ABSTRAK

THERESIA SILALAHI.NIM 5213131007. Pengembangan Trainer Mesin Cuci Berbasis IoT Pada Elemen Konsep Dasar Instalasi Motor Listrik Satu Fasa Di SMKS Sinar Husni 2 TR.

Penelitian ini bertujuan untuk mengembangkan Trainer Mesin Cuci Berbasis *Internet of Things* (IoT) sebagai media pembelajaran pada elemen konsep dasar instalasi motor listrik satu fasa di SMKS Sinar Husni 2 TR. Latar belakang penelitian ini didasarkan pada keterbatasan media pembelajaran praktik yang tersedia di sekolah, khususnya belum adanya trainer motor listrik satu fasa yang aplikatif dan terintegrasi dengan teknologi modern, sehingga proses pembelajaran masih didominasi oleh media video animasi. Kondisi tersebut menyebabkan siswa mengalami kesulitan dalam memahami konsep dan penerapan instalasi motor listrik satu fasa secara praktis. Oleh karena itu, penelitian ini merumuskan proses pengembangan trainer mesin cuci berbasis IoT beserta jobsheet pendukungnya, serta mengetahui tingkat kelayakan media, kelayakan materi, dan kepraktisan penggunaannya dalam pembelajaran. Metode penelitian yang digunakan adalah *Research and Development (R&D)* dengan model pengembangan *ADDIE (Analysis, Design, Development, Implementation, Evaluation)***.** Tahap analisis dilakukan untuk mengidentifikasi kebutuhan media pembelajaran praktik. Tahap desain meliputi perancangan fisik trainer, sistem kontrol berbasis IoT, serta penyusunan jobsheet dan buku panduan. Pada tahap pengembangan, trainer mesin cuci berbasis IoT dirakit dan diuji fungsinya, kemudian divalidasi oleh ahli media dan ahli materi. Tahap implementasi dilakukan melalui uji coba penggunaan trainer pada siswa kelas XI Teknik Instalasi Tenaga Listrik, sedangkan tahap evaluasi digunakan untuk menilai kelayakan dan kepraktisan produk yang dikembangkan. Hasil penelitian menunjukkan bahwa trainer mesin cuci berbasis IoT dinyatakan sangat layak digunakan sebagai media pembelajaran**.** Hasil validasi oleh ahli media memperoleh persentase sebesar 92,73% dengan kategori Sangat Layak. Hasil validasi oleh ahli materi memperoleh persentase sebesar 93,75% dengan kategori Sangat Layak. Selanjutnya, hasil uji praktikalitas penggunaan oleh siswa memperoleh persentase sebesar 90% yang juga berada pada kategori Sangat Layak. Dengan demikian, trainer mesin cuci berbasis IoT beserta jobsheet pendukungnya efektif digunakan sebagai media pembelajaran untuk meningkatkan pemahaman siswa terhadap konsep dasar instalasi motor listrik satu fasa melalui pembelajaran berbasis praktik dan teknologi.

Kata Kunci: **Trainer Mesin Cuci, Internet of Things (IoT), Motor Listrik Satu Fasa, Media Pembelajaran, ADDIE.**

ABSTRACT

THERESIA SILALAHI. ***Student ID* 5213131007.** ***Development of an IoT-Based Washing Machine Trainer for the Basic Concepts of Single-Phase Electric Motor Installation at SMKS Sinar Husni 2 TR.***

This study aims to develop an Internet of Things (IoT)-Based Washing Machine Trainer as a learning medium for the basic concepts of single-phase electric motor installation at SMKS Sinar Husni 2 TR. The background of this research is based on the limited availability of practical learning media in schools, particularly the absence of an applicative single-phase electric motor trainer integrated with modern technology, resulting in a learning process that is still dominated by animated video media. This condition causes students to experience difficulties in understanding both the concepts and practical applications of single-phase electric motor installation. Therefore, this study formulates the development process of the IoT-based washing machine trainer along with its supporting jobsheets and determines the level of media feasibility, material feasibility, and practicality of its use in learning activities. The research method used is Research and Development (R&D) with the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation). The analysis stage was conducted to identify the need for practical learning media. The design stage included the physical design of the trainer, the IoT-based control system, and the preparation of jobsheets and a user manual. In the development stage, the IoT-based washing machine trainer was assembled and functionally tested, followed by validation by media experts and material experts. The implementation stage was carried out through a trial of the trainer's use with Grade XI students of Electrical Power Installation Engineering, while the evaluation stage was used to assess the feasibility and practicality of the developed product. The results of the study indicate that the IoT-based washing machine trainer is categorized as very feasible for use as a learning medium. The validation results from media experts obtained a percentage of 92.73%, categorized as Very Feasible. The validation results from material experts obtained a percentage of 93.75%, also categorized as Very Feasible. Furthermore, the results of the practicality test conducted with students obtained a percentage of 90%, which is also included in the Very Feasible category. Therefore, the IoT-based washing machine trainer along with its supporting jobsheets is effective as a learning medium to improve students' understanding of the basic concepts of single-phase electric motor installation through practice-based and technology-oriented learning.

***Keywords*: Washing Machine Trainer, Internet of Things (IoT), Single-Phase Electric Motor, Learning Media, ADDIE.**