Strategies for Enhancing Employability of Engineering Graduates

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ABSTRACT

Though India has a larger proportion of youth population than the rest of the world, 57% of India's youth suffer some degree of unemployability (Planning Commission, 2009). A survey by 'Times of India' has specified that the percentage of employable graduates is much lower (only 11%) in the sector of Engineering Education. To address this concern, a survey was conducted in July 2015, to identify the reasons for the low level of employability of Engineering Graduates and to formulate the strategies to be implemented by (a) Engineering Colleges (b) Industries and (c) Government, for enhancing the employability of Engineering Graduates. The information required was collected from 173 participants (Faculties & Students of Engineering Colleges and representatives from Industries) of a National Conference on 'Sustainable Institute Industry Partnership' held at IIT Madras.

The methodology adopted for conducting the survey, the inferences made from the findings of data analysis and the strategies formulated for enhancing the employability of Engineering Graduates are described in this paper.

Keywords: Engineering Graduates, Employability, Skill Gap, Enrichment of Employability.

PRESENT SCENARIO AND NEED FOR THE STUDY

India has a larger proportion of Youth (356 million 10–24 year olds) population, than the rest of the world, according to the United Nations Population Fund (UNFPA, 2014) report on State of the world's population. India accounts for a fifth of the world's youth.

As indicated in planning commission's sub-committee report on remodeling India's Apprenticeship Regime (2009, p. 17) 57% of India's youth suffer some degree of Un-Employability. They suffer from skill deficit. The skill deficit hurts more than the infrastructure deficit because it sabotages equality of opportunity and amplifies inequality, while poor infrastructure maintains inequality (it hits rich and poor equally). The skill deficit problem can be classified into 3 categories:

1. Matching Problem – Connecting supply to demand.
2. Mismatch Problem – Repairing Supply to Demand
3. Pipeline Problem – Preparing supply to Demand

The matching problem is the easiest to solve and requires improvement of the state of employment exchanges and increasing the levels of corporate and private participation in the process of matching people to jobs. The mismatch problem can be solved by fixing the skill regime and the pipeline problem can be solved by reforming the education system.

Engineering Education in India has scaled significantly over the past few years. Thousands of Engineering colleges have mushroomed across the nation producing nearly a million graduates every year. As per the Annual Report of All India Council for Technical Education (AICTE, 2012) there are 3,346 Institutions in India, with an Intake capacity of 14,73,727 students for Bachelors Degree programme in Engineering and Technology. The current focus seems to be increasing 'Quantity' rather than 'Quality' of Engineering Graduates as reflected in the Employability ratio of students graduating from Engineering Colleges.

The National Association of Software and Services Companies (NASSCOM, 2013) of India in its report has stated that 75% of Indian Engineering Graduates are not fit to be employed. According to a survey conducted by Times of India (Dtd:19 November,2014) only 11% of Engineering Graduates in India are employable. Palaniappan, S (2014), has identified three reasons for this poor employability: lack of sound basics, analytical abilities and poor foundation in engineering principles.

A report on skill development in India prepared by NASSCOM (2013) has concluded that Employers, Education Providers and youth live in parallel universes. This clearly indicates the need for Engineering colleges to partner with industries to improve the relevance and quality of education especially its practical components. Engineering colleges and Industries which have been operating in separate domains, have to move closer to each other in order to create synergy. The theoretical strength from the colleges and the practical experience from the industry will be synergized when they join hands. A productive interface between engineering colleges and Industry is a critical requirement for enriching employability of Engineering graduates.

A survey of Industry-linked Technical institutes in India conducted by AICTE & CII (2014) has inferred that 'Industry – Institute' linkages across various dimensions have a significant scope for improvement to produce more tangible rewards mutually.

