DIGITAL MIND MAPPING TECHNIQUE TO INCREASE THE STUDENTS' INTEREST AND VOCABULARY ACHIEVEMENT TO THE TENTH GRADE STUDENTS AT SMK IT BAITUN NUR PUNGGUR

(A Thesis)

By

MARINA ANGGRAINI
NPM 2023044002

MASTER IN ENGLISH LANGUAGE TEACHING STUDY PROGRAM
LANGUAGE AND ARTS EDUCATION DEPARTMENT
TEACHER TRAINING AND EDUCATION FACULTY
LAMPUNG UNIVERSITY
BANDAR LAMPUNG
2023

DIGITAL MIND MAPPING TECHNIQUE TO INCREASE THE STUDENTS' INTEREST AND VOCABULARY ACHIEVEMENT TO THE TENTH GRADE STUDENTS AT SMK IT BAITUN NUR PUNGGUR

By
Marina Anggraini

A Thesis

Submitted in a Partial Fulfillment of
The Requirements for S-2 Degree

in

Language and Arts Education Department
Teacher Training and Education Faculty

MASTER IN ENGLISH LANGUAGE TEACHING STUDY PROGRAM
LANGUAGE AND ARTS EDUCATION DEPARTMENT
TEACHER TRAINING AND EDUCATION FACULTY
LAMPUNG UNIVERSITY
BANDAR LAMPUNG
2023

ABSTRACT

DIGITAL MIND MAPPING TECHNIQUE TO INCREASE THE STUDENTS' INTEREST AND VOCABULARY ACHIEVEMENT TO THE TENTH GRADE STUDENTS AT SMK IT BAITUN NUR PUNGGUR

By

Marina Anggraini

The present study is aimed to find out whether there is a significant difference of students' vocabulary achievement between students who are taught by using digital mind mapping technique and original mind mapping technique, and whether there is an increase in the students' interest of English vocabulary learning through digital mind mapping technique. The subjects of this research were the tenth grade students of SMK IT Baitun Nur Punggur. This study is quantitative research. The data were obtained from the pre-test, post-test, and questionnaire. The data were analyzed by using Independent group t-test and Paired sample t-test in SPSS (*Statistical Program for Social Science*). The results show that the students' vocabulary achievement in experimental class increased from 54.07 to 81.87 and there is a significant difference with the sig. (*2 tailed*) of $0.00 < 0.05$. The result of students' vocabulary achievement in control class also increased from 53.40 to 68.73 and there is a significant difference with the sig. (*2 tailed*) of $0.01 < 0.05$. Meanwhile, the result of the significance value of the experimental class and the control class are $0.00 < \alpha = 0.05$. It means that the p value is less than 0.05. This indicates that there is a significant difference in students' vocabulary achievement between the students who were taught using digital mind mapping technique and original mind mapping technique. Furthermore, the results show that students' interest increased from 30.07 to 42.30 with a significance value of $0.00 < \alpha = 0.05$. It can be concluded that H1 is accepted which states that there is an increase in students' interest in learning vocabulary using digital mind mapping technique. In conclusion, learning using digital mind mapping technique has a greater influence on students' vocabulary achievement and it is also able to increase students' interest in English vocabulary.

Key words: *Vocabulary, Mind Mapping, Digital Mind Mapping, Students' Interest*

Research Title	:	**DIGITAL MIND MAPPING TECHNIQUE TO INCREASE THE STUDENTS' INTEREST AND VOCABULARY ACHIEVEMENT TO THE TENTH GRADE STUDENTS AT SMK IT BAITUN NUR PUNGGUR**
Student's Name	:	**Marina Anggraini**
Student's Number	:	2023044002
Study Program	:	Master in English Language Teaching
Department	:	Language and Arts Education
Faculty	:	Teacher Training and Education

APPROVED BY

Advisory Committee

Advisor	Co-Advisor
Dr. Ari Nurweni, M.A.	**Dr. Muhammad Sukirlan, M.A.**
NIP 19630302 198703 2 001	NIP 19641212 199003 1 003

Chairperson of Department Language and Arts Education	The Chairperson of Master in English Language Teaching
Dr. Nurlaksana Eko Rusminto, M.Pd.	**Prof. Dr. Flora, M.Pd.**
NIP 19640106 198803 1 001	NIP 19600713 198603 2 001

ADMITTED BY

1. Examination Committee

Chairperson : **Dr. Ari Nurweni, M.A.** .....

Secretary : **Dr. Muhammad Sukirlan, M.A.** .....

Examiners : **1. Prof. Dr. Cucu Sutarsyah, M.A.** .....

2. Prof. Dr. Flora, M.Pd. .....

2. Dean of Teacher Training and Education Faculty

Prof. Dr. Sunyono, M.Si.
NIP 19651230 199111 1 001

3. Director of Postgraduate Program

Prof. Dr. Ir. Ahmad Saudi Samosir, S.T., M.T.
NIP 19710415 199803 1 005

4. Graduated on : **January 18th, 2023**

LEMBAR PERNYATAAN

Dengan ini saya menyatakan dengan sebenarnya bahwa:

1. Tesis dengan judul "Digital Mind Mapping Technique to Increase the Students' Interest and Vocabulary Achievement to the Tenth Grade Students at SMK IT Baitun Nur Punggur" adalah hasil karya saya sendiri dan saya tidak melakukan penjiplakan atau pengutipan atas karya penulis lain dengan cara tidak sesuai tata cara etika ilmiah yang berlaku dalam masyarakat akademik atau yang disebut plagiatisme.
2. Hal intelektual atas karya ilmiah ini disertakan sepenuhnya kepada Universitas Lampung.

Atas pernyataan ini apabila dikemudian hari ditemukan adanya ketidakbenaran, saya bersedia menanggung akibat dan sanksi yang diberikan kepada saya, saya bersedia dan sanggup dituntut sesuai hukum yang berlaku.

Bandar Lampung, 20 Maret 2023

g membuat pernyataan,

Marina Anggraini

NPM 2023044002

CURRICULUM VITAE

The writer's name is Marina Anggraini. She was born on August 14th, 1996 in Nunggal Rejo. She is the first child of Madian (the late) and Daryanti, S.Pd. She has one sister named Resti Amalia.

She spent her childhood in TK Dharma Wanita Pratama Mandira, Pematang Panggang and then continued her study in SDN 1 Pratama Mandira, Pematang Panggang in 2003. In 2008, she continued her study in SMP Bumi Pratama Mandira, Pematang Panggang and graduated in 2011. In the same year, she continued her higher education in MAN 1 Metro Lampung Timur and graduated in 2014. In 2014, she continued her study in IAIN (State Islamic Institute) of Metro and took English Education Study Program and graduated in 2018. Then, in 2020, she was registered as a student of the Postgraduate Study Program, Department of Language and Arts Education, Teaching and Education Faculty at Lampung University.

DEDICATION

This paper is proudly dedicated to:

My Beloved Parents

Madian and Daryanti, S.Pd.

My Beloved Sister

Resti Amalia

My Almamater, University of Lampung

MOTTO

"Do The Best, Be Good,

Then You Will be The Best"

"Keep Praying, Keep Trying"

ACKNOWLEDGMENTS

Alhamdulillahirobbil ‘alamin, praise is merely to Allah SWT, the most gracious, the most merciful and tremendous that enables the writer to accomplish this thesis, entitled Digital Mind Mapping Technique to Increase the Students’ Interest and Achievement of Vocabulary to the Tenth Grade Students at SMK IT Baitun Nur Punggur. This thesis is submitted as a compulsory fulfillment of the requirements for S-2 Degree at the Language and Arts Education Department of Teacher Training and Education Faculty of University of Lampung.

It is important to be known that this research would never come into existence without any supports, encouragement, and guidance from several generous people. Therefore, the writer would like to express her sincere gratitude and deep respect to Dr. Ari Nurweni, M.A., as her first advisor, for her ideas, revision, and suggestions for the writer during the thesis process. Her appreciation is also due to her second advisor, Dr. Muhammad Sukirlan, M.A., who gave his best valuable input, suggestions, and revision in finishing this research. The writer also would like to express her deep gratitude to the examiners, Prof. Dr. Cucu Sutarsyah, M.A., and Prof. Dr. Flora, M.Pd., who has given suggestions and criticism as well as constructive ideas in improving the content of this thesis. Her grateful appreciation is also extended to Prof. Dr. Flora, M.Pd., as the Head of Master Degree at English

Language Teaching Study Program for patiently giving much time, supports, inputs, and help.

The greatest honor and sincere thanks would be dedicated to her beloved families, her father Madian, her mother Daryanti, S.Pd., and her sister Resti Amalia. It is truly undoubted that loves, cares, motivation, patience, and willingness to wait for her graduation and timeless prayers during days and nights are everything for her. The writer would like to thank all MPBI 2020 friends for sharing and having precious time.

Finally, the writer realizes that this thesis still has some weaknesses. Therefore, criticism and suggestions are invited for its improvement. Hopefully, this thesis can give benefits to the readers and those who want to carry out further research.

