

IMPLEMENTATION OF CONSTRUCTIVISM-BLENDED LEARNING USING STEM BASED E-MODULES TO IMPROVE CREATIVE THINKING SKILLS AND LEARNING MOTIVATION OF INDONESIAN AND MALAYSIAN STUDENTS

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ABSTRACT

Science students in the 21st-century need to have critical and creative ability thinking skills in solving real-world problems. Therefore, numerous teachers still have difficulties in integrating science, technology, mathematics, and engineering to design technologies that solve real-world problems. This study aims to measure the effectiveness of STEM-based e-modules that used three different constructive learning models such as Project-Based Learning, Guided Discovery Learning, and Problem Based Learning, we embedded an engineering challenge so that students can improve their creative thinking skills and learning motivation. This study used the 4D Model's method which consists of four stages, namely define, design, development, and dissemination. The subjects of this study are students in several high schools in Yogyakarta. The e-modules are categorized as feasible, with details STEM-based PjBL e-modules that have an average value of 3.68, E-Module Particle Dynamic STEM-based GDL that have an average value of 3.82, E-Module Physics on Circular Motion based on PBL-STEM that have an average value of 3.85. A questionnaire assessment of students in the third readability e-modules found that the three e-modules got an average feasibility score of 3.17 for STEM-based PjBL e-modules, 3.06 scores for E-Module Particle Dynamic STEM-based GDL, and 3.18 points for E-Module Physics on Circular Motion based on PBL-STEM. Lesson plan implementation data is obtained through the lesson plan implementation observation sheet. Thus, this study aims to measure the effectiveness of STEM-based constructivist learning model e-modules.]

Kata Kunci: *STEM, constructivist learning model, creative thinking, motivation*