

ABSTRACT

Sandy Armando Saputra, NIM : 5123131042 : *Study of Electrical Control Techniques for Simulator of Learning Outcomes of Electric Motor Installations Based on Computer Basic Capabilities of Class XI Electrical Power Engineering (TITL) Students at IMELDA MEDAN PRIVATE VOCATIONAL SCHOOL, TEACHING YEAR 2018/2019.*

Thesis, Faculty of Engineering, Department of Electrical Engineering Education: UNIMED, 2019

This study aims to determine the effect of learning strategies and basic abilities on the learning outcomes of installing electric motors. The research method used in this study is the experimental method that is by giving different treatments to the two research groups. While the research design used was a 2 x 2 factorial variance analysis. This research was conducted at Medan Imeda Private Vocational School in the first semester of the 2018/2019 academic year. The research subjects were all students in grade 1 of the Electrical Installation Engineering Expertise Program which were divided into two classes. Class randomly divided into experimental class and control class. Class 2 TITL 1 is an experimental class taught by using Electrical Control Techniques Simulator Software and class 2 TITL 2 is a control class taught by conventional learning strategies of Non Electrical Control Techniques Simulator Software. The results of the analysis requirements test show that the distribution of learning outcomes data controls the installation of electric motors taught by Electrical Control Techniques Simulator Software and has a high basic computer ability is normally distributed where $L_{table} = 0.234 > L_{hitung} = 0.094$ and learning outcomes master the installation of electric motors taught with Electrical Control Techniques Simulator Software and having low basic computer capabilities are normal distributions where $L_{table} = 0.249 > L_{hitung} = 0.1302$ and learning outcomes mastering the installation of electric motors taught with non Electrical Control Techniques Simulator Software and having high computer basic capabilities are normal distributions where $L_{table} = 0.24 > L_{hitung} = 0.1286$ and learning outcomes mastering the installation of electric motors taught with non Electrical Control Techniques Simulator Software and having low basic computer skills are normal distributions where $L_{table} = 0.242 > L_{hitung} = 0.1231$ and both data variances are Homogeneous ($2 \text{ counts} = 5.83 < 2 \text{ table} = 7.82$). The results of this study indicate that (a) Learning strategies using Electrical Control Techniques Simulator Software and non Electrical Control Techniques Simulator Software provide significantly different influences on student learning outcomes, where ($F \text{ count} = 5.176 > F_{table} = 4.03$) (b) Height the low basic computer ability gives a significantly different influence on student learning outcomes, where ($F \text{ count} = 25,528 > F_{table} = 4.03$), (c) There is no interaction between learning strategies and computer basic skills in influencing learning outcomes, where ($F_{ount} = -0,110 < F_{table} = 4.03$).

Keywords: Electrical Control Techniques Simulator Software. Basic Computer Capabilities, Learning Outcomes of Electric Motor Installations

ABSTRAK

Sandy Armando Saputra, NIM : 5123131042 : *Studi Penggunaan Electrical Control Techniques Simulator Terhadap Hasil Belajar Instalasi Motor Listrik Berdasarkan Kemampuan Dasar Komputer Siswa Kelas XI Teknik Instalasi tenaga Listrik (TITL) SMK SWASTA IMELDA MEDAN TAHUN AJARAN 2018/2019.*

Skripsi, Fakultas Teknik Jurusan Pendidikan Teknik Elektro: UNIMED, 2019.

Penelitian ini bertujuan untuk mengetahui pengaruh strategi pembelajaran dan kemampuan dasar terhadap hasil belajar instalasi motor listrik. Metode penelitian yang digunakan dalam penelitian ini adalah metode eksperimen yaitu dengan memberikan perlakuan yang berbeda pada kedua kelompok penelitian. Sedangkan rancangan penelitian yang digunakan yaitu analisis varians faktorial 2 x 2. Penelitian ini dilakukan di SMK Swasta Imeda Medan pada semester satu tahun ajaran 2018/2019. Subjek penelitian yaitu seluruh siswa kelas 1 Program Keahlian Teknik Instalasi Tenaga Listrik yang terbagi atas dua kelas. Secara acak kelas dibagi atas kelas eksperimen dan kelas kontrol. Kelas 2 TITL 1 menjadi kelas eksperimen yang diajar dengan menggunakan *Electrical Control Techniques Simulator Software* dan kelas 2 TITL 2 menjadi kelas kontrol yang diajar dengan strategi pembelajaran konvensional non *Electrical Control Techniques Simulator Software*. Hasil uji persyaratan analisis menunjukkan bahwa sebaran data hasil belajar menguasai instalasi motor listrik yang diajar dengan *Electrical Control Techniques Simulator Software* dan memiliki kemampuan dasar komputer tinggi adalah berdistribusi normal dimana $L_{tabel} = 0,234 > L_{hitung} = 0,094$ dan data hasil belajar menguasai instalasi motor listrik yang diajar dengan *Electrical Control Techniques Simulator Software* dan memiliki kemampuan dasar komputer rendah adalah distribusi normal dimana $L_{tabel} = 0,249 > L_{hitung} = 0,1302$ dan hasil belajar menguasai instalasi motor listrik yang diajar dengan non *Electrical Control Techniques Simulator Software* dan memiliki kemampuan dasar komputer tinggi adalah distribusi normal dimana $L_{tabel} = 0,24 > L_{hitung} = 0,1286$ dan hasil belajar menguasai instalasi motor listrik yang diajar dengan non *Electrical Control Techniques Simulator Software* dan memiliki kemampuan dasar komputer rendah adalah distribusi normal dimana $L_{tabel} = 0,242 > L_{hitung} = 0,1231$ dan kedua varians data adalah Homogen ($\chi^2_{hitung} = 5,83 < \chi^2_{tabel} = 7,82$). Hasil penelitian ini menunjukkan bahwa (a) Strategi pembelajaran menggunakan *Electrical Control Techniques Simulator Software* dan non *Electrical Control Techniques Simulator Software* memberi pengaruh yang berbeda secara signifikan terhadap hasil belajar siswa, dimana ($F_{hitung} = 5,176 > F_{tabel} = 4,03$) (b) Tinggi rendahnya kemampuan dasar komputer memberi pengaruh yang berbeda secara signifikan terhadap hasil belajar siswa, dimana ($F_{hitung} = 25,528 > F_{tabel} = 4,03$) (c) Tidak ada interaksi antara strategi pembelajaran dengan kemampuan dasar komputer dalam mempengaruhi hasil belajar, dimana ($F_{hitung} = -0,110 < F_{tabel} = 4,03$).

Kata Kunci : *Electrical Control Techniques Simulator Software*. Kemampuan Dasar Komputer, Hasil Belajar Instalasi Motor Listrik.