Bandar Lampung, Maret 2023
The writer,

Marina Anggraini
NPM. 2023044002

TABLE OF CONTENTS

Page

COVER ..... **i**

ABSTRACT ..... **iii**

APPROVED ..... **iv**

ADMITTED ..... **v**

SURAT PERNYATAAN ..... **vi**

CURRICULUM VITAE ..... **vii**

DEDICATION ..... **viii**

MOTTO ..... **ix**

ACKNOWLEDGEMENTS ..... **x**

TABLE OF CONTENTS ..... **xii**

LIST OF TABLES ..... **xv**

LIST OF APPENDIXES ..... **xvi**

I. INTRODUCTION

1.1 Background of the Problems 1

1.2 Research Questions 6

1.3 Objectives of the Research 6

1.4 Uses of the Research 6

1.5 Scope of the Research 7

1.6 Definitions of Term 7

II. LITERATURE REVIEW

2.1 Review of Previous Research 9

2.2 The Concept of Vocabulary 12

2.2.1 Vocabulary Teaching 14

2.2.2 Types of Vocabulary 16

2.3 The Concept of Mind Mapping Technique 19

2.3.1 The Definition of Mind Mapping 20
2.3.2 The Benefit of Mind Mapping Technique 22
2.3.3 The Steps of Mind Mapping 22
2.3.4 The Advantages of Mind Mapping 23
2.4 The Definition of Digital Mind Mapping 24
2.5 The Concept of Digital Mind Mapping 25
2.6 The Concept of Students' Interest in Learning 27
2.6.1 The Definition of Students' Interest in Learning 27
2.6.2 Indicator of Students' Interest in Learning 29
2.6.3 Efforts to Increase Interest in Learning 30
2.7 Theoretical Assumption 31
2.8 Hypotheses 32

III. RESEARCH METHOD

3.1 Research Design 33
3.2 Population and Sample 34
3.3 Research Instruments 35
3.3.1. Vocabulary Test 35
a. Validity 35
b. Reliability 37
c. Discrimination Power 38
d. Level of Difficulty 39
3.3.2. Questionnaire 40
a. Validity 40
b. Reliability 41
3.4 Data Collecting Technique 42
3.5 Scoring System 43
3.6 Research Procedure 43
3.7 Data Analysis 44
3.7.1. Normality 44
3.7.2. Homogeneity 45
3.7.3. Hypothesis Testing 46
3.7.4. N-Gain Test 47

IV. RESULTS AND DISCUSSION

4.1 Teaching Learning Process 49

4.1.1. Teaching Learning Process in Experimental Class 49

4.1.2. Teaching Learning Process in Control Class.....51

4.2 Result of Pre-test 53

4.2.1. The Result of Pre-test in Experimental Class 53

4.2.2. The Result of Pre-test in Control Class 53

4.3 Result of Post-test 54

4.3.1. The Result of Post-test in Experimental Class 54

4.3.2. The Result of Post-test in Control Class 54

4.4 Result of Pre-test and Post-test in Experimental Class 55

4.5 Result of Pre-test and Post-test in Control Class 56

4.6 Result of Vocabulary Achievement 56

4.7 Result of Questionnaire 57

4.7.1. The Result the Questionnaire before Using Digital Mind Mapping Technique 57

4.7.2. The Result the Questionnaire after Using Digital Mind Mapping Technique 59

4.7.3. The Result of Students' Interest 62

4.8 Discussion 63

4.8.1. The Difference of Students' Vocabulary Achievement between Students who are taught by Using Digital Mind Mapping Technique and Original Mind Mapping Technique ..63

4.8.2. The Increase of Students' Interest in English Vocabulary Learning through Digital Mind Mapping Technique 65

V. CONCLUSION

5.1 Conclusions 67

5.2 Suggestions 68

REFERENCES

APPENDIXES

LIST OF TABLES

Page

Table 3.1. Distribution of the Vocabulary Aspects of Test for Pre-test and Post-test after Validity 37
Table 3.2. The Pre-test Result of Reliability 38
Table 3.3. The Post-test Result of Reliability 38
Table 3.4. Indicators of Students' Interest Questionnaire 40
Table 3.5. The Questionnaire Result of Reliability 41
Table 3.6. Result of the Normality Test 45
Table 3.7. Result of the Homogeneity Test 46
Table 4.1. The Result of Pre-test in Experimental Class 53
Table 4.2. The Result of Pre-test in Control Class 53
Table 4.3. The Result of Post-test in Experimental Class 54
Table 4.4. The Result of Post-test in Control Class 55
Table 4.5. The Result of Pre-test and Post-test in Experimental Class.....55
Table 4.6. The Result of Pre-test and Post-test in Control Class 56
Table 4.7. The Result of the Independent Sample t-test 57
Table 4.8. The Result the Questionnaire before Using Digital Mind Mapping Technique.....58
Table 4.9. The Result the Questionnaire after Using Digital Mind Mapping Technique 60
Table 4.10. The Result of the Questionnaire in the Experimental Class 61
Table 4.11. The Result of the Questionnaire in the Experimental Class 62
Table 4.12. The Result of Students' Interest 62

LIST OF APPENDICES

Page

Appendix 1. The Pre-test Result of Try out Validity 73
Appendix 2. The Post-test Result of Try out Validity 75
Appendix 3. The questionnaire Result of Try out Validity 79
Appendix 4. The Result of Reliability 80
Appendix 5. The Result of Discrimination Power Test 81
Appendix 6. The Result of Level Difficulty Test 83
Appendix 7. The Result of Normality Test 85
Appendix 8. The Result of Homogeneity Test 86
Appendix 9. Independent Group T-Test of Vocabulary Achievement 87
Appendix 10. The Result of Pre Questionnaire Validity 88
Appendix 11. The Result of Post Questionnaire Validity 90
Appendix 12. The Result of Pre Questionnaire Reliability 92
Appendix 13. The Result of Post Questionnaire Reliability 93
Appendix 14. The Result of N-Gain Score in Vocabulary Achievement 94
Appendix 15. The Result of N-Gain Score in Students' Interest 96
Appendix 16. The Result of T-Test (Paired Sample T-test) 98
Appendix 17. Lesson Plan 99
Appendix 18. Items of Test 103
Appendix 19. Questionnaire Sheet 121
Appendix 20. The Result of Answer Sheet 122
Appendix 21. The Result of Questionnaire Sheet.....126
Appendix 22. Documentations 127

I. INTRODUCTION

This chapter discusses the background of the problems, research questions, objectives of the research, research uses, research scopes, and definitions of term. The explanation of the subtopics are presented as follows:

1.1. Background of the Problems

English is one of the International languages spread across the world. This language is very popular in many countries because the people think that English facilitates them communicate with people from other countries. It plays very important role in transferring ideas and it is also applied by individuals in the entire world. As an international language, English has many effects in connecting between human beings' life and some kinds of ways. At least, English may be considered as the second language and taught in each level in formal school even in university. As the language learners, it can be criticized to emerge and produce the language well. There are four components of English skill. There are listening, speaking, reading, and writing.

Vocabulary is the basis of all skills in English. All skills require the mastery of vocabularies. So, to increase the four skills, we must possess substantial amount of vocabulary. As Mukoroli (2011) defined, "vocabulary as the entire stock of words belonging to a branch of knowledge or known by an individual." Having

substantial mastery of vocabulary, contributes significantly to the achievement of the subjects in the class. Mastering vocabulary helps learners understand reading materials, understand other speaking, giving responses, listening and writing materials. In other words, students can communicate fluently. No one can speak English if they have limited vocabulary and without a proportional amount of vocabulary any one will get trouble in the process of learning English.

According to Syawal and Zulfiqar (2017), learning English as a foreign language is assumed to be learned from an early age but it is believed that there will be several obstacles faced by students at that time, which has an impact on the not yet optimal mastery of vocabulary, especially in mastering the pronunciation of expressions in foreign languages. Meanwhile, the success of EFL learners is largely determined by vocabulary mastery. Hornby (1995) considered that vocabulary is the total number of words in a language, all words known by a person or used in a particular book, subject, etc. and a list of words with their meanings. In addition, several scholars who have discussed their attention to vocabulary (Schmitt & McCarthy, 1997; Ur, 1999; Nation, 2001, etc.) among these scholars seem to have similarities in defining vocabulary. They agree that English vocabulary is a number of English words belonging to EFL learners that they use as language elements to ensure their communication process.

According to Nation (2006), one way to determine vocabulary learning objectives in an English learning program is to look at the vocabulary size of native speakers. It is estimated that educated native English speakers know about 20.000 word families, or about 32.000 vocabulary items, excluding proper names. Ana Siyanova argued that this figure is a very ambitious and somewhat unrealistic goal

for any L2 learning program. Thus, it has been proposed that the vocabulary size of highly educated non-native English speakers is around 8000–9000 word families (Nation, 2006) – less than half of that of native English speakers. Nurweni and Read (1999) investigated the English vocabulary knowledge of 324 first-year students in the context of Indonesian EFL. They found that after six years of formal English teaching, on average, students knew 1,226 English words (986 words, or just under 50%, from the Public Service List and 240 words, or 30%, from University Glossary. Furthermore, Webb and Chang (2012) who investigated the vocabulary knowledge of 166 EFL students in Taiwan over a five-year period. They measure students' vocabulary learning progress using the Vocabulary Level Test. The authors found that those with less knowledge of English learned significantly fewer words (some learned as few as 18 words in a year), while students with greater exposure learned as many as 430 words in one year. Perhaps, most disappointingly, the study revealed that after nine years of teaching English, less than half of all learners master the words in the first 1000 word families. Even more disappointing, only 16% of students mastered the words in the second 1000 words group. In general, studies have shown that English vocabulary knowledge and learning rate in the EFL context is far from what is considered mastering. Given that L2 English learners are estimated to need 8000–9000 words (Nation, 2006).

