

ABSTRAK

Pahothon Gultom. Pengembangan *Trainer* Instalasi Motor Listrik dan kendali *Variable Frequency Drive* (VFD) Untuk Pembelajaran Pada Siswa Kelas XI Konsentrasi Keahlian Teknik Instalasi Tenaga Listrik SMKN 13 Medan.

Penelitian ini yang berjudul " Pengembangan *Trainer* Instalasi Motor Listrik dan kendali *Variable Frequency Drive* (VFD) Untuk Pembelajaran Pada Siswa Kelas XI Konsentrasi Keahlian Teknik Instalasi Tenaga Listrik SMKN 13 Medan". Yang mendasari sehingga dilakukan penelitian ini adalah tidak adanya *trainer* Instalasi Motor Listrik dan *Variable Frequency Drive* pada mata pelajaran Teknik Instalasi Tenaga Listrik. Penelitian ini bertujuan untuk melakukan pengembangan terhadap *trainer* Instalasi Motor Listrik dan *Variable Frequency Drive* pada mata pelajaran Teknik Instalasi Tenaga Listrik. Metode yang digunakan pada penelitian ini *Research and Development* (RnD), yang menggunakan model pengembangan ADDIE (*Analysis, Design, Development, Implementasion, Evaluation*), yang meliputi kegiatan Analisis kebutuhan, Observasi lapangan, perancangan produk, pengembangan produk, penerapan produk, dan evaluasi penerapan produk terhadap objek penelitian. Hasil dari penelitian ini adalah: (1) Pengembangan adanya *trainer* Instalasi Motor Listrik dan *Variable Frequency Drive* pada mata pelajaran Teknik Instalasi Tenaga Listrik. (2) Tingkat kelayakan Buku Panduan dan Jobsheet Instalasi Motor Listrik dan VFD menurut ahli materi memperoleh skor sebesar 94% dengan kategori "Sangat Layak" (3) Tingkat kelayakan *trainer* Instalasi Motor Listrik dan *Variable Frequency Drive* menurut ahli media memperoleh skor sebesar 91,31%. dengan kategori "Sangat Layak". (4) Untuk mengukur efektivitas *trainer*, rubrik digunakan untuk menilai keterampilan siswa dalam praktik menggunakan *trainer* hasil pengembangan dan media konvensional sekolah selama tiga pertemuan. Penilaian keterampilan terdiri dari 3 aspek. Hasil penilaian dianalisis menggunakan uji beda. Hasil menunjukkan kemampuan praktik siswa menggunakan *trainer* lebih baik dibandingkan menggunakan media konvensional sekolah, sehingga penggunaan *trainer* efektif untuk meningkatkan kemampuan praktik peserta didik.

Kata kunci: *Trainer*, model pengembangan ADDIE, Instalasi Motor Listrik, *Varibale Frequency Drive*

ABSTRACT

Pahothon Gultom. 5212331003. Development of an Electric Motor Installation and Variable Frequency Drive (VFD) Control Trainer for Teaching Grade XI Students Concentrating on Electrical Power Installation Engineering at SMKN 13 Medan.

This research, entitled “Development of an Electric Motor Installation and Variable Frequency Drive (VFD) Control Trainer for Teaching Grade XI Students Concentrating on Electrical Power Installation Engineering at SMKN 13 Medan,” was conducted because there was no electric motor installation and variable frequency drive trainer for the Electrical Power Installation Engineering subject. This research aims to develop a trainer for Electric Motor Installation and Variable Frequency Drive in the Electrical Power Installation Engineering subject. The method used in this research was Research and Development (RnD), which used the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development model, which included the activities of needs analysis, field observation, product design, product development, product application, and evaluation of product application to the research object. The results of this study are: (1) Development of an Electric Motor and Variable Frequency Drive Installation trainer for the Electrical Power Installation Engineering subject. (2) The feasibility level of the Electric Motor Installation and VFD Guidebook and Worksheet according to subject matter experts scored 91% in the “Highly Feasible” category. (3) The feasibility level of the Electric Motor Installation and Variable Frequency Drive trainer according to media experts scored 91.31% in the “Highly Feasible” category. (4) To measure the effectiveness of the trainer, a rubric was used to assess students' skills in practicing using the developed trainer and conventional school media during three meetings. The skill assessment consisted of three aspects. The assessment results were analyzed using a difference test. The results showed that students' practical skills using the trainer were better than those using conventional school media, indicating that the use of the trainer was effective in improving students' practical skills.

Keywords: *Trainer, ADDIE development model, Electric Motor Installation, Variable Frequency Drive*