



## QUALITY EDUCATION FOR IMPROVEMENT ENGINEERING GRADUATES EMPLOYMENT IN INDIA

<sup>1</sup>Preeti Pateriya and <sup>2</sup>Parag Dubey

<sup>1</sup>Junior Research Fellow and <sup>2</sup>Professor

<sup>1&2</sup>National Institute of Technical Teacher Training and Research, Bhopal

### Abstract

This paper deal with improvement in purposeful employment, elaborate new policy, new programs, advance courses, an educational framework which is related with newly graduates engineering student. The ‘quality’ is defined as far as of “Learning Outcomes”, of technical education and accreditation both are significant processes that carried out to maintain the quality of engineering education. In India, the rapid growth of technical education globally requires the proper maintenance of the academic quality in technical institutes to withstand the competition in the global market. Development of skill becomes as important as the technical skill as well as soft skill in engineering graduates. The main object of the study shows that the comprehensive review on the sustainability of technical education in the regard of enlargement of employability.

### 1. Introduction

Nowadays, Indian organizations needed high training quality workforce in the area of employment, on the other side, a large number of the population possess little or no job skill. (National Education Policy 2019 2019) The Aspiring Minds 2019, prepared a survey report on employability discloses that 80% of engineers are unemployable for a job in the knowledge of the economy. This created an employability gap. To bridge the gap in technical education and employability, the government of India has taken several major initiatives through digital India, and this program has introduced by Indian PM Shri Narendra Modi on 1st July 2015, that brings the socio-economic development of the country (Bano and Vasantha 2019)

Employability is the arrangement of aptitude, information and understanding which concern is developing more day by day with the advancement in technical education (Pool and Sewell 2007) suggested that employability is the group of knowledge, abilities, understanding and individual qualities that causes an individual to pick their occupation that makes them satisfied and successful. The study has suggested the Career EDGE model which has included essential components of employability and direction of interaction between the various elements. Employability believes the need for both technical hard skills as well as soft skills considering the ever-increasing competition for employment in today’s job market conquered by the industries.

In the past five decades, technical education in India has been transforming significantly with a sudden rise in the supply of engineering graduates to the market. For the development of our economy full employment is one of the major areas of concern. (Subramanian and Labs 2017) But, decrement of employability rate in Technical education is considered as a major challenge by all the educational institutions. The ignorance of employability skills is responsible for the decrement in the employability of engineering graduates. And According to Aspiring Mind report – 2019, at present 80% of engineers are not employable in any job in a knowledge economy. (National Education Policy 2019 2019) it is found from many studies, that the employability skills and industry expectations are necessary for improving the employability.(Armoogum, Ramasawmy, and Marie 2020)&(Chandrasekaran, Littlefair, and Stojcevski 2015).

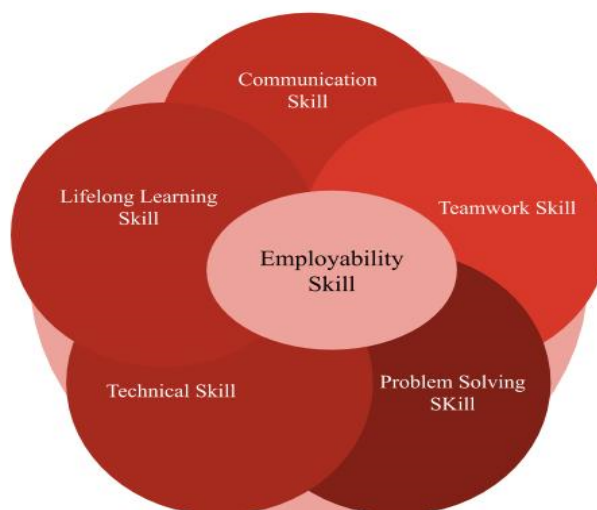


Figure.1 Necessary elements for employment



The GDP play a major role in the growth of employability rate because is the major component out of another component. In the last five decades GDP rate fluctuates, and the impact of fluctuation of GDP on the employability rates. The NSO report said that the unemployment rate was 6.1% in 2017-18, at the same time, the GDP was 7.6 %. [NSO Report 2019] But, according to the Centre for Monitoring Indian Economy, the unemployment rate in the country will be 7.6% in 2020. [CMIE Report 2019] Because the United Nations (UN) has reduced India's GDP growth forecast from 7.6% to 5.7% in 2020. [NSO Report 2019]

This paper shows a brief review on employability in the concern of sustainability of technical education and strategies. The key objective of the study is to investigate the important factor for improvement in employability. This paper elaborates new policy, accreditation system, new programs, advance courses educational framework which is associated with newly graduates engineering and management student.

