

# Gap Analysis and Implications to Develop Employability Skills: A Case Study of NEC

**L. Kalaivani and R.V. Maheswari**

*Department of EEE, National Engineering College, Kovilpatti, Tamil Nadu*

*E-mail: anuprakad@gmail.com; rvmaheswari@gmail.com*

## ABSTRACT

Recently, Globalization and modernization have created an increasingly diverse and interconnected world. Technological changes have revolutionized the work place, patterns of work, job requirements and organizational structures. Dramatic changes in economic growth are creating higher demands for employability skills. Employability of engineers is a great concern both for employers as well as industry. Therefore, the quality of the product from engineering colleges matters, and it must be the one with certain characteristics and attributes which can be trusted. Technical education needs both revamping and changes that to be introduced in the sub-components of the system. This study tries to explore the gap between industry expectations and quality of engineering graduates. The objective of the study is to provide solutions to bridge the gap between perception of employer and engineering graduates towards employability skills. It also discusses about the strategies implemented in National Engineering College to improve the employability skills of graduates.

**Keywords:** Engineering Graduates, Industry, Employability Skills, Gap Analysis.

## INTRODUCTION

India's manpower is at the center stage of the world. One might think that China would be a big player in future, but with their one-child policy, they are down by 10 million and U.S. is also down by 17 million. The possible winner for building the biggest pool of future workforce is India. Global challenges have given India an opportunity to raise the bar and exceed global standards which can be accomplished through bridging the skill gap [1].

The prominence of the employability agenda and the responsiveness of higher education institutions must enhance curriculum. This is being stated by former President of India Dr. A.P.J. Abdul Kalam as "India should emphasize more on employability than on employment". The need of employability is marked on shoulders of Institutions and Industry. The institutions must be responsive to demographic shifts that have occurred in higher education through strategic planning [2].

The quality of technical education is under severe criticisms and it is of concern to all stake holders. One of the parameters of measuring quality has been the employability of graduates from these technical institutions [3]. Higher education institutions can empower learners to develop attributes, techniques and reflective abilities, thereby placing emphasis less on 'employ' and more on 'ability' [4].

## EMPLOYABILITY SKILL SETS

Rapid changes in the economy create a pressure upon employers to identify and recruit graduates that possess critical employability skills relevant to current demands. Even though basic education and technical skills are two fundamental requirements to be possessed by graduates, there are non-technical and intangible skills that must also be acquired by these graduates [5].

The employability skill set comprise technical knowledge, effective communication, core competency, interpersonal and team work, positive attitude, self confidence, managerial skills, integrity, adaptability and so on [6]. The most important skills but most lacking skills are team work, communication, problem solving skills, lifelong learning, social and ethical responsibilities [7].

Fresh graduates, who join the industries, require six months to 2 years as gestation period to show their contribution and they leave the organization before showing results. This is due to the gap between theory and practical courses [8]. The perception gap between industry and faculty must be bridged to improve the employability of students and enhance the quality of higher education. The project based collaborative learning is also prime factor to upgrade the students [9].

Keeping faculty-student ratio around 1:10, frequent revision of syllabus in consultation with the industry will create the professionals with global mind set for adjusting different cultural & social settings [10]. Another prime factor is that the curriculum is static in nature while its application is dynamic [11].

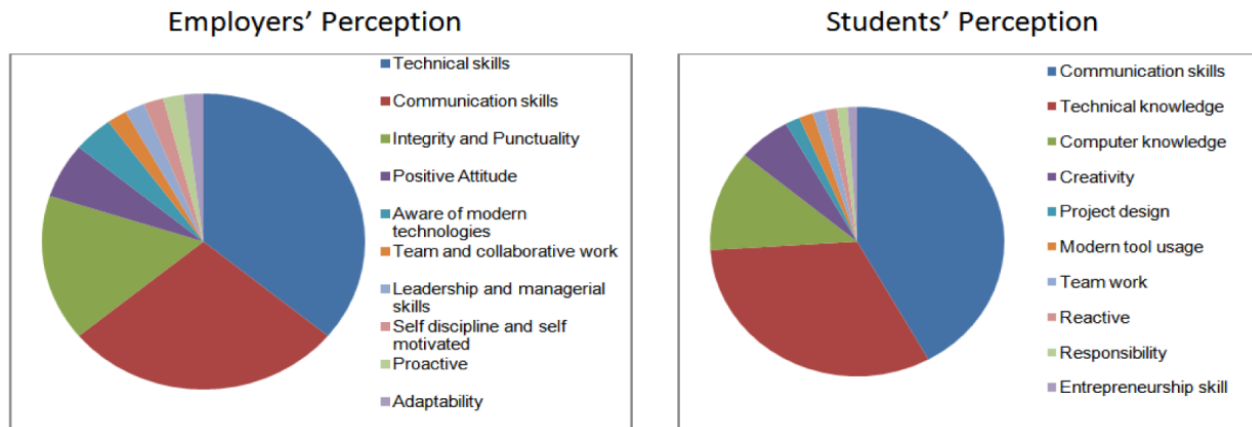
In this study, the employability skills for fresh graduates are identified as an amalgamation of several brains thinking on sound scientific knowledge and principles, and considered only the major skill set. The gap analysis has been made and the strategies implemented in NEC to bridge the gap are also reported.

