ROLE OF INDUSTRY IN TECHNICAL EDUCATION-PRESENT SCENARIO

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Abstract : Technical education is a term applied to educational programmes that specialize in the skilled trades, applied sciences and engineering concepts, offered by any institution recognized by the statutory bodies. The very purpose of technical education is to supply technical professionals for the industry needs. In this modern business scenario, any industry is in need of professional who can be employed with minimum 'training'. Market terms them as 'industry ready professionals'. To pump such professionals into the industry, apart from the academia, the role of industry is also crucial today. This paper analyses the role of industry in imparting such a 'Technical Education'. The present scenario is discussed along with the required reforms.

Key Words: Technical Education, Industry, Skill Mismatch, Employability.

I. INTRODUCTION

With an estimated population of 135+ crores today, India is the second most populous country in the globe. With an improved infrastructure and large network of educational institutions, India tries to make impact in the education sector today. However, when compared with the world leader USA (32 crores, 5000+ universities), India's position is far below the average mark both in terms of ranking and numbers. As on 12-04-2018, India has a total of 850 universities [1]. Figure 1 shows the breakup of universities. Number of colleges stands at 42,026. In the academic year 2016-17, it was estimated that a total of 3.57 crore people were enrolled in these higher education institutes.

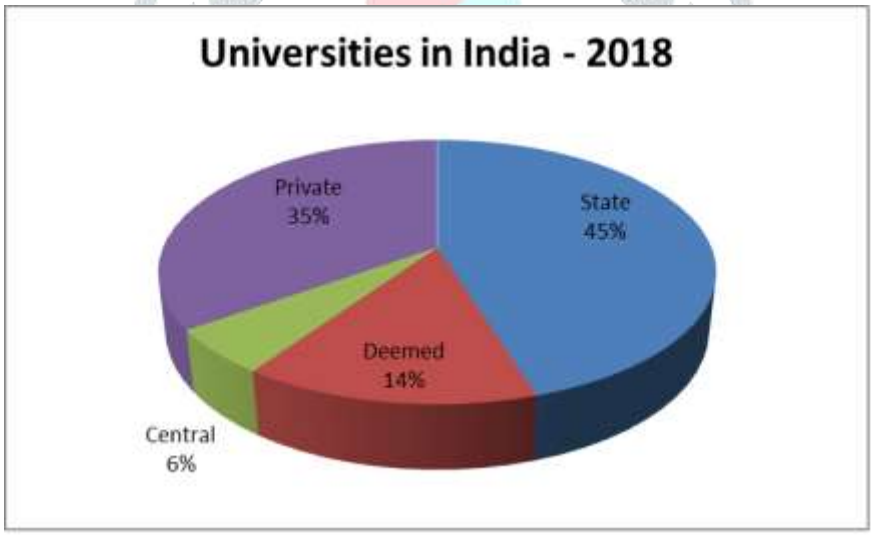

Figure 1: Universities in India

However, in QS ranking 2018, a total of 157 US universities find a place in top 959 universities; UK (population 6.7 crores) has a share of 76 universities. India has 20 universities in the ranking; IITD being at 172nd place is the topper. If Times Higher Education Ranking 2018 is considered; US 102/501 entries, UK 44/501 and India 11/501 with IISC-Bangalore is at 89th place. It is concluded through many recent studies that 60% of the engineering graduates are unemployable [2]. Current job market requires 30% technical skills and the remaining 70% soft or professional skills to succeed and hence, the technical education has to be enhanced to impart other required skills also to improve the employability and global presence, many proposals are being implemented by India. This paper discusses the importance of the role of industry in technical education and the actions taken by the Government.

After a boom for several years, engineering education faces a tough situation today. Experts from Industry veterans have expressed their concerns about unskilled Indian youth. Recently, Shri CP Gurnani, CEO and MD of Tech Mahindra said that 94 per cent of engineering graduates are not fit for hiring. Chairman of Manipal Global Education, Shri TV Mohandas Pai claimed that the country has about 10 crore people in the 21-35 age-group with bad skills, who are unsuited for the

economy.In 2016-17, out of 15.5 lakh engineering seats in 3,291 engineering colleges across the country, over fifty per cent remained vacant, according to the All Indian Council for Technical Education (AICTE).

II. REFORMS NEEDED

To improve the quality in technical education in India, a lot of improvements are needed. The important are:

- Academic – Industry interaction
- Incubating Innovation and Research
- Role of Accreditation Bodies (like NBA, NAAC)
- Reforms in Technical Curriculum
- Promotion of National Distance Education Programmes (like NPTEL)
- Good Government Policies.