### 2. Technical education system in India

In 21st century, engineering education in India faces significant challenges as it requires meeting the demands of technical profession and emerging job market. Researchers have found some universally preferred, yet challenging skills for global workforce, e.g., science, technology, engineering and math (STEM), statistics and data analysis skills, are of the topmost priority.

India with the second largest population home and the third-largest higher education system in the world by volume of the student enrolled. And according to AISHE Report 2019, Gross Enrolment Ratio (GER) has increased from 24.3 to 26.3% during the last 5 years i.e. 2014 to 2019. The Government has set up a target to increase the GER in Higher Education to 30% by the end of the year 2020. (Subramanian and Labs 2017)

Also, India has one of the diverse and biggest education system, which offers facility of education and training in almost all aspects. At the same time it led to widespread concern on the quality and significance of the higher education. (Mane and Railways 2017)Figure 2 is showing the total number of engineering and Management College in India from 2012 to 2019.

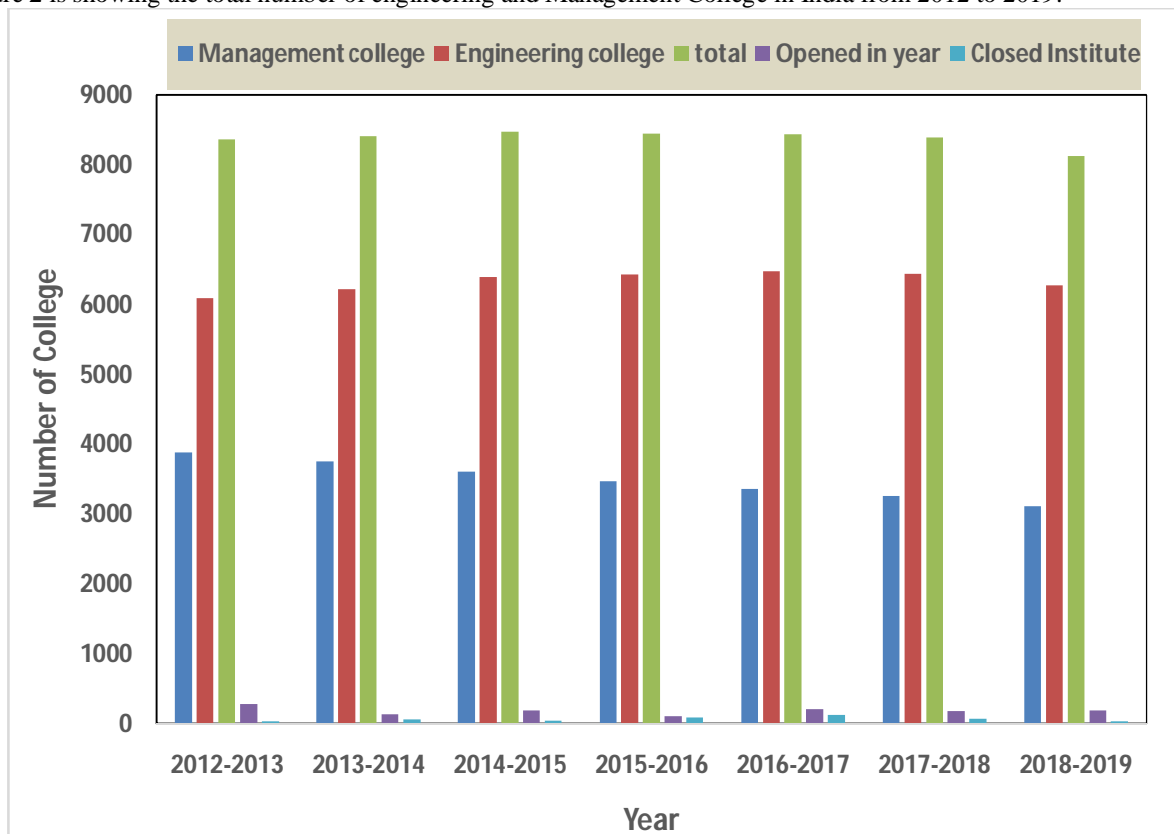


Figure 2. Total number of institute in India (Source AICTE ANNUAL REPORT)

### 2.1 Private investment participant in engineering education

In the engineering educational institutions and agency reports specify that most of the newly established engineering colleges did not have experienced faculty with research experience and they are very young and fresh graduates with a minimum of post



graduations as their educational qualification. Further, engineering colleges do not have access to high-quality engineering journals and slow in implementing and upgrading the latest advanced technologies (Access & Case, 2012). Only less number of high-quality engineering research has taken up ("Challenges & Opportunities in Engineering Education," 2011). Therefore, the gap exists between the student's performance and organizations expectations on the same due to their lack of exposure and experience during their education. But if the private investor invests in engineering colleges than the quality of teaching can be improved and student can aware of the requirement of industries. Infosys invests in one engineering college and then the college has more placements compare to before private investment. (Ram Babu, 2012.)

### 3. Global Perceptive Study Developing Countries

India and China are the world's largest educational hubs, and developing country. In 2020, India's population is 1.23 Billion. But, in many places, India is lacking behind from China, the biggest reason for which is to stay behind in education. Many such methods are being done in China which understand students practically and make skilled engineer for getting a job anywhere in the world. Apart