"IMPROVEMENT OF QUALITY IN TECHNICAL EDUCATION THROUGH APPLICATION OF QUALITY CIRCLE STRATEGY"

P.S.GAHLOT

1. INTRODUCTION

With the modern world of competition, no country or organisation can afford to produce poor quality products. For producing good quality product, the human mind is to be utilised in addition to physical skills. It is proved beyond doubt that the human mind has infinite capabilities. It is the human mind which controls all his actions. In the past, generally, physical strength and skill were utilised in case of workforce while thinking, planning, designing, problem solving etc. were considered responsibility of the management. This philosophy worked only in limited situations and could not result in optimum Total Quality. For utilising full human capabilities, it is necessary to introduce total quality consciousness at all levels throughout the organisation. Quality consciousness at various levels can be created by training and inspiring all individuals to contribute their best towards achieving the goal of total quality output.

To enable every individual to contribute optimum theres hould be voluntary forums to participate in introducing planned change, and improvements on a continuous basis. Encouraging the information of voluntary groups, accepting and implementing good proposals for improvement by the management of an organisation helps in achieving better quality output.

The philosophy of voluntary contributions to utilise infinite human capabilities was first developed by two Amricans Dr.Juran and Dr.Deming. The philosophy of voluntary contributions and formation of quality circle was not given importance in America while the Japanese have recognisd and introduced this in their industries and other organisations with full commitment. During World War II period, Japanese products were considered synonymous with poor quality but with introduction of "quality circles" in their industries, Japanese products are now considered as of best quality all over the world. This fast change has come as a result of utilising contributions of mind of people on voluntary basis. With success of quality circle strategy in Japan for achieving total quality, many countries have started introducing the strategy in their industries and other organisations.

Professor continuing Education, Technical Teachers' Training Institute, Chandigarh - 160019.

The strategy of quality circles has been successfully adopted in industry but the same concept can be utilised very effectively in engineering institutions. The engineering institutions have input and output of human being (students) and the process (instructional process) is also dominated by human being (faculty and staff). The strategy of Quality-Circle , is therefore, best suited to engineering institutions and polytechnics for improving the total quality of output needed for the engineering industries.

Achieving total quality through Quality Circles (QCs - Voluntary groups) is a innovative technique for tapping the wealth of human resources in technical education system. The quality circles serve as a forum for motivating faculty, staff and students to contribute their best by matching their individual goals with institutional goals. The quality circle movement brings about awareness of quality at all levels which help in achieving total quality in institutions. In the present time of total quality consciousness in all walks of life, it is necessary to produce a highly competent and efficient manpower through technical education system. Voluntary formation of quality circles in technical institutions provide an environment to extract best out of human resources for improving the system. The use of quality circle strategy will make the faculty and staff more competent to contribute effectively and producing quality manpower. Considering the present needs of industrial manpower, no technical institution can afford to produce second grade of technical manpower. Thus the introduction of Quality Circles in all technical institutions needs to be undertaken on priority basis.
Quality Circle strategy helps interested institutions in their pursuit for excellence.

2. CONCEPT OF QUALITY CIRCLE

The concept of quality circle is simple but needs deliberate sustained efforts to achieve the desired results. The Quality Circle is a small group of people involved in similar kind of work areas (3 to 15, generally 8 to 12) within a organisation. The group is formed VOLUNTARILY and meets regularly, usually once a week to identify, analyse and solve problems related to their work. The members of Quality Circle elect their leader and any member can become leader by rotation. Quality Circle members are trained to acquire special skills of data collection and analysis, problem analysis and solution etc. Quality Circles identify the problems faced by the institution/organisation and develop their solutions one by one on the basis of significance, relevance and practicability. Simple and practical problems are given piority in QCs. QCs present the solutions to the management for acceptance and implementation.

In each technical institution, different QCs may be formed in different work areas such as "Academic", "Administrative", "Technical Support Services", "General facilities", etc.

To understand the concept of QC clearly, one should know what QCs are NOT :

- QCs are NOT "Committees" which are usually appointed by management to serve on an ongoing basis to review policy, approve procedures and provide general guidelines on broad issues.

- QCs are NOT "Task Groups" which are of temporary nature and set up by management with a narrow focus to

complete a specific time bound task.
- QCs are NOT "Project Teams" which have carefully chosen expert members and formed to organise and manage the implementation of specific project activities.

Members of QCs are mostly Volunteers and each circle is given a name and led by an elected "Leader". The activities of QCs within institute are normally coordinated by a trained "Facilitator". QCs are formed to solve problems and help in improving the quality of performance on an ongoing basis in an institution. The Quality Circle is, therefore, a strategy to improve the quality of performance of all people at all levels through mutual interactions.

