

## **A case study of needs assessment of science, technology, engineering and mathematics (STEM) education in lower secondary schools**

### **ABSTRACT**

Science, Technology, Engineering and Mathematics (STEM) education in the formal school curriculum can be described as a STEM-related individual subject; as a learning package offering learning pathway for STEM elective subjects and as an integrated STEM learning approach. This study focuses on the needs assessment of STEM education as a learning approach among lower secondary school teachers in a local district in Malaysia. The current and desired situations were analysed as well as the causal factors which guide the choice of any intervention programs to address the actual needs. Three schools were selected through heterogenous purposive sampling. The teachers from each school were selected through criterion sampling based on predetermined criteria. 31 teachers from the lower secondary level who teach STEM related subjects as well as the head of panel and departments of the STEM subjects, were selected as the participants. Focus group and one-to-one interviews were conducted with the participants after receiving their consent. There is a gap between the desired situation and the current situation in the implementation of integrated STEM education. The implementation of STEM education at the lower secondary level can be facilitated through various means such as a comprehensive STEM education professional development or training for teachers, collaborations between STEM subjects teachers through lesson studies or professional learning community, and working together with local STEM expertise or community of practice. The findings provide relevant information and guidance on the selection of intervention for the integrated STEM education in addressing the needs. It also initiates the planning of the integrated STEM education programs which focuses on the gaps as the means to achieve the desired results.