## A CASE STUDY OF NEC

National Engineering College, Kovilpatti, Tamilnadu, fondly called as NEC by its alumni, students and faculty, was started in the year 1984. Today it offers seven under graduate programmes and nine post graduate programmes and is affiliated with Anna University, Chennai. During the academic year 2011-2012, the college attained its autonomous status. It is approved by the All India Council for Technical Institution (AICTE), New Delhi. The institution is accredited by National Assessment & Accreditation Council (NAAC) for five years with effect from 2014. All the UG programmes are accredited by National Board of Accreditation (NBA), New Delhi.

The Environment prevailing in industries is very different from academic environment.

Understanding more about what will be expected and how industry works will help us to make a successful start in the placement or employment. This expectation is analyzed by getting feedback from core, software and entrepreneurial professionals like Alstom India, ABB Global Industries and Services Pvt Ltd, Schneider Electric, TVS Motor Company Ltd, INFOSYS, IGATE global solutions, Petrofac Engineering Services India (Pvt) Ltd and others. Students from various engineering programmes of NEC have been interviewed about their employability skills developed at NEC. Based on that, the important skill set and its significance on perceptions of engineering graduates and industry towards employability skills are presented in Figure 1.



**Fig. 1:** Perception of the Importance of Employability Skills

It is observed that employers give equal importance to both technical and behavioral skills whereas student's perception focused towards technical skills. This disparity makes the students unemployable. It is necessary to create employability skills in Indian graduates to cater the requirement of global talent market. NBA also insisting these skills as graduate attributes. Even though the programme outcome of all programmes in our college fulfills those attributes, the students are still lacking in employability skills required by industries and students' satisfaction level is also less. So it necessitates the updation of curriculum at regular intervals to sustain and train the young engineering graduates.

## RESULTS AND FINDINGS

After analyzing the skill gap, it is found that there is a need to develop industry oriented curricula and create a conducive environment in technical institutions to improve the quality of the technical graduates. Hence some strategies have been implemented in the curriculum design and the instructional processes of the all programmes in NEC.

### Strategies in Curriculum Design

All curricula are aligned with graduate attributes listed in NBA and it is also satisfying criterion given by AICTE.

The curriculum is designed based on choice based credit system suggested by UGC to provide flexibility and self pacing to the learners.

All the stake holders are involved in the design of Programme Educational

Objectives, Programme Outcomes, and design of curriculum.

Industry relevant subjects designed by industry experts are included in the curriculum. 8% of the curriculum includes mandatory courses like Environmental studies, Disaster management, Communication skills etc. It helps the graduates to understand the impact of science, technology, and medicine on society.

Board of Studies has mandatory representation from industry, Alumni, faculty and experts from premier institutions to design a curricula in pace with changing technology.

Students are allowed to undergo industry training and internship to integrate predominantly practicals with relevant theory.

Students are allowed to go for any number of industrial visits depending on course flavor.

All students should involve in any one special interest group in which workshop, hands on training, paper presentations, debate etc will be conducted.

Apart from curriculum, students have to earn minimum one credit in each category for the award of degree to improve the soft skills which is listed in table 1.

**Table 1: Categories of One Credit Non CGPA Courses**

<i>Group</i>	<i>Category</i>	<i>Employability Skills Improved</i>
I	Sports/Yoga	Team and collaborative work Positive Attitude Integrity and Punctuality Leadership and managerial skills
	National Cadet Corps	
	National Service Scheme	
	Extra Curricular Activities	
II	English Proficiency Certification	Communication skills Positive Attitude
	Soft Skills	
	Foreign Languages	
III	Value Added Courses	Technical skills Aware of modern technologies
	Industrial Training	
	Industrial Lectures	
IV	Aptitude Proficiency Certification	Adaptivity Team work Positive Attitude Responsibility
	Globally accepted Certification Courses	
	Co-curricular Activities	

### Strategies in Instructional Processes

- Students have open access for laboratories and workshop for 24/7 days.
- Students are allowed to do projects in funded projects which groom them in research activities.
- State-of-art and joint laboratories like e-yantra are established to have optimum utilization of resources.
- Industry related courses are taught by industrial experts either directly or webinar. More number of centre of excellence, Incubation centres and memoranda of understanding has been established to exchange technology between industry and institution.
- Faculties are provided with industrial exposure for one or two months.
- Faculties are updated with latest trend by continuing education programme, faculty development programme, seminars, conferences, workshop etc.

