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IMPLEMENTING TOTAL QUALITY MANAGEMENT  
IN BUSINESS AND ACADEME: A CASE STUDY

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A Dissertation  
Presented to  
the Faculty of the Department of Educational Leadership  
and Policy Analysis  
East Tennessee State University

---

In Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Education

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by  
Nancy O. Bartell  
August 1996

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APPROVAL

This is to certify that the Graduate Committee of

NANCY O. BARTELL

met on the

first day of July, 1996

The committee read and examined her dissertation, supervised her defense of it in an oral examination, and decided to recommend that her study be submitted to the Graduate Council, in partial fulfillment of the requirements for the degree of Doctor of Education in Educational Administration.

  
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Chair, Graduate Committee

  
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Signed on behalf of  
Graduate Council

  
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Interim Dean, School of  
Graduate Studies

ABSTRACT

IMPLEMENTING TOTAL QUALITY MANAGEMENT  
IN BUSINESS AND ACADEME: A CASE STUDY

by

Nancy O. Bartell

Total quality management (TQM) is a philosophy and process that has been successfully implemented in many business firms. Other organizations, including institutions of higher education, have become increasingly interested in adopting it. It is likely that facilitators need to be cognizant of organizational differences and adjust facilitation methods and strategies accordingly.

This dissertation is an exploratory study designed to examine the role of the TQM facilitator in diverse settings. Specifically, the study is an in-depth two-case research study of TQM implementation in an international manufacturing firm and a regional institution of higher education.

The primary foci of this dissertation are to (1) investigate differences in context and processes of each organization, (2) compare implementation events, (3) examine the facilitator's role at various stages of TQM implementation, and (4) identify barriers involved with TQM implementation in each organization.

Conclusions of the study are that the facilitators' level of involvement in TQM implementation varied over time and at different stages of team development. Facilitators at the manufacturing firm used TQM tools and techniques more frequently than did facilitators in the academic setting. Lastly, outside facilitators had to adjust language, stories, and examples in the academic setting. They also relied heavily on an internal steering committee to plan agendas and assess the degree of acceptance by those involved in early stages of implementation.

INSTITUTIONAL REVIEW BOARD APPROVAL

This is to certify that the following study has been filed and approved by the Institutional Review Board of East Tennessee State University.

Title of Grant or Project Implementing Total Quality Management in Business and Academe: A Case Study

Principal Investigator Nancy O. Bartell

Department Educational leadership and Policy Analysis

Date Submitted August 6, 1996

Institutional Review Board, Chair

David W. Waller, MD

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CHAPTER 1  
INTRODUCTION

In the last several decades, American business has faced increasing global competition, saturated markets, eroding market shares, and changing customer needs and wants. To respond to these market changes, companies began to focus more closely on product quality and customer satisfaction.

In the late 1970s and early 1980s, after decades of growth and prosperity, U. S. companies were jolted out of their complacency by international competitors who offered quality products at lower prices. This created a major impetus for change. In the 1980s and 1990s, U. S. companies adopted quality concepts and methods in order to counter competitive threats and rapidly changing markets. In so doing, they embraced new quality management concepts, including total quality management (TQM).

This substantively new management approach involves attention to product or service quality during the process of production and delivery, as opposed to assessing quality at the end of the production process. Employees manage the process by using teams to determine the quality of work, and they strive for improvement by continually setting and achieving higher standards of performance (Chattopadhyay,



1992). The ultimate performance measure is customer satisfaction.

#### Acceptance of TQM as a Management Philosophy

According to the American Quality Foundation and Ernst & Young's International Quality Study (1991), about 40% of American businesses place primary importance on customer satisfaction in strategic planning, and a significant number of other companies plan to increase involvement of employees in teams that are responsible for quality. The International Quality Study also identified quality improvement as the fundamental business strategy of the 1990s.

Consumers have come to expect better quality and reliability of products and services. They have continued to make quality a progressively important consideration in their purchasing decisions. In a 1992 survey conducted by General Systems, Inc., nine out of ten buyers made quality their primary purchasing standard, expressing quality, not as a tradeoff between quality and price, but as a combination of quality, price, time-saving considerations, and service (Feigenbaum, 1994).

While total quality management has been adopted by many American manufacturing and service firms over the last two decades, institutions of higher education are generally in an early phase of the transition to TQM (Heilman, 1994).

Just as businesses did in the 1970s and 1980s, colleges and universities are facing rapid change in their external environments. Chaffee (1990) described these external changes as (1) crises of confidence in higher education, (2) increased accountability demands, (3) demographic changes, such as a declining high school senior pool and impending faculty shortages, and (4) funding shortfalls. These changes have been compounded by the accelerating cost of higher education and fiscal problems plaguing federal, state, and local governments. Seymour (1992) added increasing competition among colleges and universities for students to this list. Institutions of higher education that are not service oriented, Seymour observed, will have difficulty surviving in this environment.

DeCosmo, Parker and Heverly (1991) observed that "complex and difficult problems facing higher education in the nineties demand an entirely new approach to problem solving" (p. 13). They argued that educational institutions must use a quality improvement approach to address the challenges of the future.

William E. Hull (1991), Provost of Samford University, in describing the need for reform of educational institutions, wrote:

Most of our institutions of higher education exist in a world with too many schools and too few students, too many fixed costs and too few

discretionary dollars, too many competitors and too few supporters. In such a world, survival does belong to the fittest, which will be those institutions imbued with a passion for quality that extends to every member of the community, faculty included. (p. 5)

Although turbulence and complexity in the environment have increasingly affected both businesses and institutions of higher education, the two types of organizations are quite different in other respects. Given their dissimilarities, the question arises: Can TQM, which was developed in a business culture, be effective in an educational culture with considerably different purposes and values? An increasing number of college and university presidents seem to think so. Between 1991 and 1995, the number of colleges, universities, and community colleges involved in implementing quality management increased from 92 to 303 according to a Quality Progress survey (Calek, 1995). Of the 202 colleges and universities using TQM principles in 1995, 88% utilized them in administration; 55% offered quality-related certificates, minors, or degrees; and 42% did both.

#### Total Quality Management Defined

Total quality management is both a philosophy and a process. There is no single description of TQM; however,

the basic principles of TQM can be divided into three groups: a guiding philosophy of customer satisfaction, active participation by all the people involved in the process, and tools to collect, measure, and analyze performance information (Seymour & Collett, 1991).

The TQM philosophy requires that the organization's leadership convey, by word and deed, the message that customer satisfaction is paramount and that satisfaction is accomplished through a systematic process of continuous improvement in the organization's activities and outputs (Deming, 1986). This requires leadership that clearly communicates the organization's vision and goals; empowers people to work toward a shared vision; trains and educates employees in group processes, quality assessment, and measurement; and provides an open environment that is conducive to change.

Everyone in the TQM organization is expected to commit to long-term thinking (Deming, 1986). The organization's management makes a conscious investment in helping people to perform their jobs effectively by reducing fears of failure or mistakes and by rewarding efforts in improving quality. The objective of the process is to get quality of the product or service right the first time and continuously make efforts to improve quality.

Performance measurement tools "require that people work together to generate objective data concerning the process

they work in and then apply that wisdom to a systematic methodology for improvement" (Seymour & Collett, 1991, p. 1). To measure process improvement, TQM utilizes scientific methods of gathering and analyzing statistical information and provides all employees appropriate access to information necessary to make improvement decisions (Crosby, 1979; Deming, 1986; Juran, 1989).

Marchese (1993) summarized six important ideas behind TQM: customer focus, continuous improvement, management by fact, benchmarking by a systematic search for the best practices, people as the organization's greatest resource, and organizational structures that are designed around the needs and preferences of customers, rather than those of the organization or its employees.

#### The Role of the Change Agent as a Facilitator

TQM implementation is a complex process and encompasses system-wide organizational changes. Because of this, successful implementation often requires the use of persons in the role of change agents to facilitate TQM training and education, team building, and appropriate organizational development processes. Change agents are central to overcoming barriers to change and are an essential catalyst in the change process (French & Bell, 1990). In describing a change agent, Moorhead and Griffin (1989) observed:

To overcome cultural and communication barriers and to build understanding, a facilitator, or change agent, is often used . . . to help identify the need for change, to define problems, and to assist in the change process. The change agent brings in new ideas and viewpoints that help [group] members look at old problems in new ways. Change often comes from the conflict that results when the change agent challenges the organization's assumptions and generally accepted patterns of operation. (p. 719)

Change agents are ultimately responsible for facilitating the transfer of learning, which involves the shift from old to new paradigms of work and interaction. Although TQM has a prescribed set of implementation actions, TQM literature does not describe in any detail how facilitators should perform their role or how facilitation methods should be modified or tailored to meet differences among organizations.

#### Statement of the Problem

Total quality management is a philosophy and process that is used in both business organizations and institutions of higher education (Deming, 1986; Seymour & Collett, 1991). The methods of implementation, however, may differ in different types of organizations due to variations in the

characteristics of the organization, namely, its purpose, culture, structure, and processes. Given the considerable differences between business organizations and institutions of higher education, change agents involved in TQM implementation will need to be cognizant of these differences and will need to adopt facilitation methods appropriate to the characteristics of the organization undergoing change.

#### Purpose of the Study

The purpose of this study was to examine the role of change agents as facilitators in a business organization and an institution of higher education and to identify differences in the change agents' roles when implementing TQM projects and processes in different types of organizations. In reviewing the literature on facilitation and TQM, no studies were found which identify the differences a change agent may encounter in various types of organizations and how these may affect success in the TQM facilitation process.

To gain an understanding of the context and complexity of relationships which change agents face in different types of organizations, their roles in facilitating the implementation of TQM in a business and university setting were examined using a qualitative, case study approach. The two case studies examine differences in organizational

purposes, cultures, structures, and processes between the two organizations. In the course of the studies, the manner in which change agents adapted different facilitation methods with different groups were investigated and their effectiveness evaluated.

#### Significance of the Study

In the November-December 1991 issue of the Harvard Business Review (Robinson et al., 1991), six chief executive officers of major American businesses observed:

Despite some successful collaboration between business and higher education in advancing total quality management, widespread adoption of TQM is moving too slowly to meet the challenge. For a variety of reasons, businesses are often hesitant to open their quality systems to academic scrutiny, thus hindering the study and understanding of TQM by the academic community. And because of the limited amount of scholarly research, many academic institutions have been slow to incorporate TQM into their core curriculum and their own administrative practices. (p. 94)

Four years later, Edwin Artzt (1995), Chairman and CEO of Proctor and Gamble Company noted that there is still a dearth of education about quality in universities. He stated, "I hope to help make higher education the center of



teaching, researching, and practicing total quality--because America's competitiveness in years ahead will require a new generation of quality leaders and a replenished pool of knowledge about how to apply total quality" (p. 53).

There are four areas where the proposed study should be useful in higher education:

(1) teaching and using TQM philosophy, concepts, and methods in the classroom to enable students to gain a core body of knowledge and skills in TQM application and to reinforce a quality culture in the classroom and beyond;

(2) applying TQM practices in the development and administration of integrated curricula in order to meet customer satisfaction and to reinforce a quality culture in academic areas of the institution;

(3) practicing TQM in administrative functions on campuses to ensure continually improving customer services and to reinforce a quality culture in administrative and support services; and

(4) using TQM concepts to enhance relationships between business organizations and institutions of higher education by mutually assisting in TQM research and training.

In addition, the study should be useful to researchers and consultants involved in the emerging field of

transorganizational development (Cummings & Worley, 1993), as well as to those who study or practice implementation of TQM in business organizations and institutions of higher education. By providing research data that compares TQM facilitation in two culturally diverse entities, the study should contribute to a better understanding of the process of introducing change and the change agent's role in different types of organizations.

#### Definitions

To describe the study, it is necessary to define total quality management, facilitation, and change agent. For purposes of this study, total quality management (TQM) is defined as a philosophy and process designed to obtain commitment to excellence by everyone in an organization--excellence achieved through empowerment of work groups and teamwork, a process of continuous improvement (CI), dedication to bringing out the best in employees, and delivery of high-quality services or products which meet or exceed expectations of customers (Coate, 1990; Crosby, 1979; Deming, 1986; Juran, 1989). TQM is guided by a philosophy of customer satisfaction, active participation by all the people involved in the process of quality improvement, and continuous improvement as measured by factual data (Seymour & Collett, 1991).

The primary role of a change agent in an organizational setting is that of facilitator; therefore, the terms are used interchangeably. Facilitation is defined as the process of "freeing from difficulties or obstacles" as described by The American Heritage Dictionary of the English Language (1969, p. 469). The facilitator has an influence role that is neither authoritarian nor abdicative (Cummings & Worley, 1993), but one which helps effect change, often by overcoming difficulties or obstacles to change. The facilitator may be a member of the organization or an outsider (Moorhead & Griffin, 1989). For purposes of this study, a change agent is the person designated to facilitate the process of implementing TQM. In larger organizations, there often are several people acting in the role of TQM facilitator at the same time. They may be responsible for implementation in different locations, divisions or work groups, or at different points in the implementation process.

#### Research Questions

A study of the facilitator's role in TQM implementation should help to answer a number of questions. The first set of questions involves why TQM was selected by the organization as a change process and how TQM was introduced. The second set of questions addresses the organizational context or culture within which TQM facilitation occurred.

The third set of questions relates to how facilitators were chosen and what occurred during the implementation process. The last set of questions is directed to identifying similarities and differences which a facilitator needs to address in planning and implementing TQM facilitation in different types of organizations. A list of questions for each of these sets follows:

1. Total Quality Management Implementation

- a. What was the impetus to implement TQM; i.e., who was the initial TQM instigator, why was TQM selected as the change process, and what was the initial reaction to implementing TQM projects throughout the organization?
- b. What TQM implementation strategy was used and why?
- c. How was TQM performance recognized within the organization?
- d. How did management demonstrate its commitment to TQM?

2. Organizational Context

- a. What was the organizational context in which TQM implementation occurred? Specifically, what were the culture, structure and design, and organizational processes before, during, and after quality training?

- b. To what extent was TQM embraced within the culture of the organization?
- c. Were organizational structures affected because of TQM? If so, in what way?
- d. How was TQM supported through the communication processes of the organization? Were there signs of communication barriers? If so, what were they?
- e. Were decision-making responsibilities shifted to the level at which the process occurred?
- f. Were there differences in the way problem-solving was approached before, during, and after TQM implementation?

### 3. Facilitation

- a. How were change agents or facilitators selected to implement TQM projects?
- b. What were the facilitators' backgrounds, training, and experience in facilitation? Were they internal or external consultants?
- c. What facilitation methods were used throughout the TQM implementation process and why were they used?
- d. Did facilitation responsibility change hands during implementation? If so, why and how?
- e. Were facilitators able to identify factors that inhibited the facilitation process? If so, how did they cope with them?

f. Was TQM implementation considered successful by the facilitator, team members, and others associated with the TQM projects studied?

g. What evidence is there that facilitation had a significant influence on the outcomes of the organization?

#### 4. Comparison of Facilitation in Two Types of Organizations

a. What differences between the two types of organizations influenced facilitation?

b. Was organizational support for TQM implementation different? How did this reflect organizational differences?

c. Were there different kinds of organizational barriers exhibited that hindered effective TQM implementation? Did these barriers reflect the different types of organizations?

The answer to these research questions will provide insight into how facilitation methods can be adapted to reflect organizational differences.

#### Overview of the Study

In Chapter 1, the study is introduced and described and the statement of the problem, the purpose of the study, significance of the research, definitions, and relevant research questions are discussed. In Chapter 2, the body of

literature on theoretical constructs associated with total quality management, change agents and facilitation roles, and the organizational concepts of purpose, culture, structure, and processes is reviewed. Qualitative research techniques, including a framework for investigating the data collection and inductive data analysis, are described in Chapter 3. Chapter 3 also contains descriptions of the organizations investigated.

Chapter 4 describes the TQM implementation at Eastman Chemical Company and the evolution of its quality implementation, while examining the contextual factors of the organization itself. The unit of analysis was the company's training department, selected initially because of its mandate to train and educate employees, including quality training. The study branched out, however, to other quality efforts throughout the company.

Chapter 5 describes TQM implementation at East Tennessee State University's College of Applied Science and Technology, which was undertaken with the assistance of Eastman facilitators. The investigation also includes observations about the ongoing university-wide CI change effort at ETSU.

Chapter 6 describes similarities and differences in TQM implementation at Eastman Chemical Company and East Tennessee State University. Chapter 7 contains a summary of answers to the research questions, conclusions, and recommendations for future research related to the study.

## CHAPTER 2

### REVIEW OF RELATED LITERATURE

There is little academic literature on the effectiveness OF TQM implementation. According to Dr. G. O. Bounds (personal communication, October 13, 1994) of the University of Tennessee, co-author of Beyond Total Quality Management: Toward the Emerging Paradigm, TQM is still a developing field which has not yet produced significant research studies. Most of the reports on TQM have appeared in practitioner literature, although a few TQM-related articles began to appear in academic journals around 1994. The first journal devoted to scholarly examination of quality-related management issues, Journal of Quality Management, is scheduled for initial publication in 1996.

The following literature review, based on both popular literature and academic research, begins with a description of the historical development of total quality management since its introduction in the 1950s in industry and, more recently, in higher education. Theoretical concepts of TQM as developed by leaders in the field are discussed. In addition, competencies needed by change agents as they facilitate change and overcome barriers to facilitation as described in the literature are addressed. Lastly, the



literature on the organizational contextual factors under which the change agent facilitates the change process are described.

### Historical Perspective

Quality definitions have evolved over time. Beginning in the late 1800s, quality meant "inspection of the product for uniformity." In the 1930s, statistical methods and sampling techniques were introduced that reduced the cost of inspection by reducing the number of inspections. The quality assurance era, beginning in the 1950s, began with a systems approach, involving the entire company in quality planning and implementation efforts. Many of the significant quality developments at this time were launched in Japan (Bounds, Yorks, Adams, & Ranney, 1994). Quality improvement meant using standardized tools and practices to meet mass production needs for quantities of goods. In the 1960s, the quality focus shifted to another level. The purpose of quality was to understand and to meet different and varied market needs as demand for service goods increased. Market research was introduced to find out what the customer wanted, and cross-functional involvement teams were used to deliver that product. The quality focus again shifted in the 1970s, triggered by the OPEC oil embargoes and price hikes. Organizational efforts were directed toward reducing costs while increasing quality. This made

it necessary to improve production processes, involve production workers in the improvement process, and find methods to control processes and measure improvement activities. Quality circles were established primarily to work on improving existing processes and tasks. In the 1980s, worldwide competition caused another shift in order to address continually changing market needs and increasingly shorter product development cycles. Quality improvement teams were established to accomplish both reactive and proactive improvement tasks. Cross-functional teams were organized primarily to work on proactive improvement tasks (Shiba, Graham, & Walden, 1993). As the quality management focus shifted over time, quality methods and practices were developed or adapted to support the evolution.

#### TQM Concepts Espoused by Leading Theorists

The theoretical foundations of total quality management are credited primarily to three people: W. Edwards Deming, Joseph M. Juran, and Philip B. Crosby (Oberle, 1990; Sherr & Lozier, 1991). Another key researcher and practitioner in the quality movement, not as well known, was Armand V. Feigenbaum. Although TQM concepts were originally developed and used in the United States during World War II, they were largely ignored by American companies in the immediate postwar period. The Japanese, however, successfully adopted

TQM, and the philosophy is generally given credit for the emergence of Japan as a leader in manufacturing quality. It is because of Japan's success that TQM was revived in the United States in the late 1970s and widely adopted in manufacturing in the 1980s. Its application has been expanded more recently to include service organizations, governmental agencies, and educational institutions.

Dr. W. Edwards Deming, an American statistician who pioneered TQM practices in Japanese manufacturing is legendary in the world quality movement. After World War II, Japan's economy was in a state of disarray and its products were considered inferior. Deming had developed sampling techniques for the 1940 United States census and taught statistical quality control to wartime production engineers and inspectors. Many of his statistical techniques were drawn from the work of Walter A. Shewhart of Bell Laboratories. Shewhart's work on quality control demonstrated that productivity improves if variation of product quality is reduced to within a small range of acceptable standards (Mitra, 1993).

In 1950, Deming was invited to speak to 21 Japanese industrialists, who controlled most of their nation's capital, about his ideas for quality control. They heeded his advice and applied his teachings. His message was that through process quality control comes quality. This means attending to quality at the point where materials and

equipment enter the organization and throughout the production process itself, not through inspection or assessment of quality at the end of the process. When quality is improved in this way, costs decrease because of less rework, fewer mistakes, fewer delays, and better use of time and materials. As a result, productivity improves. The organization approaches the market with better quality and lower price; thus it prospers and provides more jobs (Deming, 1986; Walton, 1986).

Deming (1986) promoted 14 points as management principles to guide organizations in implementing a TQM philosophy. He reasoned that reducing variation at the point of input or during the manufacturing process, rather than inspecting finished goods, would produce world-class quality products. Quality, however, cannot be defined without the customer in mind. Deming recognized that statistical methods were needed to assess improvement, but these methods were not enough. The basis of his CI concept was exemplified in the Deming Cycle (originally known as the Shewhart cycle). It is a reiterative cycle of plan, do, check, and act (PDCA); that is, recognize the opportunity for improvement, test the theory on a small scale, analyze the results, and implement the plan.

He concluded that a management philosophy emphasizing quality at all times and at all organizational levels, coupled with statistical methods for assessing quality

performance, would provide the basis for success of organizations. He believed that 85% of quality problems were systems problems designed by management and not influenced by the workers, although workers were often blamed for the problems (Deming, 1986; Walton, 1986). Continuous education and training were essential for all levels of workers and managers if they were to be motivated to meet the goals of the organization. Deming emphasized the need for leadership throughout the organization, strong senior management support with long-term commitment to quality and a climate of trust and innovation.

Joseph M. Juran also built his reputation as a management theorist and practitioner in Japan. He stressed a universal approach to quality which he labeled the quality trilogy process: quality planning, quality control, and quality improvement. Each of these processes crosses functions, hierarchical levels, and product lines. He considered the customer not only as the consumer of a service or product, but also the next person in the process of work flow. A major thrust of his teachings was to enable employees, working in groups, to determine the cause-and-effect relationships of problems. Once problems are uncovered in the production process--from suppliers to end users--lower level employees, trained in problem-solving and teamwork, use statistical analysis to examine and measure their work processes. They determine where substantial

costs can be controlled and ultimately saved (Juran, 1991; Oberle, 1990). Juran (1988) emphasized the importance of upper management leadership and massive quality-oriented training programs. He divided costs of quality into two categories: unavoidable and avoidable. The first category refers to preventing defects, including inspection and sampling. The second is related to defects and product failures that include waste, such as scrapped materials, time to repair products, financial losses due to customer complaints and loss of business.