"QUALITY CIRCLE IS, THUS, DEFINED AS A SMALL VOLUNTARY GROUP OF PEOPLE (8 TO 12) INVOLVED IN WORK RELATED PROBLEM SOLVING THROUGH MUTUAL INTERACTION AND COLLABORATIONS WITH THE MANAGEMENT".

3. PHILOSOPHICAL FOUNDATIONS OF QUALITY CIRCLES

For successful implementation of strategy of QCs, the institutions must have certain philosophical beliefs. The basic premise of these beliefs is that every institution has a vast store of untapped human talent and capabilities. The first step to develop philosophy of QCs is recognition of availability of valuable untapped human resources in most of the technical institutions. The key philosophical foundation of QCs are following percepts :

(i) A firm expectation that people will take pride and interest in their work if they experience autonomy and control over the decision which influence their working.

(ii) An unwavering recognition of dignity, human respect, and capability of every individual in the institution.

(iii) A belief that each person (faculty, staff, students) desires to participate in making the institution a better place to work or study.

(iv) A requirement that any programme in which the institution becomes involved, must incorporate the human resource development.

(v) A willingness of people to volunteer their effort and time for the institutional development.

$$(dE1 + dE2 + ...) = E$$

(vi) A commitment to the value of human creativity and to the phenomenon of synergy that results from the creative contributions of the group.

(vii) An orientation towards "Wholism" or the importance of each and every member's role and function in meeting the goals of the institution.

$$\text{Integrated approach} = dx1 + dx2 ..... = X$$

4. OBJECTIVES OF QUALITY CIRCLES

There are two sets of objectives associated with formation and operation of quality circles in technical institutions. One set of objectives reflect direct interest of the institution and indirect interest of the

personnel, while the other set reflect the direct interest of personnel and indirect interest of institution. The key to success of QC strategy lies in making these two sets of objectives complimentary to each other.

Objectives directly serving the institutions are :

- To improve the quality of instruction provided to students using problem solving approach;

- To reduce failure and dropout rate in institutions;

- To enhance internal revenue generation, thereby ensuring cost effective functioning of the institute;

- To improve effective utilisation of laboratory and workshop equipment.

Objectives directly serving the interests of faculty/staff/students are :

- To permit staff to use and display greater amount of capabilities (knowledge & skills) than normally required for most jobs thereby improving their competence, confidence and credibility;

- To provide means to improve interpersonal relations in faculty, staff and students through mutual cooperation;

- To provide opportunity to gain better control of their work/students through team work;

- To enrich jobs/learning processes through greater involvement.

The technical institutions while implementing quality circles, should explore both type of objectives and establish a pragmatic balance between these objectives.

5. IMPLEMENTING QCs IN TECHNICAL INSTITUTIONS

5.1 ORGANISATIONAL STRUCTURE

For implementing the strategy of QCs, there should be appropriate flexibility and autonomy. The basic Quality Circle structure may comprise of voluntary members with their, leader, Facilitator, Coordinator (optional, and management steering committee (Fig.1)

5.2 SPECIAL FEATURES OF QCs

For effective functioning of strategy of improving quality in technical institutions, the QCs shall have following special features :

- QC membership to be voluntary

- Availability of facilitator for training and coordination

- Acquisition of problem identification and solving skills

- Use of creative and participative techniques

- Equality of membership and rotating leadership

- Use of multiplier effect (synergy)

- Ensured management support in accepting & implementing suitable solutions

- Timely recognition, feedback and continuity.

5.3 OUTCOME OF QCs

Introduction of QCs in technical institutions will result in :

- Participative management in goal achievement at all levels of faculty, staff and students;

- Overall human resource development in technical institutions towards latest needs of industries;

- Providing a problem solving forum in QCs by members in technical institutions;

- A source of new ideas/innovations for institutional development.

Quality circles help technical institutions in utilising its human resources to the fullest extent at all levels without heirarchical barriers of the system. QCs help in recognition of human capabilities and seeking their commitment for the institutional goals. QC strategy is based on bottom up approach and offers more chance of success. Staff and students develop greater sense of participating and loyalty to the institution. The participation in QCs develop better solutions utilizing the principle of synergy and team spirit. Success in QCs promote creativity, mutual trust and respect for each other. The solutions to the problems are more practical, easy, less expensive and more effective in implementation.

5.4 STEPS FOR TOTAL QUALITY

For achieving objectives of total quality in technical education system, following basic steps are required :

(i) Develop appropriate institutional goals and communication system considering the organisational structure.