from this, the flow of funds in research is 20% less than from China. [Elsevier's Scopus Database] In terms of GDP, India is approximately 24% behind China. The ratio of the Indian unemployment rate is also much higher than from China, the Unemployment rate is forecasted 7.6% is for India and 4.6% for China in 2020. [NSO Report 2019] Also, (K.S. Reddy et al., 2016) examine the current state of higher education, high-impact research metrics, and world university rankings in an emerging market of India and comparison with China. The results showed that, an overview of higher education and government schemes for academic research, a theoretical note on the academic scholarship, the determinants of high-impact research, most recent world university rankings. Overall, world university rankings and research metrics of Indian universities are found to be far behind those of Chinese universities.

### 4. Perception of Students & Employer

Employability skill is becoming more and more vital now - a - days, the university also provides employability skill program for the college graduates which include the development of soft skills as well as technical skill and knowledge (Sharma, 2016.) But few obstacles in the way of employability technical education, and there are many issues which created obstacle between employer and graduates for creating a job. "A gap between employer requirement on graduates skills and graduates actual skills on the employer's perception". It is necessary to introduce a method which can create a connection between employer and industries. (Tejan and Sabil 2019) investigates the perception of employer of employability skill and career development by a study. And the author has analyzed that knowledge of skill should be necessary for joining a new job. But employability skill education still not in Indian curriculum system. The learning environment of the technical education system is not sufficient for students to become a successful engineer and a link between Staff and Students necessary for Industry-University Collaboration in engineering education (Chandrasekaran, Littlefair, and Stojcevski 2015), (PrachiKapil, (2014).) investigated the need of ready-for-the-job people, and for this expectation, she suggested few important factors, such as curriculum changes, a collaboration of industry and academia, lecturer training and workshops, industrial demand.(Chinyamurindi 2017) suggested the perception of students on employability components, also this paper recommended that policymakers should develop such policies which can furnish the students need. (Bremner 2018) discussed the highlights of mismatch or gap between the learning outcomes and employability skills by the use of qualitative and quantitative methods. (Clarke, 2018.) Suggested that an organization can mentor newly hired graduates to develop certain values and behavior that are needed at the organization.