According Nurweni (2017), students have different perceptions when following text-based teaching. Students' perceptions are directed to the students themselves, their teachers, other students, class management. Some students have positive perceptions, some have negative perceptions, some have mixed and neutral perceptions. The reason for their positive perception is because of the opportunity

to speak English, hear English from their friends and teachers as well as, gain new knowledge and vocabulary from the text discussed. They have a negative perception of task-based learning because they are not confident in speaking, cannot speak, and cannot understand the speech made by their teacher and other students, and have difficulty following the lesson, and cannot focus on the lesson because other students make a fuss. She finds that the students had problems when joining the text-based teaching. The problems are when speaking in public, and concerning with listening problems. The students complained that they did not understand what the teacher and the other students said. She also shows that they were not used to listening to English speech, and as shown before their English vocabulary size is not considered high on average. On average they knew 61%, 55%, 38%, 38%, and 16% of the 2000, 3000, 5000, UWL, and 10000 words level respectively even though there were some of the students whose vocabulary size was very good, that is, they had mastered vocabulary level 2000, 3000, 5000, and the UWL.

The importance of learning vocabulary encourages researcher to find effective ways of mastering vocabulary in learning English. Many students think that to be able to speak English they must know the meaning and they have difficulty memorizing vocabulary. These facts make their interest in English even less. Teaching vocabulary is a challenge for teachers to help students in mastering vocabulary so they are able to develop their English skills. As Singer et al (2003: 39) stated, "Teaching is helping learners to acquire new knowledge or skills. Teaching consists, mainly, of telling, showing, guiding the learner in performance tasks, and then measuring the results.” So, teachers need to know what things they can use to help their students develop vocabulary. Teaching English vocabulary

requires a variety of learning methods that can help students be more attractive in receiving lessons in class. In other words, learning variations can prevent students from boredom and are able to create students' interest in English vocabulary learning.

This study used Mind Mapping in teaching English to increase students' interest in vocabulary learning and help their mastery. According to Buzan (2014) cited by Sahrawi (2013), "mind mapping is an easy way to place information into the brain and extract information from the brain. Mind Mapping is a creative and effective way of writing that will map your mind in a simple way." Buzan also said that it was a creative, effective, and simple note-taking method. Mind mapping is very useful for students to memorize vocabulary. Therefore, this method is expected to stimulate student interest. Al-Jarf (2011) cited by Heidari and Kaimi (2015), defines the concept of mind map as follows: A mind map is a graphic organizer in which the main categories radiate from a central idea and subcategories are represented as branches of a larger branch. It is a visual tool that can be used to generate ideas, take notes, organize thoughts, and develop concepts.

In this study, the researcher modified the original mind mapping into a digital mind map to increase students' interest and achievement in English vocabulary. Digital technology is an electronic tool, system, device, and resource that generates, stores, or processes data. So, digital as a place to apply mind mapping technique. Meanwhile, mind mapping made it easier to arrange the appropriate words so the words will be more organized. It will help students acquire new words more easily and improve their vocabulary performance.

1.2. Research Questions

Based on the background above, the research questions of this study can be formulated as the following here:

1. Is there a significant difference of students' vocabulary achievement between students who are taught by using digital mind mapping technique and original mind mapping technique?
2. Is there an increase of students' interest in English vocabulary learning through digital mind mapping technique?

1.3. Objectives of the Research

In line with the research questions of the problem above, the objectives of the research are to find out significant difference of students' vocabulary achievement between students who are taught by using digital mind mapping technique and original mind mapping technique and to increase students' interest in English vocabulary learning through digital mind mapping technique.

1.4. Uses of the Research

This study was expected to have some benefits both theoretically and practically as follows:

1. Theoretically, it can support digital mind mapping technique theories that can be used in teaching English, especially in students' achievement of vocabulary learning.
2. Practically, this can guide the teacher that using digital mind mapping technique is useful in increasing students' interest in English vocabulary.

1.5. Scope of the Research

This research was limited to digital mind mapping technique in teaching and increasing students' achievement of vocabulary. In this study, researcher as teacher used tests and questionnaires to obtain data. This quantitative research was focused on digital mind mapping as a technique to find out whether the modification is able to help increasing students' interest in English vocabulary learning and students' achievement of vocabulary.

1.6. Definitions of Term

There are some terms used by the researcher to make clear and to avoid misunderstanding. They are clarified as follows:

1. Vocabulary

   The general definition of vocabulary as knowledge of words and their meanings. Vocabulary can also be defined as a list of words arranged alphabetically with their definitions.

2. Mind Mapping Technique

   Mind mapping is a powerful graphic technique, which provides a universal key to unlock the potential of brain. So, it can facilitate the students to develop ideas and concepts, it could help the students to write more organized important points, and grow critical thinking.

3. Students' Interest

   Students' interest is students' awareness, desire and attention to material that is associated with a strong feeling to understand it.

4. Digital Mind Mapping

   Digital mind mapping is a learning technique that combines original mind mapping with digital media such as computers or laptops in learning.

II. LITERATURE REVIEW

Literature review presents the theories related to the research, such as review of the previous research, the concept of vocabulary, mind mapping technique, digital mind mapping technique, the concept of students' interest in learning, theoretical assumption, and hypothesis.

2.1. Review of Previous Research

The researcher realizes that this research is not the first or the newest study on mind mapping. There are several researchers who had already conducted their studies on this issue. The first research has been conducted by Heidari and Karimi (2015). The research about "The Effect of Mind Mapping on Vocabulary Learning and Retention". The researchers have explored the effects of mind mapping on vocabulary learning and retention. they randomly assigned participants and divided them into two groups, experimental (mind mapping group) and control. Before the treatment, the researchers gave a pre-test of vocabulary given to the group. For the experimental group, vocabulary was taught with various mind mapping options such as colors, symbols, keywords, designs, pictures, and pieces. Meanwhile, the control group was taught through traditional techniques such as translating to L1 and providing synonyms and antonyms. Then, the researchers gave the posttest they

had made to the group. After that, the researchers found several pedagogical implications for language learners, language teachers, and syllabus designers. They argue it provides some useful insights for the learner about possible alternative ways to learn vocabulary. Then, language teachers need to gain a better understanding of alternative vocabulary teaching techniques that can facilitate long-term retention and are able to influence students' minds. Furthermore, material design is needed to present vocabulary items through techniques that can encourage students' vocabulary retention.

The second research has been conducted by Sudibyo (2022). The research about "The Use of Digital Mind Mapping to Improve EFL Student's Ability In Writing Descriptive Paragraph" This study aimed to see if there is an improvement in writing descriptive paragraphs taught before and after using digital mind mapping. This study used a quantitative approach, with a pre-experimental research design. The test was an instrument used in research, there are two types of tests, namely pretest and posttest. The pretest is a measure of some of the attributes or characteristics that are assessed in the experiment before the group receives the treatment, and the posttest is a measure of some of the qualities or aspects considered for the experimental participants after the treatment. The subjects of the research were class VIII students, totaling 20 students in one of the junior high schools in Madiun. The reason the researcher conducted research at the school is because the school has used technology during the teaching and learning process. So, it strongly supported the use of digital mind mapping in English lessons. Based on the results, the post-test average value was higher than the pre-test average measured using Statistics 18 software. The two-way significance shown is 0.000,

which means that the significance level of the results was at a sufficient standard level (0.005). The alternative hypothesis (Ha) is accepted and the null hypothesis (Ho) is rejected. Shows that the use of digital mind mapping is effective in improving students' descriptive paragraph writing skills.

The last of previous study entitled "The Students' Interest on the Use of Vocabulary Self Collection Strategy in Learning English Vocabulary" has been done by Ali (2017). The study aimed to investigate and describe the students' perceptions on the use of vocabulary self-collection strategy in learning English vocabulary. The researcher used a descriptive research model consisting of 37 subjects. Data were collected using a questionnaire, which is a rating scale distributed after 8 treatment meetings, and includes 15 positives and closed statements about the use of vocabulary self-collecting strategy in vocabulary learning in the classroom. The researcher has calculated the questionnaire data as a percentage of each answer. He used a formula where the number of frequencies were multiplied by 100% then divided by the number of respondents. This study obtained the highest average score of 56.6% students agree, 35.5% students strongly agree, 6.7% students are unsure, 0.7% students disagree, and 0.2% strongly disagree to statements in the questionnaire. Based on the results, researcher assumed that vocabulary self-collection strategy is one of interesting strategies in learning vocabulary.

Based on the previous studies above which is the background of this research about "Digital Mind Mapping Technique to Increase the Students' Interest and Achievement of Vocabulary". The objectives of the research are to find out digital mind mapping method able to increase students' interest in English

vocabulary and to find out digital mind mapping method to increase students' achievement of vocabulary.

2.2 The Concept of Vocabulary

Vocabulary is basic skills in learning and mastering English. According to Tnanh Huyen & Thi Thu Nga (2003) cited by Asyiah (2017), vocabulary as a language element that links the four language skills including listening, speaking, reading, and writing in learning a foreign language. Hornby (1995) defined vocabulary in three senses that cover a) the total number of the words which make up a language; b) all the words known to a person or used in a particular book, subject, etc; and c) a list of words with their meaning. The importance of vocabulary was also noted by Richards and Renandya (2002) believing that vocabulary plays crucial part in one's foreign language learning and language proficiency that can affect how well learners speak, listen, read and write. Furthermore, Kim and Kim (2012: 4) claimed, "vocabulary is the base of communication in that language. Therefore, it is critical to try out various and different teaching style that cheers students to acquire vocabulary easily without negative emotion about it."

As Ghazal (2007: 84) states that vocabulary learning is one of the major challenges foreign language learners face during the process of learning a language. He also said that the central of language is vocabulary. Having adequate vocabulary helps person to express in composition vividly, precisely, and without repeating the compositions. One cannot communicate each other without knowing words meaning. Words are used to express ideas, emotions and desires to other people. In short, vocabularies are tools of effective communication. Vocabulary help people

to communicate and understand among others. According to Mukoroli (2011: 6), “vocabulary is a set of words that are the basic building blocks used in the generation and understanding of sentences”. However, other expert Akbari (2008: 54), “without vocabulary speakers cannot convey meaning and communicate with each other in a particular language.”

