2.65360 | 3.22041 |
| $\mathbf{6 6}$ | 0.67823 | 1.29451 | 1.66827 | 1.99656 | 2.38419 | 2.65239 | 3.21837 |
| $\mathbf{6 7}$ | 0.67817 | 1.29432 | 1.66792 | 1.99601 | 2.38330 | 2.65122 | 3.21639 |
| $\mathbf{6 8}$ | 0.67811 | 1.29413 | 1.66757 | 1.99547 | 2.38245 | 2.65008 | 3.21446 |
| $\mathbf{6 9}$ | 0.67806 | 1.29394 | 1.66724 | 1.99495 | 2.38161 | 2.64898 | 3.21260 |
| $\mathbf{7 0}$ | 0.67801 | 1.29376 | 1.66691 | 1.99444 | 2.38081 | 2.64790 | 3.21079 |
| $\mathbf{7 1}$ | 0.67796 | 1.29359 | 1.66660 | 1.99394 | 2.38002 | 2.64686 | 3.20903 |
| $\mathbf{7 2}$ | 0.67791 | 1.29342 | 1.66629 | 1.99346 | 2.37926 | 2.64585 | 3.20733 |
| $\mathbf{7 3}$ | 0.67787 | 1.29326 | 1.66600 | 1.99300 | 2.37852 | 2.64487 | 3.20567 |
| $\mathbf{7 4}$ | 0.67782 | 1.29310 | 1.66571 | 1.99254 | 2.37780 | 2.64391 | 3.20406 |
| $\mathbf{7 5}$ | 0.67778 | 1.29294 | 1.66543 | 1.99210 | 2.37710 | 2.64298 | 3.20249 |
| $\mathbf{7 6}$ | 0.67773 | 1.29279 | 1.66515 | 1.99167 | 2.37642 | 2.64208 | 3.20096 |
| $\mathbf{7 7}$ | 0.67769 | 1.29264 | 1.66488 | 1.99125 | 2.37576 | 2.64120 | 3.19948 |
| $\mathbf{7 8}$ | 0.67765 | 1.29250 | 1.66462 | 1.99085 | 2.37511 | 2.64034 | 3.19804 |
| $\mathbf{7 9}$ | 0.67761 | 1.29236 | 1.66437 | 1.99045 | 2.37448 | 2.63950 | 3.19663 |
| $\mathbf{8 0}$ | 0.67757 | 1.29222 | 1.66412 | 1.99006 | 2.37387 | 2.63869 | 3.19526 |
| $\infty$ |  |  |  |  |  |  |  |

Appendix 26
Documentation of The Research




# KEMENTERIAN AGAMA REPUBLIX INDONESIA INSTITUT AGAMA ISLAM NEGERI PADANGSIDIMPUAN FAKULTAS TARBIYAH DAN ILMU KEGURUAN 

Nomor: B - 1604 In.14/E.1/TL.09/10/2019 Hal : Izin Penelitian Periyelesaian Skripsi

Yth. Kepala SMP Negeri 5 Padangsidimpuan
Kota Padangsidimpuan

Dengan hormat, bersama ini kami sampaikan bahwa

| Nama | : Dewi Wahyuni |
| :--- | :--- |
| NIM | $: 1420300028$ |
| Program Studi | : Tadris/Pendidikan Bahasa Inggris |
| Fakultas | : Tarbiyan dan Ilmu Keguruan |
| Alamat | : JI. SM Raja Sitamiang Baru Kebun Demang Padangsidimpuan |
|  | Selatan |

adalah Mahasiswa Fakultas Tarbiyah dan limu Keguruan IAIN Padangsidimpuan yang sedang menyelesaikan Skripsi dengan Judul "The Effect of Spelling Bee Games on Students' Vocabulary Mastery at Grade VII of SMP Negeri 5 Padangsidimpuan".

