TECHNICAL EDUCATION IN PRE AND POST INDEPENDENT INDIA

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ABSTRACT

This paper deals with technical education growth, policies in pre and post independent India. The world is moving forward rapidly and positively, into an era where societies and economies are incrementally based on knowledge. The importance of nations in the 21st Century shall be judged not by their economic strength alone, but also by their power to conceptualize, innovate, invent and bring the benefits of these inventions to their people. With the beginning of the Industrial Revolution, new technologies like business management, pharmacy, and computer technology were developed. The Government emphasized the need for technical manpower to handle these organizations and directed the states to develop technical education on a fast track mode. The All India Council for Technical Education (AICTE) was set-up in November 1945 as a national level apex advisory body and, later on, in 1987 it was given the statutory status by an act of parliament. Due to efforts and initiatives taken during successive Five Year Plans technical education witnessed tremendous growth in quantitative terms with the establishment of engineering colleges, polytechnics, Industrial Training Institutes and so on. But mere quantitative increase in the number of institutions imparting technical education will not help India in realizing her dream of establishing the knowledge society of the future.

Key words: Education System, Technical Education Growth, Education Policies.

INTRODUCTION

Ideal education should be capable of providing the fruit of all knowledge while the tree of knowledge is still growing: the student is fulfilled as he grows in the ability to think and act in accordance with natural law, and lives a life free from mistakes and suffering. Identifying and using the sources of all knowledge judiciously and enjoying the fruit of all knowledge in daily activity, makes the student a master of life.

Before nineties, due to rapid industrialization and economic growth, engineering and technical education in India grew faster than anywhere else in the world and India now has the second largest number of engineering students in the world. Recent Indian scientific, industrial and technological development, particularly in space, nuclear and missile technology, computer engineering and information science has achieved a lot. Since technical education determines the development and socioeconomic condition of a nation, developing countries like India need world-class engineering educators in order to design and implement effective engineering education programs at their local universities. Today the typical pattern is for bright young talent in developing countries interested in engineering education to complete programs of study through an undergraduate degree in their home countries then go abroad to North America or Western Europe for doctoral study.

The Impetus to Technical Education

The first engineering college was established in Uttar Pradesh in 1847 for the training of civil engineers at Roorkee, which made use of the large workshops and public buildings there that were erected for the Upper Ganges canal. The Roorkee College (or to give it its official name, the Thomson Engineering College) was never affiliated to any university but gave diplomas considered to be equivalent to degrees. In pursuance of the Government policy, three Engineering Colleges were opened by about1856 in the three presidencies. In Bengal, a college called the Calcutta College of civil engineering was opened at the Writer's Buildings in November 1856; the name was changed to Bengal Engineering College in 1857, and it was affiliated to the Calcutta University. It gave

a licentiate course in civil engineering. In 1865 it was amalgamated with the Presidency College. Later in 1880, it was detached from the presidency college and shifted to its present quarters at Sibpur, occupying the premises and buildings belonging to the Bishop's College. Technical education has always been and continues to be one of the more preferred areas of study with expectations for better career opportunities.

Technical Education in Post-Independent India

Technical education plays a vital role in human resource development of the country by creating skilled manpower, enhancing industrial productivity and improving the quality of life of its people. Technical education covers programmes in engineering, technology, management, architecture, town planning, pharmacy, applied arts and crafts, hotel management and catering technology, transportation, roads, irrigation and power etc. During the initial stages of independence, the Government of India embarked on rapid industrialization to achieve development by starting various types of industries under the public sector. The Government emphasized the need of technical manpower to handle these organizations and directed the states to develop technical education on a fast track mode (Table 1).