To have a day to day update about the parameters like market requirements, technology developments, skill sets required, economic conditions, government policies; the contribution of industry is very important.

III. IMPORTANT CONTROLLING FACTORS

3.1. Good Government Policies

After the government has taken a decision to permit Foreign Direct Investments (FDI) in the education sector also, it is estimated by the Department of Industrial Policy and Promotion (DIPP) that the inflow from April 2000 to December 2017 [3] stood at Rs 9,586.58 crores, but a mere 0.45%age of total inflows. For improving the education in India, the Ministry of Human Resource Development, Government of India is also planning to raise around Rs 1 lakh crore from companies and individuals [4]. With an intention to concentrate on skill development, India has also invited other countries to open skill development centres in India. To provide technical training to youth in north eastern states, Singapore is going to open one such centre in Assam. The expenditure for education has been hiked by 4% in the union budget 2017-18 and now stands at a reasonable 14.63%.Less than 4% of the workforce is estimated to be skilled in India, while in China it is 47%, Germany 74%, Japan 80% and the highest is in South Korea at 96% [5].

In a significant difference from regular academic education, Technical Teachers should be informed by up-to-date industry experience and knowledge of current practice and have access to industry-standard facilities and resources is also important [6]. In collaboration with the government and also on its own, private sector has been taking various initiatives for upgrading the training facilities and also to provide training for their recruits to make them job-ready. Large corporations like Larsen & Toubro, Bharti Group, Hero Group, Maruti, ITC etc., have established training facilities that offer world-class training programmes. These training programmes are partially supported financially by government [7]. The government provides partial support in funding by way of sponsoring the tuition fee of the students.
Recently Indian Government has shortlisted IISC, IIT-Delhi, IIT-Bombay, BITS-Pilani, Manipal academy of higher education and Jio Institute as Institutions of eminence.
The institutes of eminence will have three key benefits:

- Complete freedom from regulatory interference in terms of academic and administrative requirements
- Added funds for the state-run institutions, and
- More collaboration opportunities with top global universities.
- These institutions will each get Rs. 1,000 crore additional grants over a five-year period.

Also, the chairman of AICTE on 28-07-2018 reiterated their stand for a common engineering entrance examination across the country to raise the standard of higher education in the country.

3.2. Improved Technical Curriculum

Since the introduction of Liberalization, Privatization and Globalization in the nineties, the global economy is undergoing structural transformation. It is estimated that there will be need for a workforce of 3.3 billion by 2020. To meet the national and global demands, we need a comprehensive and competitive higher education system in India. It is also expected that by the year 2020, 90% of India's GDP and 75% of employment is expected to be contributed by the services and manufacturing sectors.
Though Indian technical education has witnessed considerable improvement in recent years, still a lot of key issues impede the quality [8]:

- Out-dated curriculum independent of industry linkage
- Shortage in qualified and experienced faculty
- Unfilled vacancies of teaching faculty in all levels
- High student-faculty ratio
- Low spending in research both in terms of time and spending
- Lack of fruitful international collaboration in research and students/ faculty exchange

Absence of professional management

According to a report published in 'The Hindu' on July 28, 2018; the total number of teachers in higher educational institutions in India has come down by about 2.34 lakh in the last three years, as per the All India Survey on Higher Education Report 2017-18.

Anna University, one of the largest technical universities in the country, has revised its syllabus in 2017 for the UG and PG courses giving emphasis for industrial training/ internship/ content beyond regular academic curriculum. For example: in Regulation 2017 for UG:

Clause number 4.5: Industrial training/ internship

Clause number 4.6: Industrial visit

Clause number 4.7: value added courses and,

Clause number 4.8: online courses are a few to mention.

Ernst & Young Global Limited proposed [9] to Government of India to take several initiatives to make the Indian higher education system more globally relevant and competitive. They include certain initiatives that the government might want to consider exploring based on industry feedback and learning from global best practices.

