ABSTRAK

LIJON HASUDUNGAN SILALAHI. Pengembangan Prototype Sistem Keamanan Sepeda Motor Menggunakan Fingerprint dan Frid Reader Berbasis Arduino Nano Sebagai Media Pembelajaran Pemograman Di SMK. SKRIPSI. Medan: Fakultas Teknik Universitas Negeri Medan.

Penelitian ini bertujuan untuk mengembangkan Prototype Sistem Keamanan Sepeda Motor menggunakan Fingerprint dan RFID Reader berbasis Arduino Nano sebagai media pembelajaran pemrograman di SMK. Latar belakang penelitian ini adalah pentingnya penguasaan teknologi bagi siswa SMK untuk menghadapi tantangan di era Industri 4.0, serta kebutuhan akan metode pembelajaran yang lebih interaktif dan aplikatif. Metode penelitian yang digunakan adalah Research and Development (R&D) dengan model pengembangan ADDIE (Analysis, Design, Development, Implementation, Evaluation). Tahapan penelitian mencakup analisis kebutuhan, desain prototype, pengembangan perangkat keras dan perangkat lunak, implementasi di kelas, serta evaluasi kelayakan sebagai media pembelajaran. Hasil penelitian menunjukkan bahwa Prototype Sistem Keamanan Sepeda Motor yang dikembangkan telah diuji dan divalidasi oleh ahli media dan ahli materi. Berdasarkan uji coba terhadap 25 siswa SMK Negeri 5 Medan, prototype ini memperoleh tingkat kelayakan 72,32%, yang dikategorikan sebagai layak digunakan dalam pembelajaran. Media pembelajaran ini membantu siswa dalam memahami konsep pemrograman mikrokontroler, meningkatkan keterampilan praktik, serta memberikan pengalaman belajar yang lebih menarik dan interaktif. Dengan demikian, pengembangan Prototype Sistem Keamanan Sepeda Motor ini diharapkan dapat menjadi inovasi dalam pembelajaran teknik pemrograman dan sistem kendali di SMK, serta meningkatkan kesiapan siswa dalam menghadapi dunia industri yang semakin berkembang.

Kata Kunci: Prototype, Keamanan Sepeda Motor, Fingerprint, RFID, Arduino Nano, Pembelajaran Pemrograman.

ABSTRACT

LIJON HASUDUNGAN SILALAHI. Development of a Motorcycle Safety System Prototype Using Arduino Nano-Based Fingerprint and Frid Reader as a Programming Learning Media at Vocational Schools. SKRIPSI. Medan: Faculty of Engineering, State University of Medan.

This research aims to develop a Motorcycle Safety System Prototype using Fingerprint and RFID Reader based on Arduino Nano as a programming learning medium in vocational schools. The background of this research is the importance of mastering technology for vocational school students to face challenges in the era of Industry 4.0, as well as the need for more interactive and applicable learning methods. The research method used is Research and Development (R&D) with the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model. The research stages include needs analysis, prototype design, hardware and software development, classroom implementation, and feasibility evaluation as a learning medium. The results of the study show that the Motorcycle Safety System Prototype developed has been tested and validated by media experts and material experts. Based on a trial on 25 students of SMK Negeri 5 Medan, this prototype obtained a feasibility level of 72.32%, which is categorized as suitable for use in learning. This learning media helps students understand the concept of microcontroller programming, improve practical skills, and provide a more interesting and interactive learning experience. Thus, the development of the Motorcycle Safety System Prototype is expected to be an innovation in learning programming techniques and control systems at vocational schools, as well as increasing students' readiness to face the growing industrial world.

Keywords: Prototype, Motorcycle Security, Fingerprint, RFID, Arduino Nano, Programming Learning