Editorial

PRACTICE-ORIENTED EDUCATION: AN EMERGING PARADIGM

THE INTEGRATION of professional training with tertiary education is attractive for today's students who use their education to prepare for the challenges in their career life. Practical training has been increasingly incorporated within engineering degrees in Europe, aided by the implementation of international student mobility programs by the European Union. But also in the USA, co-operative education programs have had a niche existence in technical universities interspersing studies with company-based training and work. Universities such as Northeastern in Boston have been advocating professional experience semesters for all their students, including engineering and liberal arts majors, for some years. Employers tend to value practical experience especially if it has been obtained abroad, reflecting on an enterprising student. The more practice-oriented former British polytechnics pioneered organised industrial training periods in the United Kingdom and in Europe. In Germany the integration of engineering practice has gained considerable popularity, after some initial resistance by faculty. The practice-oriented *Fachhochschulen* in Germany now release the largest body of students in any country for a semester or more of industrial training. Benefits accrue both for the students and the enterprises. While the responsibility for hosting an engineering student in an enterprise may not seem attractive, the enterprise may benefit by 'testing' a possible future employee for a minimal outlay without being obliged to offer him subsequent employment. The student will benefit from gaining a hands-on view of his future work environment.

However, the large flow of students to enterprises at some stage of their training does raise some question marks:

Supervision and monitoring of students during an enterprise training semester is problematical.
Evaluation of the student's performance by companies has legal as well as ethical incongruities with the modes of evaluation in higher education.
Study times are extended by one or two semesters which delays entrance of graduates into the job market.
Industrial training semesters are usually counted as study semesters, without any significant involvement of the tertiary institution with the student's education during this period.
Too little feedback from the student's experiences in industrial training flows back into curriculum reform efforts.

Practice-oriented education is applicable at institutions which account for a large number of undergraduate students. These are institutions with a tradition of undergraduate professional education, and increasingly those technical universities releasing their graduates directly into the workforce. By the time they graduate, students with practical training can have an advantage when seeking employment. Employers will value the broader horizon and the maturity a student has gained by his real-world experience. A possible benefit for the student is that a practice semester may reveal that he is not really enthusiastic about his future profession, and he can change his mind before it is too late. Moreover, his experience in practice can contribute to the student's decision on whether to pursue graduate work, or transfer to the working world directly after obtaining his first degree. While an increasing number of students and tertiary institutions incorporate practical training within the study period, there will always be those students in institutions who will get through their studies as quickly as possible and only then seek out the real world.

This issue of *IJEE* contains a selection of edited papers from the Multimedia in Engineering Education Conference in Hong Kong in July 1998. The papers should find use with faculty setting up multimedia educational tools for their courses. My sincere thanks go to Robin Sarah Bradbeer who coordinated the work and had the daunting task of approving only a fraction of the presented papers for the limited space in this journal.

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