PENGEMBANGAN BAHAN AJAR TERINTEGRASI APLIKASI *MOBILE* BERBASIS MULTIREPRESENTASI "AMOBER" PADA MATERI GELOMBANG BUNYI UNTUK MENINGKATKAN KEMAMPUAN *CRITICAL THINKING* DAN *CREATIVE PROBLEM-SOLVING* SISWA

TESIS

diajukan untuk memenuhi sebagian syarat untuk memperoleh gelar Magister Pendidikan Program Studi Pendidikan Fisika

Oleh

Sri Zakiyah

NIM 2208152

PROGRAM STUDI PENDIDIKAN FISIKA

FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM

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Oleh
Sri Zakiyah

S.Pd., Universitas Sriwijaya, 2018

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

Universitas Pendidikan Indonesia
Desember 2024

LEMBAR PENGESAHAN TESIS

SRI ZAKIYAH
2208152

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DISETUJUI DAN DISAHKAN OLEH PEMBIMBING:

Pembimbing I

Irma Rahma Suwarma, S.Si., M.Pd., Ph.D.

NIP. 198105032008012015

Pembimbing II

Dr. Dadi Rusdiana, M.Si.
NIP. 196810151994031002

Mengetahui,
Ketua Program Studi Pendidikan Fisika FPMIPA UPI

Dr. Achmad Samsudin, S.Pd., M.Pd.

NIP.198310072008121004

PENGEMBANGAN BAHAN AJAR TERINTEGRASI APLIKASI MOBILE BERBASIS MULTIREPRESENTASI "AMOBER" PADA MATERI GELOMBANG BUNYI UNTUK MENINGKATKAN KEMAMPUAN CRITICAL THINKING DAN CREATIVE PROBLEM-SOLVING SISWA

Sri Zakiyah

ABSTRAK

Perkembangan teknologi yang pesat menjadi tantangan tersendiri dalam dunia pendidikan di Indonesia, salah satunya penyediaan bahan ajar yang mumpuni berbasis teknologi yang sesuai dengan kebutuhan sumber daya manusia di masa mendatang. Meskipun saat ini telah banyak pengembangan bahan ajar terintegrasi teknologi seperi *mobile learning*, namun belum banyak bahan ajar khusus untuk melatihkan *kemampuan critical thinking* dan *creative problem-solving*. Penelitian ini bertujuan untuk mengembangkan bahan ajar *mobile learning* berbasis android pada materi gelombang bunyi untuk meningkatkan kemampuan *critical thinking* dan kemampuan proses *creative problem-solving* peserta didik dalam proses pembelajaran di dalam kelas. Metode penelitian yang digunakan adalah *Research and Development* (R&D) dengan model pengembangan ADDIE. Adapun populasi penelitian adalah siswa kelas XI IPA SMA di salah satu sekolah di kota Palembang dengan total sampel peserta didik sebanyak 62 orang yang terdiri dari 31 kelas eksperimen dan 31 kelas kontrol. Instrumen yang digunakan dalam penelitian berupa lembar uji validitas, tes keterpahaman ide pokok, tes kemampuan *critical thinking*, tes kemampuan *creative problem-solving*, dan lembar tanggapan peserta didik. Teknik analisis data menggunakan perhitungan *n-gain*, uji statistik t dan t', dan *effect size*. Berdasarkan hasil uji validitas diperoleh nilai rata-rata indeks validitas konten (ICV/AU) sebesar 1.0 dengan kategori valid dan uji keterpahaman ide pokok diperoleh persentase sebesar 63.37% dengan kategori tinggi. Hasil perhitungan n-gain untuk kelas yang menggunakan bahan ajar *mobile learning* berbasis android diperoleh n-gain keterampilan *critical thinking* siswa sebesar 0.52 dan keterampilan *creative problem-solving* sebesar 0.41 dengan kategori sedang, serta memiliki dampak yang siginifikan terhadap peningkatan keterampilan *critical thinking* dan keterampilan *creative problem-solving.* Selain itu, peserta didik juga memberikan tanggapan positif terhadap penggunaan bahan ajar *mobile learning* berbasis android.

Kata kunci: bahan ajar, *mobile learning*, kemampuan *critical thinking*, kemampuan *creative problem-solving*

DEVELOPMENT OF TEACHING MATERIAL INTEGRATED WITH MULTI-REPRESENTATION-BASED MOBILE APPLICATION IN THE LESSON OF SOUNDWAVES TO IMPROVE STUDENT CRITICAL THINKING AND CREATIVE PROBLEM-SOLVING ABILITIES STUDENTS

Sri Zakiyah

ABSTRACT

Rapid technological changes have created a challenge in the realm of education in Indonesia, one of which is the provision of certified technology-based instructional materials that meet the future needs of human resources. Although many educators now use technology in their teaching and learning processes, mobile learning instructional resources to develop critical thinking and creative problem-solving have yet to be widely created. The objective of this investigation is to create mobile learning teaching materials on sound wave material that are based on Android and are designed to enhance the creative problem-solving process and critical thinking abilities of students. The research procedure employed is Research and Development (RnD) with the ADDIE development model. The research population consisted of 62 grade XI IPA high school students in the South Sumatra region, with 31 experimental classes and 31 control classes. The study employed a variety of instruments, including validity tests, main idea comprehension tests, critical thinking ability tests, creative problem-solving ability tests, and student response questionnaires. Techniques for analyzing data included n-gain calculations, t and t' statistical tests, and effect size computations. According to the validity test results, the content validity index (ICV/AU) had an average value of 1.0 and was classified as valid. The main idea comprehension test achieved a high category percentage of 63.37%. The n-gain calculation results for classes utilizing Android-based mobile learning materials indicated an n-gain of 0.52 for students critical thinking skills and 0.40 for creative problem-solving skills, both categorized as moderate, demonstrating a significant enhancement in these competencies. Furthermore, pupils provided favorable feedback regarding the utilization of Android-based mobile learning resources.

Keywords: teaching materials, mobile learning, critical thinking skills, creative problem-solving skills.

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