

Talk on 21st Century Engineering Education: Issues and its Future by
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Engr Balamuralithara delivered a talk on 21st Century Engineering Education: Issues and its Future on the 24 May 2010 attended by a total of 32 participants. The talk was organized by the Engineering Education Technical Division.

The speaker started by giving a retrospect of the engineering world where the profession has evolved from the work of builders thousands of years ago through the pre-scientific revolution, industrial revolution, the 2nd industrial revolution and presently the information revolution. The engineering profession evolved with the rapid development of industry that required specialized skills in design and production. This entails special training on the need to understand the research carried out in previous generations and present day. Such knowledge can only be assimilated properly under a specialized training programme which has evolved further into present day Engineering Education. The world and the society place great demands from Engineers to meet the current pace of development and technology which put emphasis also on qualities to be seen in Engineers. In this context, the speaker queried why is it that there has often been a misconception of engineers as being squared?

The work of Engineers have changed and further enhanced the quality of life of mankind in substantial ways. Complex engineering innovations have however both the positive as well as the negative impact towards present day society. The speaker presented some very engaging scenarios of how the world would be without Engineers. He further explained on the importance of having a sense of realization and awareness on the vulnerability of mankind to adverse environmental mishaps and engineering failures.

The speaker cited a catch phrase by Thomas Friedman “The World is Flat” to explain the impact of technology towards the concept of globalization. Through seamless information technology the trade barriers have been removed which allowed globalization of the economy and hence impacted the distribution of wealth in developed and developing countries.

There has been a shift in the education approach towards the 21st Century where a blend of knowledge and know-how is imperative for every nation’s prosperity. This is because the creation of wealth is as a result of the nation’s ability to make products and services that is of benefit to other nations.

Although the engineering education has evolved, the current modern engineering program does not serve at its optimum level but rather to be very much market driven. The speaker summarized the driving force of today’s engineering which are globalization of industry, technology based economy and the rapid technological advancement. Nevertheless the current engineering program has been somewhat affected in some parts

of the world due to the shifting of good engineers to different fields due to the notion of engineering as being not attractive or financially rewarding.

The new context of engineering practice in the 21st century need to cater for the more diverse population due to globalization, the ever increasing demand for high quality products as well as risk management and environmental sustainability to be the in the criteria.

It is important that the general public understands and appreciate the impact of engineering on social cultural system and recognize the ability of engineers to address world problems. The speaker categorized the 19th to 20th century engineers as the professional engineers with hands on training, the 2nd half of the 20th century as the scientific engineer and the 21st century gave rise to entrepreneurial engineers due to the extensive re-engineering in engineering education to suit the new world order. Future engineer's of the 21st century is expected to be strong analytically, creative in aesthetic values, constantly abreast with cutting edge technological breakthroughs, good business management and leadership skills, dynamic, highly ethical, close to society, understand global issues, and finally life long learners with an ability to use the knowledge proficiently to realize the imagination through the entrepreneurial and managerial attributes.

There were several provoking question from the floor among which how does the so called desirable attributes of engineers which are lacking match with the engineering education system in Malaysia? The speaker mentioned that the attributes of engineers are not given much attention by the EAC and the stakeholders/industry players need to insist for the requirement of such attributes among new graduating engineers. Another question posed was what are the areas in which other countries are way ahead in engineering education? The speaker explained on the need to change the pedagogical setting in the country where the "end product" has to be given importance and not just the "tools". The education system in engineering has to go a step beyond the fundamentals to make engineers with strong analytical skills.