TOTAL QUALITY IMPROVEMENT THROUGH QUALITY CIRCLES IN TECHNICIAN EDUCATION INSTITUTIONS OF INDIA

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Abstract - The purpose of this paper is to summarize the experiences of various technician Institution of India, which have managed institutional level total quality change successfully, during this decade. The relevance of TQM**,** The design of quality change, process of implementation, significant outputs, and impact are explained and presented in this paper. The paper further detailed the various form and shapes of resistance within & outside of institutions system boundary. The strategies used by institutions to overcome resistance and ensure the impact of quality change is also discussed in brief. This paper is based on the evaluation study of 28 Polytechnics all over the country, which have introduced total quality improvement, change as a project. Various relevant experiences are also shared, which gives reality of the outcome of institutional level quality improvement attempt.

I. INTRODUCTION

Quality improvement in technician education has been a concern of every stakeholder of the system. The quality Improvement need intensified due to new demand in terms of quality of services from all types of customers in technician institutions in recent time as never before. Total quality management offers a vehicle for technical education institutions to manage themselves effectively in a time of rapid change and retain clear focus on the essential purposes of technical education. TQM transforms students into customers and ensures the quality of academic 'product' they have purchased Indian national policy on education emphasizes on improvement of quality of education at all levels. A national project for strengthening technician education in India with World Bank Assistance has a major thrust area to support for quality improvement in institutions. A systematic approach of TQM suitable to technician institute was conceived at National level. After a series of discussions in workshops and seminars the Quality Circle approach of TQM as to bring TQM was selected as planned change to improve quality. The developed model was refined and modified to suit in particular Institute and implemented in 28 selected polytechnics all over the country. The selection of these polytechnics was based on carefully designed criteria. In the post economic liberalization era, during this decade accelerated industrial growth and information explosion provide in India the most fundamental challenges to the management of polytechnics in India. The changes are so profound and accelerating that any attempt to respond them using established principles, models, practices and processes are likely to be out of order. There was an urgent need for polytechnics to develop a sophisticated response to this new changing environment. The concern of quality in delivery is further complicating the design of right approach for managing polytechnics. The concept of 'rights', 'value for learning efforts & money' is being expressed in clear, practicable terms. The emergence of new Indian culture of expectations where 'customer driven' or 'client driven' needs is most important. It forces the institutions have to be in a dynamic interaction with society, industries and other stakeholders.

Quality improvement issue for polytechnic institutions has been debated, discussed, documented in many conferences, seminars and workshops for last three decades. The need for Quality was consistently felt. Many attempts in the forms of variety of models, projects, approaches have been tried out at different levels in various places in the country. The competition amongst the Institutions due to societal and stakeholders pressure for overall quality has intensified to such an extent that Institutions survival is in question. National Policy on Education emphasises on improvement of quality of education at all levels. A project for Strengthening Technician Education in India with World Bank Assistance had a major thrust area support for Quality Improvement Programme in Technician Education.
The Quality Circle i.e. QC as an approach for Quality Improvement was conceived and modified appropriately to suit polytechnics education sector in Indian context.

II. TQM IN TECHNICAL INSTITUTIONS

It is difficult to find a clear model of TQM applicable to technical education system. The issue of quality in Technical Education has been perceived as an ideal, an absolute, relative, apparent complex phenomenon. There is, yet, very empirical evidence available on the impact of quality approaches in Technical

Institutions. TTTI Bhopal (1993) provides useful indicators of some areas of technician education management that which leads to a TQM approach. TQM coincides with Institution Building model. It is interesting in reviewing the applicability of TQM and how it relates to the existing models of Managing Technical Institutions. TQM matches with 'stress upon institution goal', 'The Central Importance of Leadership', 'importance of establishing systems to manage processes' and 'framework of understanding institution by systems approach with Institution Building Approach. Fullan (1985) stresses importance of process issues in developing effective institutions, e.g. leadership as process, value systems, social interaction, and collaborative planning. Although there are no detailed evaluations of TQM in Technical or other education available. There are some helpful parallel studies indicate like Hopkins (1987), identified a range of factors that characterize effective technical institutions.

III. APPROACH TO TQM

TQM has been represented in a variety of models as a philosophy. It emphasizes on Teams, shared visionary leadership and continuous process improvements in the individual institutions. The first step in applying TQM is to identify the customer and determine the customer's quality needs. Experts agreed that TQM might be implemented in Polytechnic Nationwide through the Quality Circles approach.

IV. QUALITY CIRCLE PROJECT DESIGN

The Quality Circle project has been implemented nation-wide in 14 States and 28 selected polytechnics in India. A national level experts workshop was organised to evolve a model for Quality Change in the selected 28 polytechnics of India. The model for change was evolved to improve the quality. Three workshops were conducted to train Top level Officials, Principals and HODs of selected polytechnics from various States of India. They were trained to develop skills required for management of change. Total 54 Facilitators were selected from project polytechnics and they were provided comprehensive training in QC tools and techniques and installing Quality Circles in their own polytechnics.

The steering committee was formed which comprises of the Principal and Sr. HODs to provide support, help, assistance, resources for QC activities and recognise the achievements of the QC. The trained facilitators conducted series of programmes to introduce quality circles in their respective polytechnics. They also used different types of media to create awareness and develop quality consciousness. In this endeavour Steering Committee extended full Co-operation and support. The facilitators also obtained help from National Experts in this venture. The facilitators invited the faculty, staff and students and conducted clinical workshops regarding the launching the quality circles in the polytechnics. They also invited all volunteers for membership.