Philip B. Crosby (1979) provided a structure to get organizations started in quality improvement by focusing on attitudes toward quality. Whereas Deming and Juran had a strong orientation toward the use of statistical tools in TQM, Crosby's approach worked specifically on gaining employee commitment to quality, starting with management levels (Bounds et al., 1994; Oberle, 1990). His approach to quality meant that everyone must do things right the first time (Crosby, 1989). He identified four principles of quality management: define quality as conformance to requirements; concentrate the quality system on prevention, not appraisal; use the cost of quality as the performance measurement; and use zero defects as the performance standard. His quality management grid provided a method to evaluate existing quality systems and pinpoint areas for potential improvement. The quality measurement categories

include the degree of management understanding and attitude, quality organization status, problem handling, cost of quality as a percentage of sales, and quality improvement actions at five different stages of quality maturity. He identified those stages as uncertainty, awakening, enlightenment, wisdom, and certainty.

Another theorist and practitioner of quality management, Armand V. Feigenbaum, is a former manager of operations and quality control at General Electric Company and former president of the American Society for Quality Control. He defined quality control as an effective system for integrating quality development, quality maintenance, and quality improvement efforts of the various groups in an organization so as to enable production and service at the most economical levels which allow for full customer satisfaction (Feigenbaum, 1983). Feigenbaum asserted that the word quality does not mean "best" in the absolute sense: rather it means "best for certain customer conditions." In other words, different customers will have different expectations of quality and standards, depending upon their need. Therefore, the organization must understand what the customer's level of expectation is and must at least meet or exceed that level. In using the word control, he represented it as a management tool that incorporates four steps: (1) setting quality standards, (2) evaluating conformance to those standards, (3) acting when the

standards are exceeded, and (4) planning for improvements in the standards. Feigenbaum also stressed that quality concepts must be supported by positive attitudes within the organization. To incorporate a total quality control program, the company must (1) analyze quality needs and tailor them to the requirements of the customer; (2) base the program on sound economic analysis, striking a balance between quality problems and costs to solve problems; (3) include participation from functional groups involved in plan formulation; (4) emphasize tangible benefits and measuring devices to evaluate results; and (5) adhere to a proper sequence for "selling" quality control, starting with acceptance by top management (Feigenbaum, 1983).

In summary, the leading theorists stressed satisfying customers' needs. They all acknowledged the importance of leader involvement in promoting a quality culture, collecting data for effective problem solving, and correcting problems as they occur within the process. Each quality theorist had similar, but slightly different, approaches to quality management. Deming emphasized the need for the organization to consistently focus on quality improvements by using statistical evidence and enabling workers to become responsible for quality. He stressed the importance of breaking down barriers between departments and removing barriers that prohibit employees' performance. Juran's emphasis was on massive quality training throughout



the company. Crosby focused on defining zero defects as the ideal performance standard and concentrating on a quality system of defect prevention. Feigenbaum emphasized the need to understand the level of quality expected by the customer and insure that the product or service met the level of individual customer need. These quality theorists were the vanguard for the American quality movement that continues today.

#### TQM Implementation Strategies

Gaining commitment from top management is the critical first step in the implementation of TQM. TQM requires a substantial change in organization and management philosophy. Simply understanding TQM does not change management systems. Management must take concerted action to select and plan a TQM strategy, restructure work teams that are empowered to make changes in the system, and teach teams how to use statistical and analytical tools to continuously improve quality.

GOAL/QPC (1990), a leading non-profit organization dedicated to TQM training and education, identified five implementation strategies used by organizations. They are:

Strategy #1. The TQM element strategy takes elements of key systems, organizations, and TQM tools and works on the parts individually. It uses such elements as quality circles, statistical

process control, and quality function deployment rather than full implementation of TQM.

Strategy #2. The guru strategy takes the teachings and writings of one of the leading quality thinkers and uses them as a benchmark to determine where the organization is deficient then makes appropriate changes to remedy the deficiencies.

Strategy #3. The company model strategy uses organizational teams that visit American companies that have successfully integrated TQM to learn how they accomplished their successes.

Strategy #4. The Japanese total quality strategy studies detailed implementation techniques employed by Deming Prize winning Japanese companies and uses their learning to develop a five-year master plan for in-house use.

Strategy #5. The prize criteria strategy uses the Deming Prize or the Baldrige Award to identify arenas for benchmarking standards and improving them. (pp. 8-9)

Total quality management frequently takes three or more years to implement (Cummings & Worley, 1993; Lewis & Smith, 1994). Several authors have identified and categorized different stages associated with quality improvement (Mitra,

1993). Cummings and Worley (1993), for example, use five discrete stages:

Stage #1. Gaining senior management support and commitment to give direction throughout the change process. TQM requires large investments in training and often causes significant modifications in company policies, both of which need management support.

Stage #2. Conducting training throughout the organization in continuous improvement methods. Training includes learning problem-solving skills, statistical process control techniques, and knowledge to understand organizational process and to monitor effects of change.

Stage #3. Identifying and working on quality improvement projects that involve individuals and work groups applying quality methods to improve organizational processes.

Stage #4. Measuring progress which includes benchmarking, or comparing organizational processes against quality standards in other organizations.

Stage #5. Rewarding accomplishments by linking rewards to improvement in quality and to using quality processes. (pp. 328-331)

### TQM Facilitation

The above stages affect organizational culture as well as important interpersonal processes within an organization. These processes include communications, the role and functions of group members, problem-solving, decision-making, group norm development, and leadership and authority influences. The TQM facilitator, as a change agent, will use a variety of organizational development (OD) techniques, such as process interventions, diagnostic and feedback interventions, coaching and counseling, group and task analysis, and improvement recommendations. These are intended to align organizational members and groups with the quality culture.

Cummings and Worley (1993) also described five major activities which a change agent needs to manage:

1. Motivate for change. Create a readiness for change among organizational members by sensitizing organizations to the need for change and overcoming resistance to change.
2. Create a vision. Develop a representation of the desired future of the organization that will provide direction for change and a way of measuring progress. Facilitate clarification of mission, values, conditions, outcomes and goals with organizational members.

3. Develop political support for change.

Identify and influence key stakeholders. Gain support of powerful and influential organization members.

4. Manage the transition. Plan the road map for TQM change activities and plan how to gain commitment for the change.

5. Sustain the momentum for change. Provide resources, create a support system for change agents, develop new competencies and skills and reinforce new behaviors. (pp. 144-160)

If not implemented correctly, TQM can create frustration and failure. The underlying cause of TQM failure is that managers do not clearly understand what quality is and do not recognize its strategic importance (Bounds et al., 1994). Top managers fail to require a customer-focused vision or personal commitment to CI and, therefore, do not achieve cultural transformation.

Whichever TQM strategy an organization chooses, successful implementation requires managing the change effort at each stage of the process.

#### The Organizational Context

Organizational theory literature views organizations as complex social systems. When a major system-wide change

such as TQM is introduced, it occurs within the context of a system's arrangements, interactions, and processes. These may either enhance or inhibit the change effort.

Cavaleri and Obloj (1993) defined organizational systems as "a grouping of component parts that individually establish relationships with each other and that interact with their environment both as individuals and as a collective" (p. 13). These systems are composed of other smaller subsystems, which also contribute in varying degrees to achieving the purposes of the whole system. How subsystems interact with each other varies with different organizations. This interaction makes the organization unique. Poor interaction in one part of the system may cause other subsystems to work harder (Cummings & Worley, 1993).

There are many ways to describe the systems of the organization. For example, Nadler and Tushman (1991) identified four major elements of the organizational system as the tasks of the organization, individuals in the system, organizational arrangements, and the informal organization. Cummings and Worley (1993) identified five system variables as culture, structure, human resource systems, measurement systems, and technology. Weisbord (1976) used six categories, each with a formal and an informal component. They are: purpose of the organization; structure; rewards or incentives; helpful mechanisms, such as coordinating

technologies; relationships; and leadership. Waterman, Peters, and Phillips (1991), in their 7-S model of organizations, categorized seven elements of the system as structure; strategy; systems of formal and informal procedures; management leadership style; staff and human resources; skills of the organization that set it apart; and superordinate goals, which are the values and aspirations around which the business is built. Regardless of the systems model one chooses to address, it is important to recognize that each variable interacts with other variables. It is important that each of these variables be in congruence with one another to keep the system stable.

A systems view can help change agents and facilitators overcome fragmented ways of thinking about the change effort. By understanding how a change in one part of the system may effect other parts of the system over time, the facilitator is in a better position to help teams minimize negative effects of their decisions.

### Culture

Culture, defined as shared values, norms, and assumptions, can be a powerful influence on organizational effectiveness. Often taken for granted, it is reflected by the use of myths, stories, ceremonies, and other symbolic gestures. (Deal & Kennedy, 1982; Schein, 1985). Culture is essentially a "social contract" where implicit norms become

explicit when they become shared values that express "this is how we do things around here" (Covey, 1991, p. 209). The mission or purpose of an organization also establishes the general values of the organizational culture (King & Cleland, 1978). Cunningham and Gresso (1993) observed that a strong, healthy culture shapes structure and organizational behavior rather than being shaped by them. As noted by Shiba, Graham, and Walden (1993), organizations are increasingly making decisions about their products and services and promoting themselves on the basis of their corporate culture.

Total quality management requires a strong culture that goes beyond observable surface elements related to products of behavior, such as language jargon and physical arrangements. A strong quality culture is one in which the deeper levels of values and beliefs, ideologies, and philosophies are shared (Bounds et al., 1994).

### Structure

Structure is concerned with a pattern and grouping of jobs that are configured through differentiation and coordination. The way in which organizations are structured influences individual and group behavior (Mintzberg, 1979). The design of business organizations has shifted in parallel with the quality movement. Tall, hierarchical structures, drawn as boxes and pyramids, are being redrawn in new



shapes, such as circles and doughnuts. These new amorphous, loosely-coupled structures are represented by teams and networking links that enable organizations to be responsive and adaptive to rapidly changing environments (Handy, 1990).

Organization structure and design are constantly in a state of flux. Clark, Astuto, and Kuh (1983) pointed out that prior to the 1980s, the necessity of bureaucracy as an organizational form went unchallenged. Today, quality-oriented organizations are moving toward a bias to do things and learn from doing. Organizations are therefore moving away from mechanistic or bureaucratic structures to ones that are organic, flexible, and responsive to change.

Institutions of higher education generally have more loosely-linked systems than businesses (Clark, Astuto, & Kuh, 1983; Glassman, 1973; Weick, 1976). Loose coupling occurs when each entity is independent and preserves its own identity and separateness, yet shares a few common variables. The degree of coupling affects the unit's responsiveness to organizational matters and environmental change. Weick (1976) defined coupling elements that hold an educational organization together as the authority of office and the technology core of the organization. Authority elements include position, responsibilities, opportunities, rewards, and sanctions.

Universities are often described as collegial, democratic, loosely-coupled entities in which professionals

have autonomy in their work. Handy (1990) noted that business organizations are becoming more like universities in their coupling. He described these emerging "federal organizations" as organizational arrangements with a tight-loose interdependence. Similar to a university structure, they comprise a variety of individual groups allied together under a common purpose with some shared identity.

As business organizations downsize to a small core of permanent employees, they find it impossible to process all the information emanating from the new technology. Therefore, the small central core "does not direct or control so much as coordinate, advise, influence, and suggest" (p. 118). The energy comes from the outlying, loosely-coupled units. The core retains a few critical decisions, such as hiring key people and choosing how to spend new money, thus creating a tight coupling. This combination of autonomy and cooperation, according to Handy, is spreading among organizations.

#### Other Organizational Variables

Deming (1986) and other TQM proponents stressed that top management has the ultimate responsibility for quality. TQM and CI are long-term cultural changes that must be driven and supported by the organization's leaders. Leadership involves establishing clear goals, providing systems and resources to reach the goals, and involving

employees to work on the goals. There must be consistency in leadership's word and deed over time. Under TQM methodology, managers become less directive. Their role becomes one of integrating actions of teams, removing barriers, and analyzing and coaching employees in order to develop their capabilities (Kolb, Osland & Rubin, 1995)

Bounds et al. (1994) noted that the levers of change are in the roles people play throughout the organization and in the methods, tools, and systems which provide the working content of these roles. With TQM, new competencies are developed. Some are technical, such as learning about variation. Many are behavioral, such as working across functions or working in self-directed teams. "Most important, the education, skills, and competencies learned should be immediately applied to the job. Making sure this happens is a crucial leadership responsibility" (p. 495). Training and the timing of training, therefore, become a major TQM implementation component. Through effective training, methods and practices become standardized and encourage employees to accept a certain way of looking at the world using consistent practices.

According to Deming (1986), TQM participation and training should be totally voluntary; however, that concept does not coincide with the American culture of independence and individual rewards. Usually high initial participation is encouraged through indirect pressures, influence, and

incentives (Shiba, Graham, & Walden, 1994). People shape their behavior according to the organization's reward structure, which is an expression of what managers value.

Another variable, technology, is concerned with the conversion of raw materials into products and services. It includes production methods, work flows, information processing, decision-making, and the degree of environmental uncertainty and interdependence with the technology system. Weick (1976) identified elements of technology couplings as job activities or tasks, roles, boundaries, the technology itself, and people. Bounds et al. (1994) described an organization's core technology as "the combination of know-how, hardware, and software that is the basis of a core competence" (p. 218).

In addition to the above variables, every organization has linking mechanisms to hold the organization together. They include such things as positive relationships in teams and work groups and reinforcement of behaviors. Communication and decision-making patterns change when an organization moves from a traditional structure to one involving teams.

The individual or individuals responsible for TQM facilitation must be cognizant of these variables and ensure they are in congruence with each other as the change occurs. Moreover, if the change agent or facilitator is working with differentiated units or organizations, understanding

differences in organization variables will enhance the probabilities of a successful change effort.

#### Organizational Differences Between Universities and Businesses

Although universities and business organizations have similar systems and subsystems and common variables, there are many differences in how they fit together. Weisbord (1978) differentiated output-focused and input-focused organizational systems, based upon where evaluation occurs. Weisbord's concepts are useful in highlighting the differences between businesses and universities. Output systems are used to evaluate products or services. For instance, output-focused private sector organizations have systems focused around customer requirements. These determine productivity for the organization as a whole. There is a close relationship between the customer and producer. The employees in the organization know what they have to do to survive. Output can be measured and quickly evaluated through consumer feedback. When problems occur, people become involved and are open to discussion because they have a common understanding of the goal, they agree on performance and evaluation standards, and there is usually some correlation between performance and rewards. Work processes require close cooperation and integration of many people doing a variety of tasks.

Universities, on the other hand, are often evaluated at the input end (e.g., credentialing of professors and screening entering students). These organizations usually have multiple and unclear goals that are difficult to measure; evaluation is often a controversial issue; and administration action, or the use of authority, is often seen as irrelevant. Professors frequently derive rewards and self esteem from sources external to the university. Their work is done independently; collaboration is possible but not essential. Meetings are typically viewed as wasted time (Goodstein, 1978).

Goodstein (1978) compared organizational differences between private and public sector organizations with similar conclusions. Private businesses tend to be preoccupied with the bottom line; individuals and groups have accountability; they are driven to produce a product or service which requires a high degree of process interdependence. Failure to meet criteria affects the ability to survive. Institutions, such as universities, have unclear goals or goal confusion; the faculty and administration often have a dual loyalty to the profession and the institution; they have professional autonomy with little functional interdependence. Universities rarely go bankrupt. In addition, they tend to have more remote and structured relationships; conflict is managed by avoidance or compromise; rewards are given for compliance, not

accomplishment; and there are few helpful integrating or coordinating mechanisms available.

Seymour (1992) argued that attitudes about service differ between business and education. He noted that in colleges and universities, administrators, staff and professors feel they are "somehow exempt from the conventions that generally apply to services industries because their services are much different and more complex" (p. 128). Academicians generally view competition among educational institutions as less threatening to their institution's survival than business executives view their competition (Marchese, 1993). Faculty members see themselves as emphasizing diversity of ideas, while the term quality control suggests uniformity and control measures not commonly used in institutions of higher education. Quality in universities is usually gauged through the tenure and promotion process, whereas quality in business is measured by predetermined standards for products and services and by customer satisfaction. Academic freedom, professionalism, and the tradition of individualism of the scholar interfere with the acceptance of common quality standards in the academic community (Coate, 1990; Hull, 1991).

In the literature review, three observations stand out: TQM implementation is a major organizational change effort; the context in which the change effort is introduced is different among organizations and has some bearing on the

implementation process; and the ability of the change agent to manage TQM implementation is based upon personal skills and the nature of the organization's systems.

#### The Role of Facilitator in TQM

TQM is a mass movement that mobilizes everyone in the organization. Successful TQM initiation starts with commitment at the top. A domino effect occurs when the chief executive officer can make upper managers and facilitators enthusiastic about the quality culture. Shiba, Graham, and Walden (1993) correlated successful TQM implementation with CEO participation in the improvement activities, including planning and piloting projects, running the corporate quality committee, goal setting, and leading early training and education courses. Two factors usually motivate the CEO to lead the quality movement: personal involvement in learning, often through sources outside the company, and recognizing a potential crisis that others may not yet recognize.

Shiba, Graham, and Walden (1993) quoted Ishikawa, often called the father of Japanese TQM, as saying "TQM begins with education and ends with education" (p. 347). In their TQM training and education model, they recommended that selection of training participants initially be stratified by roles or positions to allow adaptation of teaching (pace, nature of group, types of examples). Some quality courses



may be compulsory training; some may be for selected specialists. They also recommend that, within a company, a core of TQM practices and concepts be standardized "to facilitate communication between specialists and managers, superiors and subordinates, and one function and another. A company can enforce these standards naturally by supplying and mandating the use of materials (overheads, manuals, cases) that conform to the standards" (p. 350).

Teams and teamwork are a fundamental component of TQM. Training and education often occur in team meetings, not just in organized TQM courses. In this setting, the facilitator is instrumental in helping teams work together toward goal achievement and in preventing dysfunctional group dynamics from interfering with the process. Collaborative team management within and between teams becomes an important aspect of integrating efforts toward common organizational goals. Team members frequently represent different organizational areas and have different skills, abilities, and perceptions about work processes. The facilitator must influence teams in such a way that they have a good idea of where they fit within the organizational design (Shiba, Graham, & Walden, 1993).

TQM facilitation involves a collection of skills, many of which are related to group interventions that encourage employee participation and decision-making. These skills include helping groups agree on clear goals, roles, and

procedures; guiding groups through problem-solving and decision-making processes; ensuring that group members participate; accurately interpreting group dynamics; managing conflict; and helping groups understand organizational processes (Burns, 1995). The facilitator keeps group activities on track, stimulates participation, provokes thoughts and ideas, and removes the traditional barriers of resisting change (Kelley, 1993)

Cunningham and Gresso (1993) noted that effective team facilitation must consider the context of the organizational setting:

The success of the team requires that the group clearly understands the political, cultural, and human dynamics of improvement efforts. . . . The facilitator helps to broaden the understanding of power in the organization and its application for the common good. In this way, power is a form of human energy that the facilitator helps to release. The facilitator helps the group to exercise power through its membership and blocks efforts to exercise power over them. Power is shared among individuals who have the expertise, skills, and motivation to use it in the best interest of the organization. (p. 243)

They also described the facilitator as a catalyst who is sensitive to the group's culture, fosters respect by

appreciating individual differences of each group member, handles group dynamics, creates an appropriate tone for an effective group, and empathizes with a group's various moods. The facilitator models appropriate forms of participation.

The facilitator also plays a key role in group dynamics by directing the process toward task and goal accomplishment. The facilitator eases a group through problem-solving and decision-making processes. Hart (1992) described the facilitator as one who:

must know the group members' attitudes, commitment, skills and experience. The content of the group's experience is the group itself. Its objective is to accomplish its chosen goal. Thus the facilitator does not have a set design but must instead have many methods and techniques available to use with the group. (p. 6)

The Westinghouse Facilitation Skills Training Guide (1991), used in TQM training, points out that an effective facilitator (1) knows how to wait for team members to complete their thoughts, (2) knows how to focus on present thoughts, (3) draws a distinction between what is observed and what is inferred, (4) encourages team culture, (5) focuses on what is happening, not on what should be happening, (6) is willing to be influenced and to influence team members, (7) avoids projecting feelings onto others,

(8) encourages team members to take responsibility for their responses, and (9) recognizes team members' positive contributions to the group.

Rothwell and Sredl (1992) defined the typical work outputs of a change agent, serving as facilitator, as developing and maintaining teams; resolving conflicts for an organization or groups; changing group norms, values, and culture; developing designs for change; making clients aware of relationships in and around the organization, developing plans to implement organization change; implementing change strategies, and providing recommendations to management regarding human resource development.

In addition to these factors, facilitators must consider ethical issues such as maintaining appropriate confidentiality; providing sincere encouragement to ensure involvement and participation; using power appropriately; and balancing organizational and individual needs and interests (Rothwell & Sredl, 1992). The facilitator should not use methods that exceed expertise, promise unrealistic outcomes, or work with any personal, hidden agendas that interfere with the best interests of the group. French and Bell (1990) also observed that it is important for change agents to build trust and mutual learning with their clients and to make their values and beliefs visible to both themselves and their clients.

Much of the literature on the skills of effective facilitators is directed to organizational development (OD) practitioners and consultants. Weisbord (1978) noted that change agents provide alternative visions of what is possible and support people in "clearing their (emotional) decks for some rational problem solving" (p. 15). The methods they use remove constraints on members' thoughts, feelings, and behavior, thus allowing people to raise tough questions about the organization and its processes. In other words, they help others unblock process issues that get in the way of work. Therefore, change agents are "in the business of proposing, and showing people how to operate democratic work structures: teams, task forces, committees, collateral organizations, and 'transition structures' including the impact of these structures on the rest of a system" (Beckhard & Harris, 1977, p. 16). Face-to-face problem solving and trust building are the key to successful change.

