# The Effectiveness of Science, Technology, Engineering, and MathematicsInquiry Learning for 15-16 Years Old Students Based on K-13 Indonesian Curriculum: The Impact on the Critical Thinking Skills

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**Abstract:** Industrial revolution 4.0 is currently present in various countries, including Indonesia. Indonesia responded quickly through technological developments, especially education. The actions of the Indonesian government to deal with industrial 4.0 are contained in the 4C principle, one of which is Critical Thinking. The Science, Technology, Engineering, and Mathematics (STEM) learning approach has become an alternative in building critical thinking skills, especially in science learning. The purpose of this study is to quantitatively measure the impact of the STEM-inquiry model based on the K-13 Indonesian Curriculum towards critical thinking skills of 15-16 years old students. This study employed quasi-experimental with non-equivalent control group design at SMAN 1 (State Senior High School) Padang Cermin, Lampung, Indonesia. The research subjects consisted of 50 students. The critical thinking skill was measured through 10 items of an essay question on the momentum and impulse material. Based on the results of the non-parametric statistical hypothesis test Mann Whitney, the significance level of 0.004 was obtained (sig <0.05). The results of the hypothetical test showed that the student's critical thinking skills before and after using the STEM-based inquiry model were different. It can be concluded that the application of the STEM-based inquiry model was effective in increasing students' critical thinking skills.

**Keywords:** *Critical thinking skills, effectiveness of STEM, STEM-inquiry, STEM learning.*