



Today's engineering education in India

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Abstract

The paper aims to give the status of today's engineering in India based on literature survey. Engineering has been the priority choice for career in India due to huge number of engineering colleges throughout the country, but there is question in everybody's mind: Do India require so many Engineers? And what is the possibility of employability? With this current scenario prevailing in the stream of engineering, Innovation is a must in education system for raising the quality. This paper will explore the innovation and few challenges to innovation in higher education in engineering stream. While this paper does not focus to give the final solution or direction, but it suggest the road map to be concentrated to build up qualified and efficient engineers in India.

Keywords: education, engineering, industry and challenges

1. Introduction

Education is the backbone of the current industrialized world. Though education tries to cope up with the needs of the society, it has to meet the challenges of unpredictable changing civilized population. This involves a structured system to prepare the young minds to face the challenges. Higher education helps an individual to lead a better life, develops new technology which helps to increase the economy of the country. An individual with education has a better life style as he/she will be able to solve any problem with a broad mind set. India being a country of opportunities should have skilled people to meet any challenges. This can be developed only through education which should be structured to meet the developing technologies. A country with a population of skilled people will be able to operate and develop new technologies. Next to China and the United States, India stands the third largest in higher education system. Increase in the number of education institutes and universities have made a clear roadmap towards the development of India's higher education system. There is a general consensus among engineering educators, entrepreneurs, industry and business leaders that engineering education in India is heading towards crises^[1, 3, 4]. It is a known fact that the graduating engineers want to be placed in a software firm or in core industry. However very less percentage of grandaunts have the required skill to get placed in software industry or has the capability to handle core engineering task. According to the MHRD, India has 6,214 engineering and technology institutions which are enrolling 2.9 million students wherein in 1.5 million engineers are released every year for job.

This paper aims at providing a literature survey on the current status of engineering education in India based on the key factors that stand as a major challenge and the innovations required to meet the requirements of Engineering graduates by the individual for the society.

2. Key challenges in Higher Engineering Education in India

National Knowledge Commission (NKC) says that

"Engineering education is among the key enablers of growth for transforming India's economy". Engineering concepts are explained through theoretical examples in India's education system as most of the courses are held in a classroom environment. It is worth here to note what Confucius, the Chinese philosopher said: *I hear; I forget. I see; I remember. I do; I understand.* In addition to the modalities of classroom teaching, some of the common challenges faced by engineering graduates to pursue higher education are:

1. **Language Proficiency:** Students from rural areas who have got admission for an engineering course are not given special care for improving the proficiency in English as engineering education is completely in English.
2. **Varying Capacity of absorption:** Having heterogeneous group of students, the absorbing capability of students also varies, as per which the teaching modality as to be changed.
3. **Hands on:** Technical subjects should be explained with real time applications so that the student can understand with in-depth knowledge.
4. **Lack of Industrial Interaction:** Industrial visits arranged by the institution do not meet the effectiveness.
5. **Infrastructure:** Poor infrastructure is another challenge to the higher education system.
6. **Employability:** Limited percentage of graduates is only employable.

3. Innovations in Higher Engineering Education

India being a country with high population of young people has a huge opportunity for education sector development. As the need of employability as increased, the present educational system as focused over collaboration with industrial needs, increase in research skills which includes technical and soft skills. In addition, to increase mutual understanding in higher education can be achieved through participation is platforms such as seminars, tutorials, workshops, conference etc^[1, 2].

Suggestion for improving the innovations in Higher Engineering Education

1. There is a need for implementation of innovation from school education level to higher education level to help the individual to meet the challenges globally.
2. The Quality and reputation of Higher education system has to be improved.
3. Institutions should provide good infrastructure and facility.
4. The undergraduate course should be framed in such a way that the student gains deep knowledge which helps them to implement it practically for higher education.
5. Exposure to improvise in soft skill knowledge.
6. Higher education should facilitate multidisciplinary approach so as the student becomes versatile.
7. Use of ICT in classroom teaching should be practiced.

The innovation incorporated in higher education system becomes successful only when the young mind are able to visualize the current situation of the country, so as to get expertise in new learning tools so as to make India as one of the powerful country ^[6].

4. Conclusion

Education is a conservative endeavor as it is a part of the society development. The first main challenge is to make the entire population understand technology and the need for Engineers. The second set of challenge involves curriculum, teaching learning process which includes students and teachers. The Third challenge is focused to change students mind set to concentrate and understand to get deep knowledge. To meet the grand challenges of engineering education today, the content of the engineering stream should for the student, by the student, to the student.

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6. References

1. Shaguri Obadya Ray, Higher Education in India Access, Equity, Quality, EAN World Congress Scholar, Global Access to Postsecondary education, 2013.
2. Roshni Chakrabarty. what is wrong with India's Engineers, India today, 2018.
3. Caruth Gail, Caruth Donald. Understanding Resistance to Change: A Challenge for Universities. Turkish Online Journal of Distance Education, 2013, 14(2).
4. Cunningham CM, Hester K. Engineering is elementary: An engineering and technology curriculum for children. In American Society for engineering education annual conference & exposition. Honolulu, 2007.
5. Kirschner Ann. "Innovations in Higher Education? Hah!" The Chronicle of Higher Education, 2012, 8.
6. Marshall Stephen. "Change technology and higher education: are universities capable of organisational change." ALT-J Research in Learning Technology, 2010, 18(3).