

## TABLE OF CONTENT

	Pages
LEGALITATION	i
BIOGRAPHY	ii
ABSTRACT	iii
PREFACE	iv
TABLE OF CONTENT	vi
LIST OF TABLE	ix
LIST OF FIGURE	x
LIST OF APPENDIX	xi
<b>CHAPTER I : INTRODUCTION</b>	
1.1. Background	1
1.2. Identification of Problem	3
1.3. Limitation of Problem	4
1.4. Formulation of Problem	4
1.5. Purpose of Research	5
1.6. Benefit of Research	5
1.7. Operational Definition	5
<b>CHAPTER II : LITERATURE RIVIEW</b>	
2.1. Research of Development	7
2.1.1. Kemp Model	7
2.1.2. Dick and Carey Model	9
2.1.3. 4-D Model	11
2.1.4. PSSI Model	26
2.1.5. Plomp Model	26
2.2. Student Worksheet	27
2.3. PhET Simulation	29
2.4. Guided Inquiry Learning	30

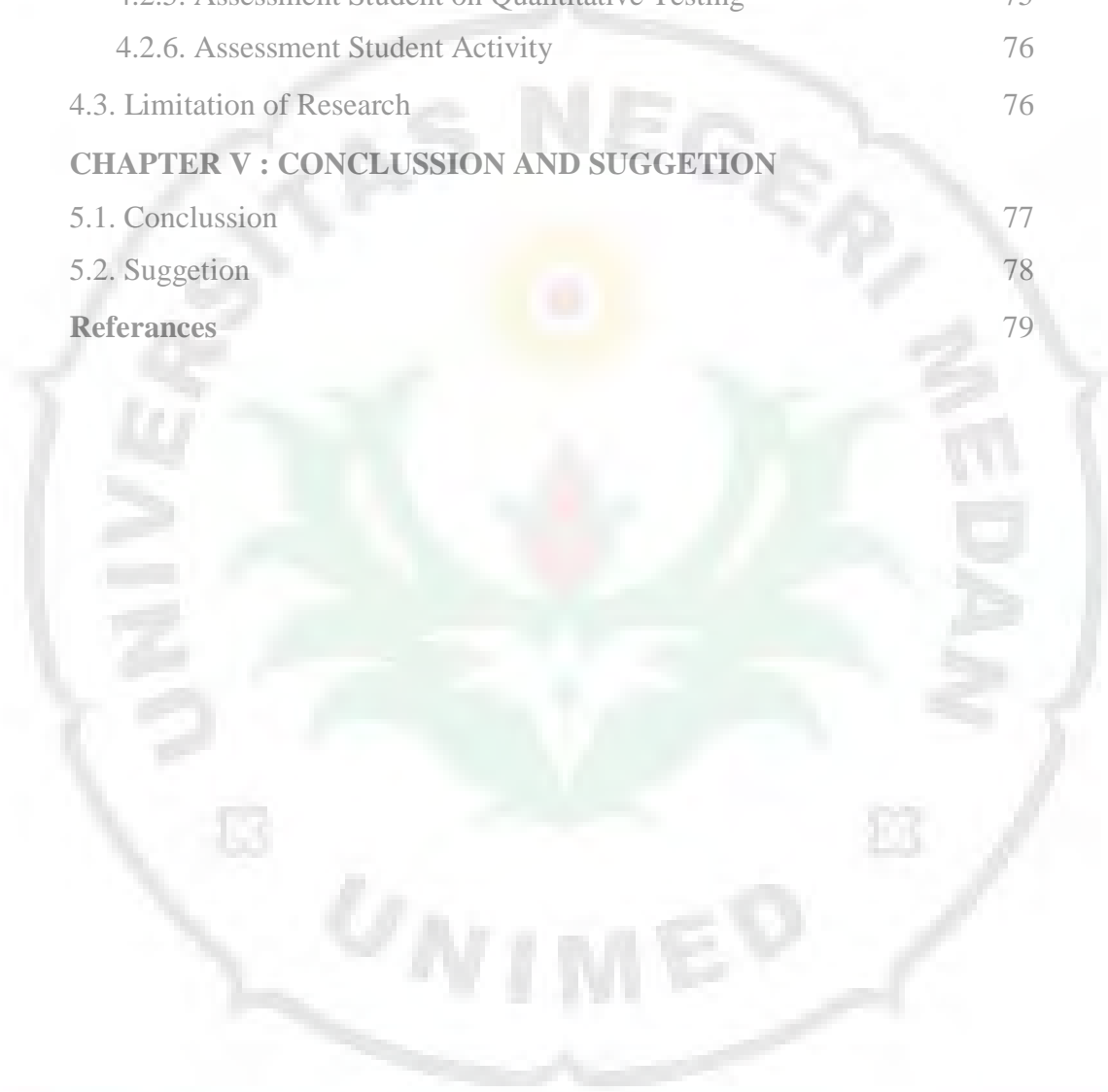
### CHAPTER III : RESEARCH METHOD

3.1. Research Subject	32
3.2. Location and Time of Research	32
3.3. Type of Research	32
3.4. Research Design	32
3.4.1. Define	32
3.4.2. Design	34
3.4.3. Develop	35
3.5. Data Collecting Technique	38
3.6. Instrument of Research	39
3.6.1. Questionnaire Teacher Interview and observation sheet with Define instrument	39
3.6.2. Validation by Material Expert	40
3.6.3. Validation by Media Expert	41
3.6.4. Validation by Practitioner Expert	42
3.6.5. Student Response Questionnaire	43
3.6.6. Observation by Observer	44
3.7 Data Analysis Technique	45
3.7.1 Data Analysis of Team Expert	46
3.7.2 Data Analysis of Student Respons and Observer	47

### CHAPTER IV : RESULT AND DISCUSSION

4.1. Research Results	49
4.1.1. Result of Define	49
4.1.2. Result of Design	55
4.1.3. Result of Develop	58
4.2. Discussion	72
4.2.1. Assessment Validator by Materials Expert	73
4.2.2. Assessment Validator by Media Expert	74
4.2.3. Assessment Validator by Practitioner Expert	74
4.2.4. Assessment Students on Initial Testing	75

4.2.5. Assessment Student on Quantitative Testing	75
4.2.6. Assessment Student Activity	76
4.3. Limitation of Research	76
<b>CHAPTER V : CONCLUSSION AND SUGGETION</b>	
5.1. Conclusion	77
5.2. Suggetion	78
<b>Referances</b>	79



THE  
*Character Building*  
UNIVERSITY

## LIST OF TABLE

	Pages