#### Internal vs. External Facilitators

External consultants, acting as facilitators, who are not members of the organization in which TQM is being introduced, typically bring a different and potentially more objective perspective to the process. They have the advantage of being better able to probe difficult issues and to question the status quo. On the other hand, it takes

time for external facilitators to gain a working knowledge of the organization and build enough trust so that insiders are willing to share information.

In discussing facilitators who are members of the organization, Cummings and Worley (1993) observed that they have intimate knowledge of the organization's culture, practices, sources of power, and information. Thus, they may be able to build trust and rapport more rapidly than outside facilitators. Drawbacks of internal facilitators include a potential lack of objectivity, cautiousness in open discussion because of possible repercussions, and a potential lack of skills, experience, and clout in facilitating organizational change.

### Facilitation Barriers

Internal or external facilitators will be confronted with barriers simply because they are not familiar with the organization or, conversely, they are too familiar with the organization. Barriers to effective facilitation are an ongoing challenge to TQM facilitators. Barriers may occur for many reasons. Seven reasons were identified by Green (1993) as: "non-supportive attitudes (culture); poor or uninformed leadership; lack of knowledge about quality improvement processes or tools; lack of fiscal, human, and informational resources; non-supportive organizational structures and reward systems; inappropriate organizational

mission or vision statements; and a hostile external environment" (p. 2). In addition, Seymour (1993) noted that change does not occur unless there is significant dissatisfaction with the status quo. Seymour (1992) also observed that attitudes and expectations establish what gets done and what does not get done. Therefore, "the ability to cause quality depends upon an attitude that makes 'do-it-right-the-first-time service' an integral part of the everyday lives of administrators, staff persons, and faculty members" (p. 127). In other words, if the attitude is not right, it will be a barrier to change.

Another factor contributing to the facilitator's effectiveness is the degree of flexibility in group interactions (Kelley, 1993). Strong group norms, including how the group views problems and interacts with other groups or the environment, can make the facilitation process easier or more difficult.

#### The Role of Facilitator in Transorganizational Development

Understanding organizational differences and the role of the TQM facilitator are especially important in the field of transorganizational development (TD). TD is an emerging form of planned change related to creating partnerships between two or more organizations. It is especially useful when two or more organizations or even large, differentiated units within an organization need to resolve mutual issues

and to manage common processes or strategies. Cummings and Worley (1993) refer to the role of a TD facilitator or change agent as one of bringing two separate organizational groups together. The facilitator, using TQM tools and problem-solving methods, focus group members on superordinate goals common to the two groups while also assisting group members in identifying and resolving personal and organizational differences through team building. For instance, the TD facilitator may need to bring together a group of people from autonomous organizations that may not see the need to join or may not know how to form an alliance. In this situation, the facilitator needs to play a more activist role yet needs to be neutral, treating all members alike. Facilitators should be seen by group members as working on behalf of the total system rather than as being aligned with particular members or views.

Cummings and Worley (1993) described the skills needed to practice TD facilitation as political competence to understand and resolve conflicts of interest. These skills also include understanding value dilemmas, where groups seek to maintain autonomy while jointly interacting on common projects. Networking skills are also important. These include the ability to manage lateral relations without hierarchical control, to link new alliances and to enable networks to combine in accomplishing joint tasks.



The literature on TQM does not include a descriptive study of the relationships between the role of the facilitator in different types of organizations when implementing TQM.

## CHAPTER 3

### METHODOLOGY

The purpose of Chapter 3 is to present the methodology and procedures used to study the role of change agents as facilitators in a business and in an institution of higher education. This includes an examination of qualitative research methods, particularly the research case method, and their applicability to the proposed study.

#### Design of the Case Studies

A two-site case study was used in this study. One case study was conducted at Eastman Chemical Company (ECC), an international chemical manufacturer, headquartered in Northeast Tennessee. Its TQM efforts began in the manufacturing division, in about 1980, in response to a potential loss of a major customer that complained about quality. The other case study was conducted at East Tennessee State University, a regional university that started TQM implementation in the early 1990s in its College of Applied Science and Technology.

At the manufacturing site, the initial unit of analysis was the training department, selected because of its primary role of education and training. The College of Applied

Science and Technology was the initial unit of analysis at the university site, selected because it was the first unit to initiate a comprehensive TQM effort. There was a connection between the efforts of the two organizations since three facilitators from ECC assisted in TQM facilitation at the university. In 1993, ECC won both the Malcolm Baldrige National Quality Award and State of Tennessee Quality Award (Level Four). The university won the State of Tennessee Quality Award (Level Two) in 1993, 1994, and 1995.

The study at ECC encompassed a review of the TQM evolution that began with training in statistical measurements and performance management in the early 1980s and eventually led to the use of TQM to guide strategic planning. Key findings from that evolution were shared with the university by the ECC facilitators, thus diminishing "trial and error" experiences as TQM was introduced at the university.

Through open-ended interviews, a series of semi-structured questions were used which permitted information to emerge, either without prompting or, in some cases, by probing for insightful information. Interviews were audio taped and transcribed. To gain an understanding of the organizational context and complexity of relationships which facilitators faced, interview questions addressed (1) why TQM was selected as a change intervention, (2) what the

organizational climate was before, during, and after TQM facilitation, (3) what insights facilitators had during the facilitation process, and (4) what organizational support and barriers they experienced that helped or hindered effective TQM implementation. The recorded data were clustered around organizational variables and facilitation methods. A comparison was made between the two types of organizations.

#### The Applicability of Qualitative Research to the Study

Qualitative inquiry enabled the researcher to investigate the complexities and multiple perspectives that shape realities rather than attempting to isolate specific variables as in the quantitative, scientific method of data collection and analysis. Lincoln and Guba (1985) described five beliefs upon which qualitative inquiry is based. The first belief is that an event or events are interpreted by different people in different ways, depending upon their values and experience. These realities must be considered and become integrated into a holistic viewpoint. In this study, selected informants who had significant knowledge of their respective organization's TQM implementation process represented both horizontal (cross-functional) and vertical (hierarchical) levels.

The second belief considers the relationship between the researcher and what is being investigated. Personal

contacts and interactions occurred during qualitative interviews, involving the researcher in the research process itself. Furthermore, as the primary data gatherer throughout the qualitative process, the researcher's relationship with the people involved in the interviews might have biased data interpretation. At ETSU, she was both a full-time temporary instructor and doctoral student and was personally known to several of the people interviewed. While serving as an officer of the American Society of Training and Development local chapter, she had a professional affiliation with several of the interviewees at ECC.

The third belief addresses the fact that qualitative studies are particular and are not intended to be generalized to the larger population. However, the data gathered through structured and unstructured interviews; from training materials and other files; and from observation, led to inductive reasoning. Therefore, the study might be useful in generating hypotheses, forming new questions, providing support (or refuting) theories, or gaining insight into a particular area of interest.

The fourth belief is that no one event or variable will be directly related to cause and effect. With events intertwined and occurring simultaneously, it was possible to identify some patterns of relationships, but it was not

possible to separate the direct effect of one variable upon another.

The fifth belief is related to the issue of values in research. The investigator recognized that personal values influenced her data collection and analysis. Those values included the fact that the investigator believes that total quality management is based on sound management principles and practices; she is interested in using those concepts in teaching and facilitating learning.

Merriam (1991), in Case Study Research in Education, considered the importance of researcher characteristics during case study research. She recommended that the case study researcher have an "enormous tolerance for ambiguity," be sensitive to the context of the study, and be a good communicator (p. 37). Because the research design, data collection, and data analysis have no rigid procedures, the researcher must be able to "enjoy searching for pieces to the puzzle and tolerate uncertainty for an indefinite period of time" (p. 37).

Qualitative inquiry "can capture whatever significant outcomes occur because the design is not locked into looking at only predetermined variables and outcomes" (Patton, 1987, p. 14). The inquiry considers processes, variations, and individual differences between those being investigated and the outcomes. Certain advantages are associated with qualitative research methodology. For instance, a

distinguishing feature of qualitative research is that it emphasizes the context of a total situation by employing a detailed and extensive investigation from multiple perspectives. The descriptive nature of the study allows for data that are thick, rich and holistic (Merriam, 1991).

Because of the detailed description, other researchers may be able to draw their own conclusions based on experience and research. In addition, the potential of research results that expose new relationships, stated in the form of hypotheses, may be examined by statistical techniques in the future (Rummel & Ballaine, 1963).

#### The Qualitative Research Case Method

The qualitative research case method is an in-depth analysis of a "total situation" (Rummel & Ballaine, 1963). It is described by a sequence of events leading to a particular organizational behavior. Goals of a research case study are to permit an in-depth study of an organizational process, clarify those events relevant to the problem that may permit a greater understanding of causality, and examine a situation in more depth than is permitted by standardized measurement procedures (McClintock, 1979).

Yin (1981) observed that a case study is not a data point that represents only a single observation, but should be regarded as a whole experiment that provides insight by

cross analysis. He recommended three ways to conduct meaningful case study analysis: to organize narrative accounts around substantive topics, such as specified propositions, questions, or activities; to tabulate meaningful events by using a quantitative approach to data collection; or to build explanations that explain a phenomenon by providing an accurate rendition of the facts, considering alternative explanations of the facts, and drawing conclusions based on explanations that are most congruent with the facts. The researcher chose to organize narrative accounts around topics related to organizational variables and facilitation methods.

McClintock, Brannon, and Maynard-Moody (1979) described a case cluster method as a means of stratifying sampling designs. The case cluster method has three features: (1) it defines the units of analysis within the case that are meaningful and represents the event or subject being studied by informants who are knowledgeable; (2) a stratified sampling of data sources based on theoretical grounds and on features of the case is crossed with a stratified sampling of the units of analysis; and (3) an optional quantitative data set may be created, consisting of standardized codes for variables pertaining to each unit of analysis, and may be gathered for systematic analysis. The researcher chose to cluster and compare units of analysis as described in (1) and (2) above.



McClintock, Brannon, and Maynard-Moody (1979) further contended that qualitative analyses are possible both for the entire case and at the level of the unit of analysis and, indeed, are strengthened by the use of different data sources for each unit of analysis. By forcing different perspectives on the same phenomenon, the researcher qualitatively portrays divergent images that might emerge from each perspective. Although the investigation began with units of analysis (ECC training department and the ETSU College of Applied Science and Technology), the study encompassed perspectives from cross-functional areas and varying levels of management at each organization.

#### The Applicability of Research Case Method to the Study

The research case method was selected as the study design for three reasons. First, the researcher believed that it was important to search for understanding of the complexities of the facilitator's role. Moreover, the facilitator, at different points in time, was a different person, sometimes internal or sometimes external, to the group studied. This phenomenon occurs frequently, especially in larger organizations. A quantitative study would not be well suited to identifying the multiple actors, situations, and time frames undertaken in the study.

Second, events were multidimensional. TQM approaches are not static; they are evolving. Although there are a

number of universal techniques in implementation, especially training in measurement skills and team building activities, not all organizations have the same degree of commitment to TQM nor do they implement it in the same manner. It was important to gather viewpoints from various organizational levels and across functions to gain a good cross analysis.

Third, not many institutions of higher education were involved in TQM when the study began in 1994, although the number is now increasing. At the time the study was initially undertaken, it was unlikely that a significant sample size could be located.

In summary, the research case method study is an in-depth analysis of multiple variables from various perspectives over some period of time. The research case method not only allowed an in-depth study into the organizational processes, but also clarified elements that were particular to the two organizations being studied. The goal of the case study was to provide an in-depth examination that provided rich data necessary and desirable in research case methodology. The study involved analysis of narrative accounts of the facilitator's role in two different organizational contexts. It was organized around a set of semi-structured questions, participant observation, and examination of artifacts and training documents. Qualitative data were gathered during a number of on-site

visits to the two sites selected for the study. The next section describes the data sources for this study.

#### Informants and Other Data Sources

Data sources were primarily interviewees representing various levels and functions in the organization, including top management, facilitators, TQM team members, customers, and others who were affiliated with TQM projects, particularly during the implementation process. Key interviewees were selected initially because of their leadership or their facilitator role. Additional interviewees were added as they were identified in a "snowball or chain sampling" (Patton, 1990, p. 182) pattern; that is, people identified by others who knew they could contribute to information-rich interviews. To counter biased effects, interviewees were selected who had both positive and negative viewpoints. Interviews were conducted until information patterns became repetitive and no new information was forthcoming. Twenty-three semi-structured interviews were conducted at ECC; 15 interviews at ETSU. Interviews lasted between 45 minutes and 2 1/2 hours.

#### Data Collection

Permission to conduct this study was secured from the Institutional Review Board of East Tennessee State University. Formal permission was obtained from the training manager at Eastman Chemical Company and the dean of

the College of Applied Science and Technology at East Tennessee State University. A necessary condition of the study was that the researcher could communicate with organizational members who had experience with TQM facilitation.

The questions cited at the end of Chapter 1 served as a guide in collecting data around specific topics and issues. Informants were told that the general purpose of the interview was to obtain information about their involvement in TQM projects. Open-ended interviews were conducted in a way that permitted information to emerge, either without prompting or, in some cases, by probing for insightful information.

Interviews were audio taped by the researcher and transcribed. Three recorded interviews were not transcribed due to equipment malfunction; however, the researcher's notes were used to supplement the interviews and later the analysis. As each transcription of an interview was completed, it was studied for identifiable patterns and specific answers to the research questions.

In addition to the interviews, minutes of meetings, policy and training documents, company newsletters, and other organizational literature were examined. Facilitators were observed in several TQM training sessions and strategic planning meetings at the university site.

### Data Analysis

Patterns, themes, and categories of analysis were drawn by inductive analysis. Although many qualitative studies are pursued without preconceived or systematic methods of examination, this study included structuring the data analysis through stratification, clustering, and cross analysis designs which would enable other researchers to pursue replicable procedures.

Several matrices were used to analyze the data. Table 1 (page 63) was designed to compare the facilitator's role at various stages of implementation. The stages selected for this study were based on organizational involvement stages described by Ackerman (1976), Murray (1975), and Stead (1983) in their respective studies of social policy implementation. They determined three phases of organizational involvement which have the following characteristics:

Phase 1, the policy phase. Leadership acceptance of TQM philosophy and policy formulation and communication of the policy throughout the organization.

Phase 2, the technical and administrative learning phase. Leadership appointment of the change agent or agents to coordinate activities and gather information to disseminate TQM knowledge and skills and to develop data systems to track and analyze

Table 1. FACILITATOR'S ROLE RELATIVE TO ORGANIZATIONAL INVOLVEMENT PHASES

Facilitator Role in TQM Implementation	Phase 1:	Phase 2: Learning		Phase 3: Institutionalized
	Policy	Technical	Administrative	
<b>General Consultation Skills</b> Diagnoses Entry & contracting Intervention selection Interviewing Process consultation				
<b>Intrapersonal Skills</b> Active learning skills Rational-emotive balance				
<b>Intervention Skills</b> Communication Conflict management Group dynamics (team bldg.) Intergroup dynamics Sociotechnical analysis				
<b>Interpersonal Skills</b> Aptitude in speaking client's language Counseling & coaching Establishing trust & rapport Giving & receiving feedback Listening Negotiation skills				
<b>TQM Quality Control Tools</b> Check sheets/stratification, pareto diagram, graphs, control charts, historam, scatter diagrams, cause-and-effect diagrams				
Brainstorming, Nominal Group Technique				
<b>TQM Management &amp; Planning            Tools</b> Affinity, (KJ method), relations, matrix, tree, PDPC, arrow diagrams, matrix data analysis				

Note: Facilitator categories adopted from OD practitioner skills reported by Shepard & Raia (April, 1981). TQM quality control, management, and planning tools identified by Shiba, Graham & Walden (1993).

social performance. In this phase, the change agent provides technical learning and then involves the management in learning about how the organization should function after the change has occurred.

Phase 3, the institutionalization phase.

Performance expectations are changed to account for TQM-related measurements; the reporting, evaluation, and reward systems are modified to reflect TQM performance; and the organizational commitment to TQM is sustained. The policy is institutionalized by working it into the resource allocation, reward systems, and the normative structure of the organization (Ackerman, 1973; Murray, 1976; Stead, 1983).

Table 2 (page 65) represents a framework to analyze the facilitator's role relative to team maturity. TQM is based on the ability of groups to analyze and solve problems involving assigned work processes or projects. As teams work together, they move through a formative stage, a growing stage, and a maturity stage. Typical facilitator strategies and activities were analyzed at each stage.

Table 3 (page 66) compares the organizational context of Eastman Chemical Company and East Tennessee State University using Weisbord's six-box model (Weisbord, 1976) as the basis for organizational diagnosis.

Table 2. FACILITATOR'S ROLE RELATIVE TO TEAM DEVELOPMENT STAGES

Facilitator Role	Team Formative Stage	Team Growth Stage	Team Maturity Stage
Business/ Organizational Consultation			
Process Consultation			
Coaching and Nurturing			

**Team Formative Stage:** Team learns roles and appropriate methods for decision making, idea generation, prioritizing; learns concepts of TQM elements, including measurements, plans, control systems, company plans, and positive reinforcement techniques.

**Team Growth Stage:** Team learns PDCA and initiates "check and act" elements; learns to analyze data and carry out analyses and specialized tasks; identifies process linkages; assigns responsibilities; analyzes "value added" aspects of improving current processes and understands impact of processes on organization; and learns conceptual application to functional issues.

**Team Maturity Stage:** Team becomes independent; learns more advanced TQM techniques; drives linkage of team efforts to larger systems; identifies need for expertise in specific tasks; identifies need for carrying out more detailed and quantitative ways to analyze data; develops strategies to support company business directions; and improves plans focused on adding value to the organization.

**Note:** Figure 1 was adapted from the MES Team Consulting Model developed by Management Engineering Services, Eastman Chemical Company.



**Table 3. WEISBORD SIX-BOX MODEL TO COMPARE ORGANIZATIONAL VARIABLES**

<b>Organizational Variables</b>	<b>Eastman Chemical Co.</b>	<b>East Tennessee State Univ</b>
<b>Purpose</b>		
<b>Structure</b>		
<b>Rewards</b>		
<b>Helpful Mechanisms</b>		
<b>Relationships</b>		
<b>Leadership</b>		

**Note:** Organizational variables based on Weisbord's six-box model (Weisbord, 1976).

### Validity

Validity is a concept that does not fit well within the inductive analysis framework of qualitative research. Lincoln and Guba (1985) substituted the term credibility for internal validity. To gain credibility, the researcher employed triangulation methods using more than one person in the organization to verify information, audio taping all interviews to obtain referential adequacy, and using a peer debriefer to insure the accuracy and true reporting of the investigator. At the ETSU site, prolonged observation of TOM facilitation at both the unit of analysis and organizational level was possible.

According to Lincoln and Guba (1985), the peer debriefer should be someone who is familiar with the topic, similar in age range but not an authority figure, and serious about the peer debriefer role. Dr. Jean Garner Stead, Professor of Management at East Tennessee State University, met these requirements. She is involved in research in the area of total quality environmental management and completed a research case study in fulfillment of her own dissertation requirements. Dr. Stead and the researcher are somewhat close in age, share many interests, and have a collegial relationship. Dr. Stead agreed to serve as peer debriefer and met with the researcher several times throughout the study. She helped the researcher in a number of ways. First, she questioned the procedures and methods throughout the research

project, then discussed aspects of personal bias, challenged ideas and working hypotheses, and helped keep the researcher focused on the unfolding study.

Lincoln and Guba (1985) also hold the view that transferability (which somewhat approximates external validity) is virtually impossible in qualitative research. The best that can be done is to provide such a full and comprehensive description that someone may use his or her own judgment about whether transfer can be contemplated.

#### Reliability

Lincoln and Guba (1985) argued that reliability must be determined before validity. Triangulation, replication, and an inquiry audit are techniques for establishing dependability, which is a term Lincoln and Guba use in place of reliability.

An inquiry audit is an examination of the research process and data conducted by an independent auditor who confirms the accuracy of the reported findings. The audit material included taped interviews of participants, transcriptions of interviews, and other relevant documentation. Dr. Penny Little Smith conducted an audit by examining both the process and content of the research effort. She interviewed the researcher on methodology and research activities, discussed transcripts and documents, and

evaluated the researcher's explanations of categories and reconstruction and analysis (see Audit Report, Appendix C).

#### Organizations Considered for Study

The organizations studied both had experience with TQM implementation and facilitation. Both organizations were recognized for their adherence to TQM processes, one at a national level, and both at the state level. This study was conducted after administrators at both organizations willingly agreed to permit interviews with their departmental members, TQM teams, and others that would enable appropriate scrutiny needed for an intensive study.

Purposeful sampling of informants at ECC began at the 75-member training department, chosen because goals and duties of their members are similar to those of the university faculty; that is, education and training effectiveness. The interviews then extended into the manufacturing, research, marketing, and management engineering services (MES) areas when it was learned that different units used facilitators and consultants other than those in the training department.

Eastman Chemical Company facilitators were trained by nationally recognized TQM experts, including W. Edwards Deming, Joseph M. Juran, and Philip B. Crosby. The initial group of Eastman TQM facilitators were not members of the training department. Rather, MES consultants, many with

advanced degrees, facilitated TQM throughout the organization. The services of both the MES consultants and the training department staff, however, were used to help implement TQM.

Purposeful sampling of interviewees occurred within ETSU's 68-member College of Applied Science and Technology (CAST), including part-time and full-time faculty, administrators, and staff. The dean of CAST introduced TQM to its faculty and staff in 1992 with the assistance of two Eastman facilitators. As quality management techniques were introduced to senior administrators at the university level, interviews were extended to members of the president's council and administrative officers who were expected to use TQM methodology in their strategic planning process. A third Eastman facilitator, one who was an active facilitator in ECC's marketing department, served as the primary facilitator for ETSU's senior management group.

The following two chapters describe the TQM implementation process at ECC and at ETSU, respectively. Excerpts from personal interviews, identified by quotation marks, were used to add to the credibility of the study. The chronology detailed in Chapter 4 is more specific than Chapter 5 since the study began approximately the same time the CAST members were being trained in TQM methodology. Therefore, the researcher was provided an opportunity to attend initial and ongoing TQM meetings at ETSU. Direct

observations and participation in these meetings, rather than reliance on interviews and documents compiled for the Eastman study, provided a different level of understanding of the facilitation process and transorganizational differences. Campus-wide implementation, however, was not completed at the time of this report; therefore, reflections and conclusions are more limited than those at Eastman. Nonetheless the numerous TQM meetings at CAST and university levels were sufficient to permit an analysis of facilitation methods and barriers that occurred at the university.

