

## Learning Challenges in Engineering

WONG Ho Fai, Simon, WONG Kin Ming

Faculty of Science and Technology, Technological and Higher Education Institute of Hong Kong

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Engineering is a traditional subject in tertiary education and students are mainly from the science stream. In the past, students from secondary school were classified in either the liberal arts or science streams and the level of the related subjects were well defined. For articulation in university, there were clear indications and guidelines for the HKAL graduates in Engineering. However, under the current secondary school education system (DSE), the school candidates take four core subjects (Chinese Language, English Language, Mathematics and Liberal Studies), plus two or three elective subjects (Hong Kong Examinations and Assessment Authority, 2010). There are a variety of elective subjects and the students are allowed to study any combination of them. For science subjects, there are physics, chemistry, biology, integrated science and combined science. This results in students with a great difference in academic background. It is the beauty of the new education system not to restrain student development but may induce learning challenges in professional areas.

For the academic year 2012-2013, it is the first and unique year of admission of students from two different education systems. Students in the following years will mainly come from the new education system. In order to understand the learning challenge in Engineering for students from DSE, the academic performance of students from Engineering, particularly Civil Engineering, was studied. The study focused on the analysis of results from continuous assignments and examinations. It also involved the influence of elective subjects to the academic performance in Engineering and related subjects. In addition, the academic performance from HKAL students is also compared with those from DSE in order to highlight any differences. The aim of the statistical analysis is to indicate the areas of weakness which require strengthening. It is indicated that the possible areas of weaknesses are language, mathematics and science-related subjects.

To understand the learning challenges of students, staff-student consultation meetings have been carried out to facilitate the communication between the teaching staff and students. In addition, professional development, which is carried out weekly, also serves the same purpose. It is indicated that other key factors e.g. learning style and time management also cause learning challenges to DSE students.

The results from this study highlight the learning challenges of DSE student. Teaching staff may provide remedies in both academic and non-academic aspects in order to facilitate the learning of students from DSE. The academic remedies could include extra tutorial classes, which review the elementary and important points of the lectures and the formation of study groups among students after class. For non-academic aspects, extra-curriculum activities e.g. field trips and or site visits shall be arranged which can raise the awareness of the students to their major subjects.

### Reference:

Hong Kong Examinations and Assessment Authority. (2010). *Hong Kong Diploma of Secondary Education Examination*, The Government of the Hong Kong SAR.