

The Quality Circle process, if properly installed as an organizational intervention, can be an extremely valuable tool in your organization!

The Quality Control Circle Explosion

BY EDWIN G. YAGER

No management process has so caught the fancy of so many organizations in such a short period of time as has the Quality Control (QC) Circle. The impact of this concept on U.S. industry has been phenomenal! As recently as 1978, few American managers had even heard of the process. Today, its use is becoming quite common, as evidenced by the exposure received via trade and news publications as well as radio and television stations across the country.

QC Circles were born in Japan. In the period 1946 to 1950 statistical quality control methods were introduced in Japan through the U.S.A. occupation forces. Dr. W.E. Deming and other educators and specialists introduced these techniques throughout Japan. The QC research group was formed as a part of the Union of Japanese Scientists and Engineers (JUSE). A massive effort to educate millions of workers and their supervisors in the basic QC methods was introduced throughout the coun-

try. Over the years, these involved a series of seminars, radio and TV broadcasts, "at-home" courses, local, regional, national conferences and other techniques.

The QC Circle was actually an education tool. This is quite contrary to the myth that has grown in the U.S. that QC Circles are unique to the Japanese culture or that QC Circles were primarily developed as a participative tool related to the so-called Japanese management style. In fact, rapid industrial expansion created a work force needing basic training. Thousands of new supervisors needed training in methods of quality control and management technique. Perhaps this was a factor most unique for Japan. Quality control techniques were seen as a tool for every supervisor — not just quality control specialists. Even today QC inspectors are employed in Japan at a rate of one to 1,000 compared to one to 50 in the United States. Each supervisor is responsible for the quality in his or her own department.

In 1949, the Industrial Standardization Law was enforced in Japan.

Under the provisions of this law, companies successful in meeting quality requirements, especially as related to the application of statistical quality control techniques as prescribed by law, were permitted to use the JIS symbol on their products. The period of 1951 to 1954 saw even more rapid expansion of the technique as well as the establishment of several national prizes for quality. The Deming Application Prize is now awarded nationally to companies rated excellent for their application of statistical quality control methods. The prize is based on the scrutiny of the Deming Prize Committee.

Total Quality Control

From 1955 to 1960, the country saw a growth of what they called *Total Quality Control*. In the Japanese concept, all people in the organization hierarchy, from top management to rank and file workers received exposure to statistical quality control knowledge and then jointly participated in the upgrading of quality control practice. National Quality Month (November) was begun in 1960, and

the "Q" symbol was adopted throughout the nation. Companies subscribing to the QC movement flew the "Q" flag on top of their buildings or inside their factories.

In 1968 the following factors were outlined by K. Ishakawa as those contributing to the rapid growth of the QC practice:¹

1. Generally prevalent enthusiasm for further education and a general attitude in all the country to provide continuing education for all citizens.

2. Availability of QC courses and seminars, including massive distribution of short and long courses in all media and at all hours.

3. Invitation of top-level foreign educators to provide informal stimulus and growth.

4. Adaptation of QC practice to specific needs, cultural values and industries.

5. The institutionalizing and government support through the Japanese Industrial Standardization, the Deming Prize, the JUSE and similar efforts.

6. Regular audits of quality control by top management.

7. The faithful observance of November as the National Quality Month.

8. Increasingly important role of first-line supervisors and rank and file workers in quality.

9. Export laws and inspections requiring a target of world first-class quality.

Perhaps the most significant difference between Japan and the U.S. in this regard is the national and government support of business and industrial practices in Japan. This is especially true when one compares the Japanese practice to the illogical and adversarial regulations that are so prevalent in the United States between government and industry.

As the demand for even more intensive education of the foremen increased, a move was launched in which foremen and workers got themselves organized to discuss QC techniques and to study together. As this movement grew, JUSE began encouraging such activities and the QC Circle was born. By 1967, 12,000 circles had formed and were registered with

JUSE and an additional 60,000 were meeting without registration.

QC Circles in the U.S.

