

QUALITY IMPROVEMENT IN POLYTECHNICS OF MAHARASHTRA AND TQM

* Dr. V. S. Vaidya

1. Background :

In 1986, Government of India announced its Educational Policy and also outlined broad action plans to implement the objectives laid down in the policy. Polytechnics in India had remained starved for a longtime due to lack of funding support and needed modernisation in all the aspects of its development. Consistent with Government of India policy guidelines, detailed developmental plans at State level were worked out with financial estimates. It was found that a huge sum of money was needed to put these plans into action. Government of India had resolved in the policy implementation documents that the development will not be deferred for want of resources. Unfortunately, Govt. of India and State Governments had very little money to spare for development of higher and technical education; their priority being universalisation of primary education. Funding agency of World Bank was approached with details of development plans and the World Bank agreed to give a soft loan for strengthening polytechnic education system in many states, including Maharashtra State. Directorate of Technical Education, Maharashtra State, prepared a very optimistic plan of improving Polytechnic infrastructural facilities, developing its faculty through Quality Improvement Programmes and improving efficiency of the system through various other activities. Titles of

major components of development and subcomponents thereunder are given in the appendix. This major developmental project started in 1992 and the financial input from World Bank will shortly end by the middle of 1999.

2. Quality Improvement in Technical Education and TQM :

TQM is a style of management compatible with higher education system where everyone wants to provide services of the highest quality. It is true that all may not have agreement over the definition and measurement of quality. However, the consumers of the product coming out of the educational institutes recognise the characteristics of the product from their experience - whether it works and delivers the services satisfactorily. Identifying the real consumer of the product from educational institutes and its perception of the product quality it receives is important. What is more important is to design and establish a suitable process which delivers the required quality product. A highly elastic and dynamic industrial world happens to be the consumer of the product from technical institutions. In contrast, the educational institutions that turnout graduate engineers or diploma technicians, are characterised by their enormous inertia, rigidity of curriculum and procedures, lack of initiative, and consequent delayed response to change. By the time, educational institutions try and gear up for making changes to suit

* Co-ordinator, TTTI Extension Centre, Pune. (Retd.)

the consumer needs, the consumer market changes its level of satisfaction. This cycle continues to plague the inertial technical education system.

In attempting continuous improvement in processes and thereby improve the product quality, theory and practice of TQM specifies four steps - the cycle called PDCA.

- P : PLAN : analyse problem, develop proposal for change.
- D : DO : run an experiment with proposed change
- C : CHECK : collect data, study how the proposal worked
- A : ACT : Implement the idea if the experiment is broadly successful; if not, learn from mistakes and try another alternative.

To run the PDCA cycle, a group of interested persons is needed to work as a "think-tank". The TQM cries out for continuous improvement in the quality of processes and the product with a focus on customer satisfaction.

The WBA project of strengthening polytechnic education system of Maharashtra was instituted basically to improve quality of polytechnic education with a strong focus on its customer i.e. students and industry. The customer focus is evident in subcomponents like capacity expansion, industry institute interaction cells, autonomy, modernisation etc. The aspect of continuous improvement of quality beyond the project period has been attended to by continuing this project beyond 1999 through the state funding evidenced in continuation of the State Project Implementation Unit (SPIU) as a separate Directorate of Industry Institute Cooperation (DIIC).

3. Planned change :

This project of strengthening of polytechnic system of Maharashtra through World Bank assistance is actually a "Planned Change" effort to bring about dynamism in the system and to enable the system to effectively cope up with the fast changes taking place in the industrial field due to the liberalisation of economic policies. Change agents in this project were the system stake holders i.e. the administrators in the Mantralaya, Directorate of Technical Education, Board of Technical Education at the State level, Principals, faculty and supporting staff at Polytechnic level, industry at the demand side, the National Project Implementation Unit at New Delhi and TTTI Bhopal, the process consultants at the regional level. It was seen that all the stake holders acted systematically in a planned manner with commitment and in spite of all odds tried to give the system a direction and new capability to enable it to have a smooth transition into the next millennium.

