

Quality Technical Education - Vis A Vis Industry –Institute Interaction

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Abstract

With changing scenario of globalization it is essential to give quality & demand driven technical education that meets international standards, requirements of industry and society for sustained economic growth and developments. Technical education should be need based and market oriented which will results in a high rate of employability. It is a challenge, a matter of concern and significance for technical professional to meet all these demand of technical education. Apart from the knowledge, which we impart to the student, inculcating the necessary skills in the students is also the need of hour. Therefore it becomes the primary aim to identify the different method by which the skills can be incorporated in faculty as well as students so that; they can stand meticulously in this competitive environment. For this a team of highly profiled, competitive incumbent and action centric professionals are required who have adaptability, flexibility, communication and innovative skills incorporated in them. Positive thinking, decision making and observation skill should be inculcated for effective teaching learning process to strive for excellence, we need to “ignite the creative sense of our brain” which is nothing but creativity and innovation skills. Focus on the administrative, leadership, communication, management of the time and knowledge skills should also be made for effective linkage with the industries. Emphasis should be laid on attitude, culture and internalization of all professional. Motivational, interpretation and analytical skills for continuous enhancement for sustainability is also required. Incorporating all these skills will definitely update the quality of technical education in order to synchronize with the rapidly changing technological scenario. This will facilitate in acquiring the necessary professional competitiveness, excellence, innovativeness and compatibility as well. This is because of rapid technological and knowledge obsolescence due to rapid strides made on these fronts leading to continuous decline in the qualitative skills.

Keywords: Globalization, Employability, Adaptability, Flexibility, Innovative

I. INTRODUCTION

The techno-economic growth of a country largely depends upon the effectiveness and the impact of technical education system on all round personality development of the student, which in turn dictates the quality, skills and attitudes of technical manpower entering into the market. Budding engineers and engineering educators need to be reoriented in their approach to teaching - learning process which has to encompass lot many attributes like creativity and Innovation, problem-solving techniques, communication skills, habit of self-learning, ability to take quick decisions, professional ethics, social and moral values in addition to upto date knowledge and latest technical skills in their area of specialization. If India is to become a super power by the year 2020 (as per the vision of President Dr. A.P.J.Abdul Kalam) then we will have to reorient or even restructure our educational system.

II. QUALITY EDUCATION AND GLOBAL COMPETITIVENESS

Consequent upon globalization of economy, market equations have drastically changed. Competition has become the way of life and indispensable part of the strategic planning right from manpower development, establishing industry to marketing activity. As a result, technical education is facing huge challenges never experienced before. Quality improvement in technical education has become the need of the day not only for achieving excellence but also for the survival of technical institutions in this millennium. To a large extent this may be attributed to the large scale expansion of engineering colleges in our country during last two to three decades, creating more seats disproportionate to the requirement of growth. However, it has also brought some new problems in its wake that naturally follows. The quality of education in general and the ability and confidence and perseverance needed to stand successfully in the competition is now being seriously debated. Of course, this does not mean that all private colleges are to be viewed with suspicious eye. In fact, some of the self-financing institutions are doing extremely well and in recognition of their valuable contribution they have been granted autonomous or deemed university status. NBA accreditation and ISO certification provide an yardstick to measure the credibility of institutions in their mission. Further, as a result of globalisation, which has made easy the entry of foreign universities with better resources this aspect of education has drawn serious attention of those planning and promoting technical education in our country. In fact, quality education now is

recognized as all-round personality enhancer of the student. Some major elements that influence the quality of technical education have been illustrated through Fig.1.

