Unemployable Engineers: Whose fault is it?

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The following article was written as a counter to the opinion (expressed in an on-going debate) that educational institutions have a duty to furnish students with skills which are geared to the demands of the employment market. Improving the 'quality' of technical education was suggested as a solution to the complaint from industry that many engineers do not possess employable skills. The view taken here is that the picture is much more complex, and commercial organisations also have a responsible role to play.

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Unemployable engineers is the talk of the day in certain circles. While industries have of late become critical of the engineer ing colleges for producing what they call 'unemployable engineers' in large numbers, whether these educational institutions alone should be held responsible for this label of unemployability, is questionable

The intake capacity for engineering education i ncreased several fold, particularly during the past two decades, with the private sector playing an increasing role. This happened mainly in response to the sudden demand for 'IT skills', which also resulted in the starting of colleges as business venture s by those with commercial and political clout, often with the unstated objective of cashing in on capitation fees. For quite some time these institutions had a successful run because the IT industry was willing to recruit almost anyone, so even colleges w ith poor infrastructure or quality of staff could earn a good record for job placement and hence attract more students.

The situation is now changing in some ways. The IT industry has become more selective in recruiting because supply has more-or-less caugh t up with the demand for employees. There has also been some revival recently in the manufacturing industries, which had gone into a terrible decline over a long period. This has created a small but noticeable demand for real engineering skills, and conse q uently the quality of the graduates is being questioned, whereas it was largely irrelevant for doing IT jobs. So now if recruiters complain about unemployable engineers, the educational institutions alone cannot be blamed. Industry as a whole is also part ially accountable for this state of affairs.

Till fairly recently (at least before the IT boom), industries had the practice of recruiting trainee engineers for jobs, and initiating them through carefully designed and systematic training programmes for a pe riod ranging from a few weeks to two years or so. Generally, the longer-term trainees would have to execute a bond to serve the organisation for a period of 3 to 5 years. This procedure found widespread acceptance in the past, with both the fresh engineer s as well as the industries, and the practice of providing on-job training to new recruits was well established.

Obviously, industries at that time knew very well that fresh graduates were not straightaway suitable for performing technical duties, and there fore readily accepted the responsibility of providing orientation training, which cannot be done by the engineering colleges and technological institutions.

In the present changed industrial climate (for which there could be many reasons such as global com petition or other economic constraints, which go much beyond the topic on hand), organisations are reluctant to invest time and resources for providing training to fresh engineers, but expect them to meet most of the job requirements right

away, which is just not possible. Declaring today's fresh engineers to be 'unemployable' is thus unfair.

While the plight of many fresh graduate engineers is pathetic and pitiable, the root causes for this situation need to be investigated more critically, as it is a seri ous matter, and a cause of great concern to the nation and society.

In the history of 'higher education' the broad function of universities and colleges was to impart an all-round capability for students to function as responsible citizens, even when they acquired the basic degree in a narrow or special discipline like engineering or medicine. The process was expected to build character and provide certain intangible qualities by being exposed to or inspired by reputed faculty and other eminent persons. Sp e cialised training for job skills was always available through various trade and professional institutions at various levels, while advanced theoretical skills were provided by postgraduate or research degrees. Even the so-called 'business schools' (a fairly recent US invention) are more like the job-oriented training, although the social and prestige value associated with them is very high. However, the expectations have been changing rapidly in recent years, and there are probably few takers today for the traditional old-fashioned notions regarding education.

There is no obvious solution to the current problem of the colleges being unable to provide what the industry wants. It should be evident that any change in the education system can produce tangible effects only after several years. It requires clear-cut and stable policies about the direction in which changes need to be made, besides suitably trained faculty and administrators to implement such changes. Else we will only keep tinkering with the system in a knee-jerk manner, and no one will be responsible for the increasing chaos. It is clearly unreasonable to expect colleges to provide at short notice whatever the unpredictable market may demand, which can shift from IT skills or nano-technology to som ething else tomorrow. Industries should realise the folly of pursuing only profit and expecting 'others' to provide trained engineers at no cost to them.

One major factor which has contributed to the problem is the high salaries given to fresh graduates by software companies and BPOs. Such institutions can pay because of the huge profit margin that they generate in operation, with hardly any expenses on infrastructure. As a result, talented engineers are reluctant to join industries which must take costly l ong-term investment decisions, and cannot match the salary offerings by the software sector which can shut shop tomorrow with little loss.

Therefore, a piquant situation has arisen, where those having real aptitude for engineering and technology waste their talents doing dull and stressful (but well-paid) work in software companies. Very often it is social pressure which pushes them into such jobs. In due course they lose the advantages of their engineering education and become unfit for solving technical problems.

Indeed it has become common for students to acquire an engineering qualification only because it improves their prospects of getting a lucrative software job (or pursuing a management career). It is very sad to see even children with a genuine flair for the sciences or maths being pushed into engineering courses 'because there is no money in science'. All this is an absolute waste of 'engineering education', and also results in starving the sciences and humanities.

A very unfortunate consequence of the skewed salary structure has been the flight of existing engineering talent from technical positions. Those who had been doing core jobs in say civil, mechanical, or process industries (other than computer-oriented tasks) found their skills being treat e d as less relevant, salaries remaining stagnant, or even jobs being lost as companies down-sized or closed down. In Madras alone, at least

three reputed heavy engineering concerns (in Ambattur, Meenambakkam, and Tondiarpet) which had done many prestigious development jobs in the past, have just not survived. What happened to their experienced engineers and all the technical staff who manned the machines and did a variety of skilled jobs in the shops or at site or in the design office? The automobile and ot her mass production industries are largely based on rule-based application of imported technology, with little scope for exercise of engineering skills.

A further consequence of the current situation is the crisis created in the teaching profession. There i s almost no incentive for the best or even good students to consider an academic career, at least in our country. Those who opt for teaching may be doing so as a fall-back option. Even faculty with established reputations are being lured by lucrative offe rs from industry. Under these circumstances how can industry expect colleges to produce graduates who possess good technical knowledge?

Obviously this is a sensitive subject on which many opinions can be expressed. What has been stated above is certainly no t the last word, but just the viewpoint of one who has worked in heavy industry for many years, and is also concerned about the education system and social issues in general. Those who manage industries, or those in academic institutions (and surely even t he enlightened public) could possibly provide an entirely different perspective. A fresh look at the national level, preceded by informed debate, is required before even beginning to sort out the issues regarding engineering education and employability.

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