

## 7A Qualitative Approach for Improvement in Technical Education Using Total Quality Management (TQM) Concept

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### Abstract

Quality in Education can be defined as The development of intellectual skills and knowledge that will equip graduates to contribute to society through productive and satisfying engineering careers as innovators, decision makers and leaders in the global economy ( R. Natrajan, 1999)

Technical education in India is facing lot of challenges as the demand for qualified engineers is ever increasing due to fast growing information technology and its enabled services sector. Though a large number of engineers pass out every year but not all of them are employed ready. The causes for this may be many, but most of them are related to the faculty and type of education and training being provided by our technical institute.

These days most of the technical institutions are facing an acute shortage of faculty members. This is vastly due to a phenomenal growth of technical institutions in our country. Others reasons for this shortage may be lack of willingness of engineers to adapt teaching as career. It is proposed to model the system of technical education system, with a view to improve its attractiveness. For this purpose the technical education system will be divided into subsystems and their interactions will be modeled. A system dynamics approach is to be proposed to explain interactions between subsystems and the feedbacks with in the loops [1]

**key words** : Technical Education, Total Quality Management

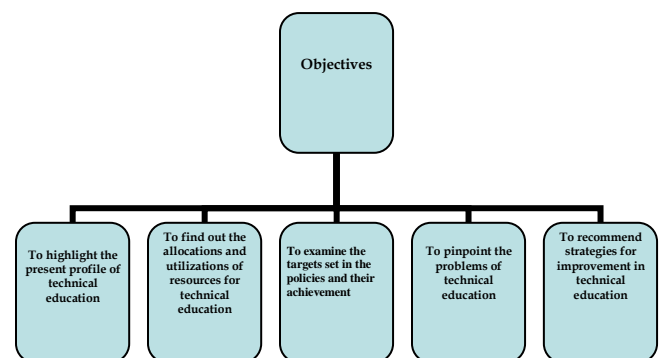
### Introduction :

#### Present System Of Technical Education

Since Independence in 1947, Technical Education System has grown into a fairly large-sized system, offering opportunities for education and training in a wide variety of trades and disciplines at certificate, diploma, degree, postgraduate degree and doctoral levels in institutions located throughout the country. In the year 1947-48, the country had 38 degree level institutions with intake capacity of 2,500 and 53 diploma level institutions with in take capacity of 3,670. The intake for postgraduates was 70. There was rapid expansion of the system in the next 20 years. By 1967-68, the number of degree level institutions had increased to 137 with intake capacity of

25,000 and for diploma to 284 institutions with intake capacity of 47,000. In the next 10 years (in 1977), the system capacity increased only marginally to admit 30,000 students for degree courses, 60,000 for diploma courses and 6,000for postgraduate courses. The system capacity increased very rapidly in the next 20 years, with the major role being played by the private sector. By1997, the system had 547 degree level institutions with admission capacity of about 131,000 and 1,100 diploma institutions with admission capacity of about 184,000. Admission capacity for postgraduate courses had increased to16, 900. Out turn of PhDs were about370annually.In the year 2006, the total number of engineering institutions, not including the IITs, NITs and university colleges approached to 1518 with admission capacity of 5,69,28 3 students; and 1250 engineering diploma institutions with admission Capacity of 2, 77,576. Approximately, two-thirds of these institutions were in the private sector[7]

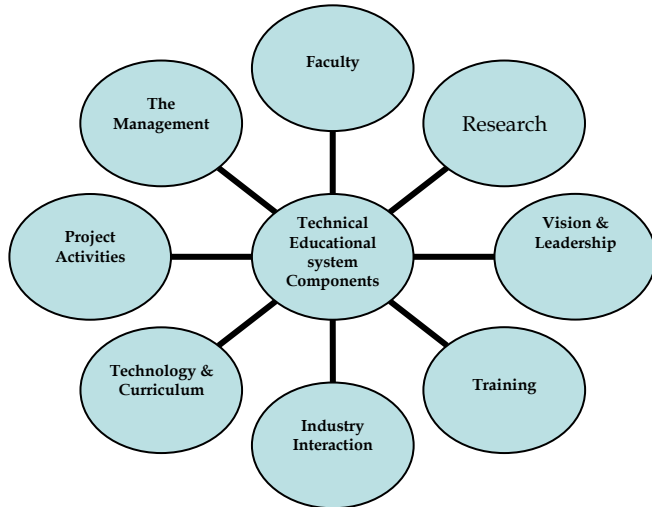
The main purpose of this paper is to investigate the problems and prospectus of technical education. The objectives of this paper are:



