

TABLE OF CONTENTS

	Page
MOTTO AND DEDICATION SHEET	i
APPROVAL SHEET	ii
ORIGINALITY STATEMENT SHEET	iii
PUBLICATION APPROVAL SHEET	iv
BIOGRAPHY	v
ABSTRACT.....	vi
PREFACE.....	vii
TABLE OF CONTENTS.....	ix
LIST OF FIGURES	xi
LIAR OF TABLES	xii
LIST OF APPENDIXES	xiii
CHAPTER I. INTRODUCTION.....	1
1.1 Background	1
1.2 Problem Identification.....	6
1.3 Scope of Problem	6
1.4 Problem Limitation	6
1.5 Formulation of Problem	7
1.6 Objective of Research	7
1.7 Benefits of Research	7
CHAPTER II. LITERATURE REVIEW	9
2.1 Learning Outcomes	9
2.1.1 Definition of Learning Outcomes	9
2.1.2 Learning Outcomes Field	10
2.2 Self-Efficacy	13
2.2.1 Definition of Self-Efficacy	13
2.2.2 Self-Efficacy Dimensions	13
2.2.3 Self-Efficacy Indicators.....	14
2.3 STEM Integration	15
2.3.1 Explanation of Integrating STEM	15

2.3.2 The Aspect of	15
2.3.3 STEM Frame Work.....	16
2.3.4 Phase of STEM Education	16
2.4 Problem-Based Learning Model	17
2.4.1 Definition of The Problem-Based Learning Model	17
2.4.2 Characteristics of Problem-Based Learning Model	18
2.4.3 Problem-Based Learning Phases.....	19
2.4.4 The Benefits and Drawbacks of PBL Model	19
2.5 Human Circulatory System.....	20
2.6 Hypothesis.....	28
CHAPTER III. RESEARCH METHODOLOGY	29
3.1 Research Location and Time.....	29
3.2 Population and Sample.....	29
3.3 Research Design and Variables.....	29
3.4 Operational Definition	31
3.5 Research Instruments	32
3.6 Data Collection Technique.....	32
3.7 Research Procedure.....	32
3.8 Instrument Analysis	36
3.8.1 Validation Test of The Instruments	36
3.8.1 Instrument Analyzing Result	39
3.9 Data Analysis Technique	39
CHAPTER IV. RESULT AND DISCUSSION.....	29
4.1 Research Result.....	44
4.1.1. Student's Learning Outcomes with PBL-STEM on The Topic of Human Circulatory System	44
4.1.2 Students' Self-Efficacy with PBL-STEM on The Topic of Human Circulatory System	49
4.2 Research Discussion	53
CHAPTER V. CONCLUSION AND SUGGESTION	58
REFERENCES	60
APPENDIX.....	64

LIST OF FIGURES

	Page
Figure 2.1 Cognitive Domain Taxonomy.....	11
Figure 2.2 Red Blood Cells	21
Figure 2.3 White Blood Cells.....	21
Figure 2.4 Platelets Cells	22
Figure 2.5 Human Heart Diagram	23
Figure 2.6 Human Circulatory Mechanism.....	25
Figure 3.1 Research Procedure Diagram.....	35
Figure 4.1 Pretest and Posttest Data of Learning Outcomes	44
Figure 4.2 Learning Outcomes Data Based Based on Achievement	48
Figure 4.2 Students' Learning Outcomes Data Based on Indicators	50
Figure 4.3 Pretest and Posttest Data of Students' Self-Efficacy	53
Figure 4.4 Self-Efficacy Data Based on Dimension Achievement	54

LIST OF TABLES

	Page
Table 2.1 Cognitive Domain	11
Table 2.2 Affective Domain	12
Table 2.3 Psychomotor Domain	12
Table 3.1 Research Design.....	30
Table 3.2 Reliability Coefficient Criteria	37
Table 3.3 Question Difficulty Index Criteria	38
Table 3.4 Question Distinguishing Power Criteria	38
Table 3.5 N-Gain Test Category	41
Table 3.6 Self-Efficacy Questionnaire Grids	42
Table 3.7 Likert Scale Criteria Interval	43
Table 4.1 Data Normality Test Students' Learning Outcomes	46
Table 4.2 Data Homogeneity Test Students' Learning Outcomes	47
Table 4.3 Data T-test data Pretest Students' Learning Outcomes	48
Table 4.4 Data T-test data Posttest Students' Learning Outcomes	48
Table 4.5 Learning Outcomes Based on Cognitive Domain Achievement ...	48
Table 4.6 Students' Learning Outcomes Data Based on Indicators	49
Table 4.7 Likert Scale Criteria Interval	50
Table 4.8 Data T-test data Pretest Students' Self-Efficacy	53
Table 4.9 Data T-test data Posttest Students' Self-Efficacy	53
Table 4.10 Self-Efficacy Data Based on Dimension Achievement	54

LIST OF APPENDIXES

	Page
Appendix 1 Experimental Class Lesson Plan	68
Appendix 2 Control Class Lesson Plan	93
Appendix 3 Students' Learning Outcomes Test	117
Appendix 4 Students' Self-Efficacy Questionnaire	125
Appendix 5 Students' Work Sheet.....	127
Appendix 6 Validity Test Result.....	138
Appendix 7 Pretest and Posttest Data	139
Appendix 8 Normality and Homogeneity Test	141
Appendix 9 Hypothesis Test	142
Appendix 10 Research Permission Letter.....	143
Appendix 11 Certificate of Having Conducting Research.....	144
Appendix 12 Research Instrument Validation Permission Letter.....	145
Appendix 13 Certificate of Having Conducted Instrument Validation	146
Appendix 14 Validation Letter by Expert I	147
Appendix 15 Validation Letter by Expert II.....	148