(ii) Identify and develop team spirit by organising group activities.

(iii) Encourage the voluntary and creative activities by forming QCs.

(iv) Develop participation of people in setting and realising institutional goals effectively.

(v) Develop mutual trust between various groups and within the group members through appropriate interactions.

(vi) Develop leadership qualities at various levels through staff training programmes.

(vii) Organise training to faculty in conduct of need based continuing education programmes for working professionals to develop industry-institute interaction.

(viii) Set minimum standards of acceptance of quality of institutional output as desired by the world of work.

(ix) Develop appropriate attitudes of people towards problem-solving, improvement in performance and total quality output.

(x) Organise formation of voluntary groups at various levels, departments, and sections for total quality out put in the institution.

(xi) Use statistical methods for the quality checks while operationalising the scheme of improvement through QCs.

(xii) Provide suitable work environment in the institution with appropriate interaction of management and strategy.

(xiii) Introduce flexibility in the system to incorporate changes necessary for improvements in performance.

(xiv) Integrate the creative and innovative efforts of various groups (QCs) for realising the institutional goals of improving quality.

(xv) Provide appropriate recognition/ rewards to the voluntary groups (QCs) and individuals for their improved performance in achieving institutional goals of quality.

(xvi) Immediately publicize the achievements/success of QCs in the institute and in the state as a whole to keep up the tempo of quality improvement.

(xvii) Repeat QC experiment in solving other problem areas.

(xviii) Repeat the QC experiment for improving other institutions.

(xix) Adopt the QC strategy to develop the value system in all technical insitutions.

(xx) Obtain feedback of QC strategy and ontinuously improve upon the strategy to derive optimum output from human resources.

Thus the strategy of QCs can successfuly be used for introducing a planned change to improve total quality in technical education system (Fig.2)

6. CONCLUSION

The strategy of quality circles have been successfully utilised in industries for improving the total quality of their product in Japan and many other countries. The strategy of QC can be introduced in technical insitutions with greater chances of success. Since the strategy of QCs does not call for much financial implications and helps in optimisation of human resource utilisation for quality improvements, QC strategy should be tried in all the institutions without any delay. The strategy of QC brings about improvements in total quality of output through brain power of Human resources and hence it can be adopted safely without fear of failure.

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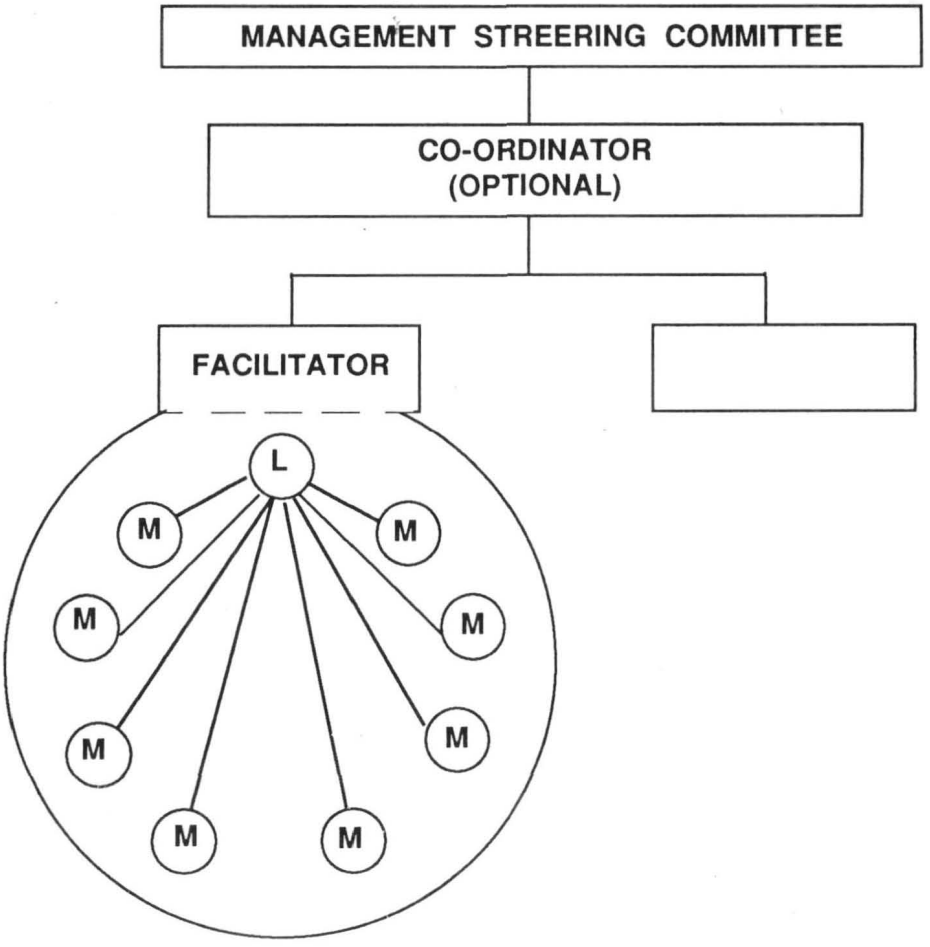