There has been a rapid expansion in technical education in India in the past few decades. The number of institutes providing technical providing and the intake capacity of the already existing institutes have increased, resulting in availability of a very large number of engineering graduates. But this increase in quantity has resulted in degradation of quality of entering students and as a consequence it has resulted in poor quality of fresh engineering graduates. The cause of this deficiency need to be ascertained, analyzed and

corrective action has got to be initialized so that our engineers can sustain the stiff competition due to liberalization, privatization and globalization. Quality improvement initiatives are a must in Technical Education system in India to prepare both students and technical teachers not only for local employment but also for employment in the global market. Therefore, the aim must be to achieve international standards in all respects. Application of principles of Total quality management( TQM), Re-engineering and benchmarking in technical education must be made to covert the threat of getting marginalized to an opportunity to achieve excellence. Japanese and American Companies have improved the quality of their products and services by applying Total Quality Management...In education and training sector the concept of use of TQM and benchmarking is gaining importance. Quality is going to be the key factor for survival with satisfaction. In Technical Education and training, India has responded quite well in creating more facilities by motivating private entrepreneurs to invest. While the users are happy with respect to quantity of technical manpower produced, the all round feeling is that a lot needs to be done to improve the quality. The concept of TQM and benchmarking when applied to technical education, would be highly beneficial to the system, if implemented with all sincerity and commitment

### Technical Education System Components



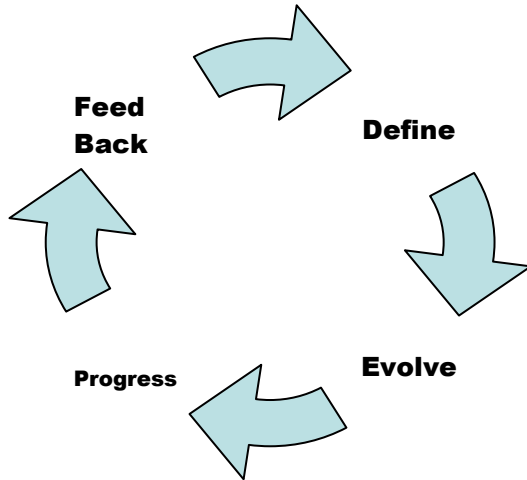
The basic observable components of a technical institute are the students, the infrastructure i.e. the building and equipment, the teachers, the curriculum, the teaching and learning material, the linkage mechanism with industry and other user system, the management system, the support services, the guidance and counseling, mechanism, the internal and external evaluation system, the feedback system, etc. There are other

important components which are called the process components. These include the way the teachers teach, the way the students learn, activities of students beyond the regular time table, the motivational attitude of the management, the overall academic climate, the opportunities and encouragement for innovations and development and of research, the openness of communications, the leadership qualities of head of institutions and of departments, the sense of involvement of faculty and staff in providing quality services, the structure of the organization, the quality of team work, the reward and recognition system, the faculty development programmes, the appraisal system of faculty and others, the clarity of vision and objectives and the stress laid on internal and external customer satisfaction. The technical education system consists of bodies, which are responsible for making and implementing various policies. these policies relate to administration, examinations system, framing of syllabus, conduct of examinations etc. Apart from these there are certain regulatory bodies that are responsible for ascertaining adherence to defined norms and for fixation of tuition and other fees, chargeable from students. Some of these bodies which are directly or indirectly related with quality of technical education are Rajiv Gandhi Proudyogiki Vishwavidyalaya RGPV, Directorate of Technical education(DTE),All India council for Technical Education(AICTE),Admission and Fee Regulatory Committee(AFRC),and Professional Examination Board, also known as VYAPAM. Apart from these there are institutions and students who have to follow the policies,norms,syllabi,evaluation system etc,as prescribed by the above mentioned bodies. The institution and students do not have a direct say in these matters. Thus a large numbers .of factors interact to determine overall system behaviour.Keeping in view the dynamic behavior of the system, which operates on the basis of feedback loops, System Dynamics will be used as the methodology for identifying the major factors influencing the quality of technical education system .[2]

### Teaching Methodology

We propose that there should be the best and unique teaching methodology of every department and in turn of institute that becomes institutes brand. Majority of institutes have similar kind of infrastructure following same guidelines from university, UGC and AICTE. One can make difference by doing the things differently. We recommend developing the best unique teaching methodology. We very strongly put forth that there should be process maturity and pathways to process maturity