There are several aspects of vocabulary that should be mastered by students as proposed by Ur (1996: 60-62) cited by Yugafiati and Priscila (2019). They are as follows:

1. Pronunciation and Spelling; the students have to know what a word sounds like (its pronoun) and what it looks like (its spelling).
2. Grammar; the grammatical rules should be understood by student when they learn a set of new words.
3. Meaning; the meaning of words is primarily what is refers to in the real world, its denotation. A less obvious component of the meaning of an item it is connotation: the association, or positive or negative feeling it evokes, which may not be indicated in a dictionary definition. A more sub aspect of meaning that often needs to be taught is whether particular item is the appropriate one to use in a certain context or not.

From several definitions above, it can be understood that vocabulary is one of the items that have to be mastered first by the students in learning English, because no one can speak English if they have limited vocabulary and without a proportional amount of vocabulary any one will get trouble in the process of learning English.

2.2.1 Vocabulary Teaching

Teaching refers to a job or profession of someone who educates. Teaching means involving and directing students in problem solving. Meanwhile, in a general sense, teaching is a system of actions intended to encourage learning. So, teaching is actually an act of a teacher himself but the way in teaching from one teacher to another is certainly different. It depends on the knowledge and pedagogical skills of the teacher.

Vocabulary is knowledge of words and their meanings. Stahl (2005) said that vocabulary knowledge is knowledge of a word, not only talking about the meaning of the word, but also talking about how the word fits into the context of a sentence. According to Graves (2000), there are four components of an effective vocabulary program:

1. Extensive or extensive self-reading to expand word knowledge,
2. Instructions in certain words to improve understanding of texts containing those words,
3. Instruction in independent word learning strategies, and
4. Word awareness and word game activities to motivate and enhance learning.

Richards (1976) and Nation (2001) made a list of things that learners need to know about a word. This includes:

1. What is the meaning of the words.
2. Oral and written form.
3. What "word parts" does it have (e.g., each prefix, suffix, and "root" form).

4. Its grammatical behavior (e.g., word class, typical grammatical pattern in which it occurs).
5. Its collocations.
6. Its list.
7. What associations does it have (for example, words that are similar or opposite meaning).
8. What connotations it has.
9. Its frequency.

In teaching vocabulary, teachers also need to have knowledge of how many words native speakers know to assess the number of words students need to learn. According to Carten, (2007) cited by Nation (2006), native speakers vary between 12,000 and 20,000 depending on their level of education. University-level native speakers know about 20,000 word families, excluding phrases and expressions. Meanwhile, current student dictionaries such as the Cambridge Dictionary of American English include more than 40,000 frequently used words and phrases. This figure is a challenge for most English learners, and even for native speakers. He also explains that another way to determine the number of words a learner need is to count how many different words are used in the average spoken or written text. Because some high-frequency words are repeated, it is said that the learner can understand most of the text with a relatively small vocabulary. For example, a student who knows 2,000 words most frequently should be able to understand nearly 80 percent of the words in the text on average, and knowledge of 5,000 words increases the learner's comprehension to 88.7 percent. For spoken language, about 1,800 words make up more than 80 percent of the spoken corpus.

He also concluded that there were two lessons to be learned. First, it is important to identify what the 2,000 to 5,000 vocabulary items are most often and to give them priority in teaching. Second, students need to be independent learners. It is impossible for teachers to discuss in class a large number of vocabulary items that students need to use or understand. However, teachers can find effective vocabulary learning strategies to help students in their learning.

In conclusion, teaching vocabulary is the teacher's effort to help students' master vocabulary which includes pronunciation, writing, and meaning. It must be in accordance with the abilities of students. This is the reason why teachers need to find suitable teaching techniques and strategies.

2.2.2 Types of Vocabulary

Vocabulary is words that have meaning. Word is the smallest part of language that has meaning and class of words. It has several grouped forms such as nouns, verbs, adjectives, and adverbs.

1. Nouns

   Nouns are words that identify or name people, places, or things. The words like cat, book, table, girl, and plane are all nouns. There are many kinds of nouns, including:

   a. Common and Proper Nouns

      Common noun is a noun that identifies a common person, place, or thing. They mention or identify what is common among others. For examples: boy, girl, city, country, chair, table, etc.

Proper nouns are used to identify people, places, or things that are truly unique and they are signified by capital letters. For example: Indonesia, Justin, Vaseline, Pepsi, etc.

b. Noun of Address

Nouns of address are used in direct speech to identify the person or group being directly spoken to, or to get that person's attention. For example: "Can I have some money, **Mom**?"

"Sorry, **Mr. President**, I didn't see you there."

c. Concrete and Abstract Nouns

Concrete nouns name people, places, animals, or things that are physically tangible that is, they can be seen or touched, or have some physical properties. For example: house, cake, book, rock, people, etc.

Abstract nouns name intangible things, such as concepts, ideas, feelings, characteristics, attributes, etc. For example: love, hate, happiness, sadness, spirit, emotion, etc.

d. Countable and Uncountable Nouns

Countable nouns (also known as count nouns) are nouns that can be considered as individual, separable items, which means that we are able to count them with numbers one, two, five, 15, 100, and so on. We can also use them with the indefinite articles a and an (which signify a single person or thing) or with the plural form of the noun. For Example:

Singular: car, potato, army, knife, etc.

Plural: cars, potatoes, armies, knives, etc.

Uncountable nouns (also known as non-count or mass nouns), which cannot be separated and counted as individual units or elements. Uncountable nouns cannot take an indefinite article (a/an), nor can they be made plural. For example: tea, coffee, powder, water, sugar, etc.

e. Collective nouns

Collective nouns are nouns that refer to a collection or group of multiple people, animals, or things. However, even though collective nouns refer to multiple individuals, they still function as singular nouns in a sentence. This is because they still are technically referring to one thing: the group as a whole. For example: group, team, set, organization, etc.

f. Attributive Nouns (Noun Adjuncts)

Attributive nouns, also called noun adjuncts, are nouns that are used to modify other nouns. For examples: toy soldier, hair band, Teddy bear, etc.

g. Compound Nouns

Compound noun is a noun composed of two or more words working together as a single unit to name a person, place, or thing. For examples:

dinning room, backpack, policeman, etc.

h. Nominalization (Creating Nouns)

Nominalization refers to the creation of a noun from verbs or adjectives. When nouns are created from other parts of speech, it is usually through the use of suffixes. For example: act**or**, happi**ness**, difficult**y**, lead**er**, etc.

2. Verbs

Verbs are words that describe the actions or states of being of people, animals, places, or things. Verbs function as the root of what's called the predicate, which

is required (along with a subject) to form a complete sentence; therefore, every sentence must include at least one verb. Verbs include action words like run, walk, write, or sing, as well as words describing states of being, such as be, seem, feel, or sound.

3. Adjectives

   Adjectives are words that modify (add description to) nouns and (occasionally) pronouns. They can be a part of either the subject or the predicate. Common adjectives are red, blue, fast, slow, big, tall, and wide.

4. Adverbs

   Adverbs are words that modify verbs, adjectives, other adverbs, or even entire clauses. Depending on what they modify (and how), adverbs can appear anywhere in the sentence. Adverbs are commonly formed from adjectives by adding "-ly" to the end, as in slowly, quickly, widely, beautifully, or commonly. Adverb of place like in the class, in the café, in the market, etc. Adverb of time like on Monday, at 05.00 o'clock, today, yesterday, tomorrow.

Based on the explanation above, this type of vocabulary is used when collecting vocabulary in the application of digital mind mapping techniques. Understanding part of speech knowledge can help students in preparation of words in a sentence.

2.3 The Concept of Mind Mapping Technique

Mind mapping introduced and developed in 1960s by Tony Buzan, an English psychologist. Mind mapping is a diagram that has functions as a way to

organize ideas and represent words, tasks, or another links that arranged a central keyword by branches and typically it contains words, colors, short phrase and picture. The definition of Mind Mapping will be explained as follows:

2.3.1 The Definition of Mind Mapping

According to Buzan (2009:4) cited by Sahrawi (2013), "mind mapping is an easy way to place information to brain and take information out from brain. Mind Mapping is creative and effective way to write and will map your mind by a simple way." Mind mapping works by taking information from several sources and then displaying information as keywords in a bright colorful manner. A key, central idea is placed in the center of a page, and is often surrounded by a memorable picture. When students use mind mapping in daily basic learning, they will find that their life becomes more productive, fulfilled, and successful on every subject. There are no limits to the number of thoughts, ideas and connections that brain can make, which means that there are no limits to the different ways can use Mind mapping to help.

According to Al-Jarf (2011: 4), "a mind mapping is a graphic organizer in which the major categories radiate from a central idea and sub-categories are represented as branches of larger branches." Teachers can use it to enhance learning. It is helpful for visual learners as an illustrative tool that assists with managing thought, directing learning, and make connections. It enables students to better organize, prioritize, and integrate material presented in a course.

The mind mapping works in harmony with the brain's natural desire for completion or wholeness replenishing our natural desire for learning. Mind mapping is potential infinite to express of the brain, and the human brain can make an infinite number of associations. However, other expert Jones et al (2012: 2) cited by Sahrawi (2013) stated, "mind mapping helps students learn information by forcing them to organize it and add images and color to it. It allows students to create a visual image to enhance their learning."

