Total Quality Management in Engineering Institution

Guruprasad Pai B1, Dr. Shrinivasa Mayya.D2
1Assistant Professor, Department of Master of Business Administration
Srinivas Institute of Technology, Valachil, Mangaluru, Karnataka State, India – 574143
2Principal, Srinivas Institute of Technology, Valachil, Mangaluru, Karnataka State, India – 574143

Abstract—The quality of education is everybody’s concern today. Various studies and commission reports at official level has recognized the same and given recommendations for its improvement. Government and other constitutional agencies are taking necessary measures. But these alone, will not serve the purpose unless institutions and faculty take proactive initiatives and measures. The unprecedented expansion of technical education sector in India in recent years has brought many questions about the quality of education imparted. A technical education is relevant for the graduate if it meets the needs of the industry. A core set of such needs must be identified and to implement this concept in technical institutions, a number of studies were being carried out; models and strategies have been developed based on the principles of Total Quality Management. Total Quality Management (TQM) is a proven concept which is practiced in industry to establish standards to ensure the quality of products and services reach the end user. TQM is continuous improvement in quality. TQM should be led by the management and followed by entire institution to create learning ability, innovativeness and sustainability campuses. This paper explains how TQM helps to improve the quality of education in engineering institutions and also Do’s and Don’ts for successful implementation of TQM.

Keywords — Technical Institutions, Total Quality Management, Quality Improvement, Continuous Improvement.

I. INTRODUCTION

Academic institutions offering professional education in particular are undergoing a process of change similar to what business organizations have undergone a few decades ago when they were confronted by competition. The speed of change is driven by multiple factors. Demands from industry, information-age mind set of the students, increased competition and the renewed quest among academic community are some of the factors driving this change. To ensure that, particularly professional education, is able to deal with market and technological changes coupled with global requirements, it is important for institutions offering higher education to use appropriate curricula, course materials and teaching methodologies that are not only up-to-date, but also effective from learner’s point of view. The exponential growth of knowledge, exploding instructional technologies, enhanced access to practices of premier institutions, accessibility to knowledge, globalization of education etc require educators and faculty members to continuously evaluate themselves and improve upon their effectiveness.

II. DEFINING QUALITY

The British Standard Institution (BSI) defines quality as “the totality of features and characteristics of a product or service that bears on its ability to satisfy the stated or implied needs” (BSI, 1991).

Green and Harvey (1993) identified five different approaches to defining quality:

- In terms of Exceptional(Exceeding High Standards and Passing required standards)
- In Terms of Consistency(Exhibited through “Zero Defects” and “Getting right the first time”, making quality a culture)
- As Fitness for purpose(meaning the product or service meets the stated purpose, customer specifications and satisfaction)
- As Value for Money(Through Efficiency and Effectiveness)
- As Transformative(in terms of qualitative change)

III. WHY EDUCATION INSTITUTIONS SHOULD WORRY ABOUT QUALITY

As teachers, principals, heads of the department and policy makers in education we should worry about quality of teaching, programmes, and institution because of the reasons

A. Competition

In present scenario we are witnessing lot of engineering institutions coming up in india, which will give rise to competition among educational institutions for students. In order to survive in such situation, educational institutions need to worry about their quality

B. Customer satisfaction

Being customers of educational institution, Students, parents or sponsoring agencies are very much conscious of their rights or getting value for their money and time spent. They expect a good quality teaching and receiving employable skill set and thus the institution must worry about the
relevance of our courses and programmes to the needs of the market.

C. Maintaining standards

As educational institutions, we should set our own standard and maintaining it continuously year after year. In order to maintain the standard, we should continuously make efforts to improve quality of educational facilities

D. Improve employee morale and motivation

When we maintain quality in institution, the morale and motivation of the staff in performing their duties and responsibilities comes in place. If quality system is in place, the internal process would be systematic making every department complementing each other’s service domain and helping in developing internal customer satisfaction leading to high morale and motivation.

E. Image and visibility

Quality institutions will have a capacity to attract better stake holder support, like getting merit students from far and near, increased grants from funding agencies and higher employer interest for easy placement of graduates.

IV. PRINCIPLES OF TQM IN HIGHER EDUCATION

The main “principles” of TQM in higher education are presented below:

A. Focus on the customer

Among the essential elements of TQM, customer focus is probably the most important, as reflected by the weight assigned to it by various quality award criteria. Customer identification in a higher education institution seems to present more difficulties than are encountered in business organizations. For example in one model interpretation, parents and students could be perceived as external customers to the quality system, while in another, they might be perceived as internal customers. At the same time parents act as suppliers also, since they supply the system with “products” – their children- who are influenced respectively by the family environment. With the term Internal Customers, in a TQM program in an education institution, we refer to the parents, students, faculty, administration and staff of the institution. On the other hand, with the term External Customers we refer to society, businesses, future employers, families and other institutions that the student might continue his/her studies, that have an interest in the output of the institutions education process. Therefore, it is worth mentioning that, one of the critical steps in TQM implementation is the step of customer identification, where current and potential customers of the organization are determined.