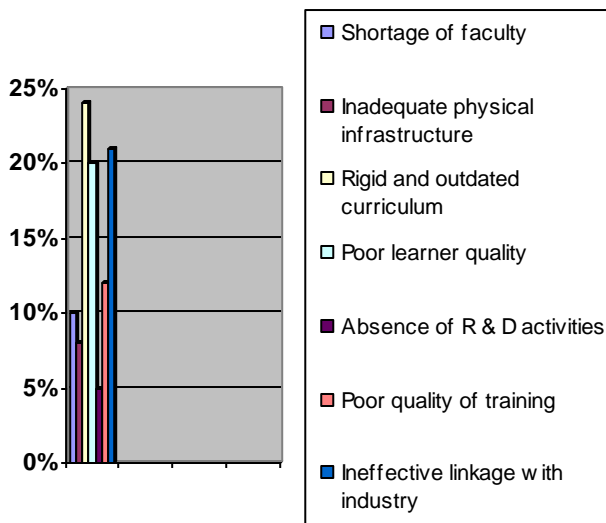
For developing methodology, we suggest few useful tips that teaching should be learner centric instead of teacher centric. It is important that knowledge gets transferred.The process should involve following phases:



**Methodology :**

The survey has been conducted at various technical institutes and observed that the poor quality of the Technical education is due to the following reasons:

1	Shortage of faculty.	10%
2	Inadequate physical infrastructure.	8%
3.	Rigid and outdated curriculum.	24%
4	Poor learner quality	20%
5.	Absence of R & D activities.	5%
6.	Poor quality of training	12%
7.	Ineffective linkage with industry	21%



**Importance of TQM in Technical Institutions :**

1.	To be growth oriented and have a good reputation
2.	To be never out of market
3.	To be capable of maintaining customer confidence.
4.	To be cost effective.
5.	To improve customer satisfaction and to develop confidence.
6.	To use the creativity of faculty and students for development of the institution.
7.	To provide job satisfaction to all employees
8.	To enhance healthy competition
9.	To be an example to other institutions
10.	To eliminate the waste of resources at all levels.

**Do's for a successful implementation of TQM Program**

In order to have a successful implementation of a TQM program, there is a list of things to do and problems and pitfalls to take care of and avoid. The things that one can do, in order to improve success chances, are presented below:

**Commitment to the principles of TQM**

It takes years in order to drive the principles of TQM through to all employees and students; emphasis on training can help. A basic ingredient for the success of the TQM effort is the commitment of the leadership of the academic organization. Top leadership is the driving force behind the success.

**Customer focus**

It is important to clearly identify all customers in the educational quality system and focus on the primary customer of the process in question.

**Evaluation**

Measurement and evaluation efforts are needed in all aspects of the TQM effort. The introduction of fact-based

management and measurement help in convincing about the efficacy of TQM.

### Resources

It is very important to allocate sufficient resources and time to the quality effort. Caution has to be given in order not to underestimate the faculty and staff resources required to launch a TQM effort. TQM needs time, persistence and patience in order to succeed.

### Training

As mentioned before training can make a great difference. Training for management and staff, academics and students, in order to understand the philosophy of TQM and acquire the necessary skills for team working, is necessary.

### Empower

A TQM program cannot be forced on “employees”. Leadership must convince employees to accept the program and participate voluntarily. Employees must be empowered and willing to follow the TQM program and believe in its necessity. Note that students are also employees” in a TQM program in education they also need to be empowered and persuaded.

### Quality Model

Models are a good starting point, but no model is perfect for every university. The chosen model needs to be tailored to suit the individual needs of the institution.

### Conclusion:

**On the basis of survey carried out, the following improvement are being suggested to enhance quality of technical Education**

- Job security for the faculties should be ensured.
- reward and award system to be introduced
- industrial based training and opportunities to teachers
- Improvement in the academic climate of the institute
- Motivating the faculty to play their multiple roles more effectively
- creating an attitudinal change in the system to work for efficiency, productivity, and excellence
- The student’s evaluation system to be made more objective, reliable and valid
- Inspiring students and teachers to take more initiative in using better Teaching -learning practices
- Emphasizing to learning and developing innovativeness and creativity

- providing self-learning facilities to students and yet make them successful
- management responsiveness to the qualitative improvement.

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