There are three ways that mind maps can help in teaching, such as writing notes, updating notes, and reminding. They explain before the initial teaching session of a new topic, the mind map will allow notes to be made of key text and paper very quickly. After reading the key information, students summarized all that information on multiple sheets of paper instead of copying paragraphs of text verbatim. Taking this information from multiple sources and condensing it into several pages of main topics, and keywords, allows for consolidation of work. Using both sides of the brain and mapping information allows students to see how information is related. Conversely, if students are given a topic with several main headings to follow, they can use each of these main headings as a central idea, allowing them to map out the information, ensuring all the key information is present.

Based on the definitions above, Mind Mapping is the process of categorizing sub topics using key words from the main topic to facilitate understanding of the material. In general, humans pay more attention to beautiful visuals and organized forms. Therefore, the use of appropriate colors, images and groupings are also needed in long-term memorization.

2.3.2 The Benefit of Mind Mapping Technique

Some benefits of using mind mapping are explained by Michalko (2011) cited by Wahyu (2019), mind mapping will help us in some cases, such as:

1. Activates the whole brain,
2. Allows focus on the subject,
3. Gives a clear picture of both the details and the big picture and
4. Requires concentrating on the subject, which helps get the information about it transferred from short-term memory to long-term memory.

By using mind mapping technique, it can open up students' creativity which will make them easier to find ideas to be expressed in writing. It also gives the students a complete picture of what they are going to write which results a better writing organization.

2.3.3 The Steps of Mind Mapping

According to Buzan (2003: 10) cited by Sillahi (2016), applying mind mapping is easy. There are five steps of mind map as follows:

1. Use a blank sheet of unlined paper and some colored pens. Make sure the paper is placed sideways.
2. Draw a picture in the middle of the page that sums up your main subject. The picture represents your main topic.
3. Draw some thick curved, connected lines coming away from the picture in the middle of the page, one for each of the main ideas you have about your subject. The central branches represent your main sub topic.

4. Name each of these ideas, then if you want draw a little picture of each this uses both sides of the brain. Words are underlined throughout a mind map. This is because they are keywords and the underlining as in normal notes, shows their importance.
5. From each of these ideas, you can draw other connected lines spreading like the branches of a tree and your thoughts on each of these ideas. These additional branches represent the details.

2.3.4 The Advantages of Mind Mapping

There are nine advantages of applying mind map in learning process as proposed by Tee et al. (2014) as follows:

1. Preparing notes from textbooks;
2. The Buzan mind map principles are easy and interesting to follow;
3. It is economical;
4. Buzan mind map involve the use of both left and right brain;
5. It is among the easiest and most famous thinking tool;
6. students are able to memorize better;
7. Students can play their daily routine with mind map;
8. Revision is quick and effective;
9. Students will appreciate own product (mind map);
10. It increases the creativity;
11. Parents and teachers are able to monitor the students' performance.

2.4 The Definition of Digital Mind Mapping

In the current era, technology has many roles in helping every human activity and their work. It is because of the rapid development of technology. Technology also has a role in the world of education, one of which is digital technology. According to Nong (2009) cited by Sudibyo (2022), digital mind mapping is a tool for students to conceptualize knowledge, brainstorm, categorize ideas, construct knowledge, and solve problems more logically. It is a tool to activate students, stimulate creativity, collaboration, and increase their confidence in contributing ideas in class.

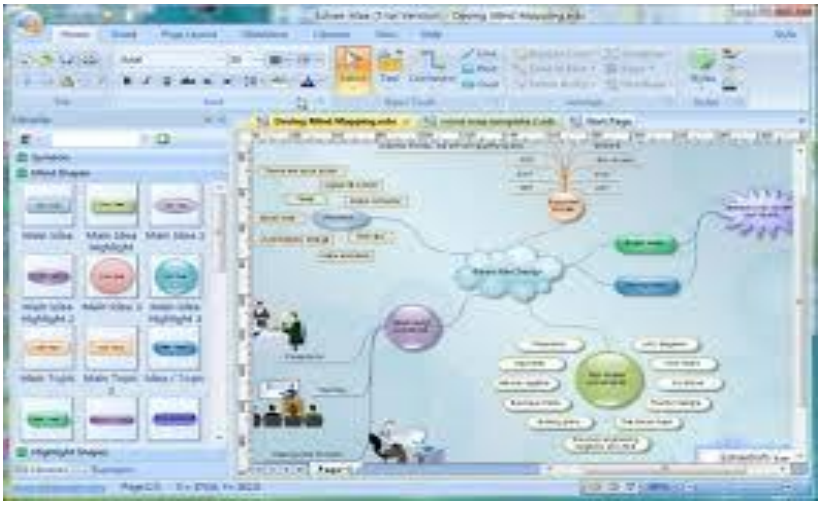
According to Awad and Hegazy (2008) cited by Sudibyo (2022), there are several benefits of digital mind mapping as follows:

1. Digital mind mapping has a much more consistent appearance and has the potential to appear much cleaner.
2. The use of a keyboard and mouse as input devices allows students to navigate through digital mind maps more easily and more quickly than paper mind maps,
3. Digital mind maps offer a dynamic distributed learning environment, which expands the physical learning space and gives students the means to develop and organize their ideas using higher order thinking skills and enhance their understanding.

Digital mind mapping can be saved as files, the file can be shared among learners and bits of it may be copied for others maps. Further digital maps enable students to include hyperlinks and email links to their maps. Students can also attach and view video clip, animated pictures and images (Sudibyo, 2022). The potential

of digital technology to improve student learning is available (Henderson, Selwyn and Aston, 2015). It can happen because of the ease of accessing the internet. This is the example of Digital Mind Mapping:

Figure 1. Digital Mind Mapping



In addition, technology facilities in education almost all schools have them. For example, computers and internet networks. There are also student personal facilities such as hand phone and laptop. So, digital technology has made it easy to apply it in teaching and learning activities.

2.5 The Concept of Digital Mind Mapping

In the teaching and learning process required a conducive atmosphere in order to achieve learning objectives. In the classroom, not all students are asked to pay attention to the teacher's explanation with just orders. They are more interested in chatting with their friends or even lowering their heads because they are sleepy. Therefore, as a teacher must create an effort to attract the attention of students.

Teachers must have many strategies to increase students' interest in learning. It can be done with various learning methods and techniques.

In this study, the researcher focused on using the mind mapping technique which was modified into digital mind mapping to increase students' interest and achievement in vocabulary. The application of this method was done in groups. Digital in applying the mind mapping technique here is as a learning media. So, the original mind mapping technique was done manually while the digital mind mapping technique used a computer or laptop. There is main part as a topic and branches like the original outline of a mind map. Furthermore, the contents of the branches are materials of the topic. This research combined these two concepts. So, that is how the researcher applied digital mind mapping technique. The following is the teaching procedures of digital mind mapping technique:

1. Students are divided into several small groups and each group uses one computer.
2. Use a blank Microsoft Word/Power Point. Make sure the paper orientation is landscape.
3. Make a picture containing the word in the middle that summarizes the main subject. Draw a picture that represents the main topic.
4. Draw several thick interconnected curved lines that move away from the image in the center of the page, one for each main idea students have about the subject. The central branch represents its main sub-topics.
5. List each of these ideas, then if students want to draw a small picture of each using both sides of the brain. Words are underlined throughout the mind map.

This is done because they are keywords and underscores as in regular notes, which shows their importance.

6. From each of these ideas, students can draw other connected lines that spread like tree branches and students' thoughts on each of these ideas. This additional branch represents the details.
7. After that, each group was asked to make a simple descriptive text with the previously created sub-topics through mind mapping technique using Microsoft Word/Power Point media.
8. Finally, each group is asked to present the results they have made in front of the class.

2.6 The Concept of Students' Interest in Learning

This section describes the theory of student interest in learning which includes definitions of student interest according to experts, indicators of student interest in learning, and efforts to increase interest in learning.

2.6.1 The Definition of Students' Interest in Learning

According to Tambunan (2018), interest is a person's awareness, desire and attention to a particular object that is associated with it and it is associated with strong feelings. Interest is an interest in an activity carried out through active participation. He said that a teacher as a motivator has a role in providing stimulation and encouragement to increase student interest in learning. He also wrote down several characteristics of students who already have an interest in learning, namely they prefer and enjoy learning, they are active in activities both in

class and outside of class, they are also more interested in solving problems related to the subjects they enjoy, and have great attention in the learning.

In Oxford Advance Learner's Dictionary, the word of interest can be defined in many meanings, as follow: a) desire to learn or know about something more. b) quality that attracts attention or curiosity. c) activity or subject which you enjoy doing or learning. According to other experts, such as Klassen (2014) cited by Ricardo and Meilani (2017) who defined learning interest as a desire and intentional involvement in cognitive activities that play an important part in the learning process, determine what part is chosen to learn, and how well a learner learns the information provided. Furthermore, Marimba (1980, in Kpolovie, Joe, & Okoto, 2014) argues that interest in learning is the tendency of the soul of students to get something because they have felt interesting things in learning and are generally characterized by feelings of pleasure.

According to Sari (2009) cited by Ricardo and Meilani (2017), the effectiveness of learning behavior is influenced by motivation, interest, effort, and evaluation. So, interest in learning can make a major contribution to the success of students in understanding a material. Sardiman (2011) also believes that the learning process will run smoothly if it is accompanied by interest. This is also reinforced by Burke's (1995) statement about interest in learning that is the main factor in determining student learning activities.

Based on the definitions above, it can be concluded that students' learning interest is a form of strong desire for student that arise accompanied by feelings of pleasure in learning something as a whole to get perfection. For example, someone

who is interested in painting. They will study it until they really master the art and can create a work of value. Likewise, interest in learning language. They have to master the vocabularies until they can speak the language and also master the original accent to sound almost perfect.