As per the National Skills Mission, 500 million professionals in India need to be skilled by 2022, to make them employable. As pointed out by NASSCOM (2014) currently, in India, talent over supply and low employability is leading to, on the one hand to under employment and on the other to a supply deficit for the industry. If not tackled well, this could stunt the industries growth. To develop the relevant skills required in the industry, it is critical to understand a talent demand and supply landscape. Further it is necessary to have a deep perspective of the skills set required and fill the skill gaps of graduates passing out of the colleges to make them Job- ready / employable.

OBJECTIVES OF THE STUDY

The present study had two objectives which are listed below:
  1. To identify the reasons for the low level of employability of Engineering Graduates.
  2. To formulate strategies to be implemented by:
      (a) Engineering Colleges

(b) Industries

(c) Government, for enhancing the employability of Engineering Graduates.

METHODOLOGY USED FOR COLLECTING DATA

The data required for accomplishing the objectives of the study was collected by the authors from primary sources: participants of a National Conference on "Sustainable Institute Industry Partnership (SIIP)" conducted by 'Society for Educational and Entrepreneurship Development (SEED)' at IIT- Madras in Chennai on 3rd and 4th July, 2015 (SEED, 2015).

Profile of the Sample

Event sampling technique was used. The information was collected from 173 participants of the National conference, using a structured questionnaire. The profile of the sample is given in Table 1:

Table 1: Profile of the Sample (N= 173)

S.No	Category of Information Provider	Number (%)
1	Faculty of Engineering Colleges (including Chairman, Principals, Professors)	102 (59%)
2	Students of Engineering College	23 (13%)
3	Representatives of Industries	48 (28%)

DATA ANALYSIS

The structured questionnaire consisted of open ended questions. The responses to these questions were content analyzed. Triangulation technique was used to validate and compile the information.

Based on the findings of data analysis (i) the reasons for low level of employability of engineering graduates were identified and (ii) strategies for enriching the employability of Engineering Graduated were formulated under three clusters viz:

1. Strategies to be implemented by Engineering Colleges.
2. Strategies to be implemented by Industries.
3. Strategies to be implemented by Government Departments.

REASONS FOR THE LOW LEVEL OF EMPLOYABILITY OF ENGINEERING GRADUATES

Curriculum

- Most of the engineering Colleges do not have autonomy to develop curricula that are relevant to the needs of Industry.
- Even in autonomous colleges the participation of Industrial experts in developing the curriculum is only marginal.

Teaching – Learning and Evaluation Process:

- The examination system of the university decides the type of teaching- Learning process adopted by the college.
- The Teaching- Learning process adopted develops only Lower order abilities (like Knowledge and Understanding) not Higher order abilities (like Application, Analysis, Synthesis, Design skills and Evaluation).

Lack of up-to-date Technical Skills

As many colleges train students through the use of obsolete machines, equipments and software, students lack the state of art technical (Psychomotor) skills required by the industry.

Lack of Soft Skills

The curriculum does not give adequate weightage for developing the soft skills of students. Hence the students lack the attitude and non technical competencies like Communication skills, Team work, Conflict management, Leadership Skills, and Analytical skills.

Lack of Partnership with Industries

Many institutions have not established sustainable partnership with industries to enrich the relevance of their curriculum, Teaching-Learning and Assessment processes.

Inadequate opportunities for Industrial Training

The opportunities available for students to undergo in-plant training, Apprenticeship

Training and Internship Training are inadequate.

STRATEGIES FOR ENRICHING EMPLOYABILITY OF ENGINEERING GRADUATES

The strategies formulated are presented under three heads viz
1. Strategies to be implemented by Engineering Colleges
2. Strategies to be implemented by Industries
3. Strategies to be implemented by Government

Strategies to be implemented by Engineering Colleges

1. Obtain 'Academic Autonomy' from the affiliating university for:
   (a) Developing 'Industry- relevant' curriculum.
   (b) Implementing fully flexible credit system to allow each student to choose 'elective courses' suited to his/her interest and to allow the student to complete the program at his/her own pace.

