5. ACHIEVING EXCELLENCE IN TECHNICAL EDUCATION THROUGH TQM

Vineet Kumar* Dr. Dinesh Khanduja** Dr. K.S. Kasana***

Abstract

The economic turbulence sweeping the world today has created several threats as well as opportunities for the education sector as well. In order to cater to the demands in changed scenario, planners for education in general and technical education in particular, have to reinvent and redesign their strategies so that the age old Indian tradition of 'excellence in education' does not get diluted. For this, the TQM approach has been gaining momentum recently as it is an effective, trusted and tested technique for the manufacturing and services sector. The attributes of quality in education are complex and intangible where as the stakeholders are large and varied. So this paper attempts to rethink on this issue and emphasize the significance of TQM for improving the quality of education so as to serve the nation better.

KEY WORDS : *'Total Quality Management' (TQM), Technical Education, Engineering Institutes, Quality Standards, Stakeholders.*

Introduction

The word education is derived from a Latin word 'educare' meaning "to raise", "to bring up", "to train", "to rear", via "education" bringing up, raising. Education is a term often used to refer to formal education. The word's broader meaning covers a range of experiences, from formal learning to the building of understanding and knowledge through day to day experiences. Ultimately, all that we experience serves as a form of education. Institutes educate, train and develop manpower for increasing the pace of the socioeconomic development of a country. A large number of technical institutes are being run by private managements and these institutes, as well as government institutes, have to run like business enterprises so as to fulfill mission of producing quality manpower for the present and the future needs of the country. A lot of criticism is faced by these institutions from various stakeholders like students, parents, governments and employees, because of the high fee structure, poor infrastructure, poor resources for education, lack of quality in education and absence of transparency in working. 'Total Quality Management' (TQM) is a management strategy aimed at embedding awareness of quality in all organizational processes. TQM has been coined combining three words: 'Total', 'Quality' and 'Management', where,

Total: means including every aspect in its entirety i.e. involving all resources such as human, technological, physical and financial.

Quality: means fitness for use, and

Management: means management process to install a culture of continuous improvement

*Research Scholar, **Assistant Professor, *** Professor, MED, National Institute of Technology, Kurukshetra.

in the organization. Such improvements will balance productivity increase against established criteria.

This is a management approach for an organization, centered on quality, based on the participation of all its members and aiming at long-term success through customer satisfaction and benefits to all members of the organization and to society. ISO 9000 defines quality, as "totality of features and characteristics of a product, or service that bears on its ability to satisfy given needs of the customers".

This approach has been widely used in manufacturing, education, government and service industries. Excellence in technical education can be achieved in the various organizations by applying the concept of 'Total Quality Management' which can be applied starting from the designing of the curricula, to the training of teachers, to the workshops, to the project management, and to the final results of the students.

Need for Quality in Education

Education as the most important resource in any country has multiplying effects on all facets of development in a society and among various educational resources; engineering education holds the key to economic viability of a nation. Educational institutions provide the most important input to the industries, namely the workforce in the form of engineers and technicians. The new social realities, particularly the interplay between democratization of education; unprecedented developments in information and communication technologies; emergence of knowledge society, liberalization of economy and globalization have greatly influenced the educational process of all societies. Sparks (1993) feels that today engineering graduates need to be sensitive towards economic, social, political, cultural and ethical dimensions of their work. Due to the present market turbulence, the previous paradigm of a 'science based conceptual engineer' has given way to a 'science-based entrepreneurial engineer' who aims by means of a science-based technical intervention (discovery, invention, planning, management, organization), to exhibit and to produce new products, services, transactions, resources, technologies or markets which can be recognized as valuable by society (Carmo et al, 1997). As a result, it has become necessary to restructure engineering education in India to meet the growing challenges. The policies, practices, systems and procedures being followed by engineering institutes have lost the traditional affiliation with new demands of the society. It has to be recognized that quality means different things to different people (Sallis, 1993; Green and Harvey, 1993; Green, 1994). With the number of stakeholders in education being varied (students, parents, teachers, employers, industry and the society) the matter becomes complex and confusing. Quality is a multidimensional concept of embracing all the activities and functions of the institutions. So TQM is a method for improving effectiveness of an organization by involving every individual at every level within the organization ensuring that they work together. Benchmarking is the practice of being humble enough to admit that someone else is better at something and being wise enough to learn how to match or surpass them, at it.