2.6.2 Indicator of Students' Interest in Learning

Silvia (2008) cited by Triarisanti and Purnawarman (2019) argued that high interest in learning is expected to help students get high learning outcomes. She also adds that there are several indicators that show student interest in learning, including interest in reading, attention in learning, student activity in learning, and knowledge.

Hidi & Renninger (2006) suggest that high learning interest greatly affects the way students learn, for example a student who wants to get good learning outcomes, will study seriously and focus on the lesson. Thus, it can affect the process of successful teaching and learning activities. He also added that in essence, interest in learning causes direct attention, facilitates concentration, prevents distractions, strengthens attachment to subject matter, and reduces learning boredom.

According to Safari (2003) cited by Ricardo and Meilani (2017), there are several indicators used to measure student interest in learning, namely attention, interest, pleasure, and involvement. Meanwhile, according to Slameto (2010) students who have an interest in learning are usually characterized by a feeling of pleasure to learn, participation or involvement, and an attentive attitude. In addition,

Dan & Tod (2014) cited by Ricardo and Meilani (2017) revealed that students who have an interest in learning have their own feelings such as:

1. Positive feelings when learning,
2. there is enjoyment/comfort when learning, and
3. the ability and capacity to make decisions related to their learning.

Ricardo and Melina (2017) managed to explain as a whole that indicators of interest in learning include feelings of interest and pleasure in learning, active participation, tendency to pay attention and great concentration, positive feelings and increased willingness to learn, comfort. while learning, and has the capacity to make decisions related to the learning process he is undergoing.

Based on the explanations of the experts above, it can be concluded that students who have a feeling of pleasure and comfortable to learn, pay attention to learn, have a good interest in learning, participate or have involvement in the learning process, and gain knowledge are indicators that will be used to identify students' interest in learning.

2.6.3 Efforts to Increase Interest in Learning

Tambunan (2017) explained that to increase students' interest in learning there are several things that teachers can do, namely conveying learning objectives that are in accordance with the intellectual level of students, because students' understanding of learning objectives can generate interest in learning. Furthermore, explaining the subject matter needs to be done with a good approach, because many lessons are not successful because the learning process is not good. Teachers can design better learning because learning design affects the progress of student achievement. Another thing that is important for students' interest in learning is that

teachers must make students enjoy their learning because fun is important in learning and there is a relationship between learning pleasure and learning achievement.

Meanwhile, according to Renninger (2007) and Wellington (1990), there are several ways to increase student interest in learning:

1. Building an informal learning environment.
2. Creating an active learning environment.
3. Implementing cooperative learning.

Another opinion was conveyed by de Vargas, et al., (2016) who said that the use of modern learning methodologies in providing material can stimulate better interest in learning.

Based on the explanation above, a teacher has an important role in fostering students' interest in learning through teacher creativity in creating an atmosphere that is interesting, active, and involves students in the process of teaching and learning activities. These are the main factors that underline this research. In this study, the authors hope that digital mind mapping can increase students' interest in learning English.

2.7 Theoretical Assumption

Vocabulary is a basic skill in mastering several other English skills, such as writing, reading, listening, and speaking. In this case, students' interest in learning English is equally important in mastering English skills, especially vocabulary. Lack of student interest can affect the level of understanding that

students will receive. Therefore, the teacher's role in increasing students' interest in learning English is very necessary.

This research applied a learning method, namely the mind mapping technique. Mind mapping is a technique of presenting a learning framework, usually having a big theme placed in the middle as the main theme and branches containing important points from the material. Generally, this technique provides attractive visual with many colors so the students are interested in paying attention.

In this case, researcher needs a learning technique that can increase students' interest and achievement in vocabulary mastery. The researcher modified mind mapping into digital mind mapping. It can also be applied by the teacher to make the class active. In this way, the teacher can involve students in the process of learning English because students need something fun and easy to get new vocabularies.

2.8 Hypotheses

Based on the theoretical assumption above, the researcher formulated the following hypothesis:

1. There is a significant difference of students' vocabulary achievement between students who are taught by using digital mind mapping technique and original mind mapping technique.
2. There is an increase of students' interest in English vocabulary learning after students were taught using digital mind mapping technique.

III. RESEARCH METHOD

This chapter presented the method used in this research and they are research design, population and sample, data collecting technique, scoring system, research procedure, and data analysis.

3.1. Research Design

The researcher used quantitative research. It was used to find out an increase in students' interest and achievement of vocabulary after students were taught using digital mind mapping technique. Furthermore, the researcher used control group pre-test post-test design in conducting the research. In this design, one group was an experimental group that was taught with digital mind mapping technique while the other group was a control group that was taught with original mind mapping technique. The group was selected randomly. The researcher conducted the initial data collection time (T1) in the form of a pre-test before treatment (X) and conducted the final data collection time (T2) in the form of a post-test after treatment in the two groups. A pre-test was given to students to determine their interest and vocabulary achievement before they were given treatment, then a post-test was given to students to see their interest and vocabulary

achievement after they were given treatment. This pattern was formulated (Setiyadi, 2013):

K1: T1 X T2
K2: T1 O T2

K1 : Group 1 (Experimental Group)
K2 : Group 2 (Control group)
T1 : Pre-test
T2 : Post-test
X : Treatment (digital mind mapping technique)
O : Treatment (original mind mapping technique)

3.2. Population and Sample

Population is whole of the object to be studied. Creating a population constraint, it requires three criteria, including content, scope, and time (Priyono, 2008). Sample is part of the population to be studied. Therefore, the sample can be seen as a provisional estimate of the population (Priyono, 2008). The population that was taken in this research is the tenth grade students of SMK IT BAITUN NUR Punggur academic year 2021/2022. There are two courses in tenth grade, namely mechanical engineering and computer network engineering. Mechanical engineering has two classes and computer engineering also has three classes. The researcher took students of computer network engineering as a research sample. It has three classes in first grade, namely TKJ A, TKJ B and TKJ C. The classes have 30 students in each class, so the number of students majoring in computer network engineering is 90 students. This study used A class as the experimental class, B class as the control class, and C class as the tryout class.

The random sampling was used by researcher in considering the research sample. It was intended to deliberately select a sample according to research needs and to gather relevant and useful information in answering research questions. The tenth grades students were selected because they have studied English at least in junior high school and they have a chance to be part of the research which is expected to help in increasing students' interest and also students' vocabulary achievement.

3.3. Research Instrument

There are two instruments that were used in this research as follows:

3.3.1. Vocabulary Test

This study used two classes, namely the experimental class and the control class. The researcher used pretest and posttest as test items, where both questions must have good validity and reliability.

a. Validity

Validity is a tool used to measure and develop research instruments (Risya, 2019). According Ary et al., (2010) and his friends, the focus of current views on validity is not on the instrument itself but also on the interpretation and meaning of the scores obtained from the instrument. That means a test was valid, if it measures accurately what it is intended to measure. Therefore, this research was conducted to measure students' achievement and interest of vocabulary.

1. Content Validity

Content validity is the extent to which a test measures a representative sample of the subject matter content. In order to comply with the content validity,

the test items of the instrument are designed in order to see whether they have represented the materials that are measured or not. The researcher chooses two basic competencies of 2013 English curriculum and syllabus which learners are learned by the tenth-grade students of the vocational high school. The basic competencies are as follows; 3.4) to comprehend the social function, text structures, and linguistics elements in descriptive text related to the description of people, tourism places, and historical building contextually and 4.4) to arrange oral and written descriptive text simply and shortly about people, tourism place, and historical building contextually.

2. Construct Validity

If a test has construct validity, it is able to measure certain specific characteristics according to behavioral theory and language learning (Heaton, 1991). It checks whether the test really fits the theory. The related vocabulary test aims to measure students' vocabulary achievement. In addition, vocabulary tests are limited to content words that have been mentioned by several researchers in word division (Carter, 1998; Read, 2000; Thornbury, 2002; Katamba, 2005; and Crystal, 2008) namely nouns, verbs, adjectives, and adverbs. While the meaning of words, synonyms and antonyms follows an expert Ur (1996: 60) who states that there are several items that need to be taught in teaching vocabulary, including those previously mentioned.

Table 3.1 Distribution of the Vocabulary Aspects of Pre-test and Post-test after Validity

No	Aspect	Item Number			
		Pre-test	Total	Post-test	Total
1	word content nouns, verbs, adjectives, adverbs	1,2,9,12,13,16,17 3,4,19,20,31,32 24,25,37,38,45,46,47 5,6,11,21,22,48	26	1,2,10,18,19,20,33 21,22,30,34,44,45 3,7,8,16,17,36,38 29,32,35,37,42,46	26
2	word meanings	8,10,27,28,29,33,34, 39,40,41	10	5,6,9,11,12,25,26, 47,48,49	10
3	synonyms	7,14,26,35,42,43,49	7	4,13,14,24,31,39,40	7
4	antonyms	15,18,23,30,36,44,50	7	15,23,27,28,41,43,50	7
Total			50		50

To assess the validity used inter-rater. It was consulted with several experts to ask their opinion about the instruments that have been made. The inter-rater were teachers at SMK IT Baitun Nur Punggur IT. Based on their decisions, the instrument tested is valid vocabulary. That means the test item measures what it is expected to measure.

b. Reliability

Reliability is consistency of a measuring instrument, or the extent to which the measuring instrument can measure the same subject at different times but shows relatively the same results (Setiyadi, 2013). According to Hatch and Farhady (1982), reliability refers to the extent to which a test produces consistent results when administered under the same conditions. The concept of reliability comes from the idea that no measurement is perfect even if we go to the same scale there is always something to conclude. The researcher used SPSS 25 calculation to estimate the reliability of the vocabulary test.

