

STEM Roadmap to Meet Growing Demand for Engineers in The Future



*Dato' Ir. Lim Chow Hock
President, IEM*

*Y.Bhg. Dato' Ir. Lim
Chow Hock is President
of the Institution of
Engineers, Malaysia for
Sessions 2014/2015 and
2015/2016.*

The Institution of Engineers, Malaysia (IEM) is aware of the declining number of science students which will affect the supply of engineers and technologists in the country in future.

Science students are the human resources from which universities produce engineers. With fewer science students in schools, there will be a corresponding limitation in the ability of universities to produce the number of engineers that the country needs. For the engineering profession, the declining interest in science subjects in schools will result in a dearth of students eligible to pursue engineering courses in universities.

The consequences are disastrous. It will mean an insufficient number of engineers to implement and maintain the many projects in the country which, in turn, will slow down the pace of national economic development. A shortage of engineers will definitely hinder the nation's target to achieve developed and high income status.

The Malaysian government places great importance on Science, Technology, Engineering and Mathematics (STEM) education and has set the target ratio of 60:40 Science and Technical versus Art stream. In 2011, only 45% of students graduated from Science stream, including technical and vocational programmes. The number of PMR students who qualified to study science but chose not to do so, increased by approximately 15%. This raises concerns about the education system's ability to produce sufficient STEM graduates for the nation.

The National Council for Scientific Research and Development estimates that we will need 493,830 scientist and engineers by 2020. However, the Ministry of Science, Technology and Innovation (MOSTI) estimates that there will be a shortfall of 236,000 people. As a professional body for engineers, IEM has a membership of approximately 40,000 members including graduates and students.

There are several factors underlying the declining enrolment and interest in Science subjects. These include limited awareness about STEM, perceived difficulty of STEM subjects, content-heavy curriculum, inconsistent quality of teaching and learning as well as limited and outdated educational infrastructure.

To strengthen STEM education in Malaysia, the challenge lies in getting students to love science and to choose science classes. Science and mathematics subjects must be made interesting, easy to understand, more hands-on and exploratory.

IEM supports the various government agencies in building awareness on Science and Mathematics programmes. It is actively involved in conducting school career awareness talk, competitions and exhibitions about interesting projects on engineering to school children to promote greater interest in engineering. Engineering students are also encouraged to join IEM as Student Members which will enable them to access IEM's resources and join IEM's activities, talks and networking sessions.

IEM is a co-organiser (together with AAET, UTAR and MIGHT) for the Kuala Lumpur Engineering Science Fair (KLESF), an annual programme aimed at promoting interest in STEM among primary and secondary school children. This year the KLESF will be held at Mines from 4-6 November, 2016.

IEM is also of the opinion that career prospect is a major factor in the students' decision when considering study options. In order to educate the public on the diverse career opportunities in engineering, IEM and CIDB will organise the CIDB-IEM Construction Career Fair during International Construction Week 2016 on 12-14 April.

The prospect to reach top positions, appropriate remuneration as well as status recognition for engineers will help motivate school students to take up STEM Education

and then pursue a career in engineering. Recognising the contribution of engineers and providing a structural pathway to the top position in the Civil Service will be a big motivator for students to pursue STEM education.

While it is important to produce more STEM students and engineering graduates to meet the national demand, it is also of paramount importance to address the quality of engineering graduates; this is an area where IEM is ready to assist.

IEM is of the opinion that, with the diversity of degree programmes offered by the increasing number of universities, there is a need for a standardised benchmarking system to test graduates on engineering fundamentals. IEM proposes to introduce Fundamental Engineering Examination (FEE) as a means to ensure that graduates entering the industry have minimum competency at least, in engineering fundamentals.

The Ministry of Education has acknowledged the importance of STEM as evinced in the Malaysia Education Blueprint 2013-2015. IEM fully supports the Malaysia Education Blueprint 2013-2025 and the roadmap to strengthen the delivery of STEM across the education system to improve technological innovations and make Malaysia a high income nation. ■

The press clippings published by various media on this article are available for viewing at the IEM Web portal at http://www.myiem.org.my/content/press_release-305.aspx.