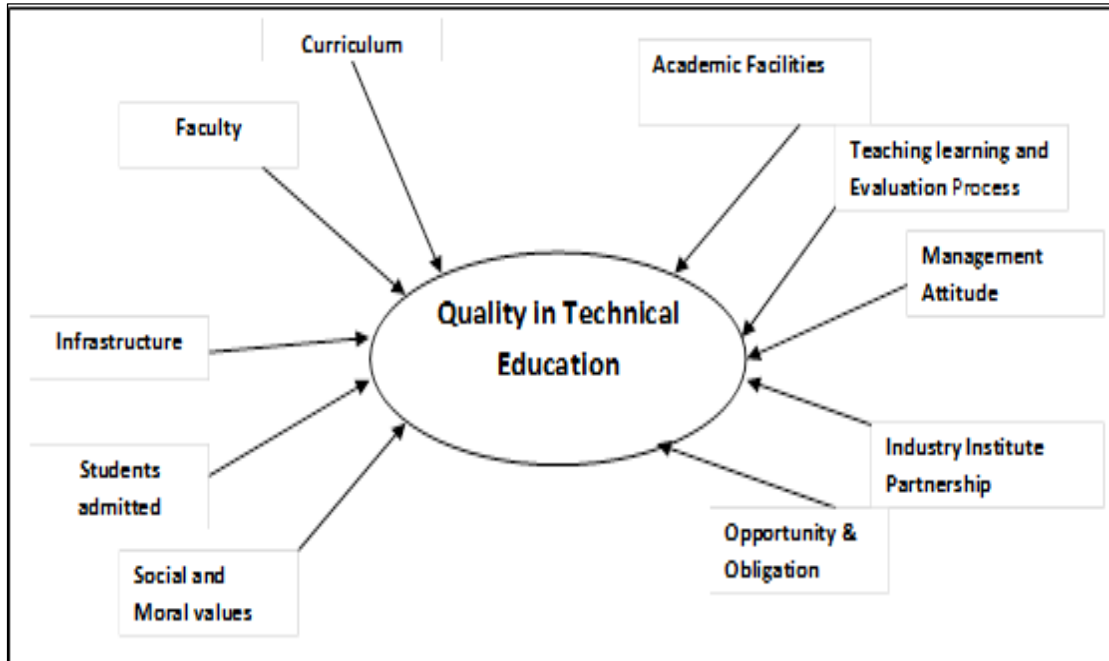


Fig. 1: Major inputs determining the impact of technical institute on Human resource Development.

III. TECHNOLOGY UPGRADATION AND GROWTH

For sustainable growth in any sector constant up gradation of technology is required. The liberalization of economy and consequent removal of trade and business barriers and the global access to knowledge and information have all contributed to integration of local resources and markets into global environment. For sustaining the competition in today's globally connected e-world our products and services should be of highest quality and reliability and employing latest technology. In addition, they should be user-friendly, less energy consuming, compact, eco-friendly and yet cost-effective. To meet such diversified and complex requirements of the global customer extensive research and development activity aimed at invention of entirely new technology or modifications in the existing technology is necessary. This is an essential component to reinforce the competitive edge in the global scenario. The technology which we need for the manufacture of tomorrow's products will have to be developed indigenously through extensive research. The reason being that either it will not be available from outside or any imported technology will be obsolete and not state of the art by the time it reaches us. Our mission therefore should be to generate and disseminate new technology with the object of improving the design and quality and efficiency of delivery of products and services for the end customers.

IV. CHANGING INDUSTRIAL PARADIGM

Three or four decades back, the emphasis on Technical Education was to produce technocrats to meet the requirements for establishment and expansion of large infra-structure projects. With the industrial development followed by computer and I.T. revolution and now globalization, the emphasis is shifted to creating more and more knowledge-based, skill-oriented and human value-nurtured technical personnel who can effectively stand in the competition. Characteristics of new industrial paradigm for global competitiveness may broadly be viewed as:

- 1) Flexibility and adaptability in all aspects and all sectors.
- 2) Innovations in technology leading to higher efficiencies and competitiveness.
- 3) Systematic integration of various activities leading to overall improvement in the product.
- 4) Problem solving and analyzing ability.

V. VALUE BASED EDUCATION

In the present scenario of rapidly changing technology, competitive edge can be provided by offering a few courses which are designed in such a way that mould the student to face challenges of the new problems in right perspective. For example, courses like personality development, computer / I.T. related courses, creativity and design, communication skills, professional ethics and moral values etc are expected to help in this endeavour. Today everybody is concerned about the decline in moral values of our society and the absence of spiritual, ethical and moral values in our higher education system is believed to be the root cause

of the evils. Nurturing commitments to human and social values is one of the aspects of imparting education. In fact, it is through education that the society seeks to pursue and promote the social and ethical values in the human beings and education is considered as the manifestation of all the desirable goals and values. This important element of human and social concern hitherto neglected, is gaining more and more importance in the background of privatization and globalization.

VI. ANTICIPATED CHANGES

Some of the changes expected to undergo as a result of the reforms likely to occur in engineering, technology, industry and society are summarized below:

- Emphasis on quality, reliability and safety.
- Modeling and simulation of engineering systems.
- Virtual reality system in design.
- Concern for energy conservation & eco-friendship.
- User-friendly products and services.
- Human independent robot controlled devices.
- Promoting creativity and innovations in knowledge based activities.
- Impact of biological knowledge on engineering system design; Neural networks, Bio-
- Mechanics, Biotechnology.
- Market driven economy.

VII. SKILLS REQUIRED

Competence Profiles of Tomorrow's Engineers need two basic skills such as:

- 1) Hard Skills
- 2) Soft/Process Skills

A. *Hard Skills:*

- Fundamental technical knowledge complemented by knowledge from neighboring technical disciplines
- Solid methodical knowledge
- System thinking and problem-solving
- Understanding of the entire value chain
- Management know-how and business process skills
- Project management and decision-making skills
- Marketing and financial know-how
- Foreign language proficiency
- Knowledge about the social and ecological implications of, technology.

B. *Soft / Process Skills:*

- Interpersonal and communication skills
- Leadership techniques
- Intercultural understanding and cultural empathy
- Sound personality with a knack of absorbing things faster and providing solutions instantaneously.
- Cool temperament and an ability to smile always even in crisis situation.
- An attitude to serve people.
- Good numerical and analytical ability.
- Tactful and diplomatic in action and communication.
- Ability to handle pressure and crisis situation with aplomb.
- Excellent leadership and organizing abilities.
- Creativity and innovations.
- Capacity and willingness to engage in life -long learning supported by cosmopolitan attitude and 'global mindset'
- Sense of social and ecological responsibility.