The criteria of reliability are:

1.	> 0.90	Very highly reliable
2.	0.80-0.90	Highly reliable
3.	0.70-0.79	Reliable
4.	0.60-0.69	Minimally reliable
5.	<0.60	Unacceptably low reliability

(Cohen, et al., 2007)

Table 3.2 The Pre-Test Result of Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
.895	50

Table 3.3 The Post-Test Result of Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
.914	50

From the table above, it can be drawn a conclusion that the result obtained in the SPSS (*Statistical Package for Social Science*) by used Cronbach Alpha, the result of reliability in the pre-test is 0.895 which means it has high reliability while in the post-test is 0.914 which means it has very high reliability.

c. Discrimination Power

The discrimination index of an item indicates the extent to which the item discriminates between the testes, separating the more able testes from the less able. The index of discrimination (D) tells whether those students who performed well on the whole test tended to do well or badly on each item in the test. It is calculated by using the formula:

$$D = \frac{\text{Correct U} - \text{Correct L}}{n}$$ (Heaton, 1991)

Where,
D : discrimination power
U : the proportion of "high group" students getting the item correct
L : the proportion of "low group" students getting the item correct
n : total number of students in each group

The criteria are:

1. 0.20 : poor
2. 0.21- 0.40 : satisfactory
3. 0.41- 0.70 : good
4. 0.71- 1.00 : excellent

(Negative) : bad items (should be omitted)

(Heaton, 1991 as cited in Putri et al., 2015)

d. Level of Difficulty

The index of difficulty of an item simply shows how easy or difficult the particular item proved in the test. The index of difficulty is generally expressed as the fraction (or percentage) of the students who answered the item correctly. It is calculated by using the formula:

$$FV = \frac{\text{Correct U} + \text{Correct L}}{2n}$$ (Heaton, 1991)

Where,
FV : level of difficulty
U : the proportion of upper group students who answer correctly
L : the proportion of lower group students who answer correctly
n : the total number of students who take the test

The criteria are:

1. <0.30 : difficult
2. 0.31- 0.70 : average
3. >0.71 : easy

(Shohamy, 1985 as cited in Putri et al., 2015)

3.3.2. Questionnaire

The questionnaire is conducted to find out whether digital mind mapping method could increase students' interest in vocabulary learning. So, some questions were made and must be answered by students before and after they are given the treatment. The questionnaire is in Indonesian to minimize misinterpretation from students and it is close-ended type with four options using a Likert scale starting with strong agree to strongly disagree on each item of the statement. The following are indicators of students' interest as the basis of the questionnaire statement.

Table 3.4 Indicators of Students' Interest Questionnaire

INDICATORS	STATEMENTS
have a feeling of pleasure and comfortable to learn	1,2,3,4
pay attention to learn	7,9
have a good interest in learning	5,6
participate or have involvement in the learning process	10
gain knowledge	8

The questionnaire used in this research was Likert scale questionnaire. The criteria for the questionnaire must have good validity and reliability requirements.

a. Validity

The validity of questionnaire was measured to find out if the components were already suitable and related to the relevant theories of students' interest.

For face validity, it would be previously checked by the advisor to see whether the items in the questionnaire were clear, readable, and understandable to be responded by the learners.

For construct validity, the questionnaire used to test students' interest was the adaptation of the previous questionnaires by Wigfield and Cambria (2010), Ali (2017), Ricardo and Meilani (2017), and Triarisanti and Purnawarman (2019). Their questionnaires had been used as a significant predictor of students' interest. In this case, the questionnaire was prepared based on indicators of student interest, including: have a feeling of pleasure and comfortable to learn, pay attention to learn, have a good interest in learning, participate or have involvement in the learning process, and gain knowledge. The researcher had adopted 10 items as the questionnaires.

b. Reliability

The researcher used Cronbach's Alpha to measure the internal consistency of the questionnaire items by using SPSS 25 computer program. Furthermore, to determine the reliability of the questionnaire, Cohen et al., (2007) proving following guideline:

Alpha value	Descriptions
> 0.90	Very highly reliable
0.80-0.90	Highly reliable
0.70-0.79	Reliable
0.60-0.69	Minimally reliable
<0.60	Unacceptably low reliability

Table 3.5 The Questionnaire Result of Reliability

Reliability Statistics	
Cronbach's Alpha	N of Items
.726	10

From the criteria, it can be drawn a conclusion that the result obtained in the SPSS (*Statistical Package for Social Science*) by used Cronbach Alpha, the reliability of the questionnaire has reliable because the result of reliability was 0.726. The researcher concluded that the degree of the level of reliability of the instrument was reliable.

3.4. Data Collecting Technique

In collecting data, the researcher used some techniques as following here:

3.4.1. Pretest

The pre-test was administered for students to measure before having treatment of teaching vocabulary by using digital mind mapping technique for the experimental class and original mind mapping technique for the control class. This is done to determine students' competence in vocabulary. The type of pre-test was a vocabulary test in which the researcher applies a multiple choice test with 50 questions.

3.4.2. Posttest

The post-test was administered for the students after doing treatment of teaching vocabulary by using digital mind mapping technique for the experimental class and original mind mapping technique for the control class. The form and material in the post-test were the same with the pre-test.

3.4.3. Distributing the Questionnaire sheet

It was distributed in the class to determine the students' interest in vocabulary learning during the teaching vocabulary by using digital mind mapping technique.

3.5. Scoring System

The students' scores of the tests were calculated by using formula as follows:

$$S = \frac{N\ x\ 100\ (maximal\ score)}{R}$$

Where,

S : the score of the test

R : the total of the right answers

N : the total items

3.6. Research Procedure

The researcher used the following procedures in order to collect the data:

3.6.1. The researcher determined research problems. The main concern of this research are, first, to find out whether there is any significant difference of students' vocabulary achievement between students who are taught by using digital mind mapping technique and original mind mapping technique. Second, to find out whether there is an increase of students' interest in English vocabulary learning after applying digital mind mapping technique.

3.6.2. The researcher determined population and sample. The population took the tenth grade students' of SMK IT BAITUN NUR Punggur. The sample was three classes the computer network engineering class. The research used A class as the experimental class, B class as the control class, and C class as the tryout class.

3.6.3. The researcher chose a text taken from the form of Descriptive Text and used vocabularies contained in the text (including verbs, nouns, adjectives, and adverbs). The topic of the material described a computer.

3.6.4. Preparring the research instrument in the form of vocabulary test and students' interest questionnaire.

3.6.5. After that, the researcher conducted try out of the instruments in a class outside the sample to measure the consistency and validity of the instrument.

3.6.6. The researcher conducted research process in the experimental class and control class in the form of pretest, treatment with techniques and posttest.

3.6.7. Furthermore, the researcher analyzed research results to answer the research questions.

3.7. Data Analysis

Analyzing data was a very necessary step in this research. Setiyadi (2006) says that data analysis is the process of organizing the data in order to gain regularity of the pattern and form of the research. In this research, several analyzes were done by researcher which involve the following analysis:

3.7.1. Normality

In this research, normality test used to know whether the data in the experimental class and in the control class are normally distributed or not. To find out the normality, the researcher used the Shapiro-Wilk test with SPSS 25 (*Statistical Package for Social Science*). The hypothesis for testing normality is:

H0: The data are not normally distributed.

H1: The data are normally distributed.

While the criteria of acceptance or rejection of hypotheses for normality test are as follows:

H0 is accepted if alpha level is lower than 0.05 ($p<0.05$).

H1 is accepted if alpha level is higher than 0.05 ($p>0.05$).

Table 3.6 Result of the Normality Tests

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Experiment	.152	30	.075	.877	30	.002
Control	.153	30	.071	.900	30	.008
a. Lilliefors Significance Correction						

Based on the table, it can be seen that *Sig*. (P-value) for experimental class was 0.075 and *Sig*. (P-value) for control class was 0.071. It means that the data in the experimental class and control class have normal distribution because the p values are higher than 0.05.

3.7.2. Homogeneity

After the normality test, the researcher determined the homogeneity test. In this research, homogeneity test used to determine whether the data in experimental class and control class are homogenous or not. In this case, the researcher used statistical computation by using SPSS 25 (*Statistical Package for Social Science*) for homogeneity test. The test of homogeneity used Levene statistic test. The hypotheses for the homogeneity tests are formulated as follows:

H0: the variances of the data are not homogenous

H1: the variances of the data are homogenous

While the criteria of acceptance or rejection of hypotheses for homogeneity test are as follows:

H0 is accepted if alpha level is lower than 0.05 ($p<0.05$).

H1 is accepted if alpha level is higher than 0.05 ($p>0.05$).

Table 3.7 Result of the Homogeneity Test

Test of Homogeneity of Variances					
		Levene Statistic	df1	df2	Sig.
Hasil belajar	Based on Mean	2.014	1	58	.161
	Based on Median	1.270	1	58	.264
	Based on Median and with adjusted df	1.270	1	56.865	.265
	Based on trimmed mean	1.915	1	58	.172

Based on the results obtained in the homogeneity test variance in the column, it can be seen that the p values in experimental and control class are 0.172. It means that the data variance is homogeneous because the p values are higher than 0.05. It indicated that students of experimental class and control class have the same ability.

3.7.3. Hypothesis Testing

The hypothesis testing was used to prove whether the hypothesis proposed in this research is accepted or not. In the effort to measure the hypothesis, independent group t test and paired sample t test of SPSS was used in this research. The hypothesis testing was stated as follow:

H0 : There is no significant difference of students' vocabulary achievement between students who are taught by using digital mind mapping technique and original mind mapping technique.