Rigorous planning was made on paper with the help of faculty trained in preparation of project proposals. Action plans with resource implications were worked out to meet the desired objectives. Observable and measurable indicators for monitoring the project implementation at different stages were identified. Contrary to the earlier practices where development was conceived, planned and implementation strategies prescribed from the top State level administrators, people at the grass root level were involved in working out details of planning, implementation and monitoring of progress. This has helped a great deal in developing project management capabilities among a sizeable section of faculty who actually had to implement this project. This has

resulted in a sense of "belongingness", and "ownership" of the project among the Principals, faculty and the supporting staff of Polytechnics. Sincere, enthusiastic faculty was already shouldering responsibilities associated with routine teaching & administrative work; and when new responsibilities under this project were assigned to the same faculty members, they naturally felt overburdened. However, the faculty showed resilience and did their job well.

Implementation of action plans was monitored by Project Implementation Units, at Polytechnics, State and National levels, and through World Bank mission, periodical progress reports, meetings, visits by the TTTI teams, and so on. It was good to see that a large number of persons were involved in planning, implementing, monitoring, revising plans & targets, and changing strategies for reaching the desired targets.

4. Implementation of Change :

Two important features of the strategy for implementation of change were -

- a) Strong emphasis on staff development at various levels
- b) Networking through establishment of lead centres at six polytechnics.

a) Staff Development :

A series of faculty training programmes were planned on the basis of need analysis and executed through the expertise available at the regional Technical Teachers Training Institute, Bhopal. In this project, TTTI acted as process consultants and guided activities at state and polytechnic levels through committee meetings, workshops, training programmes and visits to Polytechnics. Emphasis was on development of human resources in skills like programme

planning, implementation, monitoring, curriculum design and development, managerial functions like leadership, team building etc etc.

New positions like Training and Placement Officers for enhancing industry-institute-interaction; staff to work in staff development and examination cells at lead centres and autonomous polytechnics were created. Persons appointed in these positions were trained through appropriate training programmes. A major strategic decision was taken to develop a group of 50 to 60 senior lecturers into professional managers of the polytechnic system and every year 10 to 12 teachers were sent for 18 months Masters Degree programme in Technical Education - M. Tech (Ed.) at TTTI Bhopal; who, later on, were supposed to man staff development and examination cells in lead centres and also the state level units.

b) Lead Centres :

Six Government Polytechnics located at six regional revenue head quarters of Maharashtra were identified as lead centres and were developed to work as centres of excellence. Faculty at these polytechnics was trained to take up innovative work like introduction of academic autonomy through flexible curriculum (Multipoint Entry and Credit System), enhancing interaction with industry, developing instructional resources etc. The concept of networking was used on the presumption that these innovative efforts when established at these lead centres, will subsequently spread to the nearby polytechnics also.

5. TQM in Higher Education Abroad :

A number of case studies on use of TQM philosophy in improving processes

of higher education in USA are reported in two books edited by Deborah J. Teeter. The cases report institutional and university level efforts using PDCA cycle for problem solving. These case studies uncover the following important lessons for those who wish to use TQM philosophy for improving quality of educational processes. One should

- a) develop project teams,
- b) increase participation in decision making,
- c) understand that in the beginning, pressure of daily work inhibits implementation,
- d) state quality standards in observable and measurable terms,
- e) cultivate a culture of educational research for analysis and solution of institutional problems,
- f) endeavour to change the organisation culture for better results,
- g) understand that roles of faculty change in a quality conscious organisation and so, investment of time and effort is needed to redefine the roles of members and shape them into "a learning organisation".

6. Some lessons from

Maharashtra Experience :

The massive quality improvement programme in Maharashtra polytechnics has seen a number of qualitative changes in the system. It needs to be emphasised here that the TQM theory and paradigm were not followed overtly in this project. However, to manage any change, steps required to be taken like planning, implementing, monitoring, evaluating and effecting changes on the basis of periodic evaluations were followed. There is a close link between the PDCA cycle of the TQM approach and the planned

change programme of quality improvement adopted in the WBAP. Similarities could be seen in efforts like empowering large number of people, using knowledge base, making use of advance techniques for continuous improvement etc.

