

**PENGEMBANGAN MEDIA PEMBELAJARAN ALAT PRAKTIKUM
PENDETEKSI GELOMBANG ELEKTROMAGNETIK BERBASIS AR-
DUINO PADA MATA PELAJARAN FISIKA KELAS XII JURUSAN IPA
SMA NEGERI 4 SINGARAJA**

Oleh
Kadek Wira Adi Saputra, NIM 1815051033
Program Studi Pendidikan Teknik Informatika
Jurusan Teknik Informatika
Fakultas Teknik Dan Kejuruan
Universitas Pendidikan Ganesha
Singaraja
Email: wira@undiksha.ac.id

ABSTRAK

Belum banyaknya fasilitas penggunaan media pembelajaran berupa alat praktikum di proses pembelajaran mata pelajaran Fisika dalam upaya pemahaman di aspek psikomotorik atau keterampilan siswa tidak bisa hanya menggunakan media pembelajaran seadanya yang tidak sesuai dengan kondisi pembelajaran saat ini, serta kurangnya inovasi dalam pengembangan maupun penambahan media pembelajaran sebagai fasilitas pendukung bahan ajar menyebabkan hambatan dalam proses pembelajaran. Penelitian ini bertujuan menghasilkan dan mengimplementasikan serta mendeskripsikan respon guru dan siswa terhadap pengembangan media pembelajaran alat praktikum pendeteksi gelombang elektromagnetik berbasis Arduino pada mata pelajaran Fisika kelas XII jurusan IPA SMA Negeri 4 Singaraja. Metode yang digunakan dalam penelitian ini ialah *research & development* dengan menggunakan model pengembangan ADDIE yaitu, *analyze, design, development, implementation, dan evaluation*. Subjek penelitian ini ialah 31 orang peserta didik kelas XII jurusan IPA di SMA Negeri 4 Singaraja. Berdasarkan tahapan yang telah dilalui, diperoleh sebuah produk media pembelajaran alat praktikum menggunakan teknologi Arduino yang di distribusikan serta di ujikan secara luring atau tatap muka dengan prolehan koefisien validitas ahli isi sebesar 1,00 berada pada kriteria "Sangat Valid" dan tingkat validitas dengan koefisien validitas ahli media sebesar 1,00 berada pada kriteria "Sangat Valid". Selain itu hasil rata-rata skor respon peserta didik sebesar 65,4 yang berada pada kriteria "Sangat Praktis" serta rata-rata skor respon guru sebesar 44 dalam kriteria "Sangat Praktis". Bagi pengembang media pembelajaran alat praktikum berbasis Arduino selanjutnya diharapkan agar dapat melakukan penyempurnaan dan juga penambahan fitur-fitur pada media isi dan pengemasan media pembelajaran yang dikembangkan sendiri diluar pengembangan media pembelajaran alat praktikum berbasis Arduino.

Kata kunci: *Media Pembelajaran, Praktikum, Berbasis Arduino*

DEVELOPMENT OF LEARNING MEDIA TOOL PRACTICAL DETECTION OF ELECTROMAGNETIC WAVE BASED ON ARDUINO IN PHYSICS SUBJECT FOR GRADE 12 IPA MAJOR IN SMA NEGERI 4 SINGARAJA

By
Kadek Wira Adi Saputra, NIM 1815051033
Information Technology Education Study Program
Information Technology Department
Faculty of Engineering and Vocational
Ganesha University of Education
Singaraja
Email: wira@undiksha.ac.id

ABSTRACT

The lack of facilities for using learning media in the form of practical equipment in the learning process of Physics subjects in efforts to understand the psychomotor aspect or student skills cannot only use arbitrary learning media that is not in line with current learning conditions, as well as the lack of innovation in the development and addition of learning media as supporting facilities for teaching materials, causing obstacles in the learning process. This study aims to produce and implement and describe the responses of teachers and students to the development of learning media for the practical tool for detecting electromagnetic waves based on Arduino in Physics subjects for grade 12 IPA major in SMA Negeri 4 Singaraja. The method used in this research is research & development using the ADDIE development model, analyze, design, development, implementation, and evaluation. The subjects of this research were 31 students in grade 12 IPA major in SMA Negeri 4 Singaraja. Based on the stages that have been undergone, a learning media product was obtained using Arduino technology that was distributed and tested remotely or face-to-face with a content expert validity coefficient of 1.00 in the "Very Valid" criteria and validity level with a media expert validity coefficient of 1.00 in the "Very Valid" criteria. In addition, the average score of the response of students was 65.4, which was in the "Very Practical" criteria and the average score of the response of teachers was 44 in the "Very Practical" criteria. For the developers of learning media for practical tools based on Arduino, it is expected that they can make improvements and also add features to the content media and packaging of learning media developed by themselves outside the development of learning media for practical tools based on Arduino.

Keywords: *Learning Media, Practical, Based on Arduino*