

STEM-CONTEXTUAL AGRICULTURE LEARNING THROUGH THE APPLICATION OF MULTISENSORS IN INTERNET OF THINGS BASED SCIENCE PRACTICUM TO IMPROVE INTEGRATED SCIENCE PROCESS SKILLS

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ABSTRACT

Recent technological developments have encouraged science learning in universities to be able to anticipate these changes both from a theoretical and practical perspective. Science Process Skills remain very important as a scientific foundation based on the Nature of Science (NOS). However, because the task of learning is to prepare graduates to face future challenges, realistic and implementable contextual skills and knowledge are very necessary. Therefore, this research aims to answer these challenges through the STEM-C (STEM-contextual) model through the application of multisensors in IoT (Internet of Things) based science practicum combined with an Audio Stimulator System (ASS) as a technology implementation in the agricultural sector. The agricultural sector was chosen as a contribution to science learning in our country as an agricultural country. Design Based Research from Dick and Carey was used in developing the STEM-C learning model which consists of: 1) problem analysis; 2) development; 3) trials; 4) testing; and 5) reflection. The data analysis used is quantitative descriptive analysis, and effectiveness and superiority analysis using an integrated science process skills (ISPS) measurement instrument through a difference test between variants. The product to be developed has specifications: STEM-C model syntax which is expected to improve students' integrated science process skills; integrated PPP assessment instrument; and learning content in the form of handouts and IoT-based multisensory instruments. This result shows that the students who participated in the STEM-C agriculture had an average score of 4.35 (S.D. = 0.54) and 4.58 (S.D. = 0.50) in pre-experimenta skills and experimental skills respectively. It is recommended that educators provide a classroom climate that helps develop integrated science process skills by implementing a STEM-Contextual approach in their learning practices.

Kata Kunci: STEM-Contextual, Internet of Things, Multisensor, Audio Stimulator Sysstem, Agriculture