



## ROLE OF TECHNICAL EDUCATION IN INDIA

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### Introduction

Technical Education is the important tool in the development of human resource in India. It creates skilled human resource, encouraging industrial development and its productivity, and uplift the quality of life of the society. Technical education includes Science and Technology, engineering, management, applied arts & crafts, hotel management etc. The expansion of the technical education system is directly linked to economic growth and development of a country. A rapidly expanding technical education system is considered as an indicator of rapid economic growth and development. Although there might be other factors also which influenced the expansion and growth of the higher education system, yet technical education was considered the most important component for innovative technologies and human resource development.

### Evolution of Technical education in India

In British India, the technical training was began for the purpose of construction of buildings, canals, ports, production of apparatus instruments for army, navy and land survey for the development. For this purpose elementary lessons were necessary

in reading, writing, arithmetic, geometry, mechanics etc. The schools were existed in before 1825 in Calcutta and Bombay. First industrial school was established in 1842 at Guindy Campus Madras connected with Gun Carriage Factory. In Poona a training school was started.

James Thosmson proposed Civil engineering college in Roorkee (Uttar Pradesh) in 1847. It was the first engineering college to train the Civil Engineers which led to the development of public buildings, workshops and for the construction of Ganga Canal. This college provided Diploma degree which was not was affiliated to any University. In Bengal, the Calcutta College of Civil Engineering (later named Bengal Engineering College) was opened in 1856 due to Government Policy and it is affiliated to Calcutta University.

In 1854 Poona College of Engineering was established and 1858 affiliated to Bombay University. Same year Guindy College of Engineering was affiliated to the Madras University. the Shibpur, Poona and Guindy performed the same education and had licentiate courses in civil engineering up to 1880, when they organised degree classes in this branch alone. After 1880 there was demand created in the field of mechanical



and electrical engineering. In 1887 the Victoria Jubilee Technical Institute was started at Bombay with objective of the training of licentiates in Electrical, Mechanical and Textile Engineering. In 1915, IISc (Indian Institute of Science) was came to existence at Bangalore, opened Electrical Engineering classes under Dr. Alfred Hay and began to give certificates and associateships, the latter being regarded equivalent to a degree. The Bengal leaders started Swadeshi Movement in 1907 to initiate Nation's University. Resulting, many Institutions started but only the College of Engineering and Technology at Jadavpur had survived. It started granting diplomas in mechanical and engineering course in 1908 and in chemical engineering in 1921. In 1915 the Indian Industrial Commission, under the Chairmanship of Sir Thomas (Holland) debated the pros and cons of the introduction of degree courses in mechanical and electrical engineering. The first credit goes to Banaras University for started mechanical engineering, electrical engineering and metallurgy foresight of founder, Pt. Madan Mohan Malaviya (1917). In 1935-36 mechanical electrical and 1939-40 metallurgy courses started at Bengal Engineering College, Shibpur. The same courses were introduced in Guindy, Madras and Poona engineering college. After 15<sup>th</sup> August 2047 India realized that there is need of sufficient engineers to become a industrial development. Resulting of that country started many engineering colleges

In 1948 The Roorkee University Act was passed and in 1949 and the Roorkee Engineering College became first Technical University of India. The

administration of technical education is under Central as well as State Government.

In 1945 All India Council for Technical Education (AICTE) was set up as a national-level Apex Advisory Body to conduct a survey on the facilities available for technical education and to promote development in the country.

The UGC was originally set up in 1945 to oversee the operations of three central universities in India such as Delhi, Banaras, and Aligarh. By 1947, its responsibilities expanded to all Indian universities. The University Education Commission was established under the leadership of S. Radhakrishnan between 1948-1949 aims to recommend improvements and expansions in Indian University Education.

The Ministry of Human Resource Development provided grants to centrally funded institutions such as the Indian Institutes of Technology (IITs), Indian Institutes of Management (IIMs), School of Planning and Architecture (SPA), New Delhi, Technical Teachers Training Institutes (TTTIs), Indian School of Mines (ISM), Dhanbad, and Indian Institutes of Information Technology (IIITs). BTE processes the programmers of these centrally funded Institutions, monitors and evaluates them.

The National Education Policy (NEP) was established in 1986 and addressed to issues of technical education in private sector in different context. This decade shows progressive growth in quality. To achieve degree of excellence, NEP, AICTE was made a statutory authority to take care of damage control rather than the need of control to ensure high norms and standards.



AICTE Act , 1987 became more effective in fulfilling its mandatory actions.

### **Importance of Technical Education**

The expansion of the technical education system is directly linked to economic growth and development of a country. A rapidly expanding technical education system is considered as an indicator of rapid economic growth and development. Although there might be other factors also which influenced the expansion and growth of the higher education system, yet technical education was considered the most important component for innovative technologies and human resource development.

Keeping this in view IIT'S and State Engineering colleges in fifth and sixth decades of 20<sup>th</sup> century were established and that could be taken as a testimony to the vision of policy makers of that era for achieving excellence in scientific and technical education and research.

The planners also realized that tremendous efforts were required on technical education front to transform India into a developed nation and consequently, technical education in India has experienced unprecedented growth during recent years, more particularly after liberalization of economy in 1991.

