STEM CAREER INTEREST OF LOW SOCIOECONOMIC STUDENTS

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One of the underrepresented groups in STEM fields is socioeconomically disadvantaged individuals (Shaw & Barbati, 2010). For example, Leslie, McClure, and Oaxaca (1998) suggest that parents’ education and income level are significant predictors of students’ college selection, especially for technical fields. The Royal Society (2008) indicated that the majority of people who study science, specifically physical science, at universities are those who come from high socioeconomic status (SES) groups. Actually, students’ socioeconomic backgrounds’ effects have been seen in early ages. International studies like TIMSS suggest that home background is a significant predictor of both science and math achievement (Gustafsson, Hansen, & Rosén, 2011). STEM education for low socioeconomic groups is important since it would expand individuals’ not only economic opportunities, but also social opportunities (MacPhie, Farro, & Canetto, 2013). Moreover, pre-high school experiences are important for students’ career choice in the future (Sadler, Sonnert, Hazari, & Tai, 2012). Therefore, the present study aims to investigate low socioeconomic middle school students’ STEM career interest (in areas of physical science, life science, technology, engineering, and mathematics) in relation to demographic variables of gender and grade level, and attitudes towards STEM areas. The sample of the study consisted of 263 sixth, seventh, and eighth grade students attending one of five middle schools located in the rural areas of a city in the northeast region of Turkey. Results showed that students had positive feelings in having a STEM career and these perceptions did not differ in terms of gender and grade level. Moreover, students’ STEM career interest was high for both males and females. Among three grade levels, there was no significant difference in terms of STEM career interest, except for life science. Additionally, canonical correlation analysis showed that students’ career interest in STEM was positively related to students’ attitudes towards STEM fields.

Keywords: STEM education, Socioeconomic status, Middle school, STEM career interest, STEM attitude

STEM PEDAGOGICAL APPROACH FOR PRIMARY SCIENCE TEACHERS’ THROUGH EARLY ENGINEERING TRAINING PROGRAM

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Strengthening STEM initiatives outlined in the Malaysian Blueprint 2013-2015 aims to ensure students are equipped with the necessary skills to meet the challenges of an increasingly industrialized world. Therefore, it is necessary for teachers to be equipped with knowledge and teaching approach for STEM education starting from primary school teachers. This is to ensure that the mindset towards STEM fields can be cultivated and sown from early schooling level. Teachers of primary and secondary schools in Malaysia is still new in STEM education to understand let alone to apply the STEM pedagogical approach in schools. Based on the conceptual framework STEMM, primary science education is responsible for ensuring that students are able to make connections and build a foundation in science. Thus, the responsibility of a primary teacher is to ensure interest in science is applied and maintained using STEM pedagogical approach so that students are more inclined to investigate and explore matters related to science. Thus, this paper will share experiences of how the teacher early engineering training program was implemented and the impact obtained by the teacher for preparing for implementing STEM education in primary schools.

Keywords: Stem pedagogical approach, Primary science teachers, Early engineering