The All India Council for Technical Education (AICTE) was set-up in November 1945 as a national level apex advisory body and, later on, in 1987 it was given the statutory status by an Act of Parliament. The AICTE grants approval for starting new technical institutions, for introduction of new courses and for making suitable changes in the intake capacity of technical institutions. The AICTE has delegated to the concerned state governments powers to process and grant approval for new institutions, starting new courses and to make changes in the intake capacity of diploma level technical institutions. It also lays down norms and standards for such institutions. The AICTE has its headquarters in New Delhi and seven regional offices located at Kolkata, Chennai, Kanpur, Mumbai, Chandigarh, Bhopal and Bangalore. A new regional office at Hyderabad has been set up and is to become operational soon. The Council discharges its functions through an Executive Committee. AICTE would strive to be a true facilitator in addition to fulfilling the regulatory provisions.

Sl.No	Policies	Year
1	Hunter commission, officially known as Indian education commission	1882
2	Indian Universities Commission	1902
3	Government resolution educational policy	1913
4	Calcutta University Commission also called Sadler Commission	1917
5	Hartog Committee	1929
6	Sapru Committee	1934
7	Abbot-Wood Report	1936
8	Zakir Hussain Committee	1937
9	Wardha Education Committee of the Central Advisory Board of Education also called B. G. Kher Committee	1939
10	Central Advisory Board of Education Report or Post-War Educational Development Report popularly called the Sargent Report	1944

Table 1. Indian Education Policies During the Pre-Independence Period

MHRD Funded Technical Institutions

The Ministry of Education has been renamed as the Ministry of Human Resources Development (MHRD). The technical education system in the country can be broadly classified into three categories – Central Government funded institutions, State Government/State-funded institutions and Self-financed institutions.

The Centrally funded institutions of technical and science education Table 2 with the beginning of the Industrial Revolution, new technologies like computer technology were developed. These new products are extremely complex and require complex set of skills. So in the 20th century India began to witness a transition to another kind of society in which people require a lot of knowledge to pursue an occupation of their choice. Besides, as new technological changes take place, old technologies and old skills will become outdated and people will have to go on acquiring new knowledge and new skills to continue in

Institutions	Numbers
IITs	15
IIMs	13
IISC, Bangalore	1
IISERs,	5
NITs	30
IIITs	4
NITTTRs	4
Others (SPA, ISMU, NERIST, SLIET, NITIE & NIFFT, CIT)	9
Total	81

Table 2. Technical Institutions

an occupation. A good example of such an occupation is that of a computer software engineer. A software expert must go on improving his skills by learning new computer languages and new computer techniques like cloud computing in order to face competition. Thus, in a single generation skills acquired by one person may become obsolete and quite useless for the next generation. This is in sharp contrast to the kind of society that existed in medieval or ancient times because in those days if a person acquired skill relating to one particular occupation, there was no need for a person to shift to another occupation or learn new skill in order to secure a livelihood for himself.

The modern society thus creates tremendous pressure and forces people to continuously improve their knowledge and skills to stay in competition. To prepare the citizens to face the challenges of this new "knowledge society", the polytechnics and engineering colleges must not only have state-of- the- art labs but also highly trained professional teachers who will have to constantly improve their skills and knowledge by attending seminars, workshops etc. In addition, it has become imperative for all teachers imparting technical education to have a thorough knowledge of the internet in order to access information related to the latest technological developments related to their field of study (Table 3).

Growth of Technical Education

A skill is the learned capacity to carry out pre-determined results often with the minimum outlay of time, energy, or both. Skills can often be divided into domain-general and domain-specific skills. For example, in the domain of work, some general skills would include time management, teamwork and leadership, self motivation and others, whereas domain-specific skills would be useful only for a certain job. Skill usually requires certain environment stimuli and situations to assess the level of skill being shown and used. People need a broad range of skills in order to contribute to a modern economy and to take their place in the technological society of the twenty-first century. The growth of Technical Education before independence in the country has been very slow.

