ABSTRAK

Muhammad Roychani Mushoffa: ***Pengembangan Jobsheet Praktikum Pada Elemen Pemrograman Sistem Embedded Berbasis Wokwi Simulator di SMK Negeri 1 Percut Sei Tuan*****. Skripsi. Fakultas Teknik Universitas Negeri Medan. 2025.**

Penelitian ini dilatarbelakangi oleh rendahnya pemahaman siswa terhadap materi pemrograman sistem *embedded* akibat keterbatasan waktu praktik dan tidak tersedianya panduan praktik yang terstruktur. Tujuan dari penelitian ini adalah untuk: (1) Menghasilkan *jobsheet* praktikum berbasis Wokwi *Simulator* sebagai media pembelajaran pada mata pelajaran Pemrograman Sistem *Embedded*; (2) Menilai tingkat validitas *jobsheet* melalui evaluasi oleh para ahli; dan (3) Mengidentifikasi respon guru dan siswa terhadap penggunaan *jobsheet* tersebut dalam proses pembelajaran.

Metode penelitian yang digunakan adalah *Research and Development* (R&D) dengan model pengembangan ADDIE, yang mencakup tahapan *Analysis, Design, Development, Implementation,* dan *Evaluation*. Subjek penelitian terdiri atas dua validator ahli, 30 siswa kelas XI Teknik Elektronika Industri, dan dua guru mata pelajaran. Instrumen yang digunakan berupa angket validasi dan lembar respon pengguna, dengan analisis data secara deskriptif kuantitatif. Interpretasi data dilakukan berdasarkan kategori kelayakan dalam skala Likert 4 poin.

Hasil penelitian menunjukkan bahwa *jobsheet* yang dikembangkan mendapatkan skor validasi rata-rata 3,8 dari ahli materi, yang termasuk dalam kategori sangat valid. Uji coba terbatas menunjukkan skor rata-rata 3,52 dari siswa dan 3,75 dari guru, yang menandakan tanggapan sangat positif. *Jobsheet* dinilai mampu meningkatkan pemahaman konsep, mendukung praktik mandiri, serta mengatasi keterbatasan perangkat keras di sekolah. Dengan demikian, *jobsheet* praktikum berbasis Wokwi *Simulator* dinyatakan layak dan efektif digunakan sebagai media pembelajaran pada mata pelajaran Pemrograman Sistem *Embedded* di SMK.

Kata kunci: *Jobsheet*, Wokwi *Simulator*, STM32, Sistem *Embedded*, ADDIE.

ABSTRACT

Muhammad Roychani Mushoffa: ***Development of Practical Jobsheet on Embedded System Programming Elements Based on Wokwi Simulator at SMK Negeri 1 Percut Sei Tuan. Thesis. Faculty of Engineering Medan State University. 2025.***

This research was motivated by students' low understanding of embedded system programming material due to limited practice time and the absence of structured practical guides. The objectives of this study are to: (1) Develop a practical jobsheet based on the Wokwi Simulator as a learning medium for the Embedded System Programming subject; (2) Assess the validity level of the developed jobsheet through expert evaluations; and (3) Identify the responses of teachers and students regarding the use of the jobsheet in the learning process.

The research method used is Research and Development (R&D) with the ADDIE development model, consisting of five stages: Analysis, Design, Development, Implementation, and Evaluation. The research subjects included two expert validators, 30 students from Class XI Industrial Electronics Engineering, and two subject teachers. Instruments used were validation questionnaires and user response sheets, with data analyzed quantitatively using descriptive statistics. Data interpretation was carried out based on feasibility category criteria using a 4-point Likert scale.

The results showed that the developed jobsheet obtained an average validation score of 3.8 from the material expert, which falls into the "very valid" category. A limited trial yielded average response scores of 3.52 from students and 3.75 from teachers, indicating highly positive feedback. The jobsheet was considered effective in improving conceptual understanding, supporting independent practice, and overcoming hardware limitations in schools. Therefore, the practical jobsheet based on the Wokwi Simulator is declared feasible and effective to be used as a learning medium in the Embedded System Programming subject at vocational high schools.

Keywords: Jobsheet, Wokwi Simulator, STM32, Embedded System, ADDIE.