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E-Jobsheet on Electrical Power Installation Course

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ABSTRACT

The purpose of this research is to produce an e-jobsheet on the Electrical Power Installation Practicum that is valid, practical, and effective for electrical engineering students at the Padang State University. The research method used is research and development. The findings of this study are that this research has succeeded in developing an e-jobsheet in the electrical power installation course that has been developed effectively based on the cognitive and psychomotor learning outcomes of students. Based on the difference between the results of the pretest and posttest, it can be concluded that e-joobheet has been effective. The implication of this research is that e-joobsheets can be used by lecturers in charge of electrical power installation courses at the Department of Electrical Engineering, Padang State University.

Keywords: Effectiveness, E-module, Electric Power Installation

1. INTRODUCTION

The world of technology is growing rapidly. Not only in the industrial sector, but also in the field of education. The development of online learning systems has emerged, both for the learning process, to train students' skills online, as well as to support the learning process in schools. The world of education also never stops developing to produce new branches of knowledge. So many are still not touched by digital technology in the learning process. This has an impact on the less than optimal educational process both at school and on campus. One of the researchers' focus is on electrical power installation courses.

Electrical installation is one of the compulsory subjects in the electrical engineering department. Electrical power installation course learns about the process of electrical installation with high power. One of the difficulties experienced by electrical engineering students in learning is the job sheet that is always left behind or lost. In addition, the material provided is also felt to be lacking and tutorials are rarely given, making students often have difficulty understanding learning and often experience delays in working on electrical power installations.

E – electric power installation practicum jobsheet is an E-Joobsheet created to help students and lecturers in the learning process. This E-Jobsheet contains reading material for students related to electrical power installations, practical electric power installation worksheets and also a short video about the installation process and the installation design process using supporting applications such as EKTS. With this application, it is expected to facilitate the learning process in the classroom or in the workshop. So that the learning process is maximized and can be completed on time. This study aims

to design an E-Jobsheet application for electrical power installation courses. The design carried out is to adjust the features of the e-joobdsheet application to the needs of electrical engineering students.

2. EXPERIMENTAL

In this study, the Four-D development model will be used. The Four D model is a suitable model for research, where this activity starts from analyzing the problem in the background of the problem. The activity is in the form of observation/observation and concludes several events that appear in the formulation of the problem. In the later research, treatment will be given to the experimental class and no treatment (treatment) to the control class. Data collection was assisted by distributing instruments in the form of questions to electrical engineering students who took the Electrical Power Installation course to assess cognitive aspects.

The source of data in this study is primary data obtained from students taken through the effectiveness of the developed e-module. The research subjects were electrical engineering students, totaling 20 people. The sampling technique used is purposive sampling, namely sampling according to the needs of the researcher. The data analysis of the effectiveness of the e-learning module was carried out by using the t test.

3. RESULTS AND DISCUSSION

3.1 Submission Process

The development of an E-Jobsheet in the electrical power installation course is an activity carried out to produce a valid, practical and effective E-jobsheet. In the first stage, the student analysis process and curriculum in the electric power installation practicum were carried out. The next stage is the design of the e-jobsheet which is adapted to the jobsheet from the lecturer in charge of the electrical power installation course at the Faculty of Engineering, Padang State University. The main activities at this stage are writing, reviewing and editing the electric power installation E-jobsheet by paying attention to language, word order, format, purpose, evaluation and pictures, video and audio. The following is the E-Jobsheet design that will be developed:

