

## Editorial

**It is generally felt that engineering graduates are leaving universities without acquiring essential skills that are not only demanded by employers but also critical for good citizenship and social responsibility. It is appropriate to quote here a recent article published by 'Sharon Bender', *Valuable Skills Learned from Basket-Weaving*, Engineers Australia, March (2000). The article has been subjected to some editorial changes.**

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A recent report by A.C. Nielson Research Services for the Department of Education, Training and Youth Affairs (DETYA) on "Employer Satisfaction with Graduate Skills" has found that new university graduates lack creativity and flair, oral communication skills and problem-solving ability - qualities which employers say are important.

Of even more interest was the finding that whilst even graduates who are successful at getting jobs lack these skills, "the skills that most sets apart successful from unsuccessful applicants" is "capacity for independent and critical thinking". This is one of the most important skills according to the employers interviewed, ahead of logical and orderly thinking, academic learning, initiative and motivation. Employers found that engineering graduates in particular were "poor in many skills, particularly at problem-solving, oral business communications and interpersonal skills which employers consider important" and also "particularly poor at critical and independent thinking". The above skills are much desirable and hence should be part of any tertiary education.

A major difference between training and education is that training is about giving a person skills and knowledge to carry out a particular occupation or type of education; education is more about helping people to attain an understanding of the world they live in and their relationship with it.

Education seeks to provide a breadth and depth of understanding as compared to the knowledge required for training which is limited

to what enables a person to competently fulfill a function. Ideally education equips people to make their own decisions and to be critical thinkers.

It is no longer sufficient, not even practical, to attempt to cram students full of technical knowledge in the hope that it will enable them to do whatever engineering task is required of them throughout their careers. A broader more general approach is required that not only helps students to understand basic engineering principles but also equips them with generic skills. And beyond this, there is also a need to provide young engineers with an understanding of the social context within which they will work, together with skills in critical analysis.

One way to foster thinking skills is to get engineering students to do a few social science subjects. Often engineering subjects give the impression that there is always a right answer and the 'facts' will resolve disputes. They concentrate on mathematical analysis rather than critical analysis. The value of social science subjects is that the student is generally encouraged to practice and demonstrate critical analysis.

Whilst such subjects have been dismissed by traditionalists in engineering faculties as basket-weaving, it is now clear that the skills fostered by such subjects are valuable, not only in life, but also in the work place. ■

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**Professor Anil K. Sharma**  
*Editor*