

## TABLE OF CONTENTS

	<b>Page</b>
<b>APPROVAL SHEET</b> .....	i
<b>DECLARATION</b> .....	ii
<b>ABSTRACT</b> .....	iii
<b>PREFACE</b> .....	v
<b>ACKNOWLEDGEMENT</b> .....	vi
<b>TABLE OF CONTENTS</b> .....	viii
<b>LIST OF TABLES</b> .....	x
<b>LIST OF FIGURES</b> .....	xi
<b>LIST OF APPENDICES</b> .....	xii
<b>CHAPTER I INTRODUCTION</b>	
A. Background .....	1
B. Research Problem .....	3
C. Research Question .....	3
D. Limitation of Problem .....	4
E. Research Objective .....	4
F. Research Benefit .....	5
G. Definition of Terms .....	5
H. Organization of Research Paper .....	6
<b>CHAPTER II LITERATURE REVIEW</b>	
A. Virtual Test or Computer Based Testing .....	7
B. Students' Critical Thinking .....	10
C. Living Things and Environmental Sustainability .....	15
D. Related Research .....	33
<b>CHAPTER III RESEARCH METHODOLOGY</b>	
A. Research Method .....	35
B. Population and Sample .....	35
C. Operational Definition .....	36

1. Virtual Test .....	36
2. Critical Thinking .....	36
D. Research Instrument .....	36
E. Instrument Analysis .....	38
F. Research Procedure .....	42
G. Research Plot .....	43

#### **CHAPTER IV RESULTS AND DISCUSSION**

A. Results .....	44
1. Critical Thinking Test .....	44
2. Legibility Test of Science Virtual Test .....	49
3. Item Test Analysis .....	49
B. Discussion .....	76

#### **CHAPTER V CONCLUSIONS AND RECOMMENDATIONS**

A. Conclusions .....	80
B. Recommendations .....	81

<b>REFERENCES</b> .....	82
-------------------------	----

<b>APPENDICES</b> .....	87
-------------------------	----

<b>AUTOBIOGRAPHY</b> .....	212
----------------------------	-----

## LIST OF TABLES

	<b>Page</b>
Table 2.1 Critical Thinking Element .....	7
Table 2.2 Science Competencies in 8 <sup>th</sup> grade (2013 Curriculum) .....	9
Table 3.1 Interpretation r value (Correlation) .....	36
Table 3.2 Interpretation Reliability Coefficient .....	37
Table 3.3 Classification of Difficulty Level .....	37
Table 3.4 The Classification of Discriminating Power .....	38
Table 4.1 Blue Print of Science Virtual Test .....	44
Table 4.2 Result of the Reliability by SPSS 16 .....	49

## LIST OF FIGURES

	<b>Page</b>
Figure 2.1 An Overview of a Flowering Plant .....	17
Figure 2.2 Rhizomes .....	18
Figure 2.3 Bulbs .....	19
Figure 2.4 Stolons .....	19
Figure 2.5 Tubers .....	19
Figure 2.6 Simple Versus Compound Leaves .....	20
Figure 2.7 Tendrils .....	20
Figure 2.8 Spines .....	21
Figure 2.9 Storage Leaves .....	21
Figure 2.10 Reproductive leaves .....	21
Figure 2.11 Bracts .....	21
Figure 2.12 The Main Structures of The Male Reproductive System .....	24
Figure 2.13 The Main Structures of The Female Reproductive System ...	25
Figure 2.14 The Greenhouse Effect Mechanism .....	31
Figure 2.15 Global Temperature .....	32
Figure 2.16 Atmospheric CO <sub>2</sub> Measured at Mauna Loa .....	32
Figure 3.1 Research Plot .....	43

## LIST OF APPENDICES

	<b>Page</b>
Appendix A Layout of Test Item To Measure Critical Thinking.....	87
Appendix B Summary of Expert Judgement Sheet of Virtual Test.....	99
Appendix C Summary of Legibility Test of Virtual Test by Students.....	151
Appendix D Summary of Analysis of Large Test.....	169
Appendix E Story Board of Science Virtual Test.....	174
Appendix F Research Permission Letter.....	209
Appendix G Documentation.....	210