Information was compressed, categorized, and ordered to facilitate comparisons between the two organizations, as described in Chapter 6. Chapter 7 details conclusions of the study and recommendations for additional research.

## CHAPTER 4

## EASTMAN'S TOTAL QUALITY MANAGEMENT JOURNEY

Eastman Chemical Company (ECC) is an international chemical company with approximately 12,000 employees at its Kingsport, Tennessee, site. It recently celebrated its 75th anniversary and its first birthday as an independent Fortune 200 company. It was divested by Eastman Kodak in 1994. TQM was introduced into the organization through the leadership of the manufacturing division. Assistance in training and facilitating TQM methods was provided primarily by the management engineering services staff and, to some extent, by the corporate training department.

The following chronology describes Eastman's quality journey as TQM was implemented, adapted, and inculcated throughout the company. This 15-year chronology parallels the evolution of TQM itself, as described in Chapter 2. The success of Eastman's quality journey can be measured, in part, by receipt of the coveted National Malcolm Baldrige Quality Award and the Tennessee Governor's Quality Award in 1994. The journey, according to Eastman's TQM facilitators, is just that--it is a journey without an end; but its direction is one of continual improvement.

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Note: The quotes in the following chapters are excerpts from transcripts of interviewees who are not identified by name.

### Historical Perspective

Eastman's wake-up call to change the way it was conducting business occurred in the late 1970s. A major customer announced that its business relationship with ECC would cease because of quality problems. In response to the problem, the manufacturing division, Tennessee Eastman Division (TED), used a two-pronged approach. "Being a good strong engineering company, the first approach was let's fix the technology." Massive capital investments were made to upgrade equipment that had been allowed to deteriorate. The second approach was to learn about quality concepts touted by quality theorists and practiced by successful companies in the United States and adapt those best practices to Eastman's needs.

### TQM Implementation Through Teamwork

Employee involvement is an essential element of the TQM process. Employees, managers, and nonmanagers alike must accept responsibility for focusing on cross-functional systems and processes that deliver customer value. Successful employee involvement must be established within a strategic context in which operational-level employees make improvements, while managers insure that operational activities are aligned with the strategies of the organization and with the various levels of organization itself. "This alignment is accomplished through a focus on



key systems and processes, and [concentrating] on improving those elements that impact the customer. . . . Employee involvement takes many different forms, including teams, job enrichment, task forces, quality circles, and labor-management action teams (Bounds et al., 1994, p. 472).

Eastman's early approaches to TQM were through operational team activities in the manufacturing division. The strategic alignment among processes and systems and coordination efforts at various levels of the organization did not occur until the mid 1980s. However, the core of TQM implementation began with, and continues today, to be teamwork.

Problem-Solving Teams. Based on reports of Japanese success with quality circles (QC), the manufacturing division head sought help from the management engineering services department (MES) to assist the division with quality issues. At the time, quality management concepts focused on controlling processes using statistical process control (SPC) methods. The University of Tennessee provided SPC courses for training department (TD) managers, who then developed SPC workshops specifically for Eastman employees. Facilitation efforts to apply the learnings were generated primarily by the technical staff of MES.

At the manufacturing site, natural work groups were formed into problem-solving teams (PST). The new direction

was to build customer relationships through a quality emphasis program known as "the customer and us." MES facilitated team efforts to help teams learn how to listen to the customer. PSTs, not just marketers, sought information from customers about their perspective on acceptable quality, rather than Eastman supplying the product for which it alone set standards. Customer surveys and interviews were conducted to determine levels of customer satisfaction. The resulting feedback to manufacturing department heads led to "significant emotional events, as the gaps between their perception of their performance and the customer's perception were very large." New definitions of customer emerged. It moved from "a customer is the one who pays you money" to "a person who is the recipient of your services, whether it be internal or external." Manufacturing PSTs, comprised of first-line supervisors and managers, proved successful. Additional PSTs were established at the operator level.

Employees solved problems in those early teams that "the best engineering minds in the company had worked on for 40 years and hadn't touched." One story, told repeatedly by interviewees, was that of a vertical natural unit team whose members were discussing the problem of early identification of leaks in the waste-water treatment plant. Engineers had worked on the problem for some time. One day, in a team meeting, an operator said, "just build the thing on stilts

and put white gravel under it so that you can see the leaks." They built the waste water settlement system using a heavy plastic liner supported by eight-foot concrete pillars and put white gravel under it. Now anyone can immediately see if there is a leak. The idea won a national award.

Manufacturing costs were substantially reduced, and productivity and market share increased. Customer complaints decreased by over 90% (Ritchie, 1992). As success became apparent in the manufacturing area, quality improvement efforts were encouraged in other parts of the organization. In 1983, after much discussion and debate, the company issued a quality policy statement directing the entire organization's attention to TQM processes. The quality policy identified four points to guide operations:

1. focus on the customer;
2. establish mission, vision, and indicators of performance;
3. understand, standardize, stabilize, and maintain processes; and
4. plan, do, check, and act for continual improvement and innovation.

MES staff continued to facilitate the work of teams on an as-needed basis in quality application efforts.

Quality Improvement Teams. Between 1983 and 1985, the first wave of massive training began in the operations area. The purpose was to teach employees basic quality tools and techniques. "Thousands of people spent thousands of hours" learning statistical process control (SPC), flow charting, problem-solving, and graphing techniques. A ten-step TQM model (Appendix A) was introduced. Organizational barriers were broken down to encourage more trust between management and front-line personnel. For example, vacation allotments were based solely on length of tenure, benefits were equalized throughout the company, the lunch club dining room eliminated an "executives only" policy, and time clocks and dress codes were eliminated.

In 1985, ECC conducted an in-depth study to evaluate its existing culture and to determine what was needed to move the culture in the direction management set. To further break down barriers, ECC issued an "Eastman Way" policy that advocated the importance of people, specifying values and principles of trust and integrity that would guide company decisions.

Quality improvement teams (QIT) were established company wide. Everyone in the organization became a member of a work team that met regularly to identify and work on improvement opportunities. Extensive training in TQM tools and techniques, especially statistical process control (SPC), continued to be conducted. Each team was expected to

develop a team charter that identified the expected team output, its customer(s), the scope of the project, completion target dates, available resources, limitations, and status reports. Teams were taught how to write objectives and how to develop control systems for detecting and correcting causes of abnormal deviations in their processes. As part of the control process, teams identified key result areas (KRA) or process outcomes, appropriate measurement criteria, and correction strategies to align results with performance standards.

As team discussions expanded beyond quality issues, e.g., productivity, safety, training and development needs, the need to train people to work together collaboratively became apparent. Facilitator training was extensive. One trainer estimated that about a third of quality training came from MES, a third from the training department, and a third from outside sources.

TQM implementation responsibility became a political issue between departments. Was MES or TD responsible for TQM training, facilitation, and consulting? Eventually it was settled that TD would do volume training; MES would individually consult with groups or teams on problem-solving and process issues and, to some degree, facilitation. TD conducted facilitator training to enable and encourage team leaders to do their own facilitation instead of relying upon outside facilitators.

Interlocking Team Structures. In 1986, interlocking team structures were established to encourage better communication and decision-making, both horizontally and vertically. Instead of just providing support to operational and administrative teams, senior managers became members of teams themselves. ECC's senior management team redefined the company's mission and vision and established key result areas and performance measurements, thus demonstrating that TQM concepts applied to senior management functions, too. The company's quality movement had moved from the manufacturing division to corporate and support areas as well. Quality management became integral to the company's strategy. Senior management teams identified major improvement opportunities (MIOs), which were then communicated throughout the company. Every team was expected to work toward the MIOs to improve the overall company performance.

Process Evaluation, Control, and Improvement Training. Although TQM began in the manufacturing area and spread throughout the company, the manufacturing division became concerned that too many people were just "plotting points on control charts" and not really understanding manufacturing processes well enough to insure that all processes were improved. Management felt that a cultural change needed to

occur in which operators developed a strong feeling of ownership for their processes and products (Ritchie, 1992). A second wave of quality training in the manufacturing division began in 1988 to overcome this deficiency. Under a training effort called Process Evaluation, Control, and Improvement (PECI), emphasis was placed on learning TQM processes with immediate application. Quality control training was standardized to enable operators to move to other jobs and departments. Prior to training, each trainee joined a team with a specific project selected. These natural unit work teams and functional teams were trained in mathematics, quality improvement tools, processes, requirements of the international standards organization (ISO 9000 standards), and case study analysis. Immediately following training, teams put newly acquired skills and knowledge into practice. Empowerment training was introduced to enable operators to assume greater responsibility for administrative activities. Empowered or self-directed teams assumed responsibility for scheduling vacations, handling labor schedules, attending to housekeeping tasks, and addressing responsibility issues. "Their purpose is to reduce variation at the source. . . . Such teams offer quicker response to process situations, as well as customer needs. . . . [As a result, employees] aligned themselves more strongly with the product, establishing a definite link to the ultimate customer" (Ritchie, 1992, p. 24).

Under PEFI training, facilitators and trainers taught supervisors and managers to coach and operators to understand the process. Supervisors were relieved of production responsibility and taught coaching and facilitation methods. The coaching curriculum was heavily oriented toward interpersonal and social skills training. During training, coaches learned facilitation skills and applied them in team meetings. Along with PEFI training and application, reward and reinforcement systems were adapted to the new job designs. Multi-skilling, especially in maintenance activities, was encouraged to enable faster response to production downtime. Reward systems were changed. Pay for applied skills and knowledge (PASK), where employees directly influenced their compensation, was implemented. Celebrations and awards were offered as reinforcement and recognition of successes.

In 1991, management's attention moved to a macro-management approach by focusing on the question: What value do managers contribute to the process? These discussions led to role clarification, in that it became clear that managers were the link to insure that the work of the company was aligned with its strategies. Out of this came a strategic intent document that was shared throughout the company. The one-page document articulated the vision and mission of the company, who the customers are, guiding principles, and major improvement opportunities the company would seek. The company-wide organization chart was



redesigned to reflect internal networking through a web-type, flat structure to manage the core business.

Total Quality Work Systems Training (TQWS): An integrative approach. In spite of the massive training and efforts toward CI, there were groups in the company that did not demonstrate significant improvements. In part, some people still viewed quality management as a training program that was not perceived as adding value. People were complying with the process but were not committed to it. In 1990, an integration team was appointed to assess Eastman's quality programs and to recommend better ways to use quality management and organizational development methods. The team's recommendation was to develop an integrated, systematic approach to quality through integrated planning and implementation processes, an empowered work force supported by continual learning and data-based decisions, and a reward system to encourage appropriate behaviors. Through a program developed with outside consultants in 1992, TQWS was introduced.

Based on open systems and sociotechnical systems theory, TQWS was designed to integrate and align all organizational systems with the company's strategy. Daily work decisions, project selection, and training efforts were determined according to whether or not they fit with organizational priorities. TQWS blended previous SPC,

continual improvement, and empowerment training within the context of the work systems. Underlying assumptions were that a high performing work system would (1) create a learning environment, motivate people through job design, and encourage interdependence through teamwork; (2) make people accountable for outcomes; and (3) recognize the dynamics of systemic work systems.

In the manufacturing division, with its own training staff, a 14-week training course was introduced that was "interactive with on-the-job experiences." A whole work team is involved in the training together, making it "an organization[al] intervention that's holistic"

In summary, during the 15 years of TQM implementation at Eastman, TQM concepts were evolving from a statistical process control orientation to a strategic orientation. As one interviewee reflected, over time, taking care of "traditional product quality was not the only quality focus; it [also addressed] the quality of systems and processes and people all across the whole company." TQM implementation, originally facilitated by MES staff who responded to quality problems emanating from manufacturing, became the responsibility of all managers and team leaders. As good facilitators were identified and as teams learned to diagnose their own group processes, MES facilitation support diminished. TD staff provided, and continues to provide,

training in quality methods, including facilitation skills, to employees

#### Effects of Quality Management on the ECC Training Department

TQM technology for Eastman was developed in the management engineering services department. Their staff used facilitation skills to teach teams across the company to improve processes through teaching, coaching, and TQM and organizational development interventions. Demand for these skills became so heavy that the training department, in collaboration with MES, began to standardize some of the TQM methodologies and interventions for classroom training. Training personnel handled volume TQM education, while MES continued to work individually with teams.

The training department, during its massive quality training activities, initially neglected its own internal quality initiatives. By the time the training department paid attention to its own quality improvement needs, the staff was basically ready. Resistance was minimal. "After all, this was what they had been teaching" in TQM courses. Process improvement teams, using the TQM model (Appendix A), were formed to examine departmental processes based on customer needs. No facilitators external to the teams were used. Teams established baseline measurements. They then determined areas where improvement was needed. Each team developed mission, vision, principles and values statements.

They checked their decisions with the team charter and company objectives to insure alignment with company strategies.

The TD, as part of and in collaboration with the Human Resources Division, developed a mission statement, a "vision of excellence," 16 guiding principles, and a list of values to guide decision-making. These were clearly aligned with the organization's mission statement and policies.

Structural changes in the department occurred in the fall of 1995. Several MES staff members were transferred to TD, including the new TD head. The department reorganized into a matrix structure to better respond to internal customer needs. Four functional sets of teams were created: customer focus teams to conduct needs assessments with the customers; design and development teams to select appropriate content and training methodologies; administrative support teams; and teams to deliver training. The four primary customer groups which the training department supports are: technical and business; maintenance and mechanical; operator and laboratory; and leadership and management.

Team facilitators, internal to the department, were assigned to work with training department teams to improve effectiveness of team meetings and processes. Their role was to train other departmental members with little experience in facilitation and consulting. One of the more

advanced trainers was given the "stewardship" role for training facilitators in advanced OD techniques.

Members of the training department now serve as facilitators, trainers of facilitators, and TQM trainers. Former MES staff facilitators now concentrate on consulting on matters of organizational and business strategy issues rather than on TQM facilitation. Training staff, located in the manufacturing division but not part of the corporate training department, now facilitate high performance work teams that are empowered to become self managed as their skills and capabilities develop. It is the responsibility of these TED trainers to help develop these skills and capabilities.

The primary difference between the organization today and when it began TQM implementation is that throughout the company people have been given the knowledge, skills, and authority to take responsibility for their actions and their contributions as opposed to being told what to do, how to do it, and when to do it.

## CHAPTER 5

### EAST TENNESSEE STATE UNIVERSITY'S CONTINUOUS IMPROVEMENT: THE BEGINNING OF THE JOURNEY

East Tennessee State University (ETSU), a regional institution of higher education with approximately 11,500 students, is also nestled in the hills of Northeast Tennessee about 25 miles from the Eastman site. Supporting nine schools and colleges are approximately 650 full-time faculty and 1,080 staff.

ETSU's quality movement was initiated by the dean of the College of Applied Science and Technology (CAST) in 1992. The College has more than 1,000 undergraduate and graduate majors, and 68 faculty and staff. Success of the effort in CAST was, in part, measured by receipt of the Tennessee Quality Award in 1993, 1994, and 1995 (Level two of four levels). The following chronology describes the implementation process at ETSU from early 1992 through the end of 1995. A total quality management subject matter expert from Eastman Chemical Company facilitated the initial TQM implementation in the college, A second facilitator, on loan from Eastman's training department, participated during the second year of implementation. When the awareness training began for the university as a

collaboration with ETSU's strategic planning committee and president's council. Due to Eastman facilitator involvement, ETSU benefited from trial-and-error learnings that occurred in Eastman's implementation process. However, with its differentiated purpose and culture, ETSU had its own unique set of learnings, some of which are still to be determined.

#### Historical Perspective

Quality implementation at ETSU began in the College of Applied Science and Technology. In 1991, the dean, because of his interest in quality management issues and the college's alignment with manufacturing and industrial technology, became convinced there were opportunities in education where TQM concepts would be effective. He discussed his desire to involve the college and university in TQM with the university's president. They mutually concluded that CAST would be a good place to pilot the effort. To introduce CAST faculty and staff to TQM concepts and methodologies, the dean invited a facilitator, a certified quality engineer from Eastman's corporate quality division, to make a presentation to CAST department chairs. At the end of the session, participants voted to implement TQM within the college. The university president also committed his support.

A change in university leadership occurred a short time after the initial meeting. The following interim president agreed to continue endorsement of the pilot efforts. The second interim president, later appointed president, was familiar with quality improvement concepts in general, and he readily agreed to continue supporting CAST's TQM efforts. The president's knowledge of quality concepts stemmed from his long-term affiliation with the Tennessee Board of Regents, an organization which had loosely endorsed quality management since the 1980s.

CAST department chairs, faculty members of its existing teaching and learning committee, student representatives from each department, and a representative of the CAST clerical staff were appointed as the initial group to study TQM and to begin its implementation with a project or projects. The name of the committee changed several times: "When we first started it, we called it total quality, TQM; and then TQE--TQM, standing for total quality in management, and TQE for total quality in education. Then, at some point, we changed it to continuous improvement program. We are [now] calling it the continuous improvement council (CIC) or continuous improvement team (CIT)."

In the initial March 1992 training session, the Eastman facilitator described his role as a "trail guide" and "catalyst" to help the group implement changes. The TQM model (Appendix A) which he proposed meant working on three



organizational systems: technical (teaching, research, and service); social (communication, relationships, utilizing strengths, and minimizing weaknesses); and management processes (identification and improvement of the processes). The model was explained as being customer focused and based on a systematic strategic approach to continuous performance improvement. The group watched a PBS video entitled, "In Search of Excellence," with author and management consultant, Tom Peters, then discussed its observations of characteristics of excellent companies. The facilitator summarized the group's list by noting that the common element among successful companies was the obsession with focusing on their customers' needs and issues.

At the second meeting, participants were asked to consider a systems model for CAST and, using brainstorming techniques, to identify their suppliers, inputs, processes, outputs, and customers (SIPOC). The designated outputs resulted in identification of traditional university goals-- that is, educated persons, service, and research findings. Customers were grouped as students, employers, society, foundations and agencies, and colleagues. The final CAST SIPOC version is shown in Appendix B.

In April 1992, the team developed a revised mission statement. After much discussion, the mission statement changed from:

The mission of the College of Applied Science and Technology is to prepare quality graduates in the applied sciences for world community service and leadership in a technological society.

to:

**Mission Statement:** To prepare educated persons who function constructively in the Applied Sciences for global service and leadership in a technological society and to add to the body of knowledge in our disciplines using our expertise to the benefit of the university's several publics.

In May 1992, the team, using an affinity diagram to pool and categorize ideas, developed vision statements in five areas that were identified as important to the school. The five areas selected for developing vision statements were communication (an electronic paperless system); equipment (state-of-the art computer laboratories, video imaging, and multi-media technology); faculty development (promotion and support of faculty growth); resources (an Institute for Applied Technology building for teaching, research, and service in the technologies); and teaching and learning (reflecting the committed pupil-mentor partnership, creative teaching, and prepared students). In addition, statements were developed to clarify the team's five selected values (honesty, integrity, and trust; communications; continued improvement; commitment; and

individual well being) under which they felt the college should operate.

Although the CIC team discussed numerous possible improvement projects, the university-wide problem of retention became the focus of attention. The dean and at least one other chair encouraged the team to consider working on student advisement, recruitment, orientation, and student retention processes for CAST as its first CI project. CIC members concurred.

During the first fall semester meeting, 1992, the Eastman facilitator again reviewed the 10-step model, now referred to as the total quality education (TQE) model. He also presented a brief overview of the need for statistical process control and the need for understanding process variation attributed to common causes and special causes. The team then viewed a Joel Barker video on changing paradigms and discussed key points pertaining to the university's culture and climate.

With advisement, recruitment, and retention selected as the first improvement project, the team met in "off-line" subgroups to pinpoint critical behaviors and current problems related to advisement in each department. The process was subsequently flow charted. The team also developed an "ideal" advisement flow chart. The flow chart brought to the surface points where early interventions in the advisement process should occur, and it highlighted the

need for several interdepartmental efforts that were associated with advisement. Important to the early advisement process were recruitment and orientation activities.

At the November 1992 meeting, participants discussed what they liked about the ideal flow chart, as well as their concerns. Potential measurements to assess current quality levels were identified, and a subteam was appointed to correlate measurements with different points in the process. Cross-functional members of the university's admissions and registrar's offices were asked to become involved in the project. A recruitment-advisement-retention flow chart was devised and corresponding measures on process, retention, and survey information were identified.

An action plan was developed by the recruitment, advisement, and retention team, also known as the recruitment mentoring team, with the input of the entire continuous improvement council. The plan included (1) a marketing plan to identify potential ETSU and CAST applicants and to develop follow-up interventions through faculty and student letters and personal contacts, (2) the assignment of mentor-advisors to work with freshmen and new transfer students, (3) involvement in freshmen and other orientation activities, (4) types of data to collect and analyze in order to evaluate activities following orientation and future interventions, (5) identification of

actions and measures for ongoing advisement through the senior year.

Enrollment data for baseline measurements were collected by the admissions office and shared with CAST. The information was segmented by sequential years; geographic distribution (state and county); freshmen and total headcount; enrollment trends based on number of applications received, accepted, and enrolled; feeder high schools; projected high school graduates in Tennessee and Virginia; and college transfer trends.

In addition to the recruitment mentoring team, the CIC established three teams to respectively address concerns of student co-op and internship opportunities, CI courses, graduate placement, and the need for increased external funding. The instructional team's purpose was to improve the quality of CAST course offerings and classroom instructional content. The industrial relations, placement, and co-op team worked with industry to increase cooperative education and placement opportunities. The friendraising-fundraising team was responsible for increasing external funds.

As a result of CI efforts at the college level, CAST applied for, and was awarded, Level 2 achievement of the Tennessee Quality Award. The category was established to identify an intermediate level of organizations which had progressed to a point of potential serious commitment and

had demonstrated how they applied the seven categories of the Malcolm Baldrige National Quality Award. After an on-site visit and evaluation by three quality experts, the 1993 Tennessee Quality Award Feedback Report cited the following strengths:

- (1) active leadership within CAST and support from university leadership were demonstrated;
- (2) appropriate data collection and analyses of student recruitment and advisement were completed;
- (3) CAST short-term action plans were integrated with the university's long-term plans;
- (4) commitment by faculty was demonstrated in the review process, and adjusted workloads and recognition of mentoring as a tenure asset were built in the reward system;
- (5) the initial step of flow charting educational processes was completed and some of the key indicators of operational performance were identified; and
- (6) both short- and long-term plans to support the deployment of quality initiatives were devised.

