

**THE DEVELOPMENT OF AUGMENTED REALITY-BASED
FLASHCARD MEDIA TO FACILITATE STUDENTS'
CONCEPT MASTERY IN LEARNING EARTH'S LAYERS**

RESEARCH PAPER

Submitted as Requirement to Degree of *Sarjana Pendidikan* in International
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**SCIENCE EDUCATION STUDY PROGRAM
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This thesis was submitted as a requirement to obtain a Bachelor of Education Degree at
the Faculty of Mathematics and Science Education

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Universitas Pendidikan Indonesia

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APPROVAL SHEET

**THE DEVELOPMENT OF AUGMENTED REALITY-BASED
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MASTERY IN LEARNING EARTH'S LAYERS**

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Hereby declare that this thesis is my original work. I guarantee that the entire contents of this work, both in part and in whole, are not plagiarized from the work of others, except for those parts that have been quoted and clearly recognized as the source.

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Bandung, 12th August 2025



Lu'lu Halimatus Sa'adah

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EARTH'S LAYERS**

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ABSTRACT

Learning requires innovative media to help students understand and visualize material that cannot be observed directly, such as earth layers. One solution that can be developed is the use of Augmented Reality (AR) technology, which can display virtual objects in a real-world context, thereby enhancing students' learning experiences. This study aims to develop Augmented Reality-based flashcard to facilitate junior high school students in learning earth's layers. The research employed the ADDIE development model, which consist of five stages: analysis, design, development, implementation, and evaluation. Data were collected through expert validation of media and material, as well as student response questionnaires. The instrument used was a questionnaire adapted from the Learning Object Review Instrument (LORI). Validation involved five material and media experts, while the trial was conducted with 35 junior high school students. The results of the study indicate that the augmented reality-based flashcard learning media is valid and effective in helping students master the concepts related to the Earth's layers. The average validity scores for material and media were 0.88 and 0.85, which classify the media in the "High" category. This suggests that the media aligns with the science curriculum and serves as a visual aid that supports student learning. The study also collected responses from teachers and students regarding the AR-based flashcards. The average teacher response scores were 4.5 and 4.4, categorized as "Very Good." Additionally, the student responses averaged 4.7, also in the "very Good" category. Therefore, this AR-based learning media is considered highly appropriate and effective for teaching the concept of Earth's layers.

Keywords: Learning Media, Augmented Reality, Flashcard, Earth Layer, Concept Mastery

**PENGEMBANGAN MEDIA KARTU BELAJAR BERBASIS AUGMENTED
REALITY UNTUK MEMFASILITASI PENGUASAAN KONSEP SISWA DALAM
PEMBELAJARAN LAPISAN BUMI**

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ABSTRAK

Pembelajaran memerlukan media inovatif untuk membantu siswa memahami dan menggambarkan materi yang tidak dapat dilihat secara langsung, seperti lapisan bumi. Salah satu solusi yang dapat dikembangkan adalah penggunaan teknologi Augmented Reality (AR) yang mampu menampilkan objek virtual secara nyata sehingga meningkatkan pengalaman belajar siswa. Penelitian ini bertujuan untuk mengembangkan *Augmented Reality* berbasis kartu belajar untuk memfasilitasi siswa Sekolah Menengah Pertama (SMP) dalam mempelajari topik lapisan bumi. Penelitian ini menggunakan model pengembangan ADDIE yang terdiri dari lima tahap, yaitu analisis, desain, pengembangan, implementasi, dan evaluasi. Data penelitian diperoleh melalui validasi oleh para ahli media dan materi, serta angket respon siswa. Instrumen yang digunakan adalah angket yang diadaptasi dari *Learning Object Review Instrument (LORI)*. Validasi melibatkan lima ahli materi dan media, sedangkan uji coba melibatkan 35 siswa SMP. Hasil penelitian ini menunjukkan bahwa media pembelajaran *Augmented Reality* berbasis kartu belajar valid, dan efektif dalam membantu siswa untuk menguasai konsep yang ada pada topik lapisan bumi. Rata-rata validitas material dan media adalah 0,88 dan 0,85 yang mengidentifikasi bahwa media ini termasuk ke dalam kategori “Tinggi”. Ini memberikan asumsi bahwa media ini sejalan dengan kurikulum sains dan visual media yang dapat membantu siswa. Penelitian ini juga mengumpulkan respon guru dan siswa tentang AR-berbasis kartu bermain. Dengan rata-rata respon guru adalah 4,5 dan 4,4 yang dapat di definisikan “*very good*”. Selain itu untuk respon siswa mendapatkan rata-rata 4,7 dengan kategori “*very good*”. Dengan demikian, media pembelajaran berbasis AR ini dinilai sangat sesuai dan efektif untuk mengajarkan konsep lapisan bumi.