In the technical education our country as on 31<sup>st</sup> July, 2007, has 4707 degrees institutions and 1766 diploma polytechnics with an intake capacity of 8, 42,232 and 3, 33,296 students respectively. It includes all UG and PG academic programs approved by AICTE. Further, for the session 2007-08 another 467 institutions with additional intake capacity of 96551 students have been given approval, thus, taking the total

capacity to 12,72,079 students for degree and diploma programs (AICTE, 2007)

No doubt the intake in undergraduate technical education has increased many folds, but the quantitative improvement has not resulted in simultaneous improvement in quality. The concept of quality in education is a relative concept and it lies in the perception of consumers. Quality is a degree of excellence and an attribute of values. In technical education the quality is seen in terms of two objectives i.e. 'fitness for purpose' and 'value for money' ( Powar 2000).

There are performance indicators to measure the quality of technical education. These are teaching learning process; research and extension activities, physical infrastructure, organization and administration, students' support system, innovations and creativity and other healthy practices (Stella, 2000).

Higher education is considered as an essential ingredient for economic and social upliftment of the people. Hence, any quality control must reflect on the aspirations of various beneficiaries. So there is an urgent need to make technical education more relevant and effective to achieve the desired economic and industrial growths.

It is opined that the teachers who teach engineering courses have enormous responsibilities in producing competent and dedicated engineering graduates who would be able to experience a smooth transition from the college environment to corporate life. However, the onus of maintaining a vibrant academic standard of technical institutions lies with the central and state governments.



It is disheartening to find that many new institutions set up under the self-financing mode have not created adequate infrastructure or made available to the students minimum basic teaching and learning facilities. The unprecedented expansion of technical education has created scarcity of adequately trained and qualified faculty to impart technical education effectively. In addition to this the technical education system has also faced a threat from the aggressive marketing of foreign institutions in India. Our young students are being lured by these institutions which are not even recognized in their own country.

Another reason for non-availability of qualified faculty is the appointment opportunities in the information technology sectors. Consequently, postgraduate education in engineering has become less attractive and that has resulted in poor enrolment to postgraduate and research in engineering programs. This is not only in numbers, but also in the quality of those who seek higher studies in technical education.

This has caused scarcity of quality man power for R & D departments in industries and technical institutions. This problem has further aggravated due to the fact that many multinational institutions have set up R & D centers in India and have recruited many bright Indian professionals from Industries and Educational Institutions by giving higher pay packages.

Till 1990 the expansion and growth of the technical education in India was a Government prerogative; however, after the introduction of economic reforms and globalization of the economy the Government allowed privatization of

technical education. Consequently, there is a mushrooming growth of self financing technical institutions during the last 15 years. Most of these institutions are being opened and run by Industrial and Business houses and their priority is profit making. Only a few private institutions are taking care of quality education and these are equally good as IIT'S and NIT'S.

In addition to the above the privatization of technical education has brought a number of anomalies in the technical education system. The most glaring anomaly is the disparity in fees system and that has made technical education costly and beyond the reach of the poor students.

At the same time the quality of technical education has suffered in view of the fact that many private institutions lack of necessary infrastructure and facilities. The Government has tried its best to regulate the fee structures and quality of education through AICTE, but the problem persists and the effectiveness of AICTE and regulatory bodies in maintaining the quality of technical education is under cloud and debatable.

According to National survey of 650 engineering colleges in India by Aspiring Minds, more than 80 % of engineering were unemployable in 2015. Another survey of management graduates, excluding those from the top 20 schools, conducted by ASSOCHAM in 2016 tells that only 7% were employed. Only a few of 5500 management institutes impart quality management education that helps their graduates to get jobs though most of them earning less than 10000 a month. Why are most institutions of higher learning in such a pathetic condition?



## Expansion and Growth of Technical Education

Despite the above mentioned deficiencies, there is an exponential growth in technical education in India during the last two decades. Today, India has the second largest number of engineering students in the world. Indian scientific, industrial and technological development particularly in space, nuclear and missile technology, information technology, communication and computer engineering have earned world recognition and India has emerged as a global power to reckon with.

The historic achievement of landing of Chandrayan-1 and the moon impact probe on the lunar surface with the Indian tricolor pointed on it are great achievements. These can prove great inspiration to our students in taking innovative projects with creative ideas. The teachers should use these achievements to create enthusiasm among the technical students by motivation and technical inputs. The entities as much as civilization, education, industry, culture, living standards, economy, etc. cannot remain unaffected from the changes elsewhere in any part of the universe.

Due to the advent of the information technology globalization is the norm and the survival in the global context depends on the advancement in the technical education. Thus, in our country, which is at the forefront of the developing nations, the policy makers should formulate the technical education to suit the immediate requirements having considerations to the future needs of the nation also.

As per 14 November 2023 there are total 1113 universities are providing education which includes are 56 central universities,

479 state universities, 124 Deemed Universities, 455 private Universities working. In 2024 there are 1163 Universities are working.

The expansion of the technical education system is directly linked to economic growth and development of a country. It is an indicator of rapid economic growth and development based on export quality, industrial development etc. there are many factors influenced by the expansion and growth of the higher education system, yet technical education was considered the most important component for innovative technologies and human resource development.

At present the technical education facing problems little bit interaction between industry and institutes because of curriculum framed without consideration of the industrial requirements. This is frustrating in young graduates. There is need of formulation of technical education in accordance with employability.

## Conclusion

The technical education is one of the tool for the development of country. Before independence the British rule pioneered technical education and after independence gradually its was extended in Government and private sectors. The education provides and potential employers from industries and other corporate sector to maintaining quality of technical education.

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