

FRESH ENGINEERING GRADUATES : BRIDGING THE GAP BETWEEN EMPLOYERS' EXPECTATIONS AND REALITY

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ABSTRACT

The number of engineering graduates coming out of educational institutes has significantly increased in the recent years. Unless they are capable of satisfying the requirements of the industries, finding suitable placements becomes extremely difficult. Many surveys have revealed the gaps between the expectation from employers and the actual status. This paper examines the issue of finding what are the requirements of the industries, the gaps that exist, and remedial measures to be taken. It also suggests that Industry-Institute Partnership may profitably be employed to improve the quality of the fresh engineering graduates.

1. INTRODUCTION :

Engineering education plays a vital role in developing the technical workforce required for industrial, commercial and business sectors. Thus, it has a specific role to play in the growth and prosperity of the nation. The output from the engineering education institutions (EEI), namely engineering graduates, should be able to take up diversifying, challenging and skill demanding responsibilities and ensure success of the organizations. To this extent, what type of engineering graduates are coming out from the EEI and how well they fit into the roles offered by employers,

should be seriously examined. In this paper, the expectations of the industry, are compared against the skills and characteristics of entry level engineering graduates and gaps that exist are pointed out. Later, remedial measures to be taken to bridge the gap are suggested. The objective is to ensure that the output should meet the expectations of the customers. This results in achieving total quality in the process of transformation that meets customers' needs.

ENGINEERING EDUCATION : THE CURRENT SCENARIO :

The engineering education institution (EEI) that produce graduate engi-

neers have seen an unprecedented growth in number in the recent years in India. While the number of IITS, REC'S and aided institutions has remained almost the same, the number of private colleges (called self financing colleges) has phenomenally increased. This naturally has resulted in mass production of engineering graduates. According to a special report by Kanavi (1996), the four states of Maharashtra, Karnataka, Tamil Nadu and Andhra Pradesh produce 75 percent of all the engineers in India, which is more than the number produced by the entire United States of America. The number of engineering graduates coming out of EEI in India is estimated to be more than a lakh by the end of this century. The question now apparent, is, whether such a large number would be capable of getting opportunities in India or abroad. The answer would be affirmative only if these engineering graduates can meet the expectations of their prospective employers. Further, it is necessary to examine the requirements of industries, so that EEI's can orient and focus their resources towards meeting those requirements.

WHAT THE INDUSTRIES WANT FROM ENGINEERING GRADUATES ?

One of the main and important goals of any academic curriculum is to develop certain qualities in the students so that they are ready to meet the challenges of real life after their education. In particular engineering education has the dual objective of building technical and scientific skills in students, besides ensuring their smooth transformation into full-fledged professionals. Katz

(1993) states that many employers have expressed dissatisfaction about the quality of fresh engineering graduates. Based on a survey among industries, Government and consulting agencies, she has arrived at the common requirements to be satisfied by the fresh engineers. These are as follows :

(1) Ability to Work on Team :

Engineers are expected to work on teams throughout their professional careers. The teams may be coherent, cross functional or interdisciplinary, and consisting of different age-groups, cadres and could be even multilingual, multi-racial. In all such cases, the fresh engineer who is used to work independently as an individual, finds it difficult to work with the team members.

(2) Ability to Communicate :

The communication skills when it comes to oral presentations, written reports and day to day transactions, are found to be quite poor. This is a handicap both when dealing with colleagues and clients.

(3) Awareness of Work Place Expectation :

The expectations of a work place are not known to many engineers. Since workplace can vary from function to function, size to size, place to place, and time to time, from single to complex, from ordinary to high-technology, from one unit system to multinationals and conglomerates, it is definitely expected that the engineers are aware of the basic ethics, style of working and job profiles.

These points clearly prove that while everything cannot be taught at schools, at least elementary concepts

need to be imbibed during the learning process. Similarly, based on another survey conducted in 1994, Evans (1996) remarks that the respondents have identified the important quality concepts and skills for entry level college graduates as follows :

- Active learner
- Commitment in improvement
- Customer orientation
- Fact based decision making
- Practical knowledge
- Systems perspective
- Team orientation
- Understanding of work as a process.

In fact, the survey was also able to identify the relative importance for various concepts and skills. This listing is quite useful to the education planners and decision makers. Interestingly Mete (1996) remarks that while as students they may have certain requirements, these requirements significantly change when they take up careers later. This means that the educational process has to be more responsive to fast changes and quickly react too.

WHAT SHOULD BE DONE ?

Once the requirements of the employers are clearly identified, the next step would be to initial appropriate measures to tackle the issues. The questions to be answered are :

- What is to be done ?
- How it should be done ?
- Who should be involved ?

A commonly followed approach in many cases, when there are critical is-

suues to deal with, is the total quality approach. According to Snee (1986) total quality approach essentially involves the following key ingredients :

- Customer focus
- Continuous improvement
- Team work
- Top management commitment

The management of total quality can be divided into three components : (1) philosophy, (2) policies and procedures, and (3) tools. A philosophy is developed to guide the management in formulating policies and procedures and implemented through appropriate tools like computers, robots, statistics. By adopting the total quality concept, it is now possible to evolve solutions to the perceived deficiencies in engineering education.

HOW TO PROCEED TOWARDS SOLUTIONS ?

The Total Quality approach is followed step wise :

(1) Customer Focus :

Establish the needs of prospective employers (like Government, R & D Organizations, Industries, Institutes).

(2) Team Work :

Encourage group activities in terms of projects, case studies, field surveys, role plays.

(3) Include a course work on communication exclusively, where all the semantics of oral and written communication are taught.

(4) Institute the policy of continuous improvement through regular feed-

backs and having an open mind for adopting new techniques and concepts. Experimentation is to be encouraged.

(5) Top Management Commitment is Absolutely Essential :

This is to be clearly demonstrated through active participation, involvement, encouragement and making available all resources for successful implementation of plans. If the top management doesn't demonstrate its commitment through its actions, then the entire process of improvement comes to a halt.

CONCLUSION :

The engineering graduates coming out of EEL's in large number are expected to get absorbed into the main stream of nation building activity. If they have to successfully contribute to the society in whatever role they play, it is essential that they properly fit into the workplace expectations. This paper has taken up the task of identifying what is expected, what is the reality, and what needs to be done. However, to effectively implement the action plan, it is necessary to grant required resources and sufficient autonomy to the EEL's so that they can achieve their objectives. Further a strong industry - institute partnership is absolutely essential to realize these goals, involving the prospec-

tive employers into the learning process through visiting faculties, joint projects, and full or partial funding of research work. It is hoped that with industries facing shortage of skilled persons, it is quite likely that they may join hands with institutes in quality improvement.

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