Since the introduction of this concept in the United States, primarily credited to Lockheed Industries, hundreds of organizations have formed thousands of circles. For example, the circle process is now underway in Hughes Aircraft, 3M Co., General Motors Corp., Ford Motor Co., Westinghouse, General Electric, Bank of America, Memorex Corp., Foremost Foods, Crucible Steel, Hoover NSK, Eaton Corp., Polaroid Corp., Pentel of America, Verbatim, and perhaps a hundred other organizations.

A significant interest has been shown in this country by hospitals, banks, service organizations, accounting, engineer and professional firms. This same growth in non-industrial organizations has developed in Japan in the last few years.

Unfortunately not all news related to the growth in HRD-related efforts is good news. It has been interesting to me to observe the general "bandwagon" effect in the HRD field. Programs and concepts which have been on the market for years have suddenly become "productivity" programs. It has been all too easy for many in the field of employee and supervisory development to continue to sing the same song — simply changing or adding a few verses and calling it productivity.

It is true that there are some fundamental underlying issues common to organizational change efforts that work and to those that do not work. In fact, many programs that work in one area will not work in another seemingly similar area. The entire field of organizational development and the behavioral sciences has tried to answer the questions related to the transplant effect.

A similar problem is seen in the Quality Circle movement — that is that Circles work in some areas, but do not work in other areas. The QC Circle movement is based on known principles of the behavioral sciences but is not built on teaching those principles. Teach-

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ing organizational behavior theory may be one strategy necessary for preparing the organization in the use of Circles, but it is not an underlying factor. What appears to occur, however, is that the QC Circle as implementation of behavioral science concepts works, whether or not managers believe or understand those concepts.

Perhaps we have wasted too much time in past years training managers in concepts, and not enough in techniques.

Basic Formation Principles

Ishakawa outlines the basic underlying principles applicable to QC Circle formation. These may look familiar and are translated directly from the Japanese.

1. Managers, engineering staff, personnel and industrial relations staff must have a thorough understanding of the importance and significance of the QC Circle movement. They must study the feasibility of implementing this practice in the company by getting data on QC activities in other companies and by adequate study and preparation.

2. They must send a core of foremen, around whom the QC Circle will revolve to gain full appreciation of the process, to visit other companies with Circles. They may attend QC Circle conventions and meet with others who are already involved in the movement. (Note that those who are involved in Circles are encouraged to make this investigation, not senior management or personnel and training directors.)

3. After all such groundworks are completed and a group realization of the importance of the QC movement is evident to all workers and foremen, the company approaches to permit the formation of QC Circles in a limited number of workshops which are headed by competent superiors. These superiors must understand the movement and be able to identify which foremen possess good QC sense and are doing supervision. Dependent upon circumstances, it is also advisable that only supervisors and service workers are first organized into a few QC Circles. Circles can then be added in other

workshops in a fashion that organic cells keep on adding up while disintegrating.

4. Activity of QC Circles must be closely followed to see that the Circle is functioning, that the foreman is providing proper leadership, that workers are learning, analyzing problems and are working cooperatively with other Circles. However, a caution must be exercised that the management or staff people do not supply too much intervention with or control over the activity of QC Circles. They should refrain from telling the Circles what to do or what not to do. This tends to discourage their spontaneous wish of achieving something worthy of doing. This caution must also be exercised by the Circle leader. His or her position in the Circle is a coordinator rather than a leader. He/she tries to be inductive in stirring up thinking of members so they can come up with ideas . . . in no instance should he or she state own opinions nor force such opinions on members.

5. Now that interest in QC Circle movement has grown in the workshop and that everyone begins to have keen concern over the workshop improvement, the scope of Circle activities gradually expands to include people in as many other operating departments as possible. When it has developed into this stage, the company-wide standard operating procedures of the QC Circle, regulations of QC Circle activity in relation to various other company work regulations and standards, need to be developed to avoid confusion in work responsibility and authority resulting therefrom.

