Pengembangan Sistem *Monitoring* Kondisi Lampu, Suhu, dan Kelembapan Berbasis IoT Sebagai Media Pembelajaran Pemrograman Mikroprosesor dan Mikrokontroler di SMK 3 Muhammadiyah Yogyakarta

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ABSTRAK

Penelitian ini bertujuan untuk mengetahui: (1) pengembangan sistem *monitoring* kondisi lampu, suhu, dan kelembapan berbasis IoT sebagai media pembelajaran pada mata pelajaran pemrograman mikroprosesor dan mikrokontroler, (2) unjuk kerja sistem *monitoring* kondisi lampu, suhu, dan kelembapan berbasis IoT sebagai media pembelajaran pada mata pelajaran pemrograman mikroprosesor, (3) tingkat kelayakan dari sistem *monitoring* kondisi lampu, suhu, dan kelembapan berbasis IoT sebagai media pembelajaran pada mata pelajaran pemrograman mikroprosesor dan mikrokontroler.

Penelitian ini merupakan jenis penelitian dan pengembangan media pembelajaran menggunakan model ADDIE menurut Robert Maribe Branch. Subjek penelitian ini adalah siswa kelas XI Jurusan Teknik Audio Video, SMK 3 Muhammadiyah Yogyakarta. Pengumpulan data menggunakan instrumen kuisioner atau angket dengan skala Likert 4 pilihan.

Berdasarkan dari penelitian diperoleh (1) proses pengembangan media pembelajaran sistem *monitoring* kondisi lampu, suhu, dan kelembapan berbasis IoT, yaitu: (a) mengidentifikasi permasalahan, (b) mengidentifikasi komponen media pembelajaran sistem *monitoring* kondisi lampu, suhu, dan kelembapan berbasis IoT yaitu NodeMCU V3 sebagai kontroler, sensor DHT11 sebagai sensor, serta merancang desain media pembelajaran, (c) merakit media pembelajaran sistem *monitoring* kondisi lampu, suhu, dan kelembapan berbasis IoT, membuat panduan pengoperasian dan *jobsheet,* melakukan unjuk kerja, serta melakukan uji kelayakan, (2) unjuk kerja media pembelajaran sistem *monitoring* kondisi lampu, suhu, dan kelembapan berbasis IoT yaitu dapat melakukan *monitoring* kondisi lampu, suhu, dan kelembapan yang ditampilkan pada aplikasi Blynk di *smartphone*, (3) tingkat kelayakan media pembelajaran sistem *monitoring* kondisi lampu, suhu, dan kelembapan berbasis IoT ditinjau dari segi media termasuk dalam kategori "Sangat Layak" dengan persentase 85,79%, dari segi materi diperoleh persentase 93,75% yang berarti masuk dalam kategori "Sangat Layak". Uji pengguna diperoleh persentase 84,20% yang berarti masuk dalam kategori "Layak". Dapat ditarik kesimpulan bahwa media pembelajaran sistem *monitoring* kondisi lampu, suhu, dan kelembapan berbasis IoT layak digunakan sebagai media pembelajaran.

Kata kunci: Penelitian dan Pengembangan, IoT, NodeMCU V3

***Development of Monitoring Systems Lamp, Temperature and Humidity Condition based on IoT as Learning Media in Microprocessor and Microcontroller Programming at* SMK 3 Muhammadiyah Yogyakarta**

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ABSTRACT

This study aims to find out: (1) the development of monitoring system of lamp, temperature and humidity condition based on IoT as a learning media on microprocessor and microcontroller programming subjects, (2) the performance of the Monitoring Systems Lamp, Temperature and Humidity Condition based on IoT as a learning media on microprocessor and microcontroller programming, (3) the feasibility of the monitoring system of lamp, temperature and humidity condition based on IoT as a learning media for microprocessor and microcontroller programming.

This research is a type of research and learning media development using the ADDIE model according to Robert Maribe Branch. The subjects of this study were students of class XI Department of Audio Video Engineering, SMK 3 Muhammadiyah Yogyakarta. Data collection using a questionnaire instrument with a 4 Likert scale choice.

Based on the research obtained (1) the process of developing learning media monitoring system of lamp, temperature and humidity condition based on IoT, namely: (a) identifying the problem, (b) identifying the learning media components of the monitoring system of lamp, temperature and humidity condition based on IoT, namely NodeMCU V3 as a controller, the DHT11 as a sensor, and designing learning media, (c) assembling the learning media for the monitoring system of lamp, temperature and humidity condition based on IoT, create operating guides and jobsheets, do work performance, and conduct feasibility test, (2) the performance of the learning media of the monitoring system of lamp, temperature and humidity condition based on IoT that can monitor the condition of the lamp, temperature and humidity that support the Blynk application on a smartphone, (3) the feasibility level of learning media for monitoring system of lamp, temperature and humidity condition based on IoT in terms of media included in the category of "Very Feasible" with precentage 85.79%, in terms of material obtained a percentage of 93.75% which means it is included in the "Very Feasible" category. User test obtained 84.20% which means it is included in the " Feasible" category. It can be concluded that the learning media monitoring system of lamp, temperature and humidity condition based on IoT is feasible as a learning media.

Keywords: Research and Development, IoT, NodeMCU V3