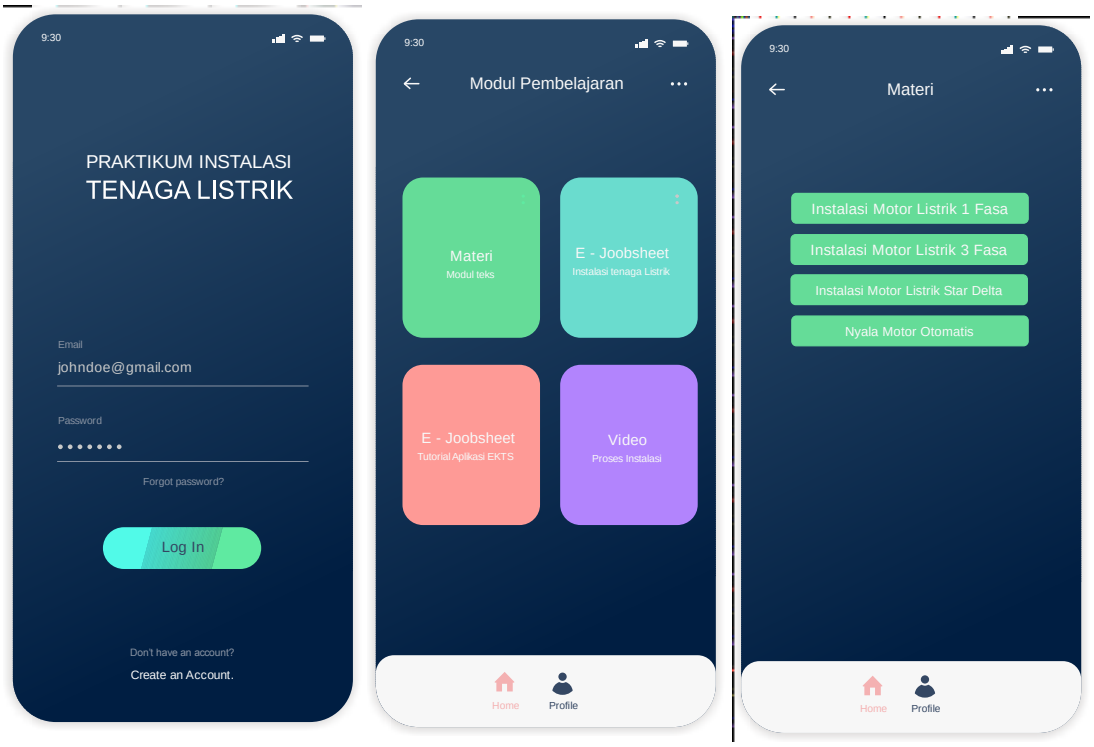

Figure 1. E-Jobsheet Aplication

The design of the front page contains the title of the E-Jobsheet for electric power installations. And go straight to the main menu. The main menu consists of Material, Jobsheet and video menu options. The results of testing the effectiveness of the E-Jobsheet consist of normality, homogeneity and hypothesis testing.

Normality test is conducted to test whether the data is normally distributed/not. The results of the normality test are: the normality value of the pre-test data is 0.107. The normality value is greater than the significance value (0.107>0.05) if this value is reached, it is said to be normally distributed. Furthermore, the normality value of the post-test data was obtained at 0.267, the normality value was greater than the significance value (0.267 > 0.05) so that the data was declared normally distributed. After the data is declared normal, it is continued with the homogeneity test which is a test to find out whether the two data obtained from the two groups have the same variance or vice versa. have the same variance (homogeneous).

Furthermore, hypothesis testing was carried out with t-test. Obtained a significance value of 0.000, which means that the value of sig.0.000 <0.05 means that there is a significant difference in the learning outcomes of students before and after using the project-based learning e-module. Effectiveness testing is also carried out using the effect size formula. Based on these tests, the results obtained are 0.6 with a medium category, meaning that the effect of using E-Jobsheet in the Electrical Power Installation course has a medium category. The effectiveness test was conducted to see the impact of using E-Jobsheet. The results of the effectiveness were seen based on the differences in the results of the pre-test and posttest to see the significance value between the learning outcomes before

using the E-Jobsheet and the learning outcomes after using the E-Jobsheet. Based on the analysis carried out at the effectiveness test stage, it proves that the E-Jobsheet in the practicum process helps students of electrical engineering at the Padang State University to understand the material faster so that they can complete the electric power installation practicum more quickly.

4. CONCLUSION

Based on the results of the study, several conclusions were obtained, namely: (1) This study produced an E-Jobsheet for the Electrical Power Installation Practice Course. The contents of the created E joobsheet consist of text, images, and videos. E-Jobsheets that are made based on applications which can later be accessed offline to read materials and jobsheets, but videos are made online to reduce the burden of installing applications. (2) Research produces an effective E-Jobsheet. The effectiveness of the E-Jobsheet is seen based on the cognitive and psychomotor learning outcomes of students in carrying out practicals, which are categorized as effective. (3) Cognitive learning outcomes of students are seen based on the value of completeness with the percentage categorized as effective. Based on the difference in the results of the pretest and posttest, it obtained a low significant value so that it was declared effective. Based on the magnitude of the impact of the use of E-Jobsheet, it gives a high effect value. Based on the psychomotor value, the results of the practice of students achieve completeness scores. This means that e-joobsheets are said to be effective judging from the psychomotor aspects of students when carrying out practical activities. The results of developing a valid E-Jobsheet can be used by Lecturers in carrying out their learning process because the e-module developed is in accordance with learning outcomes in the 2013 curriculum.

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