BW EDUCATION

(Business World)

Have A Degree But No Job!

09 July, 2019 by Prerna Lamba

The engineering colleges in India churn out as many as 1.5 million graduates every year, of whom a minuscule seven per cent are considered 'employable'. BW Education examines this paradox of a scarcity of 'employable' manpower and the swarm of engineers with degrees and diplomas, but not job skills.

Scholarship is a passion for some, a mission in quest of knowledge for others, but education is almost always a ticket to a vocation. A degree is a passport to a job or profession. So, in times when job creation tends to make or break governments in India, the finding that only seven per cent of engineering graduates are employable, is somewhat earth-shattering.

Data compiled by the think tank CMIE suggests that the unemployment rate in India had shot up to as much as 7.2 per cent in February 2019 from 5.9 per cent in February 2018. Students flock to engineering colleges in quest of that illusory job and an even greater number of aspiring students appear for entrance examinations for engineering courses every year. Thousands of students get into prestigious institutions and dedicate a crucial period of their lives to fulfill a dream of working as engineers (See: Growth of intake in AICTE approved institutions in last five years).

Every year, around 1.5 million students graduate with an engineering degree, but only seven per cent of them are employable, according to a recent survey by Aspiring Minds. Most of these graduates lack the relevant skills necessary for a job, or the ability to adapt to new-age technologies and industry readiness.

"Engineering has become a de-facto graduate degree for a large chunk of students today. However, along with improving the education standards, it is essential that we evolve our undergraduate programmes to make them more job centric", says **Varun Aggarwal, CTO Aspiring Minds**.

India churns out more engineers than most countries around the world from as many as 3,500 engineering colleges. The number of engineering colleges have tripled in the last decade, with tier-2 (consists of top ranked private institutions and all other state sponsored government colleges) and tier-3 (consists of all the remaining colleges which are private institutions but are not categorised specifically) colleges outnumbering the tier-1 (consists of top central colleges like the IITs and NITs). These, the tier-2 and tier-3 colleges, therefore contribute to the bulk of engineering graduates flocking to the job market. These are the graduates whose quality standards come into question and are often found unemployable. The Aspiring Minds surveysuggests that employability proves to be most challenging for graduates of tier-3 engineering colleges.

Growth of intake in AICTE approved institutions in last five year

	Diploma/ post diploma certificate	Engineering and Technology	Architecture
2014-15	1307344	1901501	10890
2015-16	1310414	1844642	10986
2016-17	1293843	1752296	9936
2017-18	1261059	1662488	9187
2018-19	1199401	1586341	10587

(Source: AICTE Approval Process Handbook (2018 – 19)

Problem of Plenty

The deterioration in the quality of education of engineering students have coincided with the rapid increase in the number of engineering colleges, leading to the categorisation of these institutes. Many of these institutions are little less than money-earning ventures that offer false assurances of placements to job aspirants, who only get hit by the harsh reality when they graduate. The massive proliferation of engineering colleges would not have raised eyebrows had the quality of education they offer been consistent. The problem today is that these ventures have turned into churning mills of under-qualified engineers.

The fourth industrial revolution and evolving technologies have created their own demands. Industry now needs engineering graduates equipped with professional skills and abilities, along with technical knowledge. The need of the hour is a skilled workforce capable of adapting to changing trends and needs of the industry. To be able to cope with the jobs crunch, engineering colleges need to churn out graduates with the requisite skills.

"If you make any programme completely centred on what industry requires today, then students will be unemployable tomorrow. The IITs always produce graduates who can learn new things with time, giving them a strong foundation in various areas and fields so they may pick up skills whenever they need to change their expertise. Thus, we focus on the learning aspects rather than specific aspects required by the industry", said **V. Ramgopal Rao, Director, IIT Delhi**.

According to the Aspiring Minds survey, only 40 per cent students go for internships, 36 per cent students undertake projects beyond course work and 47 per cent students attend industry talks (See: Engineering Education and Employability). The survey also points out that students who have industry exposure when studying are more tuned to the requirements of industry. To make graduates more employable and so they may have wide exposure, academic institutions need to provide more practical knowledge than theoretical knowledge. There is an urgent need to revise the engineering education curriculum and to align aspiring engineering students with the evolving demands of industry.

