DESIGNING THE INSTRUCTIONAL MEDIA FOR INTERNET OF THINGS CLASS BASED ON VIRTUAL REALITY

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ABSTRACT

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In the era of industrial revolution 4.0, IoT is applied in various sectors of life. Because of this, IoT has an important role, IoT can be included in the curriculum of primary, secondary and higher education. However, due to the wide scope of this IoT, the learning of IoT needs a strategy and material depth level that is appropriate to the level of education. On the other hand multimedia technology is currently popular with Augmented Reality (AR) and Virtual Reality (VR) technology. AR / VR technology can provide a clearer and more detailed 3-dimensional picture of certain objects. These particular objects usually have a large physical size, or are currently not easily obtained, or endanger the safety of people, so it is very difficult or even impossible to be presented in front of the class. With AR / VR technology it is as if students can interact in live.

This research will design, develop and apply VR technology to help IoT learning at bachelor level students. With VR technology in IoT learning, students can ostensibly see, select and use components such as sensor, actuators and microcontroller. Then program the microcontroller to control the sensor and actuator. Data from sensors already inside the microcontroller by students is then sent to the middle ware in the cloud. A windows or android based application is then made to access the sensor data in the cloud. Students also with the android application, in addition to being able to see sensor data, can also control the actuator. VR-based IoT learning media is expected can add to the attractiveness of students to learn IoT. Besides that, this learning media can increase the efficiency and effectiveness of IoT learning because there is no need to build or add physical facilities and infrastructure in the lab to practice IoT.

This research would be approached by the Research and Development research method. The development model used in this research consists of Analysis, Design, Development, Implementation, and Evaluation. The selection of this model because the stages of the ADDIE model is suitable for software development and has rational and complete stages so that it can be used to produce high - quality products that have been tested by material experts, media experts, and users. The expectation and target of this research output are an instructional media based on VR for IoT class, a research paper for an international journal and patent.

A new innovation of the learning (instructional) media for supporting the IoT class already developed. The learning media is mobile application based on Virtual Reality technology. This VR application can be accessed through a mobile (android) gadged with VR Box glass to encourage the students. After conducting the feasibility testing, the IoT instructional media has been proven to be able to functionally support an IoT Class. Through the instructional media, students can intelligently explore and use the instructional media without limitation of space and time