IoT-BASED LABORATORY BLENDED MODEL USING MQTT PROTOCOL AND AUGMENTED REALITY AS A REALISTIC STRATEGY OF INCREASING HOTS TOWARDS EDUCATION SECTOR SDGs

by Dadan Rosana, Supahar, Sukardiyono

ABSTRACT

This research has proven that the application of the Blended Laboratory Application Based on Internet of Things (BLABIOT) in the Science Practicum uses the STEM (Science, Technology, Engineering, and Mathematics) approach this year the focus is on developing Science Process Skills (SPS) and Design Carrying Out Investigation (DCOI) as part of High order Thinking Skills, for junior high school students. The application of the STEM approach in science learning can solve the problem of the emergence of difficulties for students in connecting technological elements represented by the Internet of Things, engineering elements realized in blended laboratory applications, as well as mathematical elements in data analysis and graphics produced by multisensors physical variables based on IoT-based environment. . The research methodology used in the research was field experiments in the form of implementing BLABIOT in the SMP Science laboratory and Research & Development (R&D) model0spiral (Cennamo and Kalk [1]) in the form of developing STEM models to improve students' SPS and DCOI. The results of the assessment based on media experts obtained an average percentage of 81.52%, while the results of the assessment from material experts obtained an average percentage of 83.5%. From these results it can be concluded that the developed BLABIOT learning media is in the good category and is suitable for use. The user response of the blended laboratory application is in very good category (80.14%). The results of the MANOVA test calculations in the table above can be seen that the significance value of the intercept test is 0.000 <0.05 so it can be concluded that there is a significant influence from the application of the STEM-based BLABIOT application on SPS and the ability to design carrying out investigations for junior high school students simultaneously. The outputs produced this year are; (1) Copyright for practical guidelines for measuring environmental parameters using the internet of things in blended laboratory applications. (2) International Journal of European Modern Studies Journal Vol 4 No 5 , October 2022, (3) Accepted in AIP Conference Proceedings of ICRIEMS, (4) presented UNIMA international conference on science and technology 2022.

Kata Kunci: *Blended Laboratory, IoT, Augmented Reality, STEM, HOTs*