ABSTRACT:

Under the Malaysian New Economic Model, a few strategic reform initiatives (SRI) call for globally competitive and excellent engineers. The recruitment of students into engineering programs at Malaysian higher education institutes is based solely on the students' examination results. Hence, it is not known whether students who apply for engineering programs have the correct pre-conception of what constitute engineering. This study aims at identifying engineering elements that can be integrated into school science and mathematics curriculum to introduce engineering at the school level. The engineering elements serve as the basis to produce an engineering profile database which is useful to identify potential school students to enroll in engineering programs. This paper reports the identification of engineering elements and surveys carried out among first-year and final-year engineering students studying at Universiti Teknologi Malaysia, the only research university in Malaysia that specialized in engineering. The engineering elements, namely inquiry, design, operation and sustainability, were identified through literature review and interview with experts in engineering education while a set of questionnaire was used to identify the profiles of the students. The profiles of the first-year and final-year engineering students were compared to map out the engineering elements developed among them.