Sehubungan dengan itu, kami mohon bantuan Bapak/lbu untuk memberikan izin penelitian sesuai dengan maksud judul diatas

Demikian disampaikan, atas kerja sama yang baik diucapkan terimakasih.


# PEMERINTAH KOTA PADANGSIDIMPUAN DINAS PENDIDIKAN SMP NEGERI 5 PADANGSIDIMPUAN 

## J. Perintis Kemerdekaan No. 61 Padangsidimpuan Selatan Telp. (0634)22255 Kode Pos 22727

SURAT KETERANGAN

NOMOR: 422/339/SMP.5/2019
mg bertanda tangan dibawah ini Kepala SMP Negeri 5 Padangsidimpuan, menerangkan bahwa:

| Nama | $:$ DEWI WAHYUNI |
| :--- | :--- |
| NIM | $: 1420300028$ |
| Fakultas | $:$ Tarbiyah dan Ilmu Keguruan |
| Proram Studi | $:$ Pendidikan Bahasa Inggris |

enar telah mengadakan penelitian (riset) di SMP Negeri 5 Padangsidimpuan pada tanggal 30 Oktober 019 sampai dengan selesai, guna untuk melengkapi penelitiannya yang berjudul : "The Effect of pelling Bee Games on Students's Vocabulary Mastery at Grade VII Of SMP Negeri 5 adangsidimpuan" sesuai dengan surat dari Dekan Fakultas Tarbiyah dan Ilmu Keguruan IAIN adangsidimpuan Nomor : B-1684/In.14/E.1/TL.00/10/2019 tanggal 29 Oktober 2019.
emikianlah surat keterangan ini dibuat dengan sebenarnya untuk dapat dipergunakan seperlunya.


## KEMENTERIAN AGAMA INSTITUT AGAMA ISLAM NEGERI PADANGSIDIMPUAN

 FAKULTAS TARBIYAH DAN ILMU KEGURUANJalan T. Rizal Nurdin Km. 4,5 Sihitang 22733
Telephon (0634) 22080 Faximile (0634) 24022

Nomor:
//b/In. 14/E.6a/PP.00.9/09/2017
Padangsidimpuan, 05 September 2017
Sifat : Biasa
Lamp :-
Perihal : Pengesahan Judul dan Pembimbing Skripsi
Kepada Yth Bapak/Ibu :

1. Zainuddin, S.S.,M.Hum.
(Pembimbing I)
2. Yusni Sinaga, S.Pd.,M.Hum.
(Pembimbing II)
Di-
Padangsidimpuan
Assalamu 'Alaikum Wr. Wb
Dengan hormat, sehubungan dengan hasil sidang bersama tim pengkaji judul skripsi jurusan tadris bahasa inggris (TBI) fakultas tarbiyah dan ilmu keguruan LAIN Padangsidimpuan, maka dengan ini kami mohon kepada Bapak/Ibu agar dapat menjadi pembimbing skripsi, dan melakukan penyempurnaan judul bila mana perlu untuk mahasiswa dibawah ini dengan data sebagai berikut:

| Nama | : Dewi Wahyuni |
| :--- | :--- |
| NIM | :1420300028 |
| Fak/Jurusan | :Tarbiyah dan Ilmu Keguruan/ TBI-4 |
| Judul Skripsi | :THE EFFECT OF SPELLING BEE TECHNIQUE ON |
|  | STUDENTS'VOCABULARY MASTERY AT GRADE VII |
|  | SMP N PADANGSIDIMPUAN |

Demikian surat ini disampaikan, atas perhatian dan kesediaan Bapak/Ibu kami ucapkan terima kasih.

Ketua Jurusan Tadris Bahasa Inggris


Rayendriani Fahmei Lubis, M.Ag NIP. 197105102000032001

Sekretaris Jurusan Tadris Bahasa Inggris


Dr. Lefyl Hilda, M.Si
NIP. 197209202000032002
Pernyataan Kesediaan Sebagai Pembimbing


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