

**DEVELOPING STEM-BASED MODULE ON SOUND WAVE TOPIC TO
ENHANCE STUDENTS' CREATIVE THINKING AND CREATIVE
PRODUCT**

THESIS

Submitted as Requirement to Obtain Degree of *Magister Pendidikan* in Science
Education



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Sebuah thesis yang diajukan untuk memenuhi salah satu syarat memperoleh gelar
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SHEET OF LEGITIMATION
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PRODUCT

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Abstract

The purpose of this research is to produce STEM-based module on sound wave topic and investigate the effectiveness through the improvement of students' creative thinking and creative product. The method used in this research was Design and Development Research or DDR. The participants of research were three experts, three science teachers as validators and four 9th grade students. The STEM-based module was implemented in science learning involving as many as 31 8th grade students. The development of students' creative thinking was measured using pre-test (before learning) and post-test (after module's implementation in science learning). Then, the creative product was assessed based on STEM product, i.e. simple loudspeaker produced by the groups. The result of the research showed that the STEM-based module on sound wave topic that is developed is eligible to use as teaching material in science learning. Then, the average of creativity score (%) was 81,47 (good in category). Based on the analysis of the students' creative thinking results, the improvement of all students is 0,70 (N-gain) with high category. The researcher recommends to do same research but in another science topics such as energy, optics and electricity.

Keyword: STEM, STEM-based module, creative thinking, creative product, sound wave, Design and Development Research

**PENGEMBANGAN MODUL BERBASIS STEM PADA TOPIK
GELOMBANG BUNYI UNTUK MENINGKATKAN BERPIKIR KREATIF
SISWA DAN PRODUK KREATIF SISWA**

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Abstrak

Tujuan dari penelitian ini adalah untuk menghasilkan modul berbasis STEM pada topik gelombang bunyi dan menyelidiki efektivitasnya melalui peningkatan berpikir kreatif dan produk kreatif siswa. Metode yang digunakan dalam penelitian ini adalah Desain dan Pengembangan Penelitian atau DDR. Partisipan penelitian adalah tiga ahli, tiga guru sains sebagai validator dan empat siswa kelas 9. Modul berbasis STEM diimplementasikan dalam pembelajaran sains yang melibatkan sebanyak 31 siswa kelas 8. Peningkatan pemikiran kreatif siswa diukur menggunakan *pre-test* (sebelum pembelajaran) dan *post-test* (setelah implementasi modul dalam pembelajaran sains). Produk kreatif siswa dinilai berdasarkan produk STEM, yaitu penguas bunyi sederhana yang diproduksi oleh kelompok siswa. Hasil penelitian menunjukkan bahwa modul berbasis STEM pada topik gelombang bunyi yang dikembangkan layak untuk digunakan sebagai bahan ajar dalam pembelajaran sains. Kemudian, rata-rata skor kreativitas siswa dalam membuat produk (%) adalah 81,47 (termasuk kategori baik). Berdasarkan analisis hasil berpikir kreatif siswa, peningkatan semua siswa adalah 0,70 (*N-gain*) dengan kategori tinggi. Peneliti merekomendasikan untuk melakukan penelitian yang sama tetapi dalam topik IPA yang lain seperti energi, optik dan listrik.

Kata Kunci: STEM, Modul berbasis STEM, berpikir kreatif, produk kreatif, gelombang bunyi, *Design and Development Research*

LIST OF CONTENT

	Page
SHEET OF LEGITIMATION.....	i
DECLARATION.....	ii
ABSTRACT.....	iii
PREFACE.....	v
ACKNOWLEDGMENT.....	vi
CONTENTS.....	viii
LIST OF TABLES.....	x
LIST OF FIGURES.....	xi
LIST OF APPENDICES.....	xiii
CHAPTER I INTRODUCTION.....	1
A. Background.....	1
B. Research Problem.....	5
D. Research Objectives.....	5
E. Research Benefit.....	6
F. Organization Structure of Research Paper.....	6
G. Limitation of Problem.....	7
CHAPTER II LITERATURE REVIEW.....	8
A. Science, Technology, Engineering and Mathematics (STEM) Education.....	8
B. Instructional Teaching Material.....	10
C. Instructional Module.....	12
D. STEM-Based Module.....	13
E. Creative Thinking.....	14
F. Creativity in Making Product.....	17
G. Sound Wave.....	19
H. Relevant Research.....	28

CHAPTER III RESEARCH METHODOLOGY	29
A. Research Method and Research Design	29
B. Participants.....	30
C. Operational Definition	30
D. Research Instrument	31
E. Research Procedure	42
F. Instrument Analysis Result	46
CHAPTER IV RESULT AND DISCUSSION	52
A. Characteristic of STEM-based Module on Sound Wave Topic	52
B. Students' Creative Thinking	73
C. Students' Creativity Product in Creating Loudspeaker	83
CHAPTER V CONCLUSION AND RECOMMENDATION.....	103
A. Conclusion	103
B. Recommendation	104
REFERENCE	105
APPENDIX.....	112

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