- Faculties are provided with incentives for publishing their research work in peer reviewed journal.
- Faculties are inculcated with outcome based education through in-house training programme.
- Awareness has been created among faculties to file patents for their novelty and enablement ideas.

## CONCLUSION

This study has provided some information about the employability skills expected by industries from technical graduates. A proper gap analysis has been made on the perceptions of industries and students towards employability skills. In order to bridge the gap, the strategies implemented in NEC for identification of skills, efforts to impart required and existing to increase the employability skills of graduates is also discussed. Thus the quality of engineering graduates get enhanced which ultimately increases the employability skills in the globalized interconnected world. However, the holistic development of all the sectors of a country will help to outshine its competitors and succeed in its endeavour to become an empowered economy in global platform.

## REFERENCES

- [1] Confederation of Indian Industry, “The Indian Skills Report”, pp. 1–49, 2014.
- [2] D.N. Burrell and, B. C. Grizzell, “Competitive marketing and planning strategy in higher education”, *Academic leadership live: the online journal*, Vol. 6, No. 1, 2008.
- [3] P.K. Tulsi, “Expectations of Industry from Technical Graduates: Implications for Curriculum and Instructional Processes”, *Journal of Engineering Education Transformations*, Special Issue: Jan. 2015, eISSN 2394–170.
- [4] S. Meshram and Devesh Dubey, “Employability of engineering graduates in IT sector – (A case study of COEP)”, *Asian Journal of Management Research*, Vol. 5, No. 4, 2015.
- [5] Mohd Shamsuri Md Saad, Anidah Robani, Zanariah Jano and Izaidin Ab. Majid., “Employers’ perception on engineering, information and communication technology (ICT) students’ employability skills”, *Global Journal of Engineering Education*, Vol. 15, No. 1, 2013. [6] S. Murali and Dr. Y. Rajaram, “A Study on the Corporate Expectations from Engineering Graduates in India – Bangalore”, *IOSR Journal of Business and Management*, Vol. 17, No. 6, pp. 1–9, 2015.
- [7] Azami Zaharim, Yuzainee MD Yusoff, Mohd. Zaidi Omar, Azah Mohamed and Norhamidi Muhamed, “Employers’ Perceptions and Expectation toward Engineering Graduates: A study Case”, *Proceeding of the 6<sup>th</sup> International Conference on Engineering Education*, pp. 23–29, 2007.
- [8] Modi Sanjay, “The task of shaping skills & employability”, *The Financial Express*, July 04, 2009. Retrieved from [www.financialexpress.com/news/the-task-of-shaping-skills-&-employability/484760](http://www.financialexpress.com/news/the-task-of-shaping-skills-&-employability/484760) on Oct 09, 2009.
- [9] Kristina Winbladh, “Requirement engineering: Closing the gap between academic supply & industry demand, Crossroad”, *The ACM student magazine*, Vol. 10, No. 4, 2004.
- [10] Chandan Kumar Banerjee, Kaushik Mandal, “Differences in opinion between industry and academia in relation to relevant issues on academic service quality: a study on management education”, *Vidyasagar University Journal of Commerce*, Vol. 18, ISSN 0973-5917, 2013.
- [11] Kevin Lowden, Stuart Hall, Dr Dely Elliot and Jon Lewin, “Employers Perception of the Employability Skills of New Graduates”, *University of Glasgow SCRE Centre and Edge Foundation*, ISBN 978-0-956560, pp. 3–8, 2011.

### Dr. L. Kalaivani

*Associate Professor (Sr. Gr.), Department of EEE, National Engineering College, Kovilpatti, Tamil Nadu*



**Dr. L. Kalaivani** received B.E. Degree from Manonmanium Sundaranar University, Tirunelveli, in 1999 and the M.E. Degree and Ph.D from Anna University, India, in 2008 and 2013 respectively. Presently she is working as Associate Professor (Senior Grade) in Department of EEE, National Engineering College, Kovilpatti. She has more than 15 years of teaching experience in Engineering Institution and research. She has published 5 papers in reputed journals in the area of evolutionary optimization and applications to Electrical Drives and Control. Her research interests are Electrical Drives and Control and Soft Computing Techniques.

### Dr. R.V. Maheswari

*Associate Professor, Department of EEE, National Engineering College, Kovilpatti, Tamil Nadu*



**Dr. R.V. Maheswari** received B.E. Degree from Manonmanium Sundaranar University, Tirunelveli, in 2000 and the M.E. Degree and Ph.D. from Anna University, India, in 2008 and 2015 respectively. She is working as Associate Professor in EEE Department of National Engineering College, Kovilpatti. She has more than 15 years of teaching experience in Engineering Institutions. She has published 12 papers in International conferences and 10 International Journal. Her research interests are Characteristics of Partial Discharge, Numerical Analysis, Pattern Recognition and Modeling of Partial Discharge.