The award committee also cited recommendations for improvement:

- (1) integrate activities and clarify roles and expectations for all CAST administrators;
- (2) address other customer issues in addition to student-as-customer issues;

- (3) pay attention to suppliers; and
- (4) establish a systematic, fact-based employee development program to expand the ability to implement quality initiatives.

In 1994, efforts by all four CIC teams were activated. The recruitment and mentoring team implemented its action plan. Advisor job descriptions were developed and research was conducted on effective advisement techniques. A request to central administration was submitted to extend certain faculty appointments to 12 months rather than nine months in order to meet calendar advisement schedules, including freshmen orientation held over the summer months. The university committed \$30,000 to support advisement efforts. Four advisors were trained on advisory skills and freshmen and transfer student mentoring. Mentors received instructional load credit. Workloads were adjusted to reflect mentoring as direct instructional support and as a recognized component of the tenure and promotion process.

A CAST student satisfaction survey was conducted following freshmen orientation. Follow-up phone calls to freshmen not returning for the spring semester were conducted and reported. Student information system terminals, formerly available only at a central registration site, were set up in CAST facilities to allow advisors to enroll students while advising. CAST data was benchmarked against university data. The university office of

admissions and office of institutional research collected and shared information with the CIC, which in turn shared it with the teams. Benchmarking efforts with other colleges and universities were also initiated.

In 1994, CAST again applied for, and was awarded, the Tennessee Quality Award for Level 2, demonstrating quality commitment. Remarks cited for each category were:

(1) Leadership: demonstrated strong leadership to develop CAST into a role model for the university; employees understood CAST's customer focus and quality values; a process to evaluate leadership's personal effectiveness is needed.

(2) Information and Analysis: data collection and benchmarking were used to evaluate processes, although the university structure and dependence on other departments often makes data collection difficult; there was a need to use operational and financial performance data for planning and action.

(3) Strategic Quality Planning: demonstrated integration with the university's plans; dean's participation on university committees was recognized; CAST needed to develop opportunities to better link the planning process to development of quality, customer and operational goals.

(4) Human Resource Planning and Management: members had the necessary skills to achieve goals; all



employees were eligible for process improvement activities and had the opportunity to initiate activities themselves; CAST needed to develop opportunities measurements and establish trends in training effectiveness, employee performance and recognition, and other employee well-being factors.

(5) Management of Process Quality: student retention and improving curricula were well supported by CI efforts; student mentoring efforts were acknowledged; CAST needed to develop a systematic process for interaction with university support services.

(6) Quality and Operational Results: although measurement is a long cycle, early results in enrollment, retention, and orientation were positive; early benchmarking activities were noted; the college should document the use of operational, business and support services, and supplier data.

(7) Customer Focus and Satisfaction: sought input from many sources; service standards were acknowledged as the accreditation requirements; student feedback and evaluations were used effectively, although trends were not yet established due to long-cycle data collection; CAST needed to develop "in-process" data for quicker feedback.

In 1995, a CAST graduate student who was studying quality management was asked to manage collection and

analysis of statistics for CAST retention data, administer training for instruction-improvement teams, teach students basic team-building skills, and generally support the CIC. He worked with voluntary junior and senior students to assist in continuous improvement efforts. Students designed and administered an "in process" student satisfaction survey for CAST courses, analyzed the data, then presented results to the class and separately to the instructor. This process was completed with approximately five volunteer instructors each semester. It helped students set their expectations, accommodate different learning styles, and provide periodic feedback to the instructor. Students were also involved in a team-building seminar facilitated by the graduate assistant. A system for student mentors to aid in retention efforts was developed, and an interactive role-playing training session for initial calls and follow-up for potential students was developed.

In 1995, for the third consecutive year, CAST was awarded Level 2 status for the Tennessee Quality Award. The feedback report cited numerous strengths related to the Baldrige criteria, especially in the areas of leadership, human resource development, and process management efforts directed toward student retention. Several major gaps were identified in deployment of CI efforts. There were:

- (1) need for evidence of how learned information is used to make improvements,

- (2) integration of public responsibilities into CAST quality values and practices,
- (3) demonstration of benchmarking as part of the improvement process,
- (4) analysis of how major customer, market, quality, operational performance, and financial outputs and outcomes are reviewed and used in decision-making,
- (5) descriptions of the competitive environment for supplier inputs (high school students) and indirect customer outputs (employer satisfaction) in the strategic plan,
- (6) designation of key project measures and indicators of each college's performance,
- (7) description of how new educational products and services are designed, evaluated, improved, and introduced,
- (8) addition of cycle time, cost or other operational performance factors impacted by improvements,
- (9) measurements of supplier performance results, and
- (10) an indication of how needs of different customers are segmented and addressed, both near-term and long-term.

The CAST dean served on the university-wide strategic planning committee since 1991. He was instrumental in introducing TQM and CI concepts to the committee and to other key influencers as a possible means to increase institutional

effectiveness. With the president's endorsement, the stage was set to introduce continuous improvement management into the university system.

#### University-wide Involvement in Continuous Improvement

The CAST dean, the president of the university senate, and a former CAST department chair who was appointed executive assistant to ETSU's president were instrumental in establishing an Eastman-hosted, two-day quality seminar in December 1994. ETSU attendees at the Eastman headquarters site were members of the president's council and strategic planning committee. Tennessee Eastman Division's president presented an overview of Eastman's quality journey. Eastman employees representing senior management and work teams discussed their successes and learnings as a result of ECC's quality management implementation. Three key components of the seminar were the explanation of the 10-step TQM model, the importance of TQM behavior reinforcement, and an exercise in which participants identified ETSU's suppliers, inputs, processes, outputs, and customers (the SIPOC model). Facilitators also discussed possible TQM applications for the university system. An offer was made by an Eastman executive to provide assistance to ETSU if they chose to follow a quality management philosophy. The offer was accepted.

In June 1995, the president's council and strategic planning committee began the first of a series of workshops on CI. An ETSU internal steering committee, serving as resources and collaborators to the Eastman facilitator, was comprised of three ETSU people familiar with CI: the executive assistant to the president, the CAST dean, and a senior faculty member with a joint appointment in CAST and the College of Business, who teaches quality courses and who is a judge for the annual Tennessee Quality Award.

The sequence of workshop events, led by the external facilitator, essentially paralleled the CAST experience during the visioning, mission, and values-development stages. In June and July 1995, the 40-member group, representing all segments of the university, met three times. Smaller off-line teams met frequently to work on assigned tasks between meetings. By the end of summer, the teams reached a consensus on ETSU's mission, vision, and values statements and a list of strategic goals.

The East Tennessee State University vision statement in its final reading was "to be the university of choice in the state and region." The mission statement was four-fold:

- (1) educate students to become responsible, enlightened, and productive citizens;
- (2) conduct scholarship that improves the human condition;

(3) serve business, education, government, health care systems, community; and

(4) enhance the cultural environment of the region.

The values that the ETSU president's council and strategic planning committee felt were important to guide the management of the university were stated as:

ETSU pursues its mission through a student-centered community of learning reflecting high standards and promoting a balance of liberal arts and professional preparation, CI, and based on core values where:

(1) people come first, are treated with dignity and respect, and are encouraged to achieve their full potential;

(2) relationships are built on honesty, integrity, and trust;

(3) diversity of people and thought is respected;

(4) excellence is achieved through teamwork, leadership, creativity, and a strong work ethic;

(5) efficiency is achieved through wise use of human and financial resources; and

(6) commitment to intellectual achievement is embraced.

In July through October 1995, the senior management team, after discussions about aligning ETSU's strategic plan with the Tennessee Board of Regents requirements, identified six key success factors that they felt the university should achieve. Those six factors included the four components of

the mission statement (educate students; conduct scholarship; serve business, education, government, health care systems and community; and enhance the cultural environment), as well as the two additional components of improved stewardship and institutional effectiveness, and improved resource acquisition (human and financial resources). Through a series of small group meetings during workshops, off-line meetings between workshops, and large meetings, the team also identified ten key processes critical to the functioning of the university. Those ten processes and corresponding subprocesses were:

(1) teaching/learning (curriculum development, teaching, learning, academic support for instruction, student life program development, professional development, faculty evaluation and continuing studies).

(2) enrollment management (recruiting/marketing, admissions, financial aid, orientation, advisement, registration, scheduling, and housing).

(3) enhancement of the cultural environment (offering cultural enrichment activities on and off campus, promoting appreciation and preservation of the Appalachian culture, teaching and advocating the value of cultural diversity, international studies and foreign travel).

(4) strategic planning, development, and budgeting (TBR five-year plan, ETSU strategic plan, university facility master plan and assessment of outcomes).

(5) resource acquisition, development, management, and accountability (fiscal, human, and physical resources).

(6) university management, governance (communications, data management, internal governance and external governance).

(7) research, scholarship and creative activity.

(8) service/community outreach (community service, partnerships with foreign universities and alumni relations/services).

(9) developing/maintaining learning environment (student services, career development and placement, special programs, and intercollegiate athletics).

(10) communicating the university image (media relations, campus publications, audiovisual productions, community relations, marketing and promotion, internal communication, and the radio station).

Preliminary measurements for each of the ten key processes were determined and refined over several meetings. Responsibility for each of the processes and subprocesses was assigned by university position, in three categories: administrative responsibility, primary action responsibility, and data steward responsibility. The



initial key processes matrix was completed in October 1995 with the understanding that refinement of process measures, benchmarks, and gaps would be CI tasks.

The team then identified strategic issues and major improvement opportunities for the university. Based on the president's message to the faculty and the work done by the team, the team also identified strategic goals for 1996 that aligned with the six success factors identified earlier. Evidence of achievement was defined in broad terms. The strategic goals for 1995-2000 were cited as:

(1) educate students to enable them to become responsible, enlightened and productive citizens as evidenced by annual improvement in performance measures to be determined by individual units;

(2) conduct scholarship that improves the human condition as evidenced by annual increases in grants and contracts and the quality and quantity of scholarly works;

(3) serve business, education, government, health care systems and community as evidenced by annual increases in quality, variety, and number of persons and organizations served;

(4) enhance the cultural environment of the region as evidenced by annual increases in the quality and diversity of cultural offerings and public participation;

- (5) improve stewardship and institutional effectiveness as evidenced by linkages between planning, budgeting and outcomes assessment; removal of policy barriers to effective management, and appropriate reallocation of existing resources;
- (6) provide resources to meet institutional needs as evidenced by outcomes assessment.

The key processes and other matters identified by the university president that would receive immediate attention were enrollment management (retention), increasing financial resources, accreditation issues related to instructional processes, equity issues related to employees, and resource acquisition.

The ETSU meeting at which this study ended called for reports from five groups on a "university-wide kickoff" and deployment of continual improvement. The training and education group recommended that (1) a five-day "train-the-trainer" workshop be conducted for ETSU facilitators on the 10-step model, TQM tools, and team building, (2) information sessions about CI purposes and progress be scheduled periodically at various locations and times across campus, (3) team leaders be provided with tools and processes used in CI, (4) potential groups for training be identified and (5) tangible rewards, including university credit and continuing education credit, be granted for participation.

The university-kickoff team recommended that at a March 1996 meeting for department chairs and unit level managers, the importance of CI in higher education, ETSU's current status, and the importance of campus leadership involvement be discussed. Furthermore, as projects are formed and teams are identified, the president of the university, division vice presidents, related administrators will meet with team members to demonstrate their endorsement of the team and its efforts.

Appropriate public relations opportunities will be taken to recognize team efforts. The feedback group's responsibility was to determine ways in which CI projects progress could be communicated to others. In addition to space in the ETSU Accent and other university publications, electronic mail and bulletin boards will be used to communicate progress. Other reinforcing opportunities, such as plaques, laminated newspaper clippings, and lunch with the president were recommended. The reinforcement group recommended a plan of action in which positive behaviors of individual team members and improvement teams will be reinforced. The plan includes celebrations, recognition at the vice president level and above, letters in personnel files, and other encouragement techniques as they are identified.

The team responsible for CI measures was reluctant to use existing performance standards tied to higher education

because they are "simplistic 'bean counting' measures that may not always be valid indicators of the underlying purpose of higher education and education processes." It recommended that faculty and staff participate in the development and identification of measures that they can support.

As the 40-member management team planned continuous improvement deployment, the facilitator stressed the fact that the CI process must be "constantly and consistently championed" by the university's leadership and management team. Faculty and staff must view those who serve as change catalysts as competent, credible, and effective. Therefore, start-up projects should be carefully selected in order to achieve early successes. Considerable time would be needed to coach teams during the transition. The ultimate objective was to institutionalize CI into the university culture.

Continuous improvement efforts at ETSU had not been implemented beyond the senior administration strategic planning process. Therefore, there was no evidence of change in the purpose, culture, structure, helpful mechanisms, or reward system of the institution. It appears that there could be some movement in changing relationships as project teams are identified and work together. The leadership is obviously committed to making this long-term strategy work. The study at ETSU concluded April 30, 1996.

## CHAPTER 6

### ORGANIZATIONAL AND FACILITATOR ANALYSIS

TQM is a change process that requires a transformation of the organization's culture, structure, and systems. It is driven by a focus on the customer. Bounds et al. (1994) argued that in order for transformational change to occur, activities must be linked to core strategies of the organization. TQM at Eastman Chemical Company and CI at East Tennessee State University are strategic, planned change programs in two diverse organizations. It is the purpose of this chapter to examine the context in which TQM facilitation occurred. The first section is an analysis of the international chemical company and the regional university based on Weisbord's six-box model for organizational diagnosis (Weisbord, 1976). The six variables of the model are: purpose, structure, rewards, helpful mechanisms, relationships, and leadership of the formal and informal organizations. Also included in this section is an analysis of the culture of each organization. It is limited to the effects of TQM implementation on the culture as perceived by the interviewees. The second section is an analysis of the organizational involvement stage as determined by Ackerman (1975). The final section is an examination of characteristics and skills identified

by facilitators and others as important to the facilitation process.

### Analysis of Organizational Variables

#### Purpose

An organization's purpose is its reason for existence. It answers the question, what business are we in. The purpose is a combination of determining what the organization produces that society values and will pay for, how clear the goals are to both the organizational members and consumers, and to what extent people understand and support the organization's purposes (Weisbord, 1976). As organizations find themselves in increasingly complex and turbulent environments, strategic planning is used to study the existing business and to create the organization's future. Traditionally, the first step in strategic planning is to define the organization's purpose in terms of management's vision, philosophy, values, and goals for meeting specified customer needs. In an emerging TQM paradigm, managers base strategy on continuously improving customer value (Bounds et al. 1994). Strategic activities are used to determine the purposes of the two organizations studied. Their respective purposes are quite diverse.

Making a profit is clearly the primary purpose of Eastman. The company produces more than 300 industrial chemicals, health and nutrition products, three types of

plastics, and two basic fibers that are marketed domestically. To accomplish its goals, ECC employs more than 17,000 people worldwide, with nearly 1,800 scientists, engineers, laboratory workers, and support personnel. Activities for each of these products and for new products are based on the organization's strategic intent. East Tennessee State University serves the public with less measurable goals. It confers approximately 1,900 degrees and certificates each year for those who have met the requirements of their respective schools and colleges. The university employs approximately 1,700 faculty and staff to accommodate approximately 11,500 enrolled students.

Purpose at Eastman. By examining the vision and mission statements and goals of the two organizations, differences become noticeable. ECC's corporate vision and mission statements are succinct. The vision is "to be the world's preferred chemical company." The mission has three components: (1) exceed customer expectations; (2) create superior value for customers, employees, investors, suppliers, and publics; and (3) adhere to quality policy, values, and principles important to the company. The vision and mission are simple and focused. It would not be difficult for anyone in the company to recite and understand them. They assume that customer expectations will be known and will, in fact, be exceeded. Although superior value may

not be easily measured, individual stakeholder groups are specifically identified, thus leaving no doubt that there are multiple publics to which employees must provide superior value. The customer, however, is listed first. Finally, operational guidelines are specified: adhere to quality policy, values, and principles. In essence, the time that teams spent in developing their own mission, vision, and values statements, which were aligned with the corporate statements, are used to guide decision-making. The visibility and the degree to which employees referred to their vision, mission, and values statements during the study was significant. Corporate, unit, and team vision, mission, and values statements were visibly posted in most offices and in formal and informal group gathering places. Almost all of the interviewees made some reference to them, without prompting, during the interview process.

Purpose at ETSU. ETSU's vision statement is "to become the university of choice in the state and region." Its purpose, as defined in its mission statement, is "to educate students to become responsible, enlightened, and productive citizens; conduct scholarship that improves the human condition; serve business, education, government, health care systems, community; and enhance the cultural environment of the region." These vision and mission statements identify broad purposes and complex goals. Words



and terms like "enlightened," "improves human condition," "serve and enhance the cultural environment" have the potential for boundless interpretations. Output is not easily measured or evaluated.

Comparison of Purposes. The long-term strategy at ECC is to build and grow, whereas ETSU has chosen a hold-and-maintain strategy. To grow, ECC's strategy is to expand its international operations to be the world's preferred chemical company. ETSU's mission implies improving existing practices and market position. The institution has selected a niche that already exists, a regional university, and is seeking to better its market position.

ECC's goals are such that they have a clear fit with what customers expect and will buy. Goals are clear and well articulated for both employees and customers. For the most part, goals are understood and supported. Organizational goals are unifying and are achieved through high interdependence among the organization's units.

ETSU's goals, after CI planning activities, were condensed and clarified as compared with previously stated goals provided to the Tennessee Board of Regents. However, each academic department chooses how to achieve these broad goals, thereby keeping interdependence among units low. Goal clarity may be diffused because of the wide spectrum of possibilities that enable various units to meet

organizational goals without the concentration of the focused goals found at Eastman. At this time, it is unclear how ETSU will translate priorities into programs, projects, or services across academic units.

### Structure

Organizational structures can often be a barrier to system improvement and strategic change. "Many quality problems can be traced to overspecialization and the resulting suboptimization by departments or functions. An organization's structure must resolve the inherent conflict between the need for specialization at the functional level and the need for integration across the business. . . . However, when managers are rewarded for expanding staff or cutting costs and employees carry out parochial policies, formal structure often gets in the way of process integration across functions" (Bounds et al., 1994, pp. 245-246).

Organizational Structure at Eastman. Eastman, recognizing that the structure should fit the strategy, redesigned its organizational chart to support a TQM environment. Prior to TQM, its structure was a traditional hierarchical, functional organization typical of manufacturing organizations. In order to position itself to meet the strategic intent of rapid globalization, aggressive sales revenue growth, and superior return on assets, senior

management determined that a more responsive, team-oriented organizational structure was needed. It changed the formal structure from a highly differentiated functional organization to a team-driven matrix structure, and finally to a horizontal corporation (Figure 3, page 117). At the center of the structure is the president's office, with spokes representing subsystems of the organization: (1) the industrial business group, (2) specialty business groups, (3) worldwide business support group, (4) core competency teams, (5) functional management teams, and (6) administration and staff. ECC organized around processes and systems, flattened its hierarchy, used teams as central organizational building blocks, let customers drive performance, maintained a high degree of supplier and customer contact, and trained employees to make their own analyses and decisions.

Jokingly referred to as the "pepperoni pizza chart," the depiction of the new structure eliminated hierarchical levels and supported teams clustered among common processes. The new structure was aligned with ECC's quality strategy and the interdependence of strategy and structure was supported by the changed culture.

Organizational Structure at ETSU. ETSU has not made any changes in its structure, nor does there appear to be discussions at this time about reorganization. The institution has highly differentiated functional units in both academic and

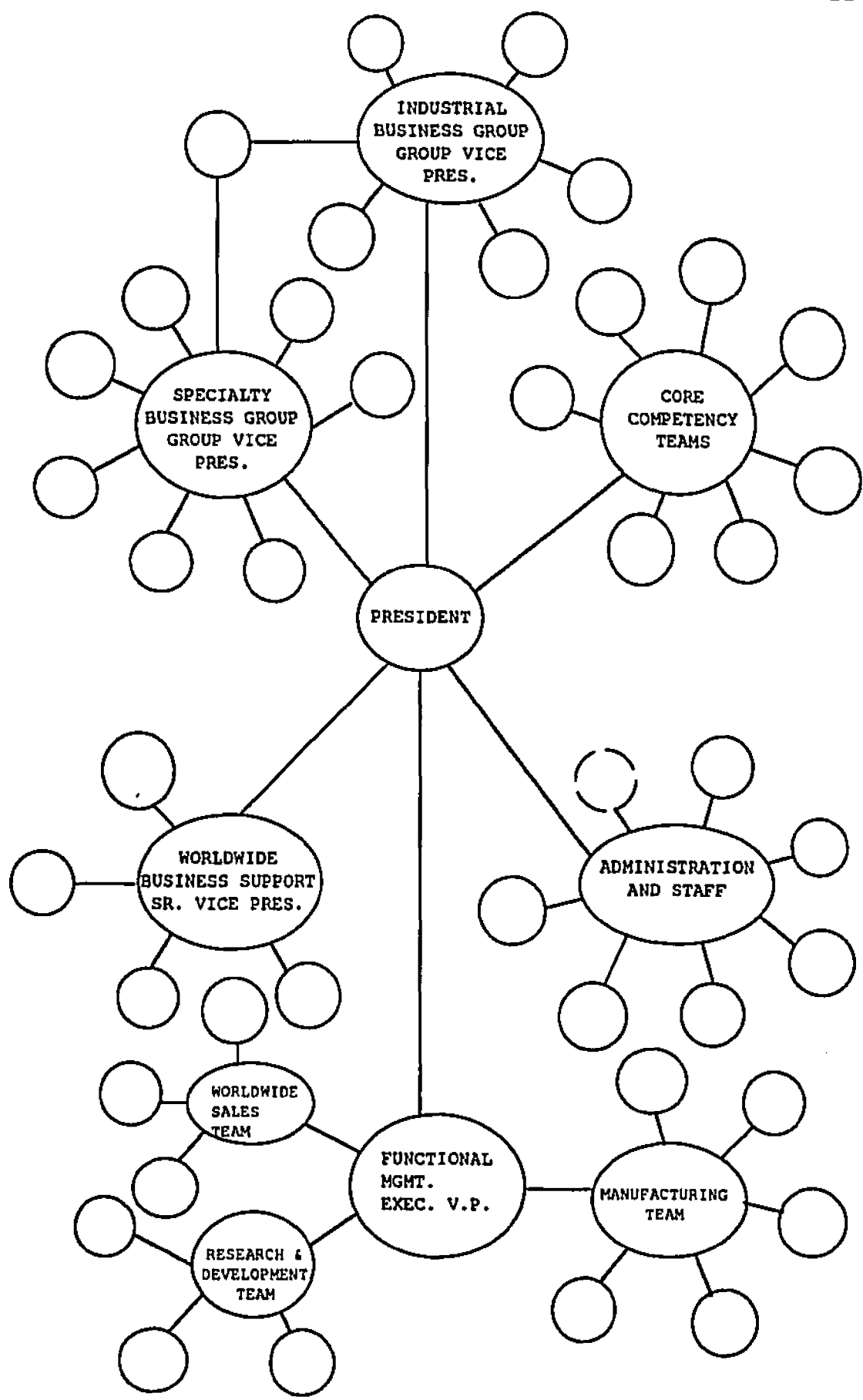


Figure 1. Eastman Chemical Company organizational chart showing horizontal corporation, 1995

administrative areas. Committee structures are used to make recommendations on various policies; most university-level decisions are centralized. Rules and procedures dominate decisions, although there is some evidence through early TQM projects that the rules may be subject to change. Initial university-wide TQM projects have been limited to administrative functions, such as changes in payroll. There appears to be little discussion about integrating academic processes across functional lines either within or among the university's schools and colleges. Academic units and their support staffs remain task independent at the present time.

