

**PENGEMBANGAN MEDIA PEMBELAJARAN BERBASIS AUGMENTED
REALITY UNTUK VISUALISASI KOMPONEN STRUKTUR
BANGUNAN DI SMKN 3 SINGARAJA**

Oleh

Angelia Stella Medita, NIM 2215051001

Pendidikan Teknik Informatika

Jurusan Teknik Informatika

Fakultas Teknik dan Kejuruan

Universitas Pendidikan Ganesha Singaraja

Email: angelia.stella@student.undiksha.ac.id



ABSTRAK

Pendidikan berkualitas memiliki peran penting dalam mencetak individu yang kompeten dan siap menghadapi tantangan dunia kerja, khususnya pada bidang teknik yang memerlukan kemampuan visualisasi dan pemahaman spasial yang baik. Namun, proses pembelajaran komponen struktur bangunan di sekolah masih didominasi oleh penggunaan buku teks dan media konvensional sehingga kurang mampu memberikan gambaran objek secara konkret. Oleh karena itu, dikembangkan media pembelajaran berbasis Augmented Reality (AR) bernama <AR Builducation> sebagai sarana pendukung pembelajaran yang interaktif dan inovatif bagi siswa jurusan Desain Pemodelan dan Informasi Bangunan (DPIB) di SMK Negeri 3 Singaraja. Penelitian ini bertujuan untuk merancang, mengimplementasikan, dan mengetahui respon pengguna terhadap media pembelajaran tersebut. Metode penelitian yang digunakan adalah Research and Development (R&D) dengan model Multimedia Development Life Cycle (MDLC) yang meliputi tahap concept, design, material collecting, assembly, testing, dan distribution. Media yang dihasilkan berupa aplikasi berbasis Android yang terintegrasi dengan AR Book untuk menampilkan visualisasi komponen struktur bangunan dalam bentuk tiga dimensi secara real-time. Pengumpulan data dilakukan melalui observasi, wawancara, dan angket. Evaluasi media meliputi Black Box Testing, uji ahli isi, uji ahli media, dan uji respon pengguna menggunakan User Experience Questionnaire (UEQ) dengan melibatkan 57 responden. Hasil penelitian menunjukkan bahwa uji ahli isi memperoleh persentase 95,84% dan uji ahli media sebesar 100% dengan kategori sangat layak. Hasil UEQ menunjukkan seluruh aspek berada pada kategori Excellent, sehingga media AR Builducation dinyatakan sangat layak, efektif, dan mampu meningkatkan pemahaman siswa terhadap struktur bangunan.

Kata Kunci: *Augmented Reality, Media Pembelajaran, Struktur Bangunan, MDLC, User Experience Questionnaire.*

**DEVELOPMENT OF AUGMENTED REALITY-BASED LEARNING MEDIA
FOR VISUALIZING BUILDING STRUCTURE COMPONENTS AT SMKN 3
SINGARAJA**

By

Angelia Stella Medita, NIM 2215051001

Informatics Engineering Education

Department of Informatics Engineering

Faculty of Engineering and Vocational Studies

Ganesha Singaraja University of Education

Email: angelia.stella@student.undiksha.ac.id

ABSTRACT

Quality education plays an important role in producing competent individuals who are prepared to face the challenges of the professional world, particularly in technical fields that require strong visualization and spatial understanding skills. However, the learning process of building structure components in schools is still dominated by textbooks and conventional media, which are less capable of providing concrete object visualization. Therefore, an Augmented Reality (AR)-based learning media called <AR Builducation> was developed as an interactive and innovative learning support tool for students of the Design Modeling and Building Information (DPIB) program at SMK Negeri 3 Singaraja. This study aims to design, implement, and determine user responses toward the developed learning media. The research method used was Research and Development (R&D) with the Multimedia Development Life Cycle (MDLC) model, which consists of the stages of concept, design, material collecting, assembly, testing, and distribution. The resulting media is an Android-based application integrated with an AR Book to display three-dimensional visualizations of building structure components in real-time. Data collection was conducted through observation, interviews, and questionnaires. The media evaluation included Black Box Testing, content expert validation, media expert validation, and user response testing using the User Experience Questionnaire (UEQ) involving 57 respondents. The results showed that the content expert validation achieved a percentage of 95.84% and the media expert validation achieved 100%, both categorized as highly feasible. The UEQ results indicated that all aspects were categorized as Excellent. Therefore, the AR Builducation learning media is considered highly feasible, effective, and capable of improving students' understanding of building structures.

Keywords: *Augmented Reality, Learning Media, Building Structure, MDLC, User Experience Questionnaire*