But the Circles themselves depend upon — and flourish — only if the following principles are firmly in place.

1. Top management (all levels of senior management) must agree to support, encourage and listen to Circle activities — no matter how many or how few Circles are operating.

2. Management must not "use" Circles to further their own pet ideas or projects. Circle members must be free to pursue their own

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priorities.

3. Management must be patient — Circles do not represent overnight change.

4. Managers must accept failures with no recrimination or criticism — but with encouragement.

5. The philosophy of the Circle concept (i.e., basically a Theory Y philosophy) must be present in every step of the process.

A. Managers and supervisors are given the option of being involved.

B. It is recognized that this is not a plant or organization-wide activity. It must be allowed to grow in a ripple effect — one Circle after another — and not be a sweeping, new program.

6. Circle leaders and facilitators must be carefully chosen, be well trained and be credible (i.e., not seen as management patsies).

7. Facilitators must be given time and support to carry out their activities (too many facilitators have too many other responsibilities and all the subtle messages tell him or her that this is only if and

when she has nothing else to do).

8. Circle membership must be voluntary. The Circle itself will deal with membership and member effectiveness in the same way most peers affect the behaviors of others.

“Not a Total OD Effort”

The Circle movement is not a total effort in Organization Development. As mentioned, it was launched initially in Japan as a training effort. Many of the motivational and participative effects emerged as the process developed. Quality of Work Life, on the other hand, is much broader and is aimed specifically at a myriad of issues related to communicating, organization, job enrichment, incentives, working conditions, team building, attitudes and other human factors on the job.

Neither is the QC Circle “participative management” as we understand that concept. The Circle does not involve interdepartment efforts, “linking pins,” representative forms of employee involvement or similar activity where

employees participate at higher levels of management or in higher organizational decisions. (Carried to an extreme, these plans have even appointed line workers to the board of directors.)

Circle activities involve effort only at the level of application of the worker. Decision powers are limited dramatically compared to those of other participative techniques. A Circle project does not preclude these activities, however. Nearly every QWL effort (or OD effort) today uses, or at least considers, Quality Circles as one element of a total project.

Quality Circles also will have an impact on other forms of organizational change or development efforts, and other management practices. Some of these might be:

• *Suggestion Programs:* Most Quality Circles are installed without any changes to the existing suggestion system. Individuals will still have more suggestions than the Circle can possibly process. Any suggestions that may result in rewards coming from Circle acti-

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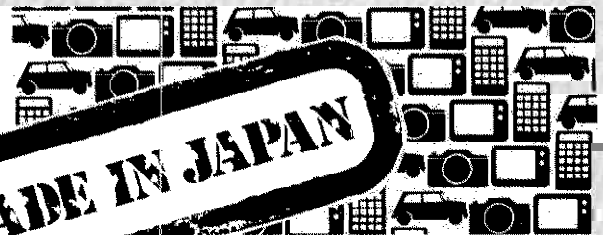
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vity are simply submitted by the Circles, and the rewards are shared by the Circle.

In many cases, Circle members do not even submit their suggestions through the formal channels, satisfied with the intrinsic rewards they have already achieved.

• *Productivity Sharing/Improve or Other Incentive Programs:* Not only will the Circle program not interfere, it will dramatically increase the value of most incentive programs. One weakness of most incentive programs is that they rely too heavily on "working harder;" by Circle formation, workers are also encouraged to "work smarter."

• *Job Enrichment:* Despite the fact that the formation of a Circle is a classic example of a job enrichment technique, the Circles themselves have a history of designing work methods improvement that become enriching and do fall into the category of job design. A weakness of many job enrichment installations is that the focus of job redesign comes from the engineers instead of from the workers themselves.