Kata kunci : Media Pembelajaran, *Augmented Reality*, *Flashcard*, Lapisan Bumi, Penguasaan Konsep

TABLE OF CONTENTS

APPROVAL SHEET	i
PLAGIARISM FREE DECLARATION	ii
ACKNOWLEDGEMENTS	iii
ABSTRACT	v
<i>ABSTRAK</i>	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	x
LIST OF FIGURES.....	xi
LIST OF APPENDICES	xiii
CHAPTER I INTRODUCTION	1
1.1 Background	1
1.2 Research Problem.....	3
1.3 Operational Definition.....	3
1.3.1 Augmented Reality-based Flashcard.....	3
1.3.2 The validity of Augmented Reality-based Flashcard.....	4
1.3.3 Teachers' Responses	4
1.3.4 Students Response.....	4
1.4 Research Objectives	5
1.5 Research Benefit	5
1.5.1 For Teachers.....	5
1.5.2 For Students	5
1.5.3 For others researchers	5
1.6 Scope of Research.....	6
1.6.1 Augmented Reality-Based Flashcard.....	6

1.6.2 Earth’s Layers Topic	6
1.7 Organization of Research Paper	6
CHAPTER II LITERATURE REVIEW	8
2.1 IT Based Teaching Media	8
2.1.1 Visual Media	8
2.1.2 Audio Media.....	8
2.1.3 Audiovisual Media.....	8
2.2 Digital Flashcard Media.....	9
2.3 Augmented Reality (AR)	10
2.4 Flashcard Augmented Reality (AR).....	11
2.5 Concept Mastery	12
2.6 Earth Layer.....	12
2.6.1 Earth Structure	12
2.6.2 Plate Tectonics	14
CHAPTER III RESEARCH METHODOLOGY	17
3.1 Research Method.....	17
3.2 Research Design.....	17
3.3 Participants.....	18
3.4 Research Instrument.....	19
3.4.1 Observation Rubric	19
3.5 Data Processing Techniques.....	28
3.6 Research Procedure	29
3.6.1 Analysis Phase	29
3.6.2 Design Stage.....	30
3.6.3 Development Phase.....	30

3.6.3 Implementation stage	31
3.6.4 Evaluation Stage.....	31
CHAPTER IV RESULTS AND DISCUSSION.....	33
4.1 Development of AR-Based Flashcard.....	33
4.1.1 Analysis Stage.....	34
4.1.2 Design Stage.....	37
4.1.3 Development Stage	44
4.1.4 Implementation Stage.....	54
4.1.5 Evaluation Stage.....	54
4.2 Validity of AR-Based Flashcard	54
4.2.1 Material Expert Judgement	55
4.2.2 Media Expert Judgement.....	57
4.3 Teachers responses to AR-based flashcards	61
4.4 Students' Respond to AR-Based Flashcard	73
BAB V CONCLUSION AND RECOMMENDATION.....	87
5.1 Conclusion.....	87
5.2 Recommendation.....	88
REFERENCES.....	89
APPENDICES.....	95
AUTOBIOGRAPIHY	183

LIST OF TABLES

Table 3.1 Media Expert Judgement Questionnaire	20
Table 3.2 Rubric of Media Expert Judgement	21
Table 3.3 Material Expert Judgement Questionnaire	24
Table 3.4 Rubric of Material Expert Judgement	24
Table 3.5 Students' Questionnaire.....	26
Table 3.6 Criteria of Average Percentage.....	28
Table 3. 7 Validation Value Criteria	29
Table 4.1 Basic Competence and Indicator	36
Table 4.2 Learning Outcomes and Learning Objectives.....	36
Table 4.3 Storyboard	40
Table 4.4 Evaluation from Expert Judgement	52
Table 4.5 Results of Material Expert Judgement.....	55
Table 4.6 Results of Media Expert Judgement.....	58
Table 4.7 Teacher Response to AR-Based Flashcard	61
Table 4.8 Science Teacher's Suggestion for Material.....	70
Table 4.9 Score Criteria Based on Liker Scale.....	73
Table 4.10 Students Response for AR-Based Flashcard.....	73