The number of Engineering colleges and polytechnics [including Pharmacy and Architecture Institutions] in 1947

Policies	Years
University education commission popularly called Dr. Radhakrishna Commission	1948-49
Secondary education commission popularly called Dr. Mudaliar Commission	1952-53
Committee on higher education for rural areas, rural institutions called Shri K.L. Shrimali Committee	1954
National committee on women's education called Shrimati Durgabai Deshmukh Committee	1958
University Grants Commission's review committee on education also called Prof. K. G. Saiyidain Committee	1960
U. N. Dhebar Commission	1960
Dr. Sampurnanand Committee	1961
Committee on Plan Projects; study team for selected educational schemes also called Shri B. N. Jha Committee	1961
Study group on the Training of Elementary Teachers in India	1961
Kothari Committee on Model Act for Universities	1961
University grants commission's committee on education as an elective subject at the undergraduate stage called Mr. A. R. Wadia committee	1963
Study group on the study of English in India called Prof. Gokak Committee	1964
Education commission popularly called Dr. D. S. Kothari commission	1964-66
Committee of members of parliament on education	1967
Three delegations by University Grants Commission	1967-71
Steering Committee of Planning group on Education	1968
National Policy on Education	1968
Review committee on the working of National Council of Educational Research and Training called Dr. Nag Chaudhri Committee	1968
Study group on the development of pre-school child called Shrimati Mina Swaminathan Committee	1970
Gajendragadkar Committee on Governance of Universities	1971
National committee on 10+2+3 educational structure called Dr. Shukla Committee	1972
Committee on secondary teacher education of NCTE called Dr. Jha Committee	1973-77
University grants commission's panel on teacher education during fifth plan period	1974
Committee on Elementary Teacher Education of NCTE also called Dr. Malcom S. Adiseshaiah Committee	1975
The curriculum for ten-year school: A framework	1975
Standing Committee of National Council for Teacher Education	1975-76
Review committee on the curriculum for ten-year school called Shri Ishwarbhai patel Committee	1977
Working group on vocationalization of education called Dr. Malcolm S. Adiseshaiah Committee	1977-78
Draft National Policy on Education	1979
Study group on INSAT Television Utilization for Education and Development called Shri s. Sathyam Committee	1980
National commissions on teachers – I & II: The teacher and society called Prof. Chattopadhyaya Commission	1983-85
Working group to review teachers' training program [in the light of the need for value orientation]	1983
Challenge of education: A policy perspective	1985
National curriculum for primary and secondary education: A framework	1985
National Policy on Education	1986
National Policy on Education: Programme of Action	1986
All India Council for Technical Education Act [AICTE]	1987
National Curriculum for Elementary and Secondary Education – A Framework	1988
National Curriculum for Teacher Education: A framework	1988
Committee for review of NPE 1986: Towards an Enlightened and Human Society called Acharya Ramamurhty Committee	1990
University grants commission's report of the curriculum development centre in education	1990
NCTE Committee for teacher education programme through distance education mode	1990
Central advisory board of education committee on distance education	1992

CABE Committee on policy	1992
National policy on education 1986: Programme of Action	1992
National Advisory committee: Learning without burden	1992
The National Council for Teacher Education act	1993
Group to examine the feasibility of implementation of the recommendations of the national advisory committee also called Prof. Yashpal committee	1993
Committee on B.E d. correspondence also called Prof. Ramal Parikh Committee	1993
University grants commission's committee on B. Ed. correspondence, distance education programme	1994
Special Orientation programme for school Teacher [SOPT]	1994-9
Committee of National Council for Teacher Education on different modes of education used for teacher preparation in India	1995
University grants commission's committee on B.Ed. through correspondence for in-service teachers called Prof. Takwale committee	1995
Planning commission's report on teacher education in five year plans	1951-97
NCTE Curriculum framework for quality teacher education	1998
National Curriculum Framework for School Education	2000
National Curriculum Framework	2005
Curriculum Framework for Teacher Education	2006
National Knowledge Commission [NKC] popularly called Sir Sam Pitroda Commission	2006-09
National Curriculum Framework for Teacher Education	2009
Panel to review the functioning of the University Grants Commission [UGC] and the All India Council for Technical Education [AICTE] [2008].	2009