FIG. I : ORGANISATIONAL STRUCTURE

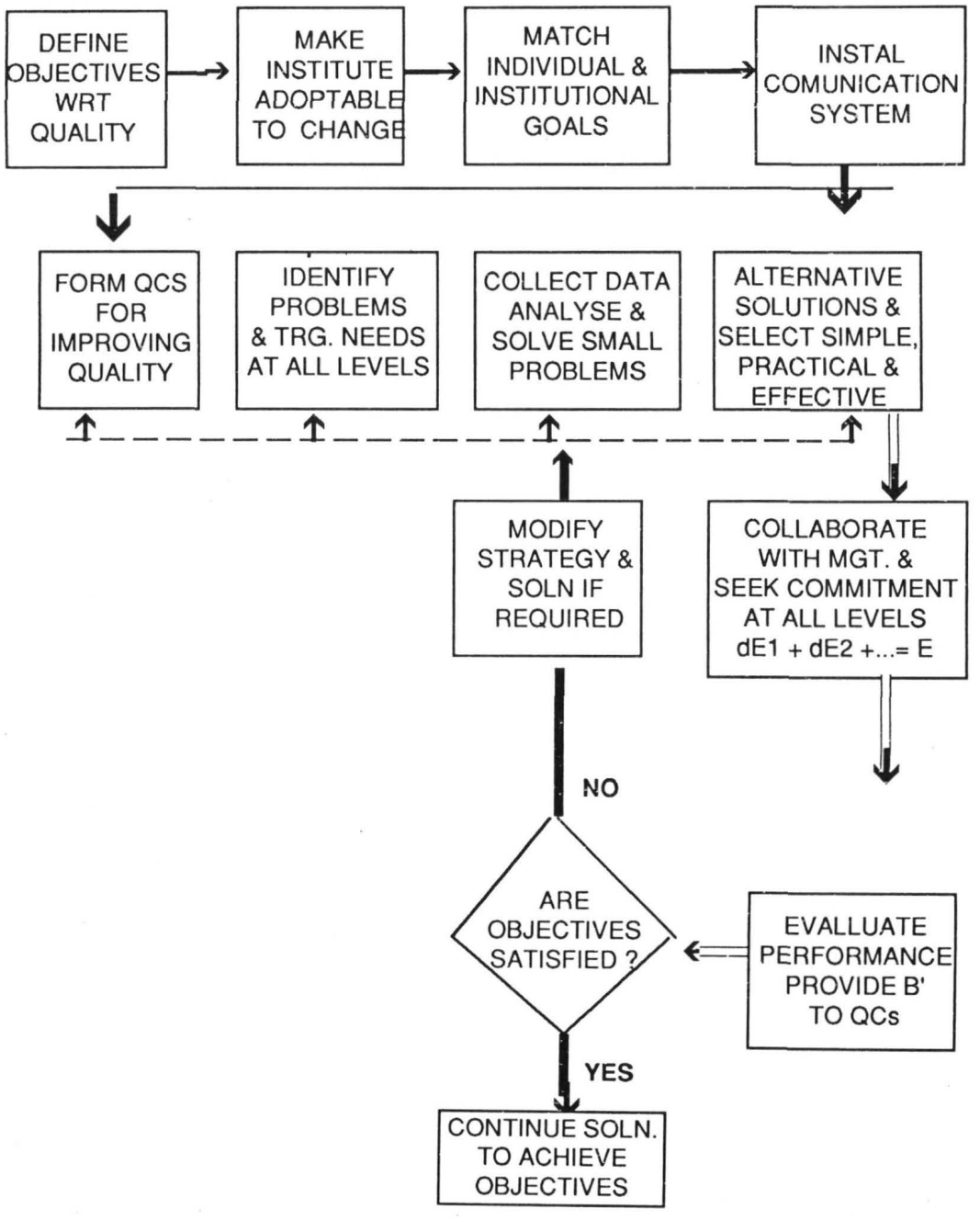

FIG. 2 : PLANNED CHANGE THROUGH QCs