2.1. Syntax of Guided Inquiry	31
3.1. Instrument of Define	39
3.2. LKPD Quality Validation Grid for Material Experts	41
3.3. LKPD Quality Validation Grid for Media Experts	42
3.4. LKPD Quality Validation Grid for Practitioner Expert	43
3.5. Student Respons Questionnaire Grid to LKPD	44
3.6. Observer sheets Grid to LKPD	45
3.7. Assessment Percentage and Feasibility of LKPD	46
3.8. Qualifications of Each Criteria	47
3.9. Analysis Percentage of Student Response Data	48
4.1. The result of observation	49
4.2. Tabel Task Analysis	52
4.3. Result of assessment validation materials expert to LKPD	59
4.4. Result of assessment validation media expert to LKPD	61
4.5. Result of assessment validation practitioner expert to LKPD	63
4.6. Revision I LKPD	65
4.7. Students respons of initial testing	68
4.8. Students respons of quantitative testing	70
4.9. Results of the student activity analysis	71

## LIST OF FIGURE

	Pages
3.1 Steps of the 3D Source Development Research Model	38
4.1. Map concepts of work and energy	54



THE  
*Character Building*  
UNIVERSITY

## LIST OF APPENDIX

	Pages
Appendix 1 (questioner interview teacher)	82
Appendix 2 (assessment by material expert)	83
Appendix 3 (rubric validation by material expert)	85
Appendix 4 (assessment by media expert)	88
Appendix 5 (rubric validation by media expert)	90
Appendix 6 (assessment by practitioner expert)	92
Appendix 7 (rubric validation by practitioner expert)	94
Appendix 8 (student questioner response)	97
Appendix 9 (certificate of validity)	98
Appendix 10 (syllabus)	99
Appendix 11 (rubric kisi-kisi LKPD)	101
Appendix 12 (rubric assessment LKPD)	102
Appendix 13 (rubric answer LKPD)	105
Appendix 14 (initial testing responses)	108
Appendix 15 (analysis result of initial testing of LKPD)	110
Appendix 16 (quantitative testing responses)	112
Appendix 17 (analysis result of quantitative testing of LKPD)	115
Appendix 18 (LKPD work and energy)	117
Appendix 19 (LKPD doing students)	138
Appendix 20 (documentation of research)	152
Appendix 21 (documentation of validation)	156