

Chapter 8

Preparing Engineering Graduates for Corporate Enterprises: A Case Study on Human Capacity Building for the Indian Power Sector

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ABSTRACT

The status of engineering education in the country is briefly reviewed. A problem faced by the industry in regard to the quality of the engineering graduates of whom 70 to 80% are considered “unemployable,” is examined. The mismatch between the skillset required by the industry and that provided by the academic institutions is identified as the major reason for the low employability of engineering graduates. Various ongoing efforts at the level of the government and academia to rectify this situation are described. Measures that could be usefully adopted by the corporate sector are identified. Intensive combined action by all the stakeholders involved in the academic process will only enable the country to reverse the trend of declining academic standards in higher technical education. The case of the Power Sector has been discussed at length to illustrate the points made. During the 11th and 12th plan periods, five lakh technical personnel and 1.5 lakh front end support personnel need to be recruited by the Power Sector as per published reports. There is also a huge requirement of back end staff to take up various managerial functions. Use of alternate sources of energy and efficient management of energy being inevitable, a huge pool of human resources would be required in harnessing small hydro, biomass and

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bio-fuel, solar, and wind resources, provided they have the appropriate specialized knowledge. Moreover, demand side management, power trading, carbon credits, smart grids, etc. will also require manpower with specialized training. Salient features of the human capital challenges in the Indian power sector are discussed, and certain action plans to overcome the challenges are suggested.

A. STATUS OF ENGINEERING EDUCATION IN INDIA

Since becoming independent in the year 1947, India has recorded a phenomenal growth of higher education institutions. The number of Universities has increased nearly 20-fold from only 20 at independence to over 400 today and the number of Colleges from less than 500 to nearly 20,000 in the same period. As a result, student enrolment has increased 100-fold from a mere 0.2 million in 1947-48 to over 20 million today. Despite this massive expansion, the GER (Gross Enrolment Ratio) is less than 15%, one of the lowest in the world. Professional courses, especially in engineering, medicine, management and education have dominated the scenario. Engineering education has witnessed its biggest growth around the turn of the millennium, when a noticeable tilt towards a services-dominated economy emerged, and the burgeoning Information Technology (IT) sector started siphoning off a large number of engineering graduates. Though the demand for engineers by the IT sector has hit disturbing lows during 2002-2003 and again during 2009-2011 due to a slump in global economy, this Sector continues to be the largest employer of engineering graduates and so the number of engineering Colleges has continued to grow unabated. Today there are approximately 5000 AICTE-approved Engineering Institutions in the country with enrolment of over a million students every year. Interestingly most of these Colleges are in the private sector, which entered the field in a big way due to the continuously decreasing government funding of higher education since the time of the Sixth Five Year Plan. However, the Government has set up separate regulatory mechanisms for each of the

professional courses, irrespective of whether it provides full funding, partial financial support or none at all (as it happens in most cases). While the All-India Council for Technical Education (AICTE) regulates engineering and management courses, Medical Council of India (MCI), Dental Council of India (DCI), Pharmaceutical Council of India (PCI) etc are responsible for the corresponding courses. The Indian Institutes of Technology (IITs), the Indian Institutes of Management (IIMs) and the National Institutes of Technology (NITs) are directly funded and administered by the Ministry of Human Resource Development while the University Grants Commission and the State Governments together control the funding of nearly 400 Universities.

Problems and Solutions

There is a large gap in the availability of skilled manpower and to bridge the gap an interface is needed between the education system and the needs of the economy. -APJ Abdul Kalam, former President of India

Read “industry” in place of “economy” in the above quotation and the unenviable predicament we find ourselves in today becomes clear. It is generally believed that the quality of education offered in most of the higher education institutions (HEIs) has not kept pace with the quantity. As a result, India Inc is experiencing a workforce crunch across various sectors and different skill-sets (Ernst&Young, 2008).

According to one survey jointly carried out by the Federation of Indian Chambers of Commerce and Industry and the World Bank (FICCI 2009), 64 percent of surveyed employers are “some-

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