

## ABSTRAK

Rena Herdiana. 2022. **PENGEMBANGAN PENGEMBANGAN ALAT PERAGA FISIKA BERBASIS ARDUINO UNO UNTUK MENENTUKAN PANJANG GELOMBANG CAHAYA DENGAN METODE KISI DIFRAKSI (Studi Kasus Panjang Gelombang Cahaya Tampak)**

Telah dilakukan penelitian pengembangan alat peraga fisika berbasis arduino uno untuk menentukan panjang gelombang cahaya dengan metode kisi difraksi (studi kasus panjang gelombang cahaya tampak), dengan tujuan untuk mengetahui tingkat validitas dan praktikalitas alat peraga fisika pengukur panjang gelombang cahaya berbasis arduino uno dengan metode kisi difraksi. Penelitian ini termasuk pada penelitian pengembangan, dengan mengacu pada model pengembangan ADDIE dengan tahapannya yaitu *analysis, design, development, implementation*, dan *evaluation*. Adapun pengujian alat peraga dilakukan dengan uji validitas oleh ahli media dan ahli materi untuk mengetahui tingkat kevalidan alat peraga yang telah dikembangkan. Selain itu, dilakukan juga uji coba produk untuk mengetahui tingkat kepraktisan alat peraga, melalui uji respon peserta didik dan penilaian dari guru fisika. Uji coba produk dilakukan di SMA kelas XI MIPA dengan jumlah sampel sebanyak 163 orang. Berdasarkan dari hasil uji validitas ahli media dan ahli materi, dapat diketahui tingkat kevalidan alat peraga memenuhi kriteria valid dengan perolehan persentase 85,71% dari ahli media dan 95,69% dari ahli materi. Kemudian, berdasarkan dari hasil uji praktikalitas yang dilakukan melalui uji respon peserta didik, dapat diketahui tingkat kepraktisan alat peraga memenuhi kriteria praktis, dengan perolehan persentase 78,74%. Sementara berdasarkan hasil uji praktikalitas yang dilakukan melalui penilaian guru fisika, dapat diketahui tingkat kepraktisan alat peraga memenuhi kriteria praktis dengan perolehan persentase 84,28%. Berdasarkan hasil penelitian ini, maka dapat disimpulkan bahwa alat peraga fisika berbasis arduino uno untuk menentukan panjang gelombang cahaya dengan metode kisi difraksi memenuhi kriteria valid dan praktis, sehingga layak digunakan dalam proses pembelajaran fisika.

Kata kunci: Alat Peraga Fisika, Arduino Uno, Gelombang Cahaya, Kisi difraksi.

## **ABSTRACT**

Rena Herdiana. 2022. **DEVELOPMENT OF ARDUINO UNO-BASED PHYSICS PROPS DEVELOPMENT TO DETERMINE THE WAVELENGTH OF LIGHT BY THE DIFFRACTION LATTICE METHOD (Case Study of Visible Light Wavelength)**

*Research has been carried out on the development of arduino uno-based physics props development to determine the wavelength of light by the diffraction lattice method (case study of visible light wavelength), with the aim of determining the level of validity and practicality of arduino uno-based physics props development to determine the wavelength of light by the diffraction lattice method. This research includes development research, with reference to the ADDIE development model with stages, namely analysis, design, development, implementation, and evaluation. The testing of props is carried out with validity tests by media experts and material experts to find out the level of validity of the props that have been developed. In addition, product trials were also carried out to determine the level of practicality of teaching aids, through student response tests and assessments from physics teachers. Product trials were carried out at SMA class XI MIPA with a total sample of 163 people. Based on the results of the validity test of media experts and material experts, it can be seen that the level of validity of props meets valid criteria with a percentage gain of 85.71% from media experts and 95.69% from material experts. Then, based on the results of the practicality test conducted through the student response test, it can be known that the level of practicality of the props meets the practical criteria, with a percentage gain of 78.74%. Meanwhile, based on the results of the practicality test conducted through the assessment of physics teachers, it can be seen that the level of practicality of teaching aids meets practical criteria with a percentage gain of 84.28%. Based on the results of this study, it can be concluded that arduino uno-based physics props development to determine the wavelength of light by the diffraction lattice method meet valid and practical criteria, so they are suitable for use in the physics learning process.*

*Keywords: Physics Props, Arduino Uno, Light Waves, Diffraction Grid.*