

ABSTRAK

Muhammad Ade Afriansyah, NIM. 5191151011, Pengembangan Modul Cetak Sistem Komputer Terintegrasi Dengan *Augmented Reality* Untuk Mata Pelajaran Informatika Kelas X TKJ SMK Negeri 9 Medan, Skripsi Program Studi Pendidikan Teknologi Informatika dan Komputer, Fakultas Teknik, Universitas Negeri Medan 2026.

Penelitian ini bertujuan untuk mengetahui tingkat kelayakan, akseptabilitas, dan efektivitas modul cetak Sistem Komputer terintegrasi dengan *Augmented Reality* untuk mata pelajaran Informatika kelas X TKJ di SMK Negeri 9 Medan. Penelitian ini menggunakan metode *Research and Development* (R&D) dengan model pengembangan ADDIE yang meliputi tahap *Analysis, Design, Development, Implementation, dan Evaluation*. Produk yang dikembangkan berupa modul pembelajaran cetak yang dipadukan dengan aplikasi *Augmented Reality* berbasis *Marker-Based Tracking*. Aplikasi dikembangkan menggunakan Unity, Vuforia Engine, dan Blender, serta dilengkapi 14 objek tiga dimensi perangkat keras komputer, fitur pemindaian *Marker*, rotasi objek, dan animasi pemasangan komponen. Teknik pengumpulan data dilakukan melalui lembar validasi ahli, angket akseptabilitas pengguna, serta tes hasil belajar berupa *pretest* dan *posttest*. Hasil penelitian menunjukkan bahwa modul memperoleh nilai rata-rata validasi ahli materi sebesar 4,61 dan ahli media sebesar 4,25, yang keduanya termasuk dalam kategori Sangat Layak. Hasil uji akseptabilitas pengguna memperoleh persentase sebesar 92,04% dengan kategori Sangat Diterima. Instrumen penelitian memiliki 15 butir soal valid, nilai reliabilitas 0,816 dengan kategori sangat tinggi, tingkat kesukaran didominasi kategori sedang, dan daya pembeda didominasi kategori baik. Hasil uji normalitas menunjukkan data *pretest* dan *posttest* berdistribusi normal, sedangkan hasil uji *N-Gain* memperoleh nilai rata-rata sebesar 71,05% dengan kategori Cukup Efektif. Berdasarkan hasil tersebut, dapat disimpulkan bahwa modul cetak Sistem Komputer terintegrasi dengan *Augmented Reality* yang dikembangkan layak digunakan, diterima dengan sangat baik oleh pengguna, serta cukup efektif dalam meningkatkan hasil belajar siswa.

Kata Kunci: Modul Cetak, *Augmented Reality*, Sistem Komputer, Informatika

ABSTRACT

Muhammad Ade Afriansyah, NIM 5191151011, *Development of an Augmented Reality-Integrated Printed Computer System Module for the Informatics Subject of Grade X Computer and Network Engineering (TKJ) Students at SMK Negeri 9 Medan. Undergraduate Thesis, Department of Informatics and Computer Technology Education, Faculty of Engineering, Universitas Negeri Medan, 2026.*

This study aimed to determine the feasibility, user acceptability, and effectiveness of an Augmented Reality-integrated printed Computer System learning module for the Informatics subject of Grade X Computer and Network Engineering (TKJ) students at SMK Negeri 9 Medan. This research employed the Research and Development (R&D) method using the ADDIE development model, which consists of the stages of Analysis, Design, Development, Implementation, and Evaluation. The developed product was a printed learning module integrated with a Marker-Based Tracking Augmented Reality application. The application was developed using Unity, Vuforia Engine, and Blender, and features 14 three-dimensional computer hardware models, Marker scanning, object rotation, and hardware installation animations. Data were collected through expert validation sheets, user acceptability questionnaires, and learning achievement tests consisting of pretests and posttests. The data were analyzed using validity testing, reliability testing, item difficulty analysis, discrimination index analysis, the Shapiro-Wilk normality test, and the N-Gain test. The results showed that the module achieved an average score of 4.61 from the subject matter expert and 4.25 from the media expert, both categorized as Highly Feasible. The user acceptability test obtained a score of 92.04%, which was categorized as Highly Accepted. The research instrument consisted of 15 valid test items, with a reliability coefficient of 0.816, indicating very high reliability. The test items were predominantly of moderate difficulty and demonstrated good discrimination indices. The results of the normality test indicated that both the pretest and posttest data were normally distributed. Furthermore, the N-Gain analysis produced an average score of 71.05%, which falls into the Moderately Effective category. Based on these findings, it can be concluded that the developed Augmented Reality-integrated printed Computer System learning module is feasible for implementation, highly accepted by users, and moderately effective in improving students' learning outcomes.

Keywords: *Printed Learning Module, Augmented Reality, Computer System, Informatics.*