

**Development of Physics Learning Media on Geometric Optics Based on
*Augmented Reality***

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ABSTRACT

One way to enhance and promote the quality of science education in Indonesia is through creative and innovative classroom teaching methods. Currently, in physics classes, especially on the topic of geometric optics, the teaching materials or modules used by teachers are still limited to books, 2-dimensional images, or instructional videos. To address this issue, an educational media application utilizing Augmented Reality (AR) technology has been developed to help students overcome these challenges and better master geometric optics. This application uses 3D models and interactive dual markers. The research was conducted over 11 months at SMA Negeri 2 Jember and Politeknik Negeri Jember, using the Multimedia Development Life Cycle (MDLC) method, involving interviews with physics teachers as sources and validators. The application testing results, measured by User Acceptance Testing (UAT), achieved a score of 81.4%, indicating that the application is appropriate. It is hoped that the development of AR-based educational media can enhance students' understanding and improve the teaching and learning process. The application's success is influenced by other factors such as light intensity of 80-115 lux, a plain background, a distance of 10-50 cm, and a camera angle of 45° to achieve optimal results in marker reading and 3D object display.

Key words: *learning media, optikgeometri, augmented reality, marker interactions*