

ABSTRACT

ZuhdiMizian, *Development of a Learning Module to Interpret Technical Drawings Assisted by Augmented Reality (AR) for Vocational School Students*, Jambi University Education Doctoral Program, Promoter: **Dr. Sofyan, M.Pd., Co Promoter: Drs. Saharudin, M.Ed., M.App.Sc., Ph.D.**

This research is motivated by the importance of the ability to interpret technical drawings as a basic competency that vocational school students must master in preparing themselves to enter the industrial world. Conventional technical drawing learning faces various obstacles, such as students' difficulties in visualizing 3D objects from 2D images, limitations in interactive learning media, and low student learning motivation.

This research aims to develop a learning module for technical drawing interpretation assisted by Augmented Reality (AR) which can facilitate more effective and interactive learning for vocational school students. The development of this module uses the ADDIE (Analysis, Design, Development, Implementation, Evaluation) research and development (R&D) model involving material experts, media experts, learning design experts, teachers and vocational school students as research subjects.

The development results show that the AR-assisted module developed has met the feasibility criteria with a "Very Feasible" assessment from material experts (96.80%) and media experts (77.00%). and learning design (93.80%) The implementation of the module in limited trials showed a significant increase in student understanding with an N-gain value of 0.71 (high category). Student responses to the use of the module were very positive with a satisfaction level of 89.3%.

The conclusion of this research shows that AR-assisted module development is effective in improving technical drawing interpretation skills of vocational school students. The implications of this research provide alternative solutions in developing innovative and interactive learning media, as well as opening opportunities for integrating AR technology in other vocational learning.

Keywords: *learning module, technical drawing, augmented reality, vocational school*

ABSTRAK

Zuhdi Mizian, Pengembangan Modul Belajar Menginterpretasikan Gambar Teknik Berbantuan *Augmented Reality (AR)* untuk Siswa SMK, Program Doktor Kependidikan Universitas Jambi, Promotor: Dr. Sofyan, M.Pd., Co Promotor: Drs. Saharudin, M.Ed., M.App.Sc., Ph.D.

Penelitian ini dilatarbelakangi oleh pentingnya kemampuan menginterpretasikan gambar teknik sebagai kompetensi dasar yang harus dikuasai siswa SMK dalam mempersiapkan diri memasuki dunia industri. Pembelajaran gambar teknik secara konvensional menghadapi berbagai kendala, seperti kesulitan siswa dalam memvisualisasikan objek 3D dari gambar 2D, keterbatasan media pembelajaran yang interaktif, serta rendahnya motivasi belajar siswa.

Penelitian ini bertujuan untuk mengembangkan modul pembelajaran interpretasi gambar teknik berbantuan *Augmented Reality (AR)* yang dapat memfasilitasi pembelajaran yang lebih efektif dan interaktif bagi siswa SMK. Pengembangan modul ini menggunakan model penelitian dan pengembangan (R&D) ADDIE (*Analysis, Design, Development, Implementation, Evaluation*) dengan melibatkan ahli materi, ahli media, ahli desain pembelajaran, guru, dan siswa SMK sebagai subjek penelitian.

Hasil pengembangan menunjukkan bahwa modul berbantuan AR yang dikembangkan telah memenuhi kriteria kelayakan dengan perolehan penilaian "Sangat Layak" dari ahli materi (96,80%) dan ahli media (77,00%). dan desain pembelajaran (93,80%) Implementasi modul pada uji coba terbatas menunjukkan peningkatan pemahaman siswa yang signifikan dengan nilai N-gain sebesar 0,71 (kategori tinggi). Respon siswa terhadap penggunaan modul sangat positif dengan tingkat kepuasan mencapai 89,3%.

Kesimpulan penelitian ini menunjukkan bahwa pengembangan modul berbantuan AR efektif dalam meningkatkan kemampuan interpretasi gambar teknik siswa SMK. Implikasi dari penelitian ini memberikan alternatif solusi dalam pengembangan media pembelajaran yang inovatif dan interaktif, serta membuka peluang integrasi teknologi AR dalam pembelajaran kejuruan lainnya.

Kata Kunci: modul pembelajaran, gambar teknik, *augmented reality*, SMK