

Development of Four Station Industrial Automation Control E-module Loaded with Character Education for PLC Practical Learning in the Applied Undergraduate Study Program in Electrical Engineering

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ABSTRACT

The aims of this research are: (1) to produce an e-module for controlling four-station industrial automation with character education; (2) determine the feasibility of the four-station industrial automation control e-module product containing character education according to material experts and media experts; and (3) to find out the student's assessment of the four-station industrial automation control e-module product containing character education to be used in PLC practical learning in the Applied Electrical Engineering Undergraduate Study Program.

The type of research used in this research is research and development which refers to the Waterfall development model according to Pressman (2010), which in general has steps: requirements specification, planning, modeling, construction, and implementation. Data collection techniques used include: observation, interviews, and questionnaires, while the instruments used are: observation sheets, interview guides, and questionnaires. The research subjects include: PLC Practice lecturer, 2 material experts, 2 media experts, and students taking PLC Practice. The data obtained were analyzed descriptively. The targeted mandatory outputs are Sinta indexed national journal articles, while additional outputs are articles on the proceedings of reputable indexed international seminars, and teaching materials in the form of e-modules.

The results showed that: (1) a four-station industrial automation control e-module product containing character education was produced to be used in PLC Practice learning in the D4 Electrical Engineering Study Program, with 9 learning activities; (2) The e-module product was validated by a material expert as suitable for use with a percentage of 80.30%, and validated by an appropriate media expert with a percentage of 80%, and (3) The e-module product was assessed by students in the good category with a percentage of 81, 03%.

Kata Kunci: e-module, industrial system automation, PLC, character education