VIII. SKILLS TO BE ACQUIRED BY FACULTY

The productivity in technical institutions is seriously affected by the quality of teachers. A team of highly profiled, competitive, incumbent and action centric professionals are required in the institution. By his good communication skills, faculty should be able to arouse curiosity in student & maintain motivation to gain more and more knowledge. He should be able to inculcate in

them abilities of analysis, synthesis, evaluation and problem solving. He can conduct extracurricular activities like group discussions, debate, quiz, seminar etc. so that student can work harmoniously in a group. Teachers must be highly motivated and dedicated to the cause of teaching, research and industrial liaison. Teaching learning process should be in tune with increasing competitiveness and should ensure meaningful interactivity amongst its participants. Innovation promotes creativity. Therefore a teacher should possess; innovative skills to aspire for a greater contribution to the growth of knowledge generate new technologies, new products and new processes. He should be motivated for research and development activities. Apart from teaching learning process teachers should indulge in process like administrative and managerial process. He should strive for industry – institutes interactive so that student gets a real picture of the application of their education.

All professionals in the institutes should have a positive attitude towards organizations objectives and ethical foundation, so that if any problem arises everybody can share the responsibility and try to solve the problem. This will not only enhance the quality of institutes but technical education on whole.

IX. SKILLS TO BE ACQUIRED BY STUDENTS

To become successful engineers, students not only need knowledge they should acquire all the necessary skills to synchronize with rapidly changing technological scenario. They should have good communication skills and observation skills. Paying attention to even the minute's details will create excellence. They should develop positive attitude towards self-learning and lifelong learning. Learning should be "Beyond curriculum and beyond boundaries" they should start enhancing their innovative skills right in college days so that they can perform much better and become fit in this competitive world market.

Lack of innovation is the reason why many technical students are still unemployed. An innovative person constantly strives for excellence. Interpersonal and management skill should be developed. They should apply their knowledge of science and technological practices in solution of engineering problems i.e. problem solving skill. Transferable skills should be developed in student which they can take from one industry to other and can build upon their skills to be able to continue to work in terms to real like, time bound, goal oriented tasks of production of design and development of providing services and of research.

A major solution to unemployment can be to develop entrepreneurial skills in students. It should be considered as a part of training which would transform students from job seekers to job creators. Practical skills and cognitive skills are necessary to perform a job independently at a prescribed proficiency level.

Students should have skills to work in stress conditions to cope up with higher standards and increasing demands of work culture. Students should be offered value based education to that they can build up a strong and positive attitude in whichever field they choose.

Incorporating all these skills in students and staff will definitely update the quality of technical education in order to synchronize with the rapidly changing technological scenario.

X. QUALITY TECHNICAL EDUCATION AND INDUSTRY – INSTITUTE INTERACTION

- 1) To improve the quality of technical education adequately to meet the needs of the industry and economy. Technical education system should operate at optimum efficiency and deliver quality product to employers.
- 2) To optimise the deployment of physical and human resources of institutions and industries in the pursuit of development of technical manpower.
- 3) To integrate industrial training and other inputs from the industry with the teaching learning processes so as to develop in the students.
 - Awareness about the job functions in the industry.
 - Attitudes to adapt to industrial environment.
 - Proper practical and relevant knowledge and skills
 - Capabilities to become self-employed
- 4) To acquaint the industry with the existing programmes of technical education and their implementation aspects
- 5) To involve the working professionals in teaching and management of institutions.
- 6) To offer research, development, consultancy and testing services to solve industrial problems.
- 7) To offer growth oriented training Programmes to working personnel from industry.
- 8) To assist the industry in the selection of suitable candidates to fill up jobs positions through campus interviews and other selection procedures.
- 9) To get feedback on institute pass outs from employers and involve them in design and review of curricula.
- 10) To share the experience and expertise between institutions and industry for mutual benefit.
- 11) To develop good work culture in students.
- 12) To promote entrepreneurship in technical institution

XI. CONCLUSION

The only way to remain competitive in the global market in the present scenario is to try to be different, at least in few aspects, from the rest of the lot in the fray. Only those organizations, establishment and institutions would survive in this millennium that

offer differentiated products and services to customers in terms of technology, quality and cost effectiveness. To remain successful, positive mind set along with challenge accepting mind set are required to integrate today's systems with those of the future.

A. Keys to Success:

- 1) Ensure international quality standards together with affordable cost.
- 2) Invest in R & D activity to develop new technology and / or innovations in existing tech.
- 3) System should be capable of responding to market changes with desired speed and Flexibility.
- 4) Full exploitation of opportunities offered by I.T.
- 5) Follow business ethics and professional code of conduct.
- 6) Ability to learn on one's own efforts
- 7) Value of Inter-personal relationship
- 8) Creativity & Innovative Approach
- 9) Entrepreneurship mindset and above all
- 10) Positive mind set.

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