Focus of the Circle

Each Circle is independent. The members of the Circle focus on problems specific to their area of responsibility. Circles are formed by members who share like responsibilities. Circles may, however, call upon resources from any other place in the organization when cooperation or expertise is required. For example, a Circle might work on a problem that involves a supplier or a supplier department (perhaps the way a sub-assembly is finished, or material is being shipped). The first Circle may call upon another Circle, or an employee, in the other group. They would ask for cooperation or information. The second Circle or employees then analyze their own work process to determine the feasibility and cost to arrive at a resolution. Both Circles may find they lack the expertise needed to solve the problem and may call upon a staff engineer or another process expert to find an answer. The focus is always on "the" problem which is

being solved. The Circle does not move into decisions involving pay, working conditions, product plans, etc., which may be of interest — but beyond the Circle's authority.

Some organizations have developed what they call Circles to address organizational problems. They seek volunteers from a number of areas to work together. This looks much more like participative management than a Quality Circle. It changes the focus from Quality Control measurements and statistical techniques. Seldom do the efforts of higher-level participant groups or task force groups ever use the techniques or statistical approaches which the Circle uses. Similarly, 9/9, participative or involvement programs which include employees in decisions at various levels may reflect a management style — but do not use the statistical measurements which are unique to the Quality Circle.

The uniqueness of the Quality Circle lies in its emphasis on measurement and problem solving. Circles focus on measurement . . . how much, how often, how far, where, when, etc. They also focus on problem solving . . . why, what can be done, and similar questions. And Circles also focus on experimentation . . . what if this were skipped, ignored, done less often, done more often, etc. And they focus on evaluation . . . what happened with each change, what was the result, what is the value, etc.

Because the Quality Circle process is so frequently mentioned as a part of an organizational development / organizational behavior effort, it may be interesting to relate this process to some organizational behavior thoughts. Richard Walton — in an excellent article in the *Harvard Business Review* — outlines "some lessons from experience."² He relates these lessons to the broad range of OD types of activities and they are especially relevant when one considers QC Circles. (As Reid Rundell of General Motors points out when discussing the controversial Tarrytown Project that has been so successful, "Remember, this process was developed at Tarrytown, for Tarrytown." This owner-

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ship is critical to any efforts of change.)

Walton warns to:

1. "Attempt work improvement because of its intrinsic positive values, not because it might be the way to avoid unionization." And, we add, to increase quality or productivity. We have found unions to be extremely cooperative in the QC movement. The structure and relationships within unions can be very helpful to support a good worker improvement project, if the effort is not being used against — but for the work force. Unions know as well as management the challenge that exists to increase productivity and quality in this country, and so long as adversarial relationships are avoided — the cooperation can be a powerful asset.

2. "Recognize the basic differences between opportunities in new facilities, and opportunities in existing ones."

Much more sensitivity and pro-

fessionalism, from a person knowledgeable in organizational behavior principles is necessary in instituting a work or decision making process that interrupts existing norms, cultural attitudes or power structures. It is in these situations where we believe an organizational behavior consultant can be of most help. The QC Circle process should not be initiated until adequate work is done to prepare the environment and the organization. The first Circle is so visible it attracts undue attention. The consultant is better able to buffer and dampen this attention than an insider in many cases. (Sometimes senior managers need to be told to stay out — and keep quiet for a while. Insiders are seldom able to do this as tenaciously as may be necessary.)

3. "Avoid either/or concepts of organization and management style."

There is not one right way to manage an organization nor to

decide. Recent publications of JUSE focus on methods of organizing Quality Circle activities — and they are as varied as the organizations and work processes themselves. The organization within the business entity should emerge through the same Circle process as is inherent to the Circle itself. Neither is there one right management style. Too much emphasis has been placed in this country on "style" and on "humanistic or non-directive" forms of communication as *the* way to manage. We now know that style is but a minor part of this process. We have spent much too much energy playing with personalities and not near enough on process.

4. "Do not advocate one answer; spread a way of looking for answers."

Although it is clear that employee involvement does have a positive effect in organization productivity and quality, Quality Circles are *not* the only way to

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accomplish this. Look carefully at the alternatives before deciding whether Circles, compared to some other job enrichment, productivity sharing or goal setting process is more appropriate, and whether or not this is the best time in your organization's history to initiate an effort.

