TABLE OF CONTENTS

	Page
LEGITIMATION SHEET	;
BIOGRAPHY	ı ii
ABSTRACT	iii
PREFACE	iv
TABLE OF CONTENTS	v
LIST OF TABLES	vii
LIST OF FIGURES	viii
LIST OF APPENDIXES	ix
CHAPTER I INTRODUCTION	
1.1 Background	1
1.2 Problem Identification	5
1.3 Problem Limitation	5
1.4 Problem Formulation	6
1.5 Research Objective	6
1.6 Research Benefit 1.7 Definition	6 6
1.7 Definition	0
CHAPTER II LITERATURE	
2.1 Problem Based Learning Model	7
2.1.1 Model of Teaching	7
2.1.2 Problem-Based Learning	7
2.1.2.1 Essential elements of Project Based Learning	8
2.1.2.2 Learning Theoritical Basis of PBL	9
2.1.2.3 Syntax of PBL	10
2.1.2.4 Social System of PBL	10
2.1.2.5 Problem Based Learning Goal	11
2.1.2.5 Impact of Problem-Based Learning	11
2.1.3 Critical Thinking Skill	12
2.1.5.1 Definition of Critical Thinking	12
2.1.5.2 Core Critical Thinking Skills	13
2.1.5.3 PBL and Critical Thinking	19
2.2 Conventional Learning	19
2.3 Animation Media	20 21
2.4 Learning Material 2.1.7.1 Temperature	21
2.1.7.2 Expansion	23
2.1.7.3 Heat	23
2.1.7.4 Principle Black	28
2.1.7.5 Heat Transfer	28
2.1.7.6 The Phase Transition	31
2.5 Conceptual	32

2.3 Research Hypothesis	32
CHAPTER III RESEARCH METHODS	
3.1 Location and Time of Research	33
3.2 Population and Sample	33
3.3 Variable	33
3.4 Operational Define	33
3.5 Types and Design of Research	34
3.5.1 Types of Research	34
3.5.2 Design of Research	34
3.6 Procedure of Research	35
3.7 Instrument of Research	38
3.7.1 Essay Test	38
3.8 Regulation of Instrument	39
3.8.1 Item Dificulty Level	39
3.8.2 Item Discrimination	40
3.8.3 Validity Test	41
3.8.4 Reliability Test	41
3.9 Technique of Data Analysis	42
3.9.1 N-gain analysis	42
3.9.2 Normality Test	43
3.9.3 Homogenity Test	43
3.9.4 Hypothesis Test	44
3.9.4.1 Mean Equality Test of Pretest	44
3.9.4.2 The Mean difference test between Pretest and Posttest	45
of Experiment	
3.9.4.3 Mean difference Test of two posttest	46
3.9.4.4 Mean Difference of N-gain	48
CHAPTER IV RESULT AND DISCUSSION	
4.1 Result of Research	49
4.1.1 Result of Critical Thinking of Student	49
4.1.2 Normality and Homogeneity Test Result	53
4.1.3 Hypothesis Test Result	53
4.1.3.1 Mean Equality Test of Pretest	53
4.1.3.2 Mean Difference Test between Pretest	1
and Posttest of Experiment	54
4.1.3.3 Mean Difference of Posttest and N-gain	54
4.2 Discussion	55
4.2.1 PBL and Critical Thinking of Student	55
CHAPTER V CONCLUSION AND SUGGESTION	
5.1 Conclusion	59
5.2 Suggestion	77
REFERENCE	52

vi