ENGINEERING EDUCATION AND EMPLOYABILITY

- Only 3.84% of Engineers are employable in software-related jobs at start-ups.
- Around 3% engineera possess new-age skills in areas such as AI, Machine Learning, Data engineering and Mobile Technologies. On an aggregate level, employability in these areas is around 1.5-1.7%.
- A much higher percentage of Indian engineers (37.7%) can not write an error-free code, as compared to China (10.35%).
- Only 40% of engineering graduates end up doing an internship and 36% do any projects beyond coursework.

Source: National Employability Report Engineers, 2019 by Aspiring Minds

"Passing out students may possess knowledge but may not have skills as per the need of industry. To make the youth job ready, we have to provide them with opportunity to learn more practical i.e. application-oriented knowledge by way of providing compulsory internship and revising our curriculum to remove outdated content of syllabus and include content as per the need of Industry 4.0", says **A. M. Rawani, Director, NIT Raipur**. Rao informs that IIT Delhi helps tier-2 and tier-3 colleges with curriculum development, quality improvement and training of teachers.

Shortage of quality faculty is another major concern for most engineering institutions in the country − and the issue is not restricted to tier-2 or tier-3 colleges. Even the tier-1 colleges find that they are short-staffed in the way of faculty. India's central universities are also struggling to fill vacancies and more than a third of the teaching positions are vacant. With the increase in the number of colleges, the need for more qualified teaching staff is increasing too and the quality of education at engineering colleges cannot improve till they have the requisite faculty.

V. Ramgopal Rao said, *"Faculty crunch is a big issue today. And for that, we are aggressively seeking out foreign faculty at IIT Delhi. We have sent our delegations to various universities abroad and we are reaching out to good students doing PhD in top universities worldwide. We are trying to get the best people from all over the world to teach our students and I think that should be the spirit"*.

New Skills and Placements

Recent Placement Record: Colleges of Tier I, II and III Region

Name of Institute	Number of Companies	Average Salary Package	Highest Salary Package
IIT Delhi	373	9 - 10 LPA	1.5 CPA
NIT Raipur	71	7.68 LPA	32.5 LPA
IIT Bhubaneswar	55	11.15 LPA	39.02 LPA
Thapar University	325	9.4 LPA	39 LPA
IIIT Delhi	102	15.80 LPA	39 LPA
Sharda University	350	3 - 3.5 LPA	10 LPA
AISECT	35	2.5 - 4 LPA	12 LPA
CMRIT	105	4.2 LPA	16 LPA

The placement process has evolved over the years with changing industry trends. At campus placement drives, industry today demands graduates equipped with employability skills. Institutes therefore, play a pivotal role in shaping and augmenting talents, so students may possess multidimensional and varied skills.

"While the placement pattern has transformed a lot over a decade, the employability ecosystem hasn't. There is a serious need to transform the education system and adopt new innovative training practices to bring the best out of students and make them future ready" says **Prashant Gupta, Executive Director, Sharda University**.

Says **Prof. R.V. Raja Kumar, Director, IIT Bhubaneswar**, *"The placements at IIT Bhubaneswar have been like any senior IIT for the last two years. In my view, students should give preference to career objectives and long-term job satisfaction than to fat pay packages and I am happy that more and more of them are tending to do so now"* (See: Recent Placement Record).

To ensure better placements, educational institutes should work aggressively on key job skills such as logical reasoning, creative thinking, problem-solving and re-engineering to address upcoming technological challenges. To make students industry-ready, important skill courses such as Internet of Things (IoT), Machine Learning, Artificial Intelligence and big data analytics should be inculcated in the curriculum.

"There is a need to boost skill training under the Apprenticeship Act to address the lack of skilled workforce across sectors," says **Dr Sanjeev Gupta, Dean of Engineering and Technology, Rabindranath Tagore University (AISECT Group), Bhopal**.

Talent Crunch, say Industry Experts

Ironically, industry experts believe that the country is facing a severe talent crunch. Millions of students graduate every year, but only a handful are immediately employable. The rest have to undergo training in various skills to fit into job roles.

