

Exploring Students' Stem Imagination Process Through an Engineering Design Process

ABSTRACT

This research was conducted to explore the STEM imagination of Grade 10 students from one Malaysian rural secondary school that adopted the integration of the imagination process in an Engineering Design Process (EDP) through an outreach program in STEM. Four stages of the STEM imagination process were examined: initiation, dynamic adjustment, virtual implementation and implementation. A total of 50 students aged 16 participated in a 10-hour program which engaged them in designing and building two different prototypes. Data on students' STEM imagination were captured through teachers' field notes based on focus group interviews and observations. The findings reveal that students needed to draw from their lived experiences to brainstorm problems and solutions around a given scenario, and to arrive at a workable solution in order to move from the initiation to the implementation stage. The findings also suggested that the EDP approach is able to create a supportive environment for nurturing STEM imagination among rural secondary school students.