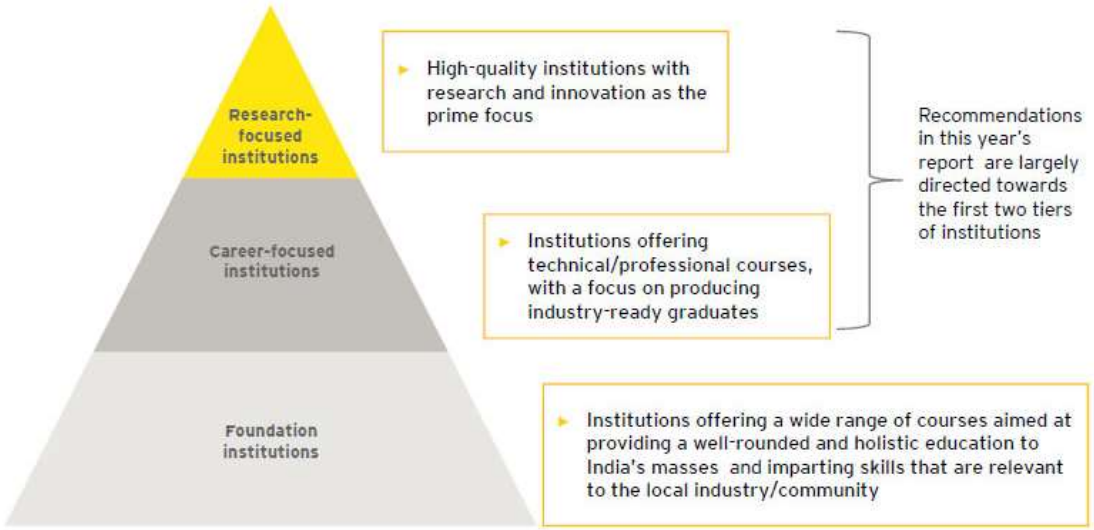

Figure 2: Three Tired System Proposed by Ernst & Young Global Limited

3.3. Effective Industry Role

In this present information age and sustained global competition, role of industry in technical education becomes more important. Since the industry has to cope up with the market needs both in terms of technology and man power requirements, the industry can provide better feedback on the requirements in the curriculum and training required.

To encourage the participation of industry professionals in the technical higher education:

- Universities can offer tailor made courses and degrees for the working professionals
- Facilitate a mechanism for sustained industry-academia engagement
- Encourage industry persons to become adjunct professors
- Recruit a section of the faculty having industry experience
- Organising faculty development programmes in core areas
- Partner with industry to set up and run incubation centres.

3.4. Role of Accreditation Bodies

In India, Universities are created constitutionally, through government action. Recognition or accreditation of courses of study is under the authority of a set of professional councils established by statute and other autonomous coordinative or regulatory bodies established or recognized by the University Grants Commission (UGC).

For the technical education, All India Council for Technical Education (AICTE) is the governing body as on today, in addition to UGC.To supplement these bodies we have: National Board of Accreditation (NBA), National Assessment and Accreditation Council (NAAC), Quality Council of India (QCI), Distance Education Council (DEC), Indian Council of Agricultural Research (ICAR), Scientific Institute and Research Organizations (SIROs) and so many.Slowly, the union government is imposing regulations through the accreditation agencies to improve the quality in higher education. Government also should encourage going for international accreditations like:

- Accreditation Board for Engineering and Technology (ABET), USA
- The Institution of Engineering and Technology (IET), UK
- Accreditation Agency for Degree Programs in Engineering, Informatics/Computer Science, the Natural Sciences and Mathematics (ASIIN), Germany

Many accreditation bodies develop procedures and processes of accreditation based on international quality assurance accords like: The Washington accord, The Sydney accord, The Dublin accord. In India, NBA and NAAC are the popular accreditation bodies. NAAC certifies institutions whereas NBA accredits the programmes run by the institutions.They have many clauses to involve industry as a stake holder in technical education. To mention a few

3.5 NAAC Manual for Universities

Clause 3.3, Innovation Ecosystem: Workshop/seminars on Intellectual Property Rights (IPR) and Industry-Academia Innovative practices.
Clause 3.7, Collaboration: Collaboration with academic institutions or industry or other agencies of professional and social relevance.
NAAC also talks about grants for research projects from industry, Industry-Academia Innovative practices, Number of extension and outreach Programmes conducted in collaboration with industry, Special research laboratories sponsored by / created by industry, functional MoUs signed with industry

3.6 NBA SAR for Tier 1 UG Engineering Programmes

Clause 1.3 adds industry as one of the stake holders
Clause 2.2.4: Initiatives related to industry interaction
Clause 2.2.5: Initiatives related to industry internship/summer training
Clause 5.8.4: Consultancy from Industry
Clause 5.9: Services provided by the faculty members to the industry, solution of real life problems in industry
Clause 5.10: Visiting/Adjunct/Emeritus Faculty from industry
Clause 9.5: Career Guidance, Training, Placement and industry interaction for training/ internship/ placement, etc.

IV. CONCLUSION

In recent years the Government has realized the importance of the role of industry in technical education and initiated actions in all fronts. As an important stake holder, effective participation of industry shall certainly propel India's higher education at par with global leaders. By 2020, there will be a need for a work force of 3.3 billion and India is aiming for its due share. India is gearing up for a good show globally by enhancing the technical education in all levels.

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