### 5. Developing Framework for improving employability in NBA Guideline

The Indian Quality Assessment and Accreditation System for engineering education started with the setting up of NBA in 1994, by the AICTE [AICTE Website 2020]. And Employability is dependent on quality education and every technical institute follows the NBA guideline for same. The NBA periodically conducts an evaluation of technical institutions or programs based on guidelines, and these guidelines consist with various Program Outcomes (POs), Course Outcomes (COs), and Program Educational Objectives (PEOs)(Srivastava and Hasan 2015) Assessment is one or more processes that identify, collect, and prepare data to evaluate the achievement of PO and PEO. Now a day Programme Specific Outcomes (PSOs) is a necessary element of NBA, which is directly related to course outcome (COs) and programme outcomes (POs), which are responsible for employability of the student. Figure 3 is showing the framework of the NBA.

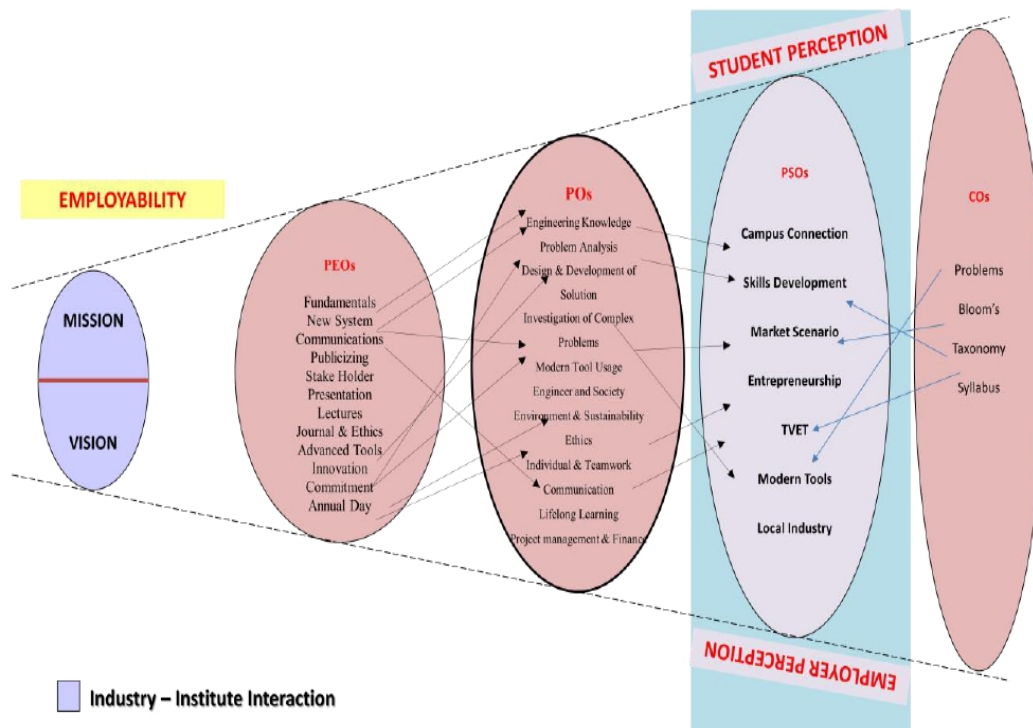


Figure 3 Framework of NBA

## 6. Sustainability of Engineering Education

Communication Skill, Professional Skill, Core Skill, summer training, entrepreneurship, Core Industrial training, Interaction Between Academia-Industry, Curriculum changes, construct a technology park, are necessary for the sustainability of technical Education that the students aware about changed globalized conditions, market expectations and business targets. The sustainability in engineering education influenced by a few factors; these factors can be identified by the critical study of published and unpublished articles, conferences proceeding university report, book and website documents. And it is possible through the education which opted with management studies for those possibilities entrepreneurship studies should be opted by the current curriculum. Entrepreneurship is a new concept for job seekers and the Indian education system needs curriculum changes concerning entrepreneurship education, and (Dhar, 2012) suggested academic entrepreneurship in India. Campus connect with the Infosys Program is very effective for the education system, (Ram Babu, 2012.) has prepared a report on campus connect (CC) with the Infosys program. This report suggested a case study which indicated a partnership important between engineering colleges and IT Industries for enhancing the employability. This study gives few valuable findings related to CC, and give the suggestions that the rate of employability was increased up to 40%, after the successful completion of CC partnership and this was a great advantage, benefits and success in the talent pool of IT industry. (Ferns, Dawson, and Howitt 2019) developed a framework for collaboration between stakeholders to ensure work-ready graduates and sustained economic growth, the study based on three-phase, mixed-method and multiple case study research design they find the research challenging conventional university approach to brokering and maintaining WIL partnership and suggests a holistic engagement framework for stakeholder. After a brief review of research papers, it is identified that the campus connects, collaboration, MoU, training are a valuable factor for the sustainability of employability schemes and policies in Technical Education. (Ferns, Dawson, and Howitt 2019).