The facilitators considering the interest of the volunteers in various areas formed various different quality circles. Depending on their Polytechnics thrust, vision, past performance and existing situation they selected various areas like Classroom instruction, Workshop practice, Laboratory instruction, Industry Institute Interaction, Student amenities, Co-curricular activities, Campus development, Staff behaviour, Examination. The members in each QC polytechnic were from all status of the institution like students, staff, and faculty members. Steering Committee members, facilitators and experts conducted intensive training programmes for QC members and leaders. They were provided skills in problem solving, decision making, leadership, group working, communication, implementing action plans, preparing cases and presentation skills.

Steering committee & facilitators remain same for number of QCs in one polytechnic Each Quality Circle decided its venue and schedule of meetings. Most QCs met once in a week and some met once in fortnight for an hour or so. Most Quality Circle started functioning immediately after the training of the members. Monitoring workshops were conducted by group of experts to provide support and guidance in the respective states.

V. FUNCTIONING OF QC

QC is basically work-related problem solving group of volunteers. The emerged or selected leader of QC used following model to tackle the problem.

- Listing the areas of care concerns and worry & prioritize them.
- Identifying problem situations
- Writing problem statement after precisely understanding what should happen and what is happening
- Listing all probable cause/causes for the deviation between what should happen & what is happening
- Identifying most probable cause/s
- Using group creativity technique (Nominal Group Technique) amongst members search solutions
- Select solutions using Kepner & Treague and Vroom Yetton model to take decision regarding solutions
- Present problem and searched solutions to steering committee & principal
- Apply solutions
- Take second listed problem & repeat procedure 3 to 4

VI. ACCOMPLISHMENTS THROUGH QUALITY CIRCLES

A comprehensive study was conducted to review the progress of the quality change project. An instrument was designed to assess the progress and change Management Information System was established to support the project in the future. The information was clustered under various categories. During the first year of the functioning of the QCs in polytechnics information was obtained from 13 polytechnics out of 28 selected polytechnics.

Areas of QC - There were nine areas in which 34 QCs were functioning. The three most crucial areas appeared to be classroom instruction, laboratory instruction and Student Amenities.
Participation - In the all the 13 polytechnics, 183 faculty members, 68 Technical support staff members, 14 ministerial staff members and 74 students participated in QC operation.
Problems undertaken - The number of problems analysed and solutions implemented/being implemented by various QC groups in polytechnics in the various areas are given below:

A r e as	No. of Presentation	No. of Problems Solved
Classroom Instruction	38	22
Laboratory Instruction	60	35
Industry-Institute Interaction	21	15
Student Amenities	40	24
Co-Curricular Activities	16	14
Campus Development	08	06
Change in Attitude	11	04
Examination	18	16
Workshop Practice	10	08

The QC presented the problems & Probable solutions but management rejected the solutions on the basis of criteria like investment, urgency and other priorities.

VII. SIGNIFICANT OUTCOMES

Most of the polytechnics reported that QC brought considerable changes in Polytechnics it also provided opportunity for involvement of different stakeholders of Polytechnic to solve work related problems and for improving quality in different areas. The significant outcomes were:

- innovations in instructional processes
- started many student-centred activities in the institution
- improvement in the attendance in laboratory work
- reduction in absenteeism of students in classrooms
- more participation and involvement in laboratory work
- improved relationship with industry
- increased usage of resources
- overall improvement in cleanliness of the campus
- improvement in sensitivity towards environment
- involvement of students in work-related problem solving
- positive attitudinal changes occurred in supporting staff
- effective interaction for strengthening relationship with stakeholder groups
- sense of belongingness and owning the polytechnic and its resources
- More awareness and consciousness for quality of individuals life of student and employees.

VIII. RESISTANCE TO QUALITY CHANGE

There was resistance in the various forms for Quality Circle approach to TQM in polytechnics. QC is Team-based, faculty member however are notorious independents, so are students in the classroom Teaching is always perceived as Solitary activity that creates high degree of individual control. Quality Circle calls for cross-functional thinking, planning and doing. Polytechnics are tradition-bound, whereas QC trumps for continuous change. This approach was totally new to the polytechnic. However numbers of polytechnics were focusing on more volunteer student-centered activities, Team Teaching and involving more number of stakeholders and encouraging more volunteers in QC to overcome resistance.

Some teachers argued that Industries are driven by their clients but Technical Institutions are by educational values. It created to prepare the students to live in Industrialized society. Students cannot be product entity. TQM through QC is in some way contrary to instruction and research practices in Polytechnics. If Technical Education is viewed as a liberal, humanizing, long-term development, and Attitude development process then clear objective driven in TQM is totally new. However, outcomes from the Nationwide Project proved that polytechnics that justification of educational objectives of polytechnic could be made for TQM. The outcome provided evidences that most of the processes of the polytechnic can be planned, measured, and reviewed and quality can be improved.

CONCLUSION

The Quality Circle approach for quality improvement in the polytechnics has brought new dimensions for shifting dependency for decisions and actions by conventional bureaucratic approach to self-help.

Empowering employees along with students exhibited considerably owning the responsibility of managing the institution. This change revealed that quest for the quality service is in the hands of all employees and students. This success of Quality Circles helped in growing number of QCs in the project polytechnics. This quality improvement approach is required to be spread in other polytechnics and similar institutions in the country. The sustenance of the success will lead to total Quality Improvement and emerging a centre of excellence of its own in the Technician Education system in India QC approach increased owning of the institutions by various stakeholders and thus helped to change attitude. Other approaches than QC approach for TQM is yet relatively untried in Technical Institution in India. Research is necessary to understand just how relevant the alternative approach is to Technical Institutions. However, The QC does offer a systematic, holistic and value driven approach that has tremendous potential to be developed. The much large-scale experimentation in polytechnics or other technical institutions to improve quality in totality is now possible due to success of this QC project of Polytechnics in India.

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