According to the Aspiring Minds survey, 80 per cent of Indian engineers are not fit for any job in the knowledge economy and only 25 per cent have the relevant technology or industry skills (AI, ML, DS etc).

"Hiring high quality engineers to meet our requirements is a typical problem of 'Paradox of Plenty'. We tend to get a large number of applications, but for laterals approximately five per cent actually get selected. While at the fresher level, the selection ratio is less than 0.5 per cent", says **Mukund Nair, Director HR, Nagarro**.

Employability hinges on primary skills that a graduate requires to get and retain a job and perform efficiently in a given role. Most companies have trouble recruiting graduates with the desired skills. Job aspirants either do not have qualifications that match the requirements of the companies or do, but the company still has to invest time and money in the training process to make the candidates 'job-ready'.

The present situation is the outcome of flawed curricula of engineering courses. Today engineering students are compelled to study subjects that are of no use to industry. "Professionals face mammoth challenges in hiring talent who stick to the organisation for a reasonable duration, assessing technical and behavioural competencies, validating the hiring process with PMS, understanding and meeting the demands of young hires and lack of employable talent pool in many core areas," says Vikas Vats, President, HR Association India.

The industry-academia gap is also due to the unrevised curriculum that has continued unrevised for decades. The focus of the syllabus is on theoretical learning instead of hands-on knowledge. There is a disconnect between what current and potential employees think that employers want and what employers really want.

Chaitanya N. Sreenivas, Vice President and HR Head, IBM – India and South Asia, acknowledges a mismatch in skills, but says that these skills could be picked up on the job too. *"To bridge this skill gap, IBM has embarked on a new curriculum campaign across universities in India. We are building strong relations with leading universities, government agencies and professional organisations to help academia keep pace with the rapid advancements in technology, relevant to the industry",* says he.

With fourth industrial revolution, the industry scenario has drastically changed. Previously, the industry had a few decision makers and a large number of workforce, whereas now the reverse is true. And to thrive in this VUCA world, one should be able learn-unlearn and relearn, be open to new things and be aligned with changing trends.

'Bridging the Gap'

With the onset of Industry 4.0 trends, the need for quality education is evident in order to produce not only potential job-seekers but also job creators in the country. In this regard, BW Education talks to **Anil Sahasrabudhe, Chairman, AICTE**, about the measures taken by the statutory body to address the pertaining issues. Excerpts:

What measures are being taken by AICTE to produce more employable engineers?

AICTE has undertaken several measures. Curriculum revision at regular intervals (almost every year), faculty certification programme of eight modules, training programmes for teachers in a variety of AICTE activities, Faculty Development Programmes (FDPs), stimulating research, student induction programmes, setting up of innovation cells in all colleges, are few steps among others. Similarly, we encourage to set up entrepreneurship cells and incubators, mandatory internships for students, examination reforms are among the few. SWAYAM portal for self and life-long learning and Smart India Hackathon for bringing out innovative spirit among students are few practices that are creating right eco-system.

With the fourth industrial revolution and new age technologies, how has the AICTE fine-tuned the curriculum?

AICTE curriculum has all the new age technologies embedded keeping in view Industry 4.0., AI, IoT, Machine Learning, Deep Learning, Robotics, Block Chain, Cloud computing, Data Analytics, Augmented Reality and Virtual Reality are all part of the curriculum from past one year.

With the rapid changing industry, how important it is to revise/overhaul the curriculum with the industry trends? Your views.

Curriculum revision should be an annual feature.

According to you, what is the roadmap to make more employable engineers?

Internships, soft skills, teamwork, time management, leadership, innovation, values and ethics to be inculcated right from the first year in the college is necessary and these practices have been introduced through curriculum revision, and student induction programmes.

Will it be beneficial to shut the institutes who are producing non-employable engineers and continue with a quality number of institutes?

The non-performing institutes will wither away on their own. Students and parents today are well informed and through not taking admission in poor performing colleges, they will get closed on their own.

This article was published in BW Education issue dated 'July 3, 2019' with cover story titled *'BW Education Issue June-July 2019'*