For over 50 years, the technical education system in Maharashtra has been dominated by the tight administrative controls of the government bureaucracy and its effect was very obvious during the seven years of this project. Adherence to rules, procedures & precedences; looking upwards for decisions and directions, lack of initiative, "no risk or playing safe" attitude in tackling issues, handling staff like 'servants; (they have only to obey orders) rather than as partners in change processes etc. were evident in the initial phases of the project. Seniors felt that their authority & position was threatened because of mass participation of faculty in various planned change activities. As the staff development programmes progressed at different levels, these initial apprehensions slowly started vanishing and after about 3 to 4 years, things started changing for the better.

Mindset of persons working in government and government controlled institutes has all along been to equate quality improvement with increased inputs; assumption being that quality of education system improves automatically with improvements in working conditions of the staff (salary, housing, workload hours, etc.), increase in equipment, buildings etc. etc. Quality consciousness is a state of mind, an attitude and cannot be developed only through external inputs of building, equipment, machinery, salary. A great deal of effort was needed to slowly modify this mindset; this was seen in

under utilisation of computer facilities provided for office automation and also in lethargic responses to the utilisation of equipment and machinery purchased for modernisation of laboratories.

During the project period, a large majority of institutes had inadequate faculty in position; this created a great deal of additional burden on the faculty while completing the project activities. Initial slow progress of the project can be attributed to this. Whenever key additional faculty positions were created, persons were posted in these positions either late or faculty selection was not proper. M. Tech (Education) passout did not get proper postings of responsibility. While younger staff picked up new thinking and skills easily, the elder faculty showed sluggishness and at times covert resistance to change. However, later on, they tried to adjust to the changing environment.

One of the most crucial issues that came up in the focus was that of leadership. The status-quo culture of institutes and an underlying general feeling of "nothing good is possible" can not be changed unless the leadership at state, regional and institute level is consciously trained, developed and made aware of its crucial role as change agents. Simplification of rules and procedures was tried to some extent, with a view to clearup administrative bottlenecks; however, this needs to be continued further if one expects continuous improvement in processes. A good deal of effort is needed in the area of developing skills of leadership, teambuilding and improving institutional climate. Attitudinal changes in faculty will come

about only when adequate role models of academic and administrative leadership are present at various levels.

7. Conclusion :

Implementation of TQM in technical institutions is not a simple matter. It is not a process of learning problem - solving - skills. It requires a significant change in the way these institutions function. Any kind of change is difficult, but when it revolves around organisational behaviour, it presents a significant challenge.

Every institute has small and big problem which cry out for early solutions. Small beginning could always be made to systematically tackle them on the basis of TQM technique of PDCA cycle. Small beginnings in successful resolution of problems will lead to improved teaching - learning and other processes. This needs to be encouraged. Sustained efforts in educational action research are necessary and all such positive efforts should be backed up by administrative policy, encouragement and resource support. This will create a climate which will ultimately enable the institutes to develop a quality culture.

Reference :

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Appendix

Project Components And Sub-Components :

A) Capacity Expansion

- i) New Diploma Courses
- ii) New post Diploma Courses
- iii) New co-ed Polytechnics
- iv) Strengthening of Newly established Polytechnics
- v) Continuing Education Centres and Departments
- vi) Community Polytechnics
- vii) Residential Polytechnics and Wings for Women
- viii) Hostels / Residence
 - a) for Boys
 - b) for Women
 - c) Faculty Houses
 - d) Staff Quarters

B) Quality Improvement

- i) Modernising Laboratories and Workshops
- ii) Staff Development Centres
- iii) Staff Development Cells
- iv) Computer Centres
- v) Introduction of Flexibility (Multipoint Entry and Credit

- System)
- vi) Curriculum Development Centres
- vii) Faculty Development (No. of Teachers)

C) Efficiency Improvement

- i) SPIU
 - * Additional Staff
 - * Additional Supporting Staff
- ii) State Directorate
 - * Additional Staff
 - * Additional Supporting Staff
- iii) Board of Technical Education
 - * Additional Staff
 - * Additional Supporting Staff
- iv) Curriculum Development Centres
 - * Additional Staff
 - * Additional Supporting Staff
- v) Learning Resource Development Centre
 - * Additional Staff
 - * Additional Supporting Staff
- vi) Industry-Institution Interaction
 - * Central
 - * Regional Cells
 - * Polytechnic Cells
- vii) Autonomous Polytechnics
- viii) Maintenance Cells
 - * Central /
 - Regional Polytechnic

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