## 7. Conclusions

In the current educational scenario, employment of newly graduate's students is the biggest issue. The paper belongs to employability skills of new graduates of technical colleges, sustainability, historical development, and comparison with various countries employability strategies. In the present study, brief literature review method used for identification of various employment factors, for this purpose various reports, papers reviewed and the results showed that sustainability of technical education depends on the improvement of the employability of new graduates for skills, outcomes, PEOs. This paper introduced a framework which



contains PSOs for employability with the connection of PEO, PO, CO and skills which are very important for degrees courses, and curriculum.

## 8. Recommendations

1. Curriculum to be revised and should be in line with the respective industries
2. Teacher's regular trainings should happen on required skills Minimum eligibility should be PhD to teach in higher education (UG/PG)
3. Labs & other infrastructure to be in-line with course to ensure practical experience
4. University/Institute to facilitate to enhance knowledge as well as hand on experience (If possible) on upcoming & new technologies like Advance Robotics, Artificial Intelligence (AI), Machine Learning, IoT, Cloud Computing, Data Science, Big Data Analytics

## References

1. Armoogum, Nigel Yoven, Brinda Ramasawmy, and Brigitte Marie. 2020. "The Need to Enhance the Employability Competences ( Knowledge , Skills , Autonomy , and Attitudes ) of Undergraduates in Agriculture . Evidence from Students ' Perceptions and Employers ' Expectations." : 1–45.
2. Bano, Yasmeen, and S Vasantha. 2019. "Bridging Employability Skill Gap through Digital Enabled Education." 9(February): 508–19.
3. Bremner, Pauline. 2018. "The Gap between Degree Outcomes and Employability Skills Introduction :"(July).
4. Chandrasekaran, Sivachandran, Guy Littlefair, and Alex Stojcevski. 2015. "Staff and Students Views on Industry-University Collaboration in Engineering." 8(2): 13–19.
5. Chinyamurindi, Willie T. 2017. "Perceptions of Factors That Affect Employability amongst a Sample of Final-Year Students at a Rural South African University." : 1–10.
6. Ferns, Sonia, Vaile Dawson, and Christine Howitt. 2019. "A Collaborative Framework for Enhancing Graduate Employability." International Journal of Work-Integrated Learning 20(2): 99–111.
7. Mane, Suresh D, and Indian Railways. 2017. "NBA and NAAC Accreditation of UG Engineering Programmes / Colleges in India : NBA and NAAC Accreditation of UG Engineering Programmes / Colleges in India : A Review." (October 2015).
8. National Education Policy 2019. 2019.
9. Pool, Lorraine Dacre, and Peter Sewell. 2007. "The Key to Employability : Developing a Practical Model of Graduate Employability." 49(4): 277–89.
10. Srivastava, Amit Iqbal, and Aamir Hasan. 2015. "Bridging the Skill Gap in India : Challenges and Solutions." 1(4): 318–29.
11. Subramanian, Kalpathy Ramaiyer, and Thninketh Labs. 2017. "Higher Education And Employability Skills." (January).
12. Tejan, Oussama Ait, and Abdelkader Sabil. 2019. "Understanding Employers ' Perception of Employability Skills and Career Development in Morocco Understanding Employers ' Perception of Employability Skills and Career Development in." (June).