

TABLE OF CONTENT

APPROVAL SHEET	i
BIOGRAPHY	ii
ORIGINALITY STATEMENT	iii
PUBLICATION AGREEMENT	iv
ABSTRACT	v
PREFACE	vi
TABLE OF CONTENT	viii
TABLE OF FIGURE	xi
TABLE OF TABLE	xii
TABLE OF APPENDIX	xiii
CHAPTER I.....	1
INTRODUCTION.....	1
1.1. Background	1
1.2. Identification of problems	5
1.3. Scope	6
1.4. Scope of Problem	6
1.5. Formulation of the problem.....	6
1.6. Research Purposes	6
1.7. Benefits of Research.....	7
CHAPTER II.....	8
THEORETICAL REVIEW	8
2.1. Research Development	8
2.2. 4D Models	8
2.2.1. Stage I: Define.....	8
2.2.2. Stage II: Design.....	10
2.2.3. Stage III: Develop	11
2.2.4. Stage IV: Disseminate.....	12
2.3. Learning Media	13
2.4. High Order Thinking Skills (HOTs)	15
2.5. Scientific Iteration	15

2.6.	iSpring Presenter	16
2.7.	Acid and Base.....	17
2.7.1.	Arrhenius Acid-Base Theory	17
2.7.2.	Bronsted-Lowry Acid-Base Theory	18
2.7.3.	Lewis Acid-Base Theory.....	19
2.7.4.	Ion Equilibrium in Acid and Base Solutions	20
2.7.5.	Acidity.....	23
2.7.6.	Acid-Base Indicator	24
2.8.	Relevant Research	26
2.9.	Thinking Framework	27
CHAPTER III		29
RESEARCH METODOLOGY		29
3.1.	Location and Times of Research	29
3.2.	Populatin and Sample.....	29
3.3.	Design and Variable	29
3.4.	Definition Operational.....	29
3.5.	Research Intrument.....	30
3.6.	Data Collection Technique	32
3.7.	Research Procedure	33
3.7.1.	Define	33
3.7.2.	Design	34
3.7.3.	Develop	35
3.7.4.	Disseminate	35
3.8.	Data Analysis	35
3.8.1.	Expert validation data analysis.....	35
3.8.2.	Field trial data analysis.....	38
CHAPTER IV		39
RESULT AND DISCUSSION.....		39
4.1.	Research Result	39
4.1.1.	Define Stage.....	39
a.	Need Analysis.....	39

b. Students Analysis	40
4.1.2. Design Stage	40
a. Material Selection.....	40
b. Format Selection.....	40
4.1.3. Develop Stage	41
a. Learning Media Product Results	42
b. Learning Media Product Validation Results	45
1. Material Expert Validation.....	45
2. Media Expert Validation	50
4.1.4. Disseminate Stage.....	54
A. Students Responses	54
B. Revision of Trial Assessment Results	55
4.2. Discussion	56
4.2.1. Defining Stage.....	56
4.2.2. Product Planning (Design Stages).....	57
4.2.3. Initial Product Development (Development Stages).....	57
a. Material Validation.....	58
b. Media Validation	60
4.2.4. Disseminate	63
CHAPTER V	64
CONCLUSSION AND SUGGESTION	64
5.1. Conclussion	64
5.2. Suggestion	65
REFERENCES.....	66
APPENDIX	69