Implementing the Process

One organization's experience serves well to describe the potential and the limits of the QC Circle effort. This company is most interested in solving complaints and improving quality in an integrated consumer product service division. The product is processed, packaged and delivered to "at-home" customers through an extensive route delivery system. The concept of Circles was introduced to senior management and the middle management in two separate sessions. All managers participated in a workshop focusing on employee involvement in consensus management processes. Volunteer departments, limited to six initially, were then sought to implement Circles. (Six is very high limit for an initial project.)

Two production, one purchasing, one long-haul trucking, and one shipping department, and one local delivery Circle were formed. A facilitator was trained, and so were Circle leaders. Once the Circles began, the facilitator worked closely with each as they got started learning the techniques of data collection, brainstorming, problem solving, cause and effect diagrams, histograms, Pareto techniques and other statistical methods.

One Circle began on the problem of "bottle caps." Discarded bottle caps in the unloading area created hazardous and inconvenient conditions. By designing a way to collect the discarded caps they also found that they could be recycled, saving hundreds of dollars per day.

A second Circle of drivers worked on some issues related to errors in the forms that they were using, especially as it related to collection of refunds and bottle deposits. The purchasing department Circle began working on paperwork errors and the truckers and delivery

route workers began working on a problem of broken bottles in delivery.

In all cases, the Circles became highly motivated and highly involved. Within a matter of months, each was contributing significantly to cost reduction and improved quality within the organization.

As a second plant was brought on line in the installation of the Quality Circle process, the facilitator was not given adequate time away from the job in order to serve the Circles that had been formed. In addition, a new plant manager joined the organization during the implementation phase and was not adequately brought on board as a participating member in the Circles. His subsequent lack of support and the competitive pressure for time of the facilitator began to destroy the Circles almost before they had begun.

In one instance, a supervisor who found the Circle meeting time to be inconvenient for something that he had to do personally arbitrarily changed the meeting time. In this case, the Circle read this as a very definite signal regarding the importance of their work and immediately changed what were very productive Circle sessions into gripe sessions and general excuses for being away from work. The Circle soon folded, perhaps a victim of its own success.

Summary

All the data suggests that the Quality Circle process, if installed as an organizational intervention — which it most certainly is — with the proper preparation and communication and the commitment and ownership of senior management can be an extremely valuable tool in nearly any organization. Managers and workers alike are continually amazed at the value of the intrinsic rewards that accrue from participation in the Circle, as well as the cost returns from the Circle's activities.

Nearly every evaluation study that has been done to date has demonstrated anywhere from 4:1 to 8:1 return on investment within the first year of Circle activities. Implementation of a Circle process requires patience and recognition

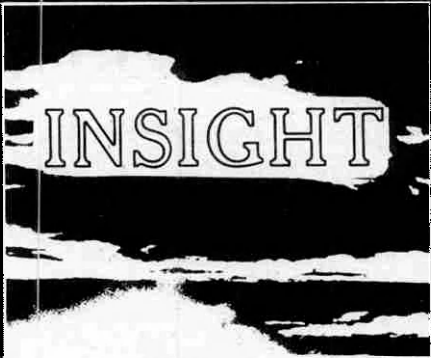
that it is a change in the management system and is not a program or a package to bring about dramatic effects but rather is a long-term commitment aimed at significant changes over a period of time.

EDITOR'S NOTE: To obtain examples of employee reports of QC activities and a number of models of QC installations, please contact: Training and Development Journal, P.O. Box 5307, Madison, WI 53705.

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1. Along with Dr. Juran and Dr. Deming from the U.S., K. Ishakawa is awarded much of the credit for the growth and enthusiasm of the QC method in Japan. See K. Ishakawa, QC Circle Activities, Union of Japanese Scientists and Engineers, 1968, Japan.
2. Walton, Richard, "Work Innovations in the United States," *Harvard Business Review*, July-August 1979, Boston, MA.


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