On the education front, India has formally recognized the importance of higher education on science and technology and committed itself to the development of science and technology manpower (Constitution, 1949; Government, 1958). The country has provided full policy support (Government, 1958; 1968; 1986 a; 1986 b) and substantial public funds to create one of the worlds largest network system of higher education system which includes seven Indian Institutes of Technology (these institutes are globally acknowledged for quality education), some front ranking universities/institutes for engineering and applied sciences education, eighteen National Institutes of Technology

(almost one institute for every state in India), scores of well-established state Engineering Colleges in all states and around five hundred Engineering Colleges managed by private sector. This vast network of institutions should have brought unparalleled technological dominance to India. But this could not happen on account of certain faults, fallacies and failures of our educational planners. Hence, a re-engineering of the education system is needed to improve the quality of education. There is a need for a coordinated working of all national bodies and institutions engaged in quality assurance and quality management of engineering education. Government departments and agencies like MHRD, UGC, and AICTE should facilitate this urgently to bring about an orderly development of the quality system for technical education in India. The major objective of the TQM process is the satisfaction of the stake holders by meeting their needs, both specified and implied. It is a well appreciated fact that the needs of different stakeholders are different and may be conflicting too. The major stakeholders identified for engineering education system are; students, teaching faculty, non-teaching employees, industry, parents and the society. A TQM process for any engineering institute must focus on important elements like:

- Customer satisfaction (customers are industries, government agencies and society).
- Global product acceptance.
- Quality of education.
- Updating of syllabus (as per latest global developments).
- Quality consciousness in each and every link in the organization like technical staff, non-technical staff, management, teaching staff, students and parents.
- Bringing excellence and quality consciousness in quality of infrastructure\ faculty\ building\ equipment etc. without any egoistic approach and blockings.

- Quality standards in processes and systems, which are internationally acceptable.

Pillars of TQM Education

The following four pillars provide indomitable strength to the process of TQM implementation in any educational institution. These are:

Synergistic Relationship: The first pillar of TQM education emphasizes on synergistic relationships between supplier and the customer. The concept of synergy suggests that performance and production is enhanced by pooling the talent and experience of individual. In a class room, teacher-student team is equivalent to industries positive workers. The product of their successful work together is the development of student's capabilities, interest and characters.

Continuous Improvement and Ongoing Process: The second pillar of TQM applied to education is the total dedication to continuous improvement personally and collectively. In academics for the recognition of its organization as a system, the work done within the organization must be seen as ongoing process. In the new paradigm of learning, continual improvement of learning processes based on outcomes replaces the outdated "teach and test" mode.

Self-evaluation: The third pillar of TQM applied to education puts in a lot of emphasis on the organization. According to Deming "No human being should evaluate another human being; therefore, TQM emphasizes self evaluation as a part of continuous improvement process".

Leadership: The fourth pillar of TQM applied to education is that the success of TQM is associated with the top management. Teachers who emphasize more on context area and principle-centered teaching provide the leadership framework and tools necessary for continuous improvement is the learning process.

Benefits of TQM to Various Stakeholders

Benefits to Students

- Familiarization with industrial environments.
- Better preparation to face industrial situations.
- Exposure to industrial practices regarding manufacturing technologies, manufacturing management and quality assurance strategies and practices.
- Better understanding of needs of the industry.
- Hands on experience on the industrial problems.
- Exposure to various tools, techniques, methodology to migrate the industrial problems.
- Helps derive the relevance of theoretical tools, concept and to know how to solve industrial problems.
- Improves technology capability of the students through excellence, exposure to industrial environments.
- Improve analytical capability, creativity and mental ability.

Benefits to Industry

- Makes available much needed human resources
- Lesser training requirement at the time of induction of fresh graduates into industry.
- Better training and skill development of students lead to enhanced performance of industry.
- Projects undertaken by students can also lead to solutions to many industrial problems.
- Contributions toward solution of industrial problems through technological capabilities available at the institutes.
- Provision of a platform for interaction with technical institutes leading to signing up of MoU's in critical industrial technological areas.

Benefits to Institutions

- Better understanding of the needs of the industry and ensuring relevance of technical education.
- Shared responsibility of training with industry.
- User demand on technical institute to acquire the state of the art technologies and equipment for training purposes.
- Better effectiveness through resource, sharing with industries.
- Ensures enhanced technology capability leading to better performance in industrial situations.
- Ensure better placement of the students in the industries.
- Better student performance also enhances the marketability of the technical institutes.
- Provides much needed exposure to the facility in the industry.
- Provide a platform for the institute to have a meaningful interaction with industries leading to better understanding of requirements of the industries.
- Provide a critical input/ output for the development of the curriculum relevant to the need of the industry.
- Provide much needed feedback regarding the quality of human resource being produced by the technical institute.

Benefits to parents and society

- Satisfaction among the parents
- Low fee structures of the technical institutes.
- Quality technical graduates will come up.
- Better utilization of resources.
- Fulfillment of customer needs and wants.
- Continuous development of the society
- Since benefits are enormous, this approach deserves critical attention of all its stakeholders, as they are the best drivers to carry this process of quality improvement in education.

Conclusions

In response to the inevitable changes due to liberalization and globalization, governments and educational planners must build up quality in the ways the students are being educated in technical institutions by infusing creative thinking and innovation in their educational curriculum. In the same vein, they must put much emphasis on the need to train future engineers by infusing quality components within the educational system. With this change in the mindset and the relative knowledge that engineers will bring forth, they shall be better equipped to face the new challenges.

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