

COMPETITIVE GRANTS RESEARCH REPORT

Year II



INNOVATION OF MICROCONTROLLER-BASED LEARNING MEDIA FOR SCIENCE AND TECHNOLOGY IN JUNIOR HIGH SCHOOL

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NOVEMBER 2011

Dibiayai oleh Direktorat Jenderal Pendidikan Tinggi, Kementrian Pendidikan Nasional, sesuai dengan Surat Penjanjian Pelaksanaan Hibah Penelitian Nomor :

033/SP2H/PP/DP2M/III/2010

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ABSTRACT

An innovation in the development of learning media for science and technology subject in junior high school is needed in order to attract student to be creative. The objective of this research are (1) Creating science and technology microcontroller-based learning media in Junior High School (2) Conducting socialization through training microcontroller for science teacher in Junior High School (3) Testing the effectiveness of microcontroller-based learning in science and technology in Junior High School (4) Generating scientific journal

This research was conducted in two years. The first year include the preparation of the learning media device as follow: (a) Designing microcontroller-based technology simulator as the learning media (b) Realizing the design (c) Device specification testing (d) Validating with the experts such as media expert (lecturer learning media) and electronics junior high school teacher. The second year was the continuation from the first year result. This research was started by socialization through microcontroller training for junior high school science and technology teacher in Sleman, Magelang, as well as Yogyakarta. Furthermore, effectiveness from the microcontroller-based science and technology learning media was tested using project-based learning. In addition, field testing was conducted in Muhammadiyah 3 Junior High School, Depok Sleman.

This research successfully generates microcontroller-based science and technology learning media in junior high school that consist of input, process, and output. The assessment result of socialization to the teachers revealed some teacher's impression to media that media is interesting and capable to give real experience according to the daily needs. From that reason, media can give motivation and increase students' interest to learn electronics skill. Based on the observation in class, implementation of microcontroller-based learning media for science and technology in electronics subject can draw students' interest. It is proven by students' response to the open questionnaire which has positive results with reasons: fun, good, exciting, amazing because they can try new things, new experience, not boring, easily understood, and has more clearly practice. The calculation from the closed questionnaire shows that students' motivation with innovation of microcontroller-based learning media measured by the criteria of motivation as the courage to act creatively 70% very high and 30% high. Based on those results, it can be concluded that innovation of microcontroller-based learning media for science and technology subject in junior high school is effective.