2. Appoint people with strong industry experience as teaching faculty.
3. Establish partnerships with industries for:
   (a) Developing curriculum
   (b) Enriching Teaching- Learning process
   (c) Carrying out 'student projects' which are relevant to the needs of Industries.
   (d) Evaluating 'Job- readiness' of Students
4. Organize programmes for developing the soft skills of students such as Communication skills, Team work, Emotional Intelligence etc.

Strategies to be implemented by Industries

1. Collaborate with Engineering Colleges by sharing of their human resources and training facilities for:
   (a) Enriching the relevance of processes such as curriculum Development, teaching strategies and validity of tools used for evaluation of students.
   (b) Facilitating industrial tour and study visits of students.
   (c) Providing in-plant training, Apprenticeship Training and Internship Training. d) Promoting faculty and staff exchange.
2. Allocating appropriate development funds for developing 'Employable Graduates' as a part of Corporate Social Responsibility (CSR).
3. Implementing 'Internship' Scheme including 'virtual Internship'.

Strategies to be implemented by Government

Policy Support

Formulating policies for provision of incentives such as Tax – Concession to industries for motivating them to allocate a part of their profit as a "Development fund" for implementing various activities for preparing ' Employable Graduates' in collaboration with Industries.

2. Facilitating Public - Private Partnerships (PPP) between Industry and Engineering Colleges as part of Corporate Social Responsibility (CSR)

As pointed by Majumdar (2008a and 2008b) Public-Private Partnerships provide a new dimension in taking up Industry – Institute Interaction where risks and benefits could be shared. The Education and training sector will greatly benefit from the capital and management expertise of the private sector for implementing specific projects.

To be successful, any project implemented under Public- Private Partnership scheme must result in delivering more with less. This means high quality for lower cost than any traditional training would incur. For this political commitment and good governance are required while fiscal transparency must be strong.

CSR has a big role to play in driving and effecting meaningful partnerships between Industry and Engineering Colleges for the common good. CSR is defined by the world Bank as " the

Commitment of businesses to behave ethically and to contribute to sustainable economic development by working with all relevant stakeholders to improve their lives in ways that are good for business, the sustainable development agenda, and society at large" (Larsen, 2007).

Enlarging and Strengthening the Apprenticeship Training Scheme:

The MHRD- GOI is implementing an Apprenticeship Training scheme for providing on the job training to fresh Engineering Graduates and Diploma holders. This is being implemented by four Regional Boards of Apprentice Training (BOATs) located at Kanpur, Chennai, Mumbai and Kolkotta.

Apprentice training programme provides the necessary overlap between employability and employment.

GOI must provide the necessary policy support to the BOATs for:

(a) Enlarging their scope and types of services provided to Engineering Graduates.
(b) Increasing the number of apprentices trained. Board of Apprenticeship Training – Southern region (BOAT- SR) has a vision to train 5 lakh trainees for the current XII Five year plan, this include 2.25 lakh Engineering Graduates, 2 lakh technicians (Diploma) and 0.75 lakh technician (Vocational) apprentices (BOAT-SR, 2014)
(c) Implementing a training scheme for students immediately after their final examination under the National Employability Enhancement Mission (NEEM).

CONCLUSION

In this paper the reasons for the low level of employability of Engineering Graduates and the strategies to be implemented for enhancing the employability have been presented based on the data collected from primary stakeholders – faculty & students of Engineering colleges and representatives of Industries. Based on the insights obtained from the findings of the survey the appropriate strategies to be implemented by Engineering colleges, Industries and Government for enhancing the employability of Engineering Graduates have been formulated. It is hoped that the initiatives that have been taken by Government of India & its various agencies like Ministry of Human Resource Development, Ministry of Labor and Employment, Ministry of Skill Development, Entrepreneurship, Youth Affairs & Sports, National Skill Development Corporation, AICTE, NASSCOM & Industries will result in Employability enhancement of youth. The strategies suggested in this paper will facilitate the accomplishment of Employability enhancement of the Engineering Graduates in a sustainable manner.

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