H1 : There is a significant difference of students' vocabulary achievement between students who are taught by using digital mind mapping technique and original mind mapping technique.

Essentially, all the hypotheses above were accepted or rejected based on the criteria of data analysis interpretations. If the probability value or Sig (2-tailed) < 0.05, H1 is accepted. On the contrary, if the probability value or Sig (2-tailed) > 0.05, H0 is accepted.

3.7.4. N-Gain test

The data analysis used to determine an increase students' interest in learning English using *normal Gain test*. N-Gain is to find the difference between the pretest and posttest scores. The *normal Gain test* was done using the *normal Gain* formula, with the following formulation:

$$N - Gain = \frac{Posttest\ score - Pretest\ score}{Maximum\ score - Pretest\ score}$$

with the following acquisition categorize:

High N-Gain : score $G \geq 0.70$
Average N-Gain : score $0.30 \leq G < 0.30$
Low N-Gain : score $G < 0.30$

(Wardani and Mitarlis, 2019)

and following the effectiveness category of the n-gain percent score:

Not effective	: score < 40
Less of effective	: score 40 – 55
Effective enough	: score 56 – 75
Effective	: score > 76

(Wardani and Mitarlis, 2019)

V. CONCLUSIONS AND SUGGESTIONS

This chapter deals with conclusions and suggestions based on the results and discussions of the research.

5.1 Conclusions

The objectives of this research are to investigate (1) the significant difference of students' vocabulary achievement between students who are taught by using digital mind mapping technique and original mind mapping technique, (2) the increase of students' interest in English vocabulary learning through digital mind mapping technique. By referring to the discussion of the research findings in the previous chapter, the researcher comes to the following conclusions:

1. The independent group t-test analysis shows that there is a statistically significant difference in vocabulary achievement between the students being taught with digital mind mapping techniques. It indicates that the digital mind mapping technique has a greater influence on result of students' vocabulary achievement than teaching using the original mind mapping technique.
2. The next result show that students have an increase in their interest of learning vocabulary using digital mind mapping technique. It is due digital mind mapping is a learning technique that involves digital tools and has their

vocational suitability, namely computer network engineering. In addition, it also gives students the freedom to be creative to help improve their creativity.

5.2 Suggestions

Given the conclusions above, the following suggestions are put forward for teachers and further research:

5.2.1. For the Teachers

a. The teachers are suggested to provide instructions that are easily understood by students when applying learning with digital mind mapping techniques.
b. The teachers are suggested to provide feedback on student performance. It can help increase their confidence and interest in learning.

5.2.2. For the Further Research

a. The researcher used Digital Mind Mapping technique to determine the students' achievement and interest of vocabulary. Future research, can do this technique on different aspects of English.
b. The researcher tested the difference in the application of Digital Mind Mapping Technique with Original Mind Mapping Technique on the students' achievement of vocabulary in the tenth grade, the further research can compare the students' achievement of vocabulary with more variety by combining other technique or using different grade level.

REFERENCES

Ali, S. (2017). The Students' Interest on the Use of Vocabulary Self Collection Strategy in Learning English Vocabulary. *Journal of Language Teaching and Literature*, 2 (4):165.

Ary, D., Jacobs, L. C., Sorensen, C., & Razavieh, A. (2010). *Inroduction to Research in Education (8th ed)*. Canada: Wadsworth Cangage Learning.

Asyiah, D. N. (2017). The Vocabulary Teaching and Vocabulary Learning: Perception, Strategies, And Influences on Students' Vocabulary Mastery. *Jurnal Bahasa Lingua Scientia*, 2 (9):294.

Chanturia, A. S., & Webb, S. (2016). Teaching Vocabulary in the EFL Context. *Springer International Publishing*, DOI 10.1007/978-3-319-38834-2_16.

Egan, D. M., & Gilic, L. (2021). Using Technological Applications as an Independent Learning Strategy to Support Vocabulary Acquisition for Secondary Students with Learning Disabilities. *Journal of Modern Linguistics*, 11, 529-538.

Ghazal, L. (2007). Learning Vocabulary in EFL Contexts Through Vocabulary Learning Strategies. Novitas-royal,1(2):84-91.

Hatch, E., & Farhady, H. (1981). *Research Design and Statistics For Applied Linguistics*. University of California: Los Angles.

Heaton, J. B. (1988). *Writing English Language Test*. New York: Longman.

Heidari, A. A., & Karimi, L. (2015). The Effect of Mind Mapping on Vocabulary Learning and Retention. *International Journal of Educational Investigations*, 12 (2):55.

Henderson, M., Selwyn, N., & Aston, R. (2015). What Works and Why? Student Perceptions of 'Useful' Digital Technology in University Teaching and Learning. *Studies in Higher EducationI*.

Kim, S. & Kim, M. (2012). Kolb's Learning Styles and Educational Outcome: Using Digital Mind Map as a Study Tool in Elementary English Class. *International Journal for Educational Media and Technology*, 6 (1):4-13.

McCarten, J. (2007). *Teaching Vocabulary: Lessons from the Corpus, Lessons for the Classroom*. New York: Cambridge University Press.

Mukoroli, J. (2011). Effective Vocabulary Teaching Strategies for The English for Academic Purposes ESL Classroom. *MA Tesol Collection*, 1 (1):6.

Nation, I. S. P. (2006). How Large a Vocabulary Is Needed For Reading and Listening? *The Canadian Modern Language Review/La Revue canadienne des langues vivantes*, 1.

Nurweni, A. (2017). A Teaching and Learning Practice Incorporating Students‟ Own Goal and Their Institutional Goal in Big-Sized English Classes. *Atlantis Press*, (10):147.

Patahuddin, Syawal & Zulfiqar, S. (2017). Investigating Indonesian EFL Learners' Learning and Acquiring English Vocabulary. *International Journal of English Linguistics*, 4 (7):129.

Priyono. (2008). *Metode Penelitian Kuantitatif*. Sidoarjo: Zifatama Publishing.

Rachmawati, R. J. (2019). "The Effectiveness of Using Word Matching Games on Students' Vocabulary (A Quasi-experimental Study at the Eighth Grade of MTSN 1 South Tangerang in Academic Year 2019/2020)". *Syarif Hidayatullah State Islamic University*, Jakarta.

Ricardo & Meilina, R. I. (2017). The Impacts of Students' Learning Interest and Motivation on Their Learning Outcomes. *Jurnal Pendidikan Manajemen Perkantoran*, 2 (2):190-191.

Sa'adatuddaroen. (2019). "Developing Students' Vocabulary Knowledge through Daily Journal Vocabulary". *Syarif Hidayatullah State Islamic University*, Jakarta.

Sahrawi. (2013). The Effectiveness of Mind Mapping for Teaching Vocabulary to The Eighth Grade Students of Smp Negeri 3 Sungai Kakap in Academic Year 2012/2013. *Jurnal Pendidikan Bahasa*, 2 (2):237.

Sairo, M. I., Ratminingsih, N. M., & Sudira, G.A. (2021). Using Digital Mind Mapping to Improve Writing Skills. *Indonesian Journal of Educational Research and Review*, 2 (4):274.

Setiyadi, Ag. B. (2013). *Metode Penelitian untuk Pengajaran Bahasa Asing: Pendekatan Kuantitatif dan Kualitatif*. Yogyakarta: Penerbit Graha Ilmu.

Silalahi, D. E. (2016). The Effect of Using Mind Mapping Technique in Writing Descriptive Text at the First Year Students of SMA Negeri 4 Pematangsiantar. *JETAFL*, ISSN: 2459-9506.

Sindiyasti, A. (2019). "Reading Strategies in Islamic Boarding School: A Small Scale Survey". *Islamic University of Indonesia*, Yogyakarta.

Sudibyo, H. L. (2022). The Use of Digital Mind Mapping to Improve EFL Student's Ability In Writing Descriptive Paragraph. *RETAIN (Research on English Language Teaching in Indonesia)*, 1 (10):87-92.

Tambunan, H. (2018). The Dominant Factor of Teacher's Role as A Motivator of Students' Interest and Motivation in Mathematics Achievement. *International Education Studies*, 4 (11):145.

Tee, T. K., Azman, M. N. A., Mohamed, S., Mohammad, M. M., Md Yunos, J., Yee, M. H., & Othman, W. (2014). Buzan Mind Mapping: An Efficient Technique for Note-Taking. *International Journal of Psychological and Behavioral Sciences*, 1 (8):29.

Triarisanti, R., & Purnawarman, P. (2019). The Influence of Interest and Motivation on College Students' Language and Art Appreciation Learning Outcomes. *International Journal of Education*, 2 (11):130-131.

Wahyu. (2019). Engagement and Interest in Learning Writing Through Mind Mapping Technique. *Journal of Language Teaching and Learning, Linguistics and Literature*, 2 (7):249.

Wahyudi, F. F. (2020). "CTL Based English Words Game to Improve Students' Vocabulary Achievement to The Eighth Grade Students at SMPN 33 Bandar Lampung". University of Lampung.

Wardani, H., & Mitarlis. (2019). Development of Students' Worksheet with Mind Mapping Strategy to Improve Creative Thinking Skills on Stoiciometry. *Journal of Chemistry Education Research*.

Wigfield, A., & Cambria, J. (2009). Students' Achievement Values, Goal Orientation, and Interest: Definitions, Development, and Relations to Achievement Outcomes. *Elsevier*.

Yugafiati, R., & Priscila, T. (2019). The Use of Mind Map to Improve Students' Vocabulary. *ELTIN Journal*, (7):239-241.