LIST OF FIGURES

Figure 2.1: Earth Structure.....	12
Figure 2.2: Divergent Plate Boundary	15
Figure 2.3: Convergent Plate Boundary.....	15
Figure 2.4: Transform Plate Boundary.....	16
Figure 3.1: The Stage of ADDIE Model.....	18
Figure 3.2: Flowchart of the ADDIE Process	32
Figure 4.1: Learning Media (Part 1)	38
Figure 4.2: Flowchart Learning Media (part 2)	39
Figure 4.3: Layout Flashcard	40
Figure 4.4: Layout After Scene AR-Based Flashcard.....	41
Figure 4.5: Layout Opening Scene AR-Based Flashcard	41
Figure 4.6: Layout Learning Objectives and Learning Outcomes.....	42
Figure 4.7: Layout Material Scene AR-Based flashcard	42
Figure 4.8: Layout Explanation Scene AR-Based Flashcard.....	43
Figure 4.9: Layout Question Scene AR-Based Flashcard.....	44
Figure 4.10: Display of Assembler.edu.....	45
Figure 4.11: Display Welcoming Screen After Scan QR	46
Figure 4.12: Display Mode	46
Figure 4.13: First Scene of Opening	48
Figure 4.14: Learning Objectives and Achievement.....	48
Figure 4.15: First Scene Material Earth Layer.....	49
Figure 4.16: Sparkling Question	50
Figure 4.17: Tectonic Place Movement	50
Figure 4.18: Guidebook for AR-Based Flashcard	51
Figure 4.19: Before Change Teacher Icon	52
Figure 4.20: After Change Teacher Icon.....	52
Figure 4.21: Before Change Image	53
Figure 4.22: After Change Image.....	52
Figure 4.23: Before Adding End home	53

Figure 4.24: After Adding End Home.....	53
Figure 4.25: After Add Students' Goals	53
Figure 4.26: Pie Chart Category Content Quality	65
Figure 4.27: Pie Chart Category Alignment with Learning Objectives.....	66
Figure 4.28: Pie Chart Category Facilitating Learning.....	67
Figure 4.29: Pie Chart Category Accessibility.....	68
Figure 4.30: Pie Chart Category Presentation Design	69
Figure 4.31: Pie Chart Category Use of Concept.....	78
Figure 4.32: Pie Chart Category Visual Quality	79
Figure 4.33: Pie Chart Category Quality of Content.....	80
Figure 4.34: Pie Chart Category Alignment with Learning Objectives.....	81
Figure 4.35: Pie Chart Category Motivation.....	82
Figure 4.36: Pie Chart Category Uses of Interaction.....	83
Figure 4.37: Pie Chart Category Presentation Design	84
Figure 4.38: Accessibility	85

LIST OF APPENDICES

Appendix A.1 Media Validation Instrument.....	97
Appendix A.2 Material Validation Instrument	101
Appendix A.3 Form of Students Questionnaire.....	104
Appendix A.4 Augmented Reality Based on Flashcard Media	107
Appendix A.5 Flashcard Guide Book.....	119
Appendix B.1 Permission Letter from Faculty	126
Appendix B.2 Respon to Research Permit Application.....	127
Appendix B.3 Completion Letter of Research from School	128
Appendix B.4 Lesson Plan.....	129
Appendix B.5 Documentation.....	132
Appendix C.1 Expert Judgement Validation Result	135
Appendix C.2 Expert Judgement Validation Analysis	161
Appendix C.3 Student Questionnaire Result	162
Appendix C.4 Student Questionnaire Analysis.....	167
Appendix C.5 Proof of Turnitin and AI Detector	181
Appendix C.6 Proof of Journal Submission.....	182

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