Table 3. Indian Education Policies During the Post-Independence Period

was 44 and 43 respectively with an intake capacity of 3200 and 4300 respectively. The growth of industries in the country, just after independence, also demanded the need for qualified professionals in other fields, such as business management, architecture, pharmacy industrial sociology etc as shown in the Table 4. Meanwhile, expansion of institutions and intake remained at a low level in the government private aided and university sectors. The policy shift during eighties towards involvement of private and voluntary organizations in the setting up of technical and management institutions on self-financing basis ushered in an era of unique expansion of the technical education system, a trend which has continued during successive five year plans.

Education should always be purposeful, growth oriented and productive. But technical institutes are failing to produce dynamic and enterprising youngsters capable of facing the changing times and taking on the toughest technical challenges. Due to efforts and initiatives taken during successive Five year plans and particularly due to policy changes in the nineties to allow participation of private and voluntary organizations in the setting up of technical institutions on self-financing basis, the growth of Technical Education has been phenomenal

Year	Engineering	Management	MCA	Pharmacy	Architecture	HMCT	Total	Added in year
2005-06	1475	1888	1576	629	118	70	5756	383
2006-07	1511	2031	1619	665	116	64	6006	250
2007-08	1668	2062	1642	854	116	81	6423	417
2008-09	2388	2734	1768	1021	116	87	8114	1691
2009-10	2942	3482	1888	1054	106	93	9565	1451
2010-11	3241	3858	1937	1102	125	101	10364	799

Sources: Approval Process Hand Book (2011-2012), AICTE

Table 4. Growth of Different Programs in Technical Institutions

The Planning Commission constituted a working group on technical education for the formulation of the XII plan. The working group on technical education comprised four sub-groups.

- Research and Innovation
- Technology-Enabled Learning
- Strengthening State Technical Institutions
- Skills and Employability

Education, recognized as one of the critical elements of the national development effort, of which technical education is an integral part, is of vital importance to the nation as it is a powerful tool to build knowledge-based society of the 21st century. The Gross Enrolment Ratio in Higher Education in India is still about half the world's average GER (24%) and about two thirds that of the developing countries (18%). It is much lower than that of developed nations (58%). During the 11th plan, the targeted GER in higher education was fixed at 15% by the end of the 11th Five Year Plan and was accordingly required to grow by 8.9% annually. In technical education, the enrolment growth was targeted at 15% per annum.

Eleventh Five Year Plan mainly focused on increasing intake capacity by starting new educational institutions, enhancing the capacity of existing ones, starting new programmes etc. During the XI plan it was proposed to establish one polytechnic in each of the 200 districts in the country not having even one at present. Further, the Ministry of Technical Education has also proposed setting up at least 1000 polytechnics in XI plan i.e., 300 in Government sector, 300 in public private participation mode and 400 in the private sector.

Conclusion

Contemporary globalization constitutes a massive, complex system of exchanges that virtually covers all aspects of human societies. One critical issue that emerges from all of these restructuring processes is the central role of knowledge, technical education and learning in the success of the Global Information Society (GIS) and Global Information Economy (GIE). The main function of technical education is to create and disseminate knowledge. The university bears the responsibility of moving the society forward by producing positive thinkers and intelligent workers who can address the pressing problems of the society. In this age of globalization, technological advancement and competition, there is no alternative to the creation of a knowledge-based society which is only possible through technical education.

Technical education witnessed tremendous growth in quantitative terms with the establishment of hundreds of engineering colleges, polytechnics, industrial Training Institutes and so on. But mere quantitative increase in the number of institutions imparting technical education will not help India in realizing her dream of establishing the knowledge society of the future. This quantitative increase in the number of technical institutions must be supplemented by a qualitative increase in the number of highly trained and highly motivated teachers capable of imparting world class technical education to the students. It is only then that India will realize her ambition of becoming an economic superpower.

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