B. Commitment

Top Management’s leadership and commitment to quality is also one of the essential elements of TQM. Management’s commitment is a prerequisite in order to start any quality initiative. Quality needs a change of culture and given that people resist to changes, management’s commitment is an essential element for success. This commitment to quality has to be proven in practice, top leaders need to “walk the walk and talk the talk” in order to teach by example and direct involvement. Commitment to quality can also be proven by the allocation of sufficient resources and time. By the term resources we refer to people, tools, training and processes that will boost and promote quality

C. Total involvement

Another crucial element in TQM in education is the involvement of all interested parties, mentioned above, in the educational reform. Quality is the responsibility of every member of the organization rather than the responsibility of the “administration”, or the equivalent of a quality department in industry. Changes are an outgrowth of faculty involvement rather than those of the university administration. It has to be noted that the involvement of all interested parties is a crucial element for success.

D. Measurements

You cannot improve what you cannot measure». Measurement against defined goals is a very important element for the successful implementation of a TQM program in an educational institution. In order to prove success, an institution must define quality objectives; measure the starting point of the quality effort, and use measurements for proving the attainment of improvements. A possible problem that may appear is to focus on problem solving, without, at the same time, measure the effectiveness of these efforts.

E. Continuous improvement

Given the principle “Do something tomorrow better than you did it today”, the goal of every TQM effort is continuous improvement. TQM is a continuous, unending process of improvement. The TQM program should be reviewed and evaluated on a regular basis to ensure goals are still focused and objectives are being met. In the continuous improvement process small improvements are important, as well as, great improvements. Faults and problems are opportunities for further improvement and in no case openings for criticism or judgments. In a TQM program everybody is responsible for preventing and solving problems. TQM is a philosophy of never ending improvements achievable only by people. Furthermore, continuous improvement in academic institutions means exploring the needs and expectations of the institutions’ customer base, re-evaluating the effectiveness of programs and total quality initiatives [5].
V. ENGINEERING EDUCATION: WHAT HAS TQM TO OFFER?

Engineering institutions as an engineer-producer, just like every other production system, must of course have quality, time and costs under control. TQM has already proved in higher educational institutions that results in improvements in quality of education, lower costs, productivity improvements, increased customer satisfaction and improved student/staff morale. There is no reason why TQM in engineering education won’t have the same results. All aspects of TQM discussed above are also applicable in engineering education. Furthermore the need of applying TQM in engineering education is more critical, due to the close relation of engineering to the market-industry needs, where TQM philosophy has entered its maturity phase. Nowadays, more than ever, engineering students need to be able to effectively make the transition to the work environment, contribute to a project team, work independently, utilize multiple information resources, communicate effectively, value self renewal, and have a clear perspective about the dynamics of the changing engineering profession in today’s society and complex working environment.

According to M.Jaraiedi and D.Ritz [3] students entering engineering, in the US, is on a decline. Engineering education needs to undergo dramatic changes in order to keep up with the changing society and declining student enrollment. The challenge is to prepare engineering students for the industry as well as give them enough background and incentive to pursue graduate studies [3]. In order to move forward and attain a higher level of quality in engineering education, the concept of TQM must be applied. A university, as a service provision organization, provides services not only to students, but also to the companies that hire graduates. It should be stated, that TQM is not a set of rules that, if implemented, will solve all problems. TQM is a philosophy, a way of life, that must be supported at all levels and practiced by all involved in order to succeed. Applying TQM philosophy, in engineering education can help technical institutions play this role and continuously improve quality in education.

VI. DO’S AND DON’TS FOR A SUCCESSFUL IMPLEMENTATION

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:

• Leadership. Top leadership is the driving force behind success. The program leader must teach by example and his direct involvement is a key to the program’s success.

• 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 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.

• 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.

• Starting Point. Starting with a department where success will come more easily and quality improvements will be clearer to present is a good tactic. Usually administration is the first area to be subjected to quality and scientists only join the effort much later. Academia will be easier to follow once success is already proven. Nevertheless, there is a need to achieve faculty commitment to quality.

• Communication. The issue of internal communication, but also communication outside the organization to the community, is very important for the success of the TQM effort. The dissemination of information helps getting all interested parties involved in the institutions success.
VII. CONCLUSIONS

Engineering institutions have been facing lot of challenges for some time and are expected to face still more in the future. In the present situation of education, quality plays an increasingly important role. It is important for any institution to maintain the quality of education with lower cost and greater efficiency in order to cope up with the competition. TQM is seen by many as having enormous potential to respond to the challenges.

The authorities involved in the management of higher education system in India like UGC, AICTE etc., have made serious efforts to improve the quality education in India and also to match Indian education standards with the international norms. The need of the hour is to implement TQM in the educational institutions to maintain quality education. TQM will help attain excellence, which only can guarantee the survival of institutions in a highly competitive world. The future of our economic system, and thus our nation, is directly coupled to our ability as a nation to establish and keep a high quality higher education system. If suitable and necessary recognition and support will be extended to Indian educational institutes and universities then India has the potential for extending frontiers of knowledge in all disciplines.

REFERENCES