# PENGEMBANGAN MEDIA KOMIK DIGITAL INTERAKTIF BERORIENTASI PENINGKATAN LITERASI SAINS DAN LEVEL PEMAHAMAN KONSEP PESERTA DIDIK SMA/MA PADA TOPIK PEMANTULAN GELOMBANG BUNYI

**TESIS**

*diajukan sebagai syarat untuk memperoleh gelar Magister Pendidikan*
*Program Studi Pendidikan Fisika*


Oleh:
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**PROGRAM STUDI MAGISTER PENDIDIKAN FISIKA**
**FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM**
**UNIVERSITAS PENDIDIKAN INDONESIA**
**BANDUNG**


**2024**

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S.Pd. Universitas Pendidikan Indonesia, 2021

Sebuah Tesis yang diajukan untuk memenuhi salah satu syarat memperoleh gelar Magister Pendidikan (M.Pd.) pada Fakultas Pendidikan Matematika dan Ilmu Pengetahuan Alam

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## PERNYATAAN

Dengan ini saya menyatakan bahwa tesis dengan judul "Pengembangan Media Komik Digital Interaktif Berorientasi Peningkatan Literasi Sains dan Level Pemahaman Konsep Peserta Didik SMA/MA pada Topik Pemantulan Gelombang Bunyi" ini beserta isinya adalah benar-benar karya saya sendiri. Saya tidak melakukan penjiplakan atau pengutipan dengan cara tidak sesuai dengan etika ilmu yang berlaku dalam masyarakat keilmuan. Atas pernyataan ini, saya siap menanggung resiko/sanksi apabila di kemudian hari ditemukan adanya pelanggaran etika keilmuan atau ada klaim dari pihak lain terhadap keaslian karya saya ini.

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# KATA PENGANTAR

*Bismillahirrahmanirrahhim*, puji dan syukur penulis haturkan kehadirat Allah SWT atas segala limpahan rahmat dan hidayah-Nya sehingga penulis dapat menyelesaikan tesis yang berjudul "Pengembangan Media Komik Digital Interaktif Berorientasi Peningkatan Literasi Sains dan Level Pemahaman Konsep Peserta Didik SMA/MA pada Topik Pemantulan Gelombang Bunyi". Dalam tesis ini dibahas mengenai hasil dari pengembangan media komik digital interaktif berorientasi peningkatan literasi sains dan level pemahaman konsep peserta didik SMA/MA pada topik pemantulan gelombang bunyi. Tujuan penulisan tesis ini adalah untuk memenuhi salah satu syarat memperoleh gelar magister (M.Pd) Program Studi Pendidikan Fisika Universitas Pendidikan Indonesia.

Penyusunan tesis ini tidak terlepas dari hambatan yang penulis alami, namun berkat bantuan, dorongan, serta bimbingan dari berbagai pihak, akhirnya tesis ini dapat diselesaikan dengan baik. Penulis beranggapan bahwa tesis ini merupakan karya ilmiah terbaik yang dapat dipersembahkan. Namun penulis menyadari tidak menutup kemungkian terdapat kekurangan. Oleh karena itu, penulis mengharapkan adanya kritik dan saran yang mendukung untuk penelitian berikutnya. Semoga tesis ini dapat bermanfaat bagi penulis dan bagi pembaca pada umumnya.

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## UCAPAN TERIMA KASIH

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## ABSTRAK

Penelitian ini bertujuan untuk mengembangkan Media Komik Digital Interaktif yang berorientasi pada peningkatan literasi sains dan level pemahaman konsep peserta didik SMA/MA pada topik pemantulan gelombang bunyi. Metode penelitian yang digunakan adalah *Research and Development* (R&D) dengan model ADDIE, meliputi tahapan analisis, perancangan, pengembangan, implementasi, dan evaluasi. Subjek penelitian terdiri dari 24 siswa kelas eksperimen dan 25 siswa kelas kontrol di salah satu Madrasah Aliyah di Kabupaten Bandung. Instrumen penelitian mencakup tes literasi sains berbentuk pilihan ganda, tes level pemahaman konsep berbentuk uraian, serta lembar validasi media dan keterlaksanaan pembelajaran. Analisis data dilakukan menggunakan *n-gain* untuk mengukur peningkatan dan uji hipotesis untuk menguji efektivitas media. Hasil penelitian menunjukkan bahwa Media Komik Digital Interaktif efektif meningkatkan literasi sains dan level pemahaman konsep peserta didik. Nilai *n-gain* literasi sains sebesar 0,54 dan *n-gain* level pemahaman konsep sebesar 0,52, keduanya termasuk dalam kategori sedang. Pola perubahan level pemahaman konsep peserta didik menunjukkan pergeseran dari level *No Understanding* (NU) dan miskonsepsi ke *Partial Understanding* (PU) dan *Sound Understanding* (SU). Uji-t menunjukkan perbedaan signifikan antara kelompok eksperimen dan kontrol terhadap peningkatan literasi sains. Uji Mann-Whitney U menunjukkan perbedaan signifikan antara kelompok eksperimen dan kontrol terhadap peningkatan level pemahaman konsep. Dengan demikian, Media Komik Digital Interaktif ini dapat menjadi alternatif inovatif dalam pembelajaran fisika untuk meningkatkan literasi sains dan pemahaman konsep peserta didik pada topik pemantulan gelombang bunyi.

**Kata Kunci:** Media Komik Digital Interaktif, Literasi Sains, Level Pemahaman Konsep, Pemantulan Gelombang Bunyi



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# DEVELOPMENT OF INTERACTIVE DIGITAL COMIC MEDIA ORIENTED TOWARDS IMPROVING SCIENCE LITERACY AND LEVEL OF CONCEPTUAL UNDERSTANDING OF HIGH SCHOOL STUDENTS ON THE TOPIC OF SOUND WAVE REFLECTION

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## ABSTRACT

This study aims to develop Interactive Digital Comic Media oriented towards improving scientific literacy and the level of conceptual understanding of senior high school students on sound wave reflection. The research method used is Research and Development (R&D) with the ADDIE model, which includes the stages of analysis, design, development, implementation, and evaluation. The research subjects consisted of 24 students in the experimental group and 25 students in the control group at a Madrasah Aliyah in Bandung Regency. The research instruments included a scientific literacy test in multiple-choice format, a conceptual understanding test in essay format, and validation sheets for media and lesson implementation. Data analysis was conducted using n-gain to measure improvement and a t-test to evaluate the effectiveness of the media. The results showed that the Interactive Digital Comic Media effectively enhanced students' scientific literacy and level of conceptual understanding. The n-gain value for scientific literacy was 0.54, and for conceptual understanding, it was 0.52, both classified as moderate. The pattern of changes in students' conceptual understanding levels indicated a shift from No Understanding (NU) and misconceptions to Partial Understanding (PU) and Sound Understanding (SU). The t-test results revealed a significant difference between the experimental and control groups in improving science literacy. The Mann-Whitney U test results revealed a significant difference between the experimental and control groups in improving level of conceptual understanding. Thus, Interactive Digital Comic Media can be an innovative alternative in physics learning to improve scientific literacy and students' conceptual understanding of sound wave reflection.

**Keywords:** Interactive Digital Comic Media, Science Literacy, Level of Conceptual Understanding, Sound Wave Reflection



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