#### Rewards

The implications of reward systems are important to change processes. As TQM is implemented, incentives for behavioral change should be congruent with the system change. Incentives may be comprised of explicit rewards, such as salaries, wages, and bonuses; and implicit rewards, which can be divided into two categories. Natural rewards are intrinsic rewards people receive from the job or task itself; social rewards include acknowledgment from others which may have no cost attached, such as words of praise, or small costs, such as taking people to lunch to acknowledge their accomplishments. Weisbord (1976) noted that a reward system that pays off in fringe benefits and salary alone is inadequate unless people also value their work and see in it

a chance to grow. Goodstein (1978) looked at other reward factors. He noted that success in the public sector is often measured by who can build major empires instead of how well they are managed, whereas the smaller, better-managed empire is rewarded in the private sector.

Rewards at Eastman. ECC altered its standard performance appraisal procedure. Although it has not eliminated individual performance appraisals as suggested by Deming, it has moved from a seven-scale performance appraisal system to three categories: unacceptable, acceptable, and outstanding contributions. Evaluations include team appraisals. Recognition is given for efficient use of resources, as well as for meeting and achieving goals. Team performance is usually rewarded with natural rewards (job redesigns in which individuals feel their work has value) and social or symbolic rewards, where team accomplishments are recognized by celebrations, including coffees, impromptu parties, plaques and mementos appropriate to the occasion. Team performance is evaluated on achieving goals, both in productivity performance and efficient use of resources. In the manufacturing division, programs are currently being developed to compensate trained team members of self-directed teams based on level of knowledge and skills learned.

Rewards at ETSU. ETSU, in part because it is a public sector institution, is limited in its ability to change the formal reward system. Salary increases usually are not tied to performance. No reward is tied to efficient use of resources or to risk taking. Some administrators view efficiency as poor management, with the possibility that budgets will not be refunded at the same level in future fiscal years if any funds remain in accounts at the end of the year.

Pay levels and raises, for the most part, are determined by outside agencies. Administrator and staff evaluations are usually completed by an immediate supervisor. Evaluations for faculty are primarily conducted through self-reporting, goal setting, and measurement against individually determined plans. Major faculty recognition is tied to promotion and tenure. One interviewee commented that faculty are rewarded "by the profession nationally as opposed to institutionally. . . . That's a very different environment [than one at Eastman] where the primary reward is being recognized within a given organization."

Extrinsic and intrinsic rewards for teaching and research and their importance to individual units add complexity to the issues of motivation and recognition. In CI meetings, members of the president's council and strategic planning committee periodically discussed,

sometimes heatedly, the fact that constraints on extrinsic rewards would prevent change in behavior to support a CI environment. Moreover, it was argued that some academic units place more emphasis on the importance of teaching, some on research. Some individuals find teaching psychologically rewarding; some find research psychologically rewarding. In addition, the committee felt that faculty would not appreciate "theme" oriented achievement recognition programs, such as scoreboards administered at Eastman. These themes, it was thought, would be perceived as "hokey."

Two subcommittees were appointed--one to address how to appropriately provide feedback to faculty and staff, and one to consider reinforcement options. Recommendations for feedback included devoting regular space in the faculty and staff newsletter, disseminating information to the media on significant accomplishments, and using electronic mail to communicate progress. As part of the reinforcement plan, liberal use of team and individual photographs, plaques, laminated newspaper clippings, and lunch with the president were recommended as an effort to recognize contributions toward CI. The reinforcement committee also recommended a systematic plan to provide social recognition to those actively involved in CI.



### Helpful Mechanisms

Helpful mechanisms are the many processes and influences that bind the organization together and allow it to function in a positive way. The mechanisms include procedures, policies, meetings, systems, physical facilities, and information, among other things. On the formal level, the processes that Weisbord (1976) included are planning, budgeting, control, and measurement. On the informal level, the primary helpful mechanism is communication. Goodstein (1978) noted that these four formal processes rarely occur at the operational level in public sector organizations because they are politically, rather than rationally, determined. For instance, the public-sector budget typically is based on the previous year. Planning, budgeting, and forecasting have little impact on what happens. Goodstein noted that although there is a plethora of helpful mechanisms in the public sector, there is usually little sense of cohesive organization. Weisbord contended that in an organization that lacks "any rational planning, budgeting, control, or measurement systems . . . no amount of interpersonal or group process work will 'improve' an organization. Second, and worse, is the organization that has budgeting and controls, but no goals that the people doing the work agree are organizationally relevant (for them)" (Weisbord, 1976, p. 444).

Helpful Mechanisms at Eastman. Eastman relied heavily on planning, control, and measurements as the underpinning of its TQM procedures. Manufacturing processes were constantly measured against standards for product quality. Planning and problem-solving were shared in vertical and cross-functional teams.

Communication patterns dramatically changed at ECC. Team-building training helped team members become more trusting; therefore they shared more information with each other. ECC recognized the importance of using supervisors, managers, and team leaders as linking pins with other teams to coordinate activities and strategies, an effort which also enhanced communications. The result was better integration of units and task interdependence. Celebrations, company information through newsletters, e-mail, and closed circuit television kept employees informed of team and company progress. As teams gained capability, they became more autonomous in decision-making, with the qualification that their decisions were within the boundaries to which people affected by the decision agreed. Managers and team leaders were trained to take on coaching roles to develop employees and correct performance problems. The technology components in the manufacturing area required interdependence and coordination among many of the teams. Raw data and information were widely shared throughout the

organization. The organization became less bureaucratic and more customer oriented.

Another helpful mechanism that became evident was the encouragement of organizational learning. That is, many of the facilitators, trainers, and team members readily discussed "key learnings" resulting from projects, methods, and change effort analyses. "Key learnings" was a term used at Eastman to describe what the organizational members learned from their evaluation of processes and events. It was obvious that the findings were the result of discussions within and among teams about what worked, what did not work, and why.

Helpful Mechanisms at ETSU. ETSU traditionally used cross-functional standing and advisory committees and task forces for studies and recommendations related to university-wide issues. Committees within schools and colleges, for the most part, were formed by members within those units. Representation from outside the unit appeared to be rare, with the exception of a few external advisory boards. Information was usually communicated throughout the institution from central administration down through channels of deans and unit heads, who disseminated information based on individual preferences. Coordination of policy issues, planning, and budgeting functions were centrally controlled.

At CAST, following CI training, the process by which CI teams functioned appeared to be somewhat different from interaction observed at university committees. CAST team discussions centered on the customer and processes, and there was a sense of openness and collaboration exhibited among team members.

It appeared that among several faculty members interviewed, the common perception was that the university had adequate planning processes; however, it fell short on implementation of plans. The budgeting system was much like that described by Goodstein in that it is typically based on the previous year. Control mechanisms, especially in the accounting area, were loosened. Unit heads, for instance, were authorized to make purchases under \$500 without centralized bidding and approval.

Measurement criteria varied widely. They tended to be precise in the accounting procedures, loose in the performance appraisal area, and varied across academic areas, in part, because they were based on accreditation standards of different agencies.

### Relationships

Weisbord (1976) and Goodstein (1978) noted that there are three important relationships to consider: interpersonal, between peers or boss-subordinate relationships; intergroup, between units doing different

tasks; and interactive, between the workers and the technology systems or equipment. How successful relationships are will depend upon the degree of interdependence and the quality of relationships. Weisbord felt that the quality of relations between people or units matter more to the organization's performance if the units must work together to achieve results. Another issue related to relationships is the manner in which conflict is handled. In the public sector where professional people interact, Goodstein (1978) noted that these people often deny that conflict exists or they seek compromise solutions rather than using confrontation methods or attempt to work out differences.

Relationships at Eastman. The quality of relationships within Eastman improved with a TQM culture. Interpersonal relationships following TQM training changed. One trainer described the difference as:

Operators [before social skills training] just fought those battles out there on the equipment and in the break shack. They're just working differently [now]. All of a sudden, the operator, instead of just punching in a clock, walking down this path, going into this building, and doing this performance, and then walking out the same path, clocking out the same clock--all of a sudden he's coming down here, and

he's having to go over to a team meeting. All of a sudden, his job has changed. Not from doing just his little part, but to a bigger scope of managing-- having to know more about what's going on and more about how to interact with [other] people--[realizing that what he's] doing affects them.

An example of the boss-subordinate changed relationship was described by a department head:

Now empowerment is focusing us on giving employees the knowledge and the skill to do the job. Hopefully, they've got the desire and [are] accountable for those results. On a personal basis, it's given me the freedom, the courage to be more open and frank with an employee and not worry about sugar coating it. What it's causing us to do is to have higher expectations for our people and the freedom to say, "hey, you're not doing what you need to be doing."

In discussing the differences in sharing information, he added:

There are no secrets, except a few from a legal standpoint. If something happens or is going to be announced in the paper, our corporate communications puts it on the [internal] electronic world the day before. [Give information] to the department heads, and it's posted and cascaded to everybody. So there

is a real decrease in the need to start rumors because there's [an official communication] before you could start a rumor.

Overall, ECC's team-building activities created better relationships within and between groups. The company now relies on team structures to improve processes and accomplish tasks. Cross-functional relationships have become the norm. Supervisors and team members have been trained in communication and conflict management techniques that encourage employees to use effective listening skills, including techniques for expressing empathy and addressing underlying feelings as well as thoughts and ideas.

Interactive relationships, between employees and the technical system were also enhanced. One example was reported in an interview with a reengineering team. Team members were adamant that their team-building training not only led to team development at a faster pace, it changed the way they worked on their system. When the individuals were asked to form a team to take on a major reengineering project, they "got off to a running start simply because they knew how to work in teams and had a lot of experience with the team process." They were given the charge to review the order fulfillment process within Eastman and to design a new one, if necessary, that would be efficient and effective. The project affected 145 subprocesses and 800 people. Information was gathered, analyzed, and rechecked.

Approximately 250 front-line people across product lines and functions were individually asked, "What's wrong with the process? Tell it like it is." What the team found was that although the order fulfillment process existed, it was ineffective and, therefore, not followed. Instead, people responsible for order fulfillment took the initiative and responsibility for getting things done in spite of the existing procedures. Over a one-year period, the team evaluated the existing process and sought input from "hundreds of people." They subsequently designed a new order fulfillment process and presented it to the executive team. The approved order fulfillment design will be driven and evaluated by the process itself. In effect, all products worldwide, from Singapore to Rotterdam, will follow the same standardized process. The recommendation included the construction of a new, multi-million dollar centralized customer order fulfillment building to accommodate teams that are closely linked both to the customer and to the manufacturing and shipping units.

One of the primary outcomes of TQM as it influenced relationships was that ECC employees felt an improvement in their status--that is, in the reduction of power distance with superiors. There was more freedom to act as an equal in interactions and decision-making. Employees also felt free to talk with whoever could help them solve problems



without relying on a rigid hierarchy. In short, they learned to work together more effectively.

Relationships at ETSU. To date, relationships at ETSU were not significantly altered as a result of TQM. At continuous improvement meetings and in personal interviews, a "we-they" attitude continued to prevail between faculty and staff.

Faculty tended to work independently. As one College of Arts and Sciences faculty member described faculty, they are:

people who have their own agendas, who are attracted to the profession because of the freedom it gives them to plan what they do with their time, what they're going to teach in their classes, what kind of activities they're going to be involved with professionally. And the notion that some higher-level administrator would dare to tell them what they can and cannot do with their time--it goes right counter to everything that attracted us to the profession to begin with.

Some support staff who have knowledge of the senior administrator's CI workshops seem to have less skepticism than faculty and, to the degree that they are knowledgeable about the concepts, are, in fact, eager to become involved in working together to make changes. Their expectations are

high but when queried, they do not know where or how changes will occur.

There is little, if any, evidence of change in the manner in which individuals or groups work together, or the way people work with the technology. This may change when teams are assigned and they begin to work on processes or projects that affect multiple departments or units.

Another factor that may influence relationships is the team-building component of facilitator training, the next step in CI deployment. Facilitators will be trained in helping heterogeneous teams understand group processes and enable them to work together effectively. Over time, it is probable that relationships across the institution will improve. The first facilitator workshop is scheduled for September 1996.

### Leadership

Leaders are the catalyst for clarifying and communicating the organization's vision and direction to make it sufficiently compelling for others to follow (Lewis & Smith, 1994). A powerful approach is leadership by example. This includes direct involvement and participation of the leader(s) and commitment of time and resources. Executives who have successfully implemented TQM relate that they initially spent approximately one-third to one-half their time involved in TQM activities (Goetsch & Davis, 1995).

Weisbord noted, however, that leadership is most effective in conjunction with clear and acceptable goals. He stated that there is "growing evidence that interpersonal skills are most functional in unstructured, ambiguous, and/or high-anxiety situations. Although a leader can use such skills to smooth ruffled feathers, the skills contribute little to organizational performance in the absence of goal clarity and goal agreement" (Weisbord, 1976, p. 442).

Leadership at Eastman. ECC's first venture into TQM occurred at a divisional level. The division president and a few senior staff led the change. As successes were noticed, ECC's corporate president quickly took the mantle and spread TQM throughout the remainder of the company. As one ECC employee reflected:

The vision [became one] of bringing the walk and the talk closer together. . . . It's taken a long time to get there; and then [the corporate president] first said "we're going to change the way we manage the company." We didn't have any idea what that meant. And I don't think he fully had the idea of what it meant because he's, as we've said in East Tennessee, he's 'evoluted' that process. It's sort of evolved as he's moved through it. But the first step, then, was to get that belief system in those

managers below it. . . . How do you make that change? So the first thing that [the corporate president] started doing when he moved into that organization was to make that change. So he quit doing things that he wanted other people to do. He quit answering questions or being the person who had to arbitrate the differences. . . . I heard him say once, "You know, I can make those decisions, but I want them to make the decisions." So, that's (bringing) the walk and the talk together.

As the employee continued reflecting, he described the results of an outdoor challenge course the president wanted developed for the senior management team.

And so for two days, then, they were faced with tasks in teams where they had to physically do something. They had to behave against some tasks where the consequence, or the outcome of the task, was immaterial; but the behavior was not. So they started looking at their behaviors . . . and the next day [they] worked on what did we do--what was our real behavior? Plus, that was hard for them--the first time they had done anything like that, but they understood that [the president] meant to do something different.

The president and his executive team have maintained the TQM focus and direction consistently since that time. One interviewee noted that the senior management team continues to meet on TQM issues several hours a week. TQM leadership and commitment were exemplified by leadership by example.

Leadership at ETSU. From a leadership perspective, clear evidence of the university president's commitment to the change effort was demonstrated in many ways. He spoke of his interest in the Eastman experience and TQM at the initial awareness meeting in December 1994 and agreed to using Eastman's expertise in implementing CI at ETSU. Subsequently, he attended almost every CI meeting over an 18-month period. Although he was not a presenter or facilitator at any of the meetings, he fully participated as a team member in subgroups. He let the management group work through its understanding of TQM. Only when the group could not reach a consensus would he specifically express his viewpoint. For example, when long, rambling discussions occurred about identifying the customer, he clearly stated that "the student was the customer." Through small and large group discussions, a dialectic process occurred over the 18 months of awareness training and identifying key processes. The result appears to be that a critical mass of the 40 senior administrators present at those meetings was

reached to carry forward continual improvement deployment strategies. Interviews with several of those administrators, however, suggests that the degree of commitment was varied.

ETSU's president clearly endorsed CI through his presence and participation. Demonstrated commitment to CI and leadership by example among the university's academic and administrative units has yet to be experienced. A senior administrator observed, "moving faculty is like herding cats--and it's not to say that it can't be done. It's just not the way you herd some other animals. I think it is because the multiple directions of the various professions give credence to that [metaphor]."

### Culture

A cultural transformation to TQM or CI philosophy and practices could be viewed as a measure of successful implementation. By definition, culture is the common behavior and internalized codes of conduct that guide employees' actions. Through shared beliefs and values, it provides employees with rules of behavior or accepted norms for conducting operational business. Further, it represents a common perception held by employees. Kotter and Heskett (1992) found that those organizational cultures that value continuous and adaptive changes promote effective economic performance over time. Strong cultures, however, may be

particularly resistant to change, and therefore the change process may take years to implement.

Organizational Culture at Eastman. The existing traditional, parental culture, established over the 75 years of the company's existence, was difficult to break. It was complacent and resistant to change. The Appalachian culture (Weller, 1965) supported the old Eastman environment. Whereas Eastman wanted to move toward a team culture that promoted cooperation and problem-solving capabilities, traditional values of Southern Appalachia ran counter to these goals. Characteristics of the region, according to a TD staff member who studied the culture, included individualism, a resistance to change, reluctance to express differences of opinion, and little planning and self discipline.

One employee described the ECC culture in the 1980s as that of "a follower--being safe, with our engineering mentality of being sure we have it right--not taking risks." Another interviewee stated,

It was a lot tougher to get people to make the transition and be solid examples of success because gravity and inertia [were] around the old system.  
. . . And there's some belief that the cultural dimension has an orientation that's more individualistic, versus team. . . . [We asked] "Is

the leadership capable of transforming that organization?" . . . They have the skills and knowledge to really lead over those barriers. I think within management and our non-management people there's still a lot of reluctance that this is the right thing to do. The default position is what you know works, which is pretty traditional.

Management had to first learn to "walk the walk and talk the talk" before it could get employees to understand that a new culture was emerging. A trainer/facilitator who worked closely with senior management teams reflected how old behaviors worked against Eastman's new growth strategy. Since ECC was a follower of Eastman Kodak, management personnel were accustomed to following the lead of the parent company, not to making their own decisions. One of the primary catalysts to bring together management's "walk and talk" was to clarify their vision. This process involved several iterations over several years. Once solidified, single-page documents were developed that included the new mission, vision, values and principles, and strategic intent. They were published and placed in visible locations throughout the plant. Almost every office had the documents prominently displayed. The documents were discussed at meetings. The belief system of a critical mass of managers became aligned with the vision.



Moving the vision down the organization was another matter. Some managers and supervisors had difficulty accepting empowerment concepts and the changing supervisory role of employee development and coaching rather than directing. It's "good for everyone below us . . . but I manage this department" was the initial reaction.

Initial resistance at the operator level was high. As one TD staff member said:

When you've got an organization that's set in the way that it does things, you've got a bunch of older operators doing things, and now you come in and you stir all that up and expect to make [quality efforts] happen with that same group of people . . . you're going to have to expect some setbacks before you're going to get any benefits. . . . [In] 1985, when we first started rolling out the teams . . . [they] said "I'll guarantee you, I'll never lead a team." That was the mentality they had. "I'm here because I have to be, but you're never going to catch me up here in front of this team." But, at this point in time, and probably for the last four or five years, every one of those people ten years ago that said that, I'll guarantee that on a regular basis they're leading team meetings and think nothing about it.

One of the most commonly cited examples by interviewees when asked what they do differently under TQM, is, "People now ask, where is the data to support your statement?" One interviewee observed,

What I think we do is we're less inclined to take opinion as fact and less inclined to react to a single fact without corroborating data and are more inclined once an action is taken, to check to see "is the desired result occurring?" and "has it occurred?" Not that we're doing a perfect job of that. I think we're still very much guilty of taking action and assuming everything's been fixed and never following up, or following up in a haphazard way.

One trainer indicated that people were having more fun at work. "You're not supposed to have fun at work. That's one of the biggest paradigms that's changed with TQM. People are almost allowed to have fun at work now, just in being humorous and creating a bit of excitement. . . . It's brought my child-within back out again in the workplace."

Several managers estimated that by 1995, about 80% to 85% of the employees were committed to the TQM philosophy. Those that could not adapt to the change were moved to positions where they either worked independently or trained others in their expertise. In some instances, employees took early retirement if they so chose. According to

interviewees, no one became unemployed because of Eastman's quality movement.

Maintaining a TQM environment included reinforcement activities, such as posting charts as a visible sign of performance levels and accomplishments. Social recognition occurred in the form of team celebrations and were especially prevalent in the early years of implementation. Successes were celebrated with small parties, luncheons, and symbolic activities. For example, at one event, old 45-rpm records were broken as a symbol of one team's success in breaking a company record.

Eastman's quality culture was also strongly supported by frequent employee publications announcing team accomplishments and other success stories. Instead of sharing information on a secretive, "need-to-know basis," Eastman management now openly shared financial and operations information with its employees through meetings, employee publications, and television screens located throughout the plant which broadcast Eastman employee news, including current Eastman stock prices.

Within ECC, subcultures exist. One interviewee observed,

I think all of our major functions have their own culture. Manufacturing has its own culture . . . and our other bases [locations] all have their own culture. . . . Research [for example] . . . rarely has urgent stuff, where manufacturing lives on

urgent stuff and rarely has long-term stuff. . . .  
Most of research is done by an individual scientist [although] there may be some small groups, the equivalent of two professors working together. It's rare that we would have ten scientists working on the same project.

He further explains that the division has doubled the output of research in the TQM environment. Part of the reason is that the research is directed toward the goals of the organization. "We have 150 Ph.D.'s in this area working together and being more effective. But that doesn't mean they work as a team; they don't have one, to be pungent. It's this alignment toward an objective. It's an alignment toward a purpose."

In summary, ECC has developed a strong quality culture that is pervasive throughout the organization. Most employees can cite mission and values statements and tend to do it with pride and ownership. Employees require data to make decisions and frequently measure progress against baseline data. There is a very strong focus on both external and internal customers. The pattern of shared beliefs and values are closely associated with TQM.

Organizational Culture at ETSU. Although ETSU describes itself as a regional university, there are differences of opinion among senior administrators as to

what "regional" means in terms of geographic location and the perceived role of a regional university. Some debate occurred among the strategic planning committee and president's council members as to the relationship of research and teaching and how they may be viewed by professional associations outside the institution. This issue was discussed in many of the strategic planning meetings, although no consensus or conclusion was articulated.

To what degree ETSU will embrace a CI culture remains unknown. At the senior administrative level, the degree of acceptance of CI concepts varied considerably, from person to person, and within the same individual over time. When asked about his reaction to CI, one dean replied:

I've had various reactions, ranging from kind of basic acceptance, to amusement, to outrage on certain things. I mean, I think it's necessary to engage in the planning process to establish clear goals to be able to somehow measure these goals. I'm not sure that buying into the whole TQM approach is the way to go in academics. I think the people that we've had from Eastman to talk about it don't fully understand the difference in the two contexts. I guess it's not so much in the basic assumptions as in the approaches and the trappings. . . . One of the things that the trainers from Eastman talked about was the

fundamental Skinnerian background of TQM, which I think is questionable. And I think Skinner's whole programmatic approach has certainly been subject to scrutiny.

He further stated, after referring to Eastman's gainsharing plan in which employees received a 30% bonus:

You can't do that here. There's no direct tie between what you do in the classroom and the measurable product often times. Sometimes there is. And the whole notion of student as consumer bothers me. I asked [the Eastman facilitator] one time, "If the student is the consumer, then what's the product?" It can't be the same thing. It forces you to adjust the metaphor in such a way that it doesn't make any sense. And I'm not sure what the product is. . . . There are fundamental problems, I think, in adapting the outward trappings of TQM for an academic setting. I think I'm pretty representative of the faculty, and this whole notion of rah! rah! rah! is alien to me.

A faculty representative serving on the strategic planning committee reinforced the separation of faculty and administrators as a "we-they" culture, by stating:

Well, I think the first barrier to faculty involvement in CI is getting them to think of it as something serious at all. Many faculty perceive of

what happens at the administrative level as being almost meaningless to what they do. And the requirements for filling out paperwork, etc. seem to have no purpose other than to satisfy some administrator's need to have paperwork. . . . Most of my faculty think I am silly to have agreed to spend time on the strategic planning committee and be involved in all these meetings, especially when they hear that I've been involved in a meeting that lasted four hours in which nearly everyone present was an administrator. Who on earth would want to do that? They think it's a sign I've become a little addled in the head; and, therefore, maybe it's time to make me an administrator because I'm clearly not qualified to be a faculty member any more! . . . The only way you're going to get people to take it seriously is to have, first, department chairs actually make use of those documents for real planning purposes and real reporting purposes [so] that faculty members can see some results. And, second, to have the higher administration actually allocate resources according to some plan that people can see.

Another senior-level administrator, in describing acceptance of CI by the president's council and strategic planning members stated:

I think there's not unanimity, but I think there's a strong consensus that the concepts that are being dealt with must be perceived. I think there's less consensus with some of the particular strategies. For example, some of the issues relative to celebrating and communicating success, putting things on the wall . . . I know there's not consensus.

Like many institutions of higher education, ETSU does not appear to have a strong, unifying alignment of academic units except as administered centrally. The institution's goals of education, scholarship, service, and enhancing the cultural environment are so broad that they can be "all things to all people." Specialization in disciplines, even within schools or colleges, often leaves faculty members unsure or unclear about what their colleagues teach. From a student's perspective, it may appear that teaching and learning are fragmented among disciplines. They may or may not see connections within the curriculum.

When queried about the culture of the university, people were either reluctant to or could not define it. Several faculty and staff, reflecting upon previous administration experiences, believed there would be no change in the culture--whatever it was. Several faculty cited the laborious work on a mid-1980s project as to what the university would be like in 2011, the university's 100th



anniversary. The project was abandoned once the final document was published.

The university did not conduct a campus-wide survey to determine actual organizational culture perceptions of faculty and staff, although it has conducted several student satisfaction surveys. A mandatory student-as-customer training program was required for all university administrators and staff, but not for faculty members. There appeared to be no reinforcement scheme to maintain the student-as-customer focus. To bring about a cultural change, behaviors must change and be rewarded to reflect the desired culture. The president has affirmed his intention to make this happen.

ETSU appears to be a loose-tight organization. That is, there is academic freedom and autonomy but central administration has final decisions on resource allocation. There was evidence of increased awareness, by both faculty and staff, that the president and senior staff expected students to be treated fairly and with respect; however, there were few, if any, sanctions when incidents ran counter to this concept.

It appears that there is little commitment at this time from other than key administrators to make deep changes in the organization. Whether these leaders will be perceived to "walk the walk and talk the talk" remains to be seen.

### Analysis of Organizational Involvement Stages

The purpose of this section is to examine Eastman's and East Tennessee State University's respective TQM and CI implementation processes as defined by the Ackerman (1975) model of corporate responsiveness. Phase 1 of the model is a policy phase in which the chief executive officer recognizes a problem and determines the development of a policy to support the philosophy, program, position or issue the organization will adopt. Therefore, a critical issue at this point appears to be whether the chief executive officer chooses to take a proactive position. In other words, it is a matter of strategic choice on the part of the chief executive officer as to whether or when the organization will enter Phase I.

Phase 2 is a learning phase, marked by the selection of a subject matter expert or specialist who is often added to the staff. The emphasis in this phase is for employees to obtain technical knowledge and skills related to the specific issue and develop data and other administrative systems to track and analyze performance. A specialist often helps to overcome resistance.

Phase 3 is characterized as sustained commitment or institutionalization in which the new philosophy, program, position, or issue becomes part of the culture or expected patterns of behavior within the organization. It refers to instilling a commitment, over time, and inculcating the philosophy into the norms and values of the organization.

Ackerman contended that Phase 3 is where the actual implementation of the policy occurs at the operational level. Both Ackerman (1975) and Murray (1976) found in their social policies research that the implementation process spanned six to eight years. They also concluded that the chief executive's leadership is the most critical factor in reaching the institutionalized phase of implementation.

Chapter 4 provided a chronology of implementation events at ECC between 1980 and 1995. Chapter 5 provided a chronology of implementation events at ETSU between December 1994 and February 1995. The information contained in these chapters suggests that TQM has become part of the normative structure at Eastman Chemical Company, and therefore they are in Phase 3 of the Ackerman model. In effect, virtually all organizational members are aware of TQM and have been trained in TQM concepts. They have been a involved in at least one TQM team project, and perceive that senior management will not deviate from its present TQM philosophy.

In contrast, ETSU is just beginning to move beyond Phase 1, where the university president recognized the benefits of CI for the institution and developed verbal policies that support CI concepts, therefore implying they are workable and important to the university. No known written policies supporting continuous improvement exist. Initiation of Phase 2 began with 40 senior administrators involved in CI training over an 18-month period which was applied to the university's

strategic planning process. Plans are currently under way to move the process down into the organization. Several pilot projects were completed. A one-day continuous improvement awareness session was held for all department chairs and unit heads. A facilitator-training workshop, to be conducted in September 1996, will be designed for key university facilitators who will assist teams involved in CI projects.

#### Characteristics and Skills of Effective TQM Facilitators

The purpose of this section is to analyze the facilitation role in each organization. As noted earlier, ETSU had the benefit of TQM facilitators who were able to eliminate some of the trial-and-error learning based on their experience at Eastman. The term facilitator means different things to different people. On the one hand, a facilitator may be viewed as simply the keeper of the agenda and meeting records. The definition used by the researcher, however, is more broadly defined. That is, the facilitator's primary responsibility is to guide the team through analysis of the process and to insure that the team works well together. A facilitator trained in techniques for building reflection and inquiry skills can help teams develop skills faster. Effective facilitators can encourage dialogue and help people through emotions that may emerge as discussions evolve. "Team members often unknowingly collude to misrepresent reality to each other, and cover up in ways

in which they do so. Only an outsider can see these learning disabilities clearly enough to lead the team to deal with its undiscussable behavior or issue" (Senge, Kleiner, Roberts, Ross & Smith, 1994, p. 356). The facilitator, through TQM and organizational development techniques, helps team members analyze problems and issues in a systematic manner. Finally, the facilitator's role is considered a temporary role within a team. The role of the facilitator is one that helps develop team skills; therefore, once those skills are acquired, there is no longer a need for the facilitator.

#### TQM Facilitation at Eastman

As the management engineering services staff studied evolving TQM methods and applied them within the company, they recognized that consulting and facilitation roles were not clearly understood. They recognized that the facilitator must respond to the team in terms of its development stage or maturity and portray the appropriate role aligned with that stage. They developed a contingency consulting model (Figure 1, page 66) to help determine what level of support should be given at each level of team development.

At Phase 1 (formative stage), the facilitator focused on coaching and nurturing the team. Typical activities included: (1) assisting with meeting agendas and guiding

team member participation, (2) providing approaches for team development of quality management foundations, such as visioning, reinforcement strategies, and assessments, (3) helping teams understand team processes, and (4) assessing team progress and determining areas for improvement.

Facilitators reported that as team members moved through the first phase to the second phase, the growth stage, they experienced role conflict, power struggles, and general frustration. They argued about goals often because goals were unclear. Every facilitator interviewed indicated that conflict management was a critical skill in this stage. As team members learned more about each other and became more accepting, they tended to establish formal and informal group rules and advanced to a collaborative effort.

At Phase 2 (growth stage), the facilitator focused on process consultation. Typical activities were: (1) helping teams define functional processes and outputs; (2) implementing Deming Cycle activities of plan, do, check, act (PDCA) for processes; (3) helping teams understand "value added" aspects of improving current processes; (4) helping implement detailed quantitative data analysis; and (5) bringing in technical expertise, when necessary, to support problem-solving processes. In early TQM projects, facilitators directed teams to select projects that were likely to succeed since success had a tremendous effect on developing group esteem and efficacy. Facilitators

frequently took "time out" to acknowledge group successes using small celebrations, such as coffees, lunches, and plaques.

In Phase 3 (maturity stage) the facilitator focused on business and organizational-type consultation, not group task or group process techniques. Typical activities in this stage were: (1) providing alternative recommendations on organizational and business issues; (2) applying advanced or specialized assistance in such areas as decision and risk analysis, loss increases as a function of variation (Taguchi methods), strategy development, and quality function deployment (QFD) to translate customer needs into detailed technical requirements; (3) serving as a subteam "surrogate" leader by stepping outside the consulting role; and (4) providing staff assistance with decisions on resource allocation and guiding activities of other staff groups that interact with teams throughout the organization.

At the maturity stage, Eastman facilitators found that members took on responsibility and generally supported one another. The key role for the facilitator at this stage was to insure that the teams communicated their objectives and achievements to other units affected by their projects. It was at this stage that teams tended to develop high cohesiveness. As team members became experienced with team roles and dynamics, they were often moved to other teams.

The result was their team experience led to shorter maturation processes.

Another aspect of the contingency consulting model was the recognition that the movement of teams from one phase to another was not discreet and did not occur in a continuously forward motion. There were times when team progress would lapse. It was important for the facilitator to recognize this phenomenon and adopt facilitation methods that would stay in tandem with the team's maturity.

Facilitator Selection. Facilitator selection in the early to mid-1980s included people who had strong technical competence in their profession or work, combined with a "good attitude" about the company and perceived strong interpersonal skills. Initially, three people from the manufacturing operation were assigned "to talk with external experts, identify high performance companies, and develop information partnerships wherever they could to position the company to move into a higher performance mode." Eventually internal facilitators were identified and trained. No one at Eastman, however, was given the title "facilitator." In fact, employees who facilitated team and functional processes outside their own group, for the most part, only remained in that role between six months and two years before moving on to other responsibilities. Team leaders, however, were expected to facilitate group processes throughout the life of the team.



At ECC, internal facilitators were not beyond their culture. They had problems, too, according to one facilitator. Recognizing that one of the best methods for learning was teaching, Eastman provided learning experiences so their facilitators and others could get a better understanding of the new culture. One of their first tasks was to identify what new behaviors were desired and what the actual behaviors were. Experiential exercises, where facilitators were taught to reflect on their own behaviors, helped internalize the new ways of behaving.

Facilitator Characteristics and Skills. Facilitators and trainers were asked their opinions on the important characteristics of an effective facilitator, integrating both personal qualities and effective interpersonal relations. Interviewees summarized personal qualities of an effective facilitator at Eastman as having:

- (1) patience to work with teams struggling to reach higher levels of performance,
- (2) the ability to achieve and maintain credibility with the team,
- (3) high levels of empathy, and
- (4) self awareness of their own strengths and weaknesses.

In addition, they identified facilitator skills necessary to work successfully with teams as:

- (1) expertise in team-building, problem-solving and conflict resolution techniques;
- (2) ability to observe body language, hear everything, listen for nuances, and attend to underlying issues reflected in verbal and nonverbal language;
- (3) ability to use probing questions to encourage group members to get underlying issues out for discussion while keeping politics to a minimum;
- (4) ability to provide group members with honest interpretations of group processes, followed by discussion (e.g., "This is what I saw. Is this correct?);
- (5) competency to serve as an unbiased third party when conflict arises if group members cannot resolve differences;
- (6) talent to see patterns in details, connect them, and work with the team to develop comparable skills;
- (7) capability to see differences between vision of the company or team and current reality; and
- (8) knowledge of TQM and organizational development approaches appropriate to individual situations.

Facilitator Roles. Facilitators also described their views about the facilitator's duties and responsibilities. A compilation of their views is as follows:

- (1) to develop strategies to create effective teams by moving them through stages of change;
- (2) to help teams develop meeting agendas and measures of effectiveness;
- (3) to coach team leaders prior to and after group meetings to develop appropriate leadership skills,
- (4) to insure that team activities are aligned with divisional and corporate goals;
- (5) to teach teams to think in terms of processes and systems and understand the effects of their work on them;
- (6) to help team members stay focused on processes and prevent them from going off on tangents;
- (7) to enable teams to learn from failure by focusing on problems of the system, not people, and by not letting them quit their efforts when they fail;
- (8) to provide "just-in-time" training to allow teams to apply learning to a specific problem.

Facilitation Barriers. Facilitators had many barriers to overcome. Eastman interviewees pointed out that some of the barriers are caused by facilitators themselves when they:

- (1) cannot change their own paradigm or look beyond their own culture to see what behaviors need to be in place;
- (2) have their own agenda for what is right rather than collaborating with team members to develop their own strategies or methods;
- (3) rely too heavily on one or two successful intervention strategies when other interventions may be more appropriate;
- (4) do not know when to bring in other expertise if they have reached a level beyond their competency;
- (5) encourage team members to continue to rely on them when teams should become independent of the facilitator;
- (6) do not know the language or jargon of the group and therefore miss the meaning or context of what is being said.

Another barrier identified by interviewees was the issue of time. Time was required to train people; extensive team meetings took time; it took time for group debates and revision; and it took more time for group decisions than individual decisions. Moreover, it took time to convince people to change their way of doing things.

At Eastman, facilitation was a key component in overcoming barriers, especially during the formative and growth stages. Facilitators had responsibility for teaching

teams and team leaders appropriate methods and tools of process improvement as well as team-building and team-maintenance techniques. Facilitators also functioned as coaches to team leaders and teams, especially in early stages of development. Successful team facilitators were the ones who brought teams to a level where they could manage their own problem-solving and management processes independent of the facilitator. The ultimate test was that team successes had a cumulative effect on organizational performance and that its activities were properly aligned with organizational strategies.

#### TQM Facilitation at ETSU

ETSU used only three outside facilitators during this study, and their role was primarily limited to helping groups understand continuous improvement and getting them started on the process. They were not active in team facilitation of selected TQM projects. Facilitators who were involved in CAST and university-wide CI meetings were instrumental in reducing the amount of time needed to establish the framework for strategic planning (i.e., developing vision, mission, value, and goal statements) when compared with Eastman. Despite the time reduction, some ETSU senior administrators felt that the process took too long and was, at times, redundant. As one administrator said, "there's been a significant decline in cost-benefit in

terms of time. In every meeting we've had, the first hour has been a summary. . . . I think it's time to move on and to learn by doing. . . . If you devote 18 months to a theory with the faculty, those of us who haven't been run off would have moved on to some other process."

At the university group level, team development did not appear to move beyond the organizational involvement policy phase (Table 1, page 65) nor the formative stage of the team development model (Figure 1, page 66). Facilitator activities included setting meeting agendas, teaching the TQM model, using approaches that helped the group reach a unified vision, and influencing the development of reinforcement strategies. Most of the activities were directed toward accomplishing tasks as opposed to assessing team processes.

During the first 18 months of university-level CI meetings, the facilitator primarily used brainstorming for idea generation and one standard TQM tool in teaching concepts--the matrix diagram. He did not instruct senior administrators on the use of any specific TQM tools, nor did he suggest their advantages or importance. The focus tended to remain at a conceptual level. Once he explained the TQM model, he relied primarily on a dialectic approach among group members to fit the university's context into the model. At each meeting, he presented an agenda for the day. The usual format was to have the group of approximately 40

people meet first in its entirety. He then presented the agenda, reviewed what had transpired previously, and shared the next step in the process. The group would break into the same subgroups to discuss the topic or topics on the agenda, then meet again as a full group to summarize their conclusions, clarify issues related to those summaries, and reach an informal consensus on the issue. A member of the steering committee then transcribed the summaries and distributed them at the next meeting.

Overall, it was agreed that the Eastman facilitators were skillful. One administrator summarized his perceptions of two of the Eastman facilitators as having "the ability to establish a good trust relationship . . . and the ability to keep people on task." He further added, "another skill is being able to challenge people to want to do something they're not quite sure they can do or want to do." He did not evaluate the Eastman facilitators on this dimension. Interviewees were in agreement that the use of an outside facilitator was appropriate for ETSU at this time.

Facilitation techniques in university-level meetings relied primarily on presentation of concepts, brainstorming methods, small and large group discussions, and consensus building. No TQM tools were introduced. Facilitation at the College of Applied Science and Technology level also used presentation and brainstorming methods extensively. However, the external facilitator applied several TQM tools

such as affinity diagrams and developing flow charts at the college meetings. When CAST project teams developed baseline measures for enrollment and retention trends, maps and bar charts were primarily used to provide quick visual interpretation.

It is apparent that TQM involvement at ECC has permeated the organization, whereas at ETSU, most involvement is at the top administrator level. Therefore, CI efforts at ETSU have had little impact on operations at the conclusion of this study. Facilitation efforts at Eastman were carefully examined, and a number of conclusions will be summarized in the following chapter. Facilitation at East Tennessee State University has not progressed sufficiently to draw significant conclusions about what is effective or ineffective, although some preliminary judgments can be made, based on reactions at the senior administrative level.

The concluding chapter will summarize the pertinent research questions with respect to the facilitator's role in TQM implementation at Eastman and the potential role at East Tennessee State University.



## CHAPTER 7

### SUMMARY OF RESEARCH QUESTIONS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this chapter is to examine the findings of this study with respect to TQM facilitation. The initial section of the chapter will summarize answers to the research questions related to how TQM was introduced and the organizational context of each organization studied. Next, a discussion of facilitator activities related to the organizational involvement model described by Ackerman (1975), Murray, (1976), and Stead (1983) and ECC's team-development stages model will be presented. The information examined in all of these sections will then be synthesized into a proposed TQM facilitation model for diverse organizations. Finally, questions will be formulated to address future research issues related to TQM facilitation.

#### A Summary of Responses to Research Questions Regarding TOM Implementation and Organizational Context

##### Eastman's TOM Implementation

The impetus to use TQM at Eastman Chemical Company was the direct result of an external influence--the loss of a significant customer. TQM was selected as a change strategy for two reasons: the customer complaint was related to product quality, and the manufacturing division's president

had become interested in the rapid success of Japanese manufacturers' quality products and their touted TQM strategies. When initial TQM projects were successfully executed in the Tennessee Eastman Division, the outcomes caught the attention of Eastman Chemical Company's corporate offices. The approach was embraced by senior management. Initial reactions to TQM as a way of doing business, however, were mixed. Supervisory personnel were initially uncomfortable with their new role as coach, while teams struggled with learning how to become empowered to correct the processes for which they were responsible.

ECC used the prize criteria of the Baldrige award as their TQM strategy. It evolved within Eastman over more than a decade as managers studied and applied the work of TQM theorists. They selected those TQM components which seemed best to fit Eastman's needs and adopted a 10-step TQM model. Extensive company-wide training was introduced in both TQM measurement and human relations skills.

The initial implementation occurred in a micro-macro-micro sequence; that is, implementation occurred first within manufacturing core processes; then organization-wide to include all of the management and support systems. A renewed effort was again initiated at operating units to insure that improvement projects were aligned with the organization's strategy. One facilitator said if he were to have the opportunity to begin all over again, the

strategy would be a macro-micro-macro approach. That is, senior management's agreement to a cohesive, company-wide mission, values, and strategy should be the framework for change before deploying TQM throughout the organization.

Transition was not easy and took significantly more time than planned. Eastman devoted significant resources to mass training. However, employees' basic skills were lower than expected, and "they tried to make mathematicians" out of the operators. Operators primarily needed to understand variation, separating common cause from special causes, and to apply that learning specifically to their jobs and their customers. Some of the statistical training was not immediately useful. A key learning was that more sophisticated SPC training should be conducted on a just-in-time (JIT) or as-needed basis, rather than massive training that was not useful and was soon forgotten.

Facilitation and training emphasis shifted from teams building better customer relationships, to using statistical process control for quality improvement, to emphasizing the integration of team activities with corporate strategy, to developing empowered teams to make decisions regarding their processes, and finally to aligning all the organization's systems with the company's strategy. The shift in emphasis, however, did not disregard previous learning; it built upon it.

Senior management demonstrated its commitment in several ways, specifically by leading by example and by committing resources to extensive TQM training and team development. In addition, management recognized the need to reinforce a TQM culture. Training included helping managers and teams understand reinforcement strategies and using them extensively in the early implementation process.

ECC's organizational structure was redesigned to accommodate interaction across functional lines. In the mid-1980s, Eastman tried to eliminate supervisory levels in a short period of time, either by making supervisors team members or moving them to other areas of the company. The company quickly lost the trust of a key group of people. They found that supervisors were the key to successful transition as TQM was deployed throughout the organization. Therefore, management established an agreement with supervisors guaranteeing they would not lose their jobs, although they would experience significant changes in job responsibilities. They would have input into any changes made that affected them, and every effort would be made to maintain salary levels and prestige should a transfer within the company be necessary.

Culture was a large barrier to the change effort, especially in areas where technical language or jargon bound work groups together. Interviewees frequently mentioned the importance of teaching TQM terminology to

enable a common understanding and to incorporate the language as part of the culture. Moreover, some departments had their own culture and differentiated views on their respective approaches to work. For example, one interviewee said:

Research is different from manufacturing; it's different from sales; it's different from HR; it's different from plants. And I've been in all of those, so I know that, basically, they don't play on the same mat. And part of it is . . . immediacy of concern. [For instance,] research rarely has urgent [issues], where manufacturing lives on urgent [issues] and rarely has long-term [issues]. Long-term [issues go] to the development people, which is part of the R&D community. Manufacturing deals in a today, this week, this hour kind of world, and their [sic] job is to get the product out today, and most of their [sic] efforts are focused there. And their [sic] job is to try to focus [work efforts] so the organization will work tomorrow. And they're [sic] making incremental improvements.

Eastman's traditional culture was described as "parental." Managers and supervisors told employees what to do; if they followed orders, they would have job security and a decent quality of work life.

The TQM culture became prominent in the mid-1980s when a critical mass of managers and employees actively practiced the philosophy. The new culture was supported in a number of ways. Management continued to show its commitment. Process and other decisions were based on fact, not opinion. More teams were trained to make decisions autonomously, and team members acquired skills beyond their previously specialized tasks. Decision-making moved from decision-by-opinion to decision-by-fact. As new teams were formed, their team skills enabled them to operate more effectively and efficiently in shorter periods of time.

Communication processes changed dramatically. Information was no longer on a need-to-know basis, but was shared for the purpose of enabling employees to have a greater understanding of company issues and problems. Information was shared within and among units through meetings, newsletters, and electronic mail. Reward systems were redesigned to accommodate the new paradigm. Ultimately, Eastman's gainsharing program tied organizational performance to individual bonuses.

A direct correlation between TQM and the company's financial performance could not be made, although the success of Eastman Chemical Company, as demonstrated by its profit margins and stock prices over the last several years, supports the conclusion that TQM's pervasive culture was a supportive factor.

### ETSU's Continuous Improvement Implementation

By contrast, the impetus to implement TQM at East Tennessee State University was initiated by one dean as a result of a natural outgrowth of his interest in TQM. At the university level, TQM became a strategic issue for a number of reasons. External forces, including the Tennessee Board of Regents and several accrediting agencies, supported quality efforts in higher education. Declining enrollments and budgetary constraints, as well as sensitivity to addressing customer satisfaction, contributed to the decision. In addition, Eastman's offer of a facilitator provided the opportunity to launch the campus-wide effort.

The university identified 10 key processes as part of its strategy development. The processes were linked to goals and integrated into the annual planning and budgeting cycle. At the conclusion of this study, TQM had not reached the state where a critical mass supported a changed culture. Plans to implement TQM throughout the organization were in process. Senior administrators agreed to support TQM initiatives in their respective units, although the degree of commitment appears mixed. ETSU's implementation program was initiated at a macro level, and is intended to cascade down the organization. The prize criteria strategy, utilizing the Baldrige award, will be the standard measure for success. The university has applied for Level 2 status of the 1996 Tennessee Quality Award.

A clear picture of ETSU's culture did not emerge from this study. Interviewees had a difficult time specifically describing the culture as differentiated from other universities. Two ways of articulating the culture emerged. From the faculty viewpoint, academic freedom was important; and from both faculty and administrators, a "we-they" mentality permeated the discussions. Some faculty had difficulty accepting the perception of the "student as customer." Their argument was that the student has to contribute to the final product, unlike a consumer purchasing a good or service. When discussing customers, attention was paid primarily to students, not to internal customers or other stakeholders. Several faculty members and administrators also expressed cynicism about progress or changes in the way things were done.

There was no indication that the institution's structure or reward systems would be changed or realigned to accommodate changed behavior. In fact, efforts thus far appear to be to attempt the change effort within the existing structure and reward system. The institution will rely primarily on social rewards for performance management. TQM communication processes were addressed and plans to implement an effective communication program will be put into effect as teams demonstrated achievements.



### TOM Facilitation

The facilitator needed skills in two areas: to help groups accomplish tasks and to help them work through social processes within and between groups. Personal traits or characteristics also influenced the facilitator's effectiveness. Eastman interviewees identified four dominant traits of effective facilitators: patience, credibility, high levels of empathy, and awareness of one's own strengths and weaknesses. Other characteristics and skills that were consistently mentioned included the ability to listen for nuances and feelings of each team member at all times, to look for patterns in detailed information, and to ask reflective questions such as "how is this going to work?" A complete list of facilitator skills, abilities, and responsibilities as identified by Eastman interviewees was presented in Chapter 6, pages 155 to 159.

At Eastman, the team development model guided facilitators as they worked with teams. It was discovered that even mature teams needed some degree of coaching. Management learned the importance of sustaining commitment to develop and reinforce coaching capabilities and team-building skills with team leaders. They found it was easy to confuse training with capability building or the ability to perform at increasingly higher levels. Training was limited to developing awareness and perhaps some practice

of skill components. The coaching process within teams insured that employees used what they learned. As a result, Eastman set out a plan for training deployment to insure that the structure and culture reinforced training. They set expectations that new skills must be used, but they also learned to allow time for people to demonstrate those skills.

Facilitation Using TQM Tools. To help teams accomplish tasks, facilitators at ECC selected from a number of basic TQM graphical and statistical diagnostic tools to coach teams to seek the root of the problems. Brainstorming, nominal group techniques for idea generation, and TQM tools, such as checksheets and flow charts, were useful in TQM problem identification. Histograms, scatter diagrams, control charts, process capability indices, and force field analysis were useful in TQM problem analysis. Some tools and techniques, such as pareto charts, cause and effect diagrams, run charts, and stratification were used for either problem identification or problem analysis. Most Eastman facilitators interviewed were knowledgeable about all of these TQM tools; however, many tended to rely on only two or three of them when working with teams.

At ETSU, brainstorming was the most consistently used method for problem identification. In addition to

brainstorming, stratification, flow charts, and histograms were used by CAST project teams to analyze problems.

While graphical and statistical tools are useful for teams in measuring results, Brassard (1989) noted that managerial personnel often need to organize around words, ideas, and issues rather than numerical data. As a result, seven additional TQM tools have been identified to help managers simplify ideas and verbal data. These seven management and planning tools provide the framework for collecting large amounts of data, exploring their interrelationships, and systematically mapping out the tasks that need to be accomplished. These tools may be used to prioritize criteria, make connections between issues, determine contingencies, and force scheduling activities. Brassard (1989) lists these tools as affinity diagrams, interrelationship digraphs, tree diagrams, prioritization matrices, matrix diagrams, process decision program charts, and activity network diagrams. It was unclear as to which of these planning tools were used by Eastman facilitators or how frequently they were used. Facilitators did not voluntarily discuss them. At ETSU, matrix diagrams were applied during both university and CAST group meetings. Affinity diagrams were also used by CAST teams.

Table 4 (page 173) lists a compilation of facilitator skills adapted from both OD and TQM literature, some of

Table 4. RELATIVE FREQUENCY OF SKILLS, INTERVENTIONS, AND TOOLS UTILIZED AT ECC AND ETSU

Facilitator Role in TQM Implementation	Phase I: Adm. Policy	Phase II: Team Learning		Phase III: Institutionalized
		Technical	Administrative	
General Consultation Skills Diagnoses Entry & contracting Intervention selection Interviewing Process consultation	(E) 3; (U) 2	(E) 3, (U) *	(E) 3; (U) *	(E) 1; (U) *
Intrapersonal Skills Active learning skills Rational-emotive balance	(E) 3; (U) 3	(E) 3; (U) *	(E) 3; (U) *	(E) 1; (U) *
Intervention Skills Communication Conflict management Group dynamics (team bldg.) Intergroup dynamics Sociotechnical analysis	(E) 2; (U) 1	(E) 3; (U) *	(E) 3; (U) *	(E) 1; (U) *
Interpersonal Skills Aptitude in speaking client's language Counseling & coaching Establishing trust & rapport Giving & receiving feedback Listening Negotiation skills	(E) 2; (U) 2	(E) 3; (U) *	(E) 3; (U) *	(E) 2; (U) *
TQM Quality Control Tools Check sheets/stratification, pareto diagram, graphs, control charts, historam, scatter diagrams, cause-and-effect diagrams	(E) 1; (U) 0	(E) 3; (U) *	(E) 3; (U) *	(E) 2; (U) *
Brainstorming, Nominal Group Technique	(E) 3; (U) 3	(E) 3; (U) *	(E) 3; (U) *	(E) 3; (U) *
TQM Management & Planning Tools Affinity, (KJ method), relations, matrix, tree, PDPC, arrow diagrams, matrix data analysis	(E) 2; (U) 1	(E) 1; (U) *	(E) 2; (U) *	(E) 2; (U) *

Categories: 3= frequent; 2=somewhat frequent; 1=seldom; 0=never; \*=not reported or observed  
(E=Eastman Chemical Company; U=East Tennessee State University)

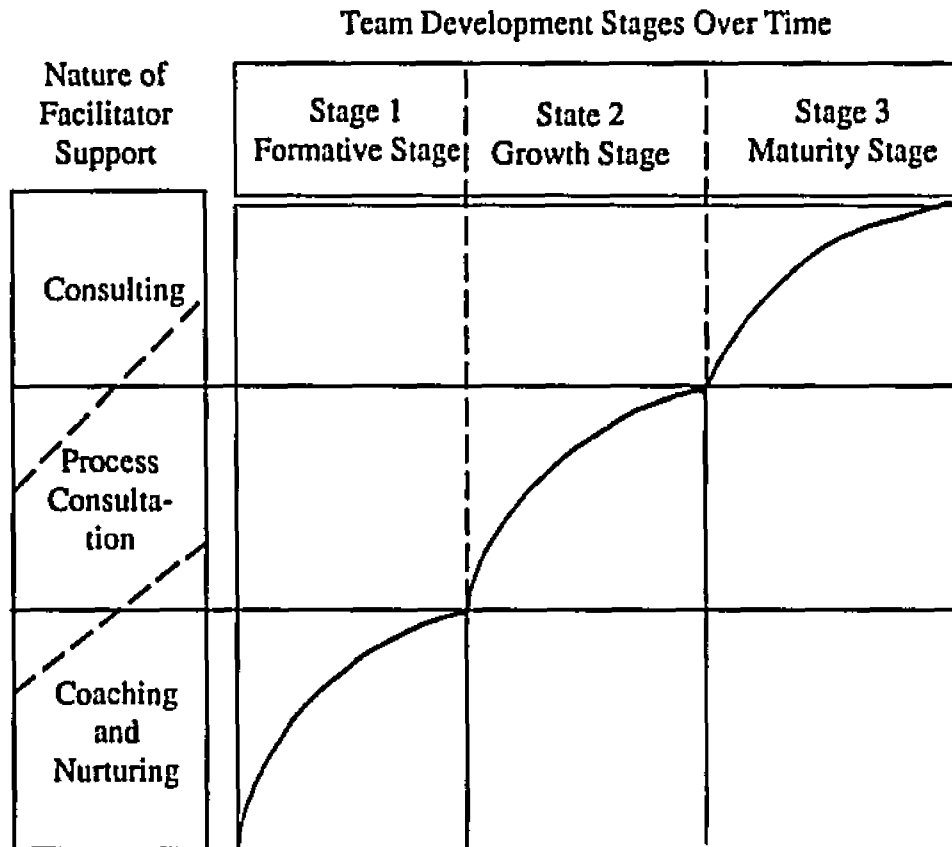
Note: Facilitator categories adopted from OD practitioner skills reported by Shepard & Raia in April, 1981 Training and Development Journal (as cited in Cummings & Worley, 1993). TQM quality control, management and planning tools identified by Shiba, Graham & Walden (1993).

which were utilized at Eastman and ETSU. Based on interviewees' comments regarding Eastman's facilitators and personal observations at ETSU's CAST and president's council and strategic planning committee meetings, the matrix categories are marked according to the relative frequency with which these skills appeared to be used in each organization.

Facilitation Using Group Intervention Skills. Another set of TQM facilitation skills critical to TQM teamwork focuses on executing interventions that affect the way people work with each other. Skills at this level are directed toward improving group dynamics and collegiality. An effective TQM facilitator also uses organizational development (OD) intervention skills to develop team capability. Eastman's MES facilitators used a team development model to determine facilitator behavior based on team development phases. Events such as losing or gaining a member, reaching an impasse, or altered goals caused teams to regress to a previous stage at times. Facilitators learned to stay in tandem with the dynamics of the team, whether advancing or regressing. Several facilitators noted that it was extremely frustrating when the facilitator assumed team members had moved to a more mature level when they had actually regressed.

At the introduction of each stage of team development, the facilitator's contribution to the team was limited. The team members controlled the meeting or process, but as the group moved through each stage and experienced blockages as to what to do or how to do it, the facilitator's contribution increased. As the team's capability grew, the facilitator role decreased. It became clear that the facilitator's role was a temporary one used to help clarify issues and group dynamics. The effective facilitator did not let the team lose its control of the its own process or problem. Figure 2 (page 176) graphically displays the frequency of the facilitator's interaction with teams at the three stages of development.

At ETSU, TQM implementation had not moved beyond the planning stages. Facilitation was only observed during the first phase of organizational involvement. At university-wide continuous improvement meetings, little effort was made to examine group processes. When an impasse was reached, the facilitator or one of the steering committee intervened to explain, clarify, or give direction to the group. The facilitator worked with the group and subgroups primarily on task accomplishment, not group processes. The facilitator (with the steering committee's advice) determined the agenda and served as the group's leader. At the conclusion of the study, team training had not occurred; therefore, there were



**Figure 2. Facilitator Interaction with Teams at Stages of Development**

no observations or reflections on facilitator interaction with teams based on their development stages.

Additional Facilitation Factors. At Eastman, facilitators were initially selected because of demonstrated technical and social skills and advancement potential. MES staff initiated early TQM facilitation efforts, but as certain team members became competent, they would be asked to serve as facilitators. Facilitators frequently met on an informal basis to discuss team issues and problems with each other and to seek other perspectives or solutions to difficult problems.

With the exception of training department personnel, most internal facilitators were assigned a facilitator role for a limited time--between six months and two years--before rotating to line positions. If they remained in those roles longer, they were not considered "doers." In the training department, few trainers actually took on facilitator or consulting roles with teams; their facilitation efforts were mostly limited to classroom-oriented training. Several senior trainers however, did facilitate teams.

At ETSU only outside facilitators were used. When asked if inside facilitators could have been as effective, most interviewees responded that having TQM subject matter experts from outside the university was appropriate.



Moreover, the experts' experience in a company that received the Malcolm Baldrige Award added credibility.

A number of barriers to the outside facilitators became evident, however. At ETSU, it was apparent in early meetings that the facilitators were not familiar with the culture or processes of the university. At the university level, it took a while for the Eastman facilitator to understand constraints imposed by the Tennessee Board of Regents. Words like customer, pinpoint, and total quality management were not readily acceptable in the university environment. In earlier work with CAST faculty, it was evident that TQM was not an acceptable term; "Continuous improvement" was used in as a substitute phrase for "TQM". Other language and perception barriers were overcome, for the most part, with the use of an internal co-facilitator in CAST meetings and an internal steering committee for the central administrator group. The steering committee assisted in translating TQM language and concepts into terms and ideas that fell within the context of the university. Without this assistance, the credibility of the facilitators may have been lost.

#### Facilitator Activities In Stages of Organizational Involvement

The ultimate objective of the TQM facilitator is to encourage organizational members to change their paradigms and work patterns by (1) focusing on the customer, (2)

involving all organization members, (3) making decisions based upon data, and (4) continuously improving the processes. Both ECC and ETSU began TQM implementation at division levels rather than at centralized corporate or administrative levels. It became apparent at Eastman that as senior management became involved, the need to align different units with the organizational strategy was necessary. This occurred in part because the manufacturing division was so large and affected many company units. Therefore, additional training and realignment of team activities occurred as centralized management incorporated TQM in its strategic planning. The recommended TQM implementation approach, based on the Eastman experience, is (1) begin at the senior management level for the whole organization (macro level), (2) cascade TQM learning down the organization and align team projects (micro level) with the strategy, and (3) focus again at the macro level to insure that the organization's systems and management processes, such as structure, reward, communication and decision-making, continue to support those efforts.

The facilitator's role changes as the organization evolves through these stages. The policy phase, during which time senior management is learning about TQM, requires heavy involvement of the facilitator to not only assist in awareness training, but to respond to questions and issues as they fit the organization's individual needs. The

facilitator, in many instances, takes the leader role in meetings. Facilitation involvement continues to be high during Phase 2, when groups are learning the techniques and administrative components. It is at this phase when teams learn to perform according to TQM principles and managers learn to support the TQM environment. As teams become comfortable with TQM practices and learn to work together, the role of the consultant dramatically diminishes. At Phase 3, when the organization is practicing TQM principles as the standard method of conducting business, the facilitator's role diminishes altogether. Figure 3 (page 181) conceptualizes the degree of facilitator involvement at each of Ackerman's (1975) organizational involvement levels if TQM were implemented in a macro-micro-macro sequence.

Planning facilitation activities at each organizational involvement phase is important to the facilitator's success. Decisions as to content, the degree of facilitator involvement, appropriate TQM tools, and organizational development interventions must be decided based upon the needs of the organization and group. A facilitator must be cognizant of differences in facilitation situations. If the organizational process or the culture is unfamiliar, the facilitator may find it difficult to establish a relationship of credibility and trust. An approach to addressing this issue, which appeared to be effective at ETSU at both the CAST and university levels, is to work with

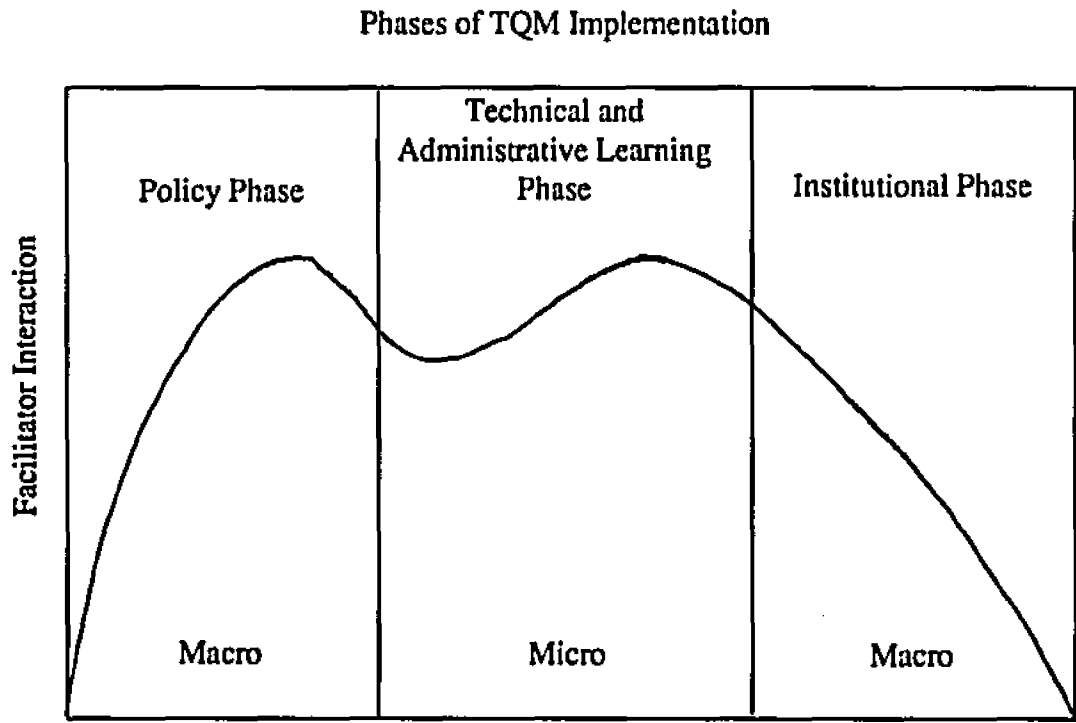


Figure 3. TQM Facilitator Role at Each Phase of Organizational Involvement

a steering committee or several key client members who can translate concepts or provide examples within the organization's context. If it is deemed that differences may appear to be obstacles, joint facilitation between an internal person, who maintains credibility within the organization, and an external facilitator is recommended.

#### A Working Model for the TOM Facilitator

In an attempt to simplify the complexities of TQM facilitation, a TQM facilitation model for different organizational settings is proposed in Figure 4 (page 183). In this model, the facilitator assesses the organization's situation to determine whether or not TQM is appropriate to the organization, the organization's management understands what is involved in the process, and the organization is ready to implement change. If the culture, including language or jargon, of the organization is different from the facilitator's experience, then the facilitator collaborates with internal personnel who can serve as a resource and bridge gaps the facilitator may have regarding understanding the organization's issues. The facilitator and collaborators may, at this point, determine if TQM language and concepts can be adapted to fit the organization's language prior to its being presented to groups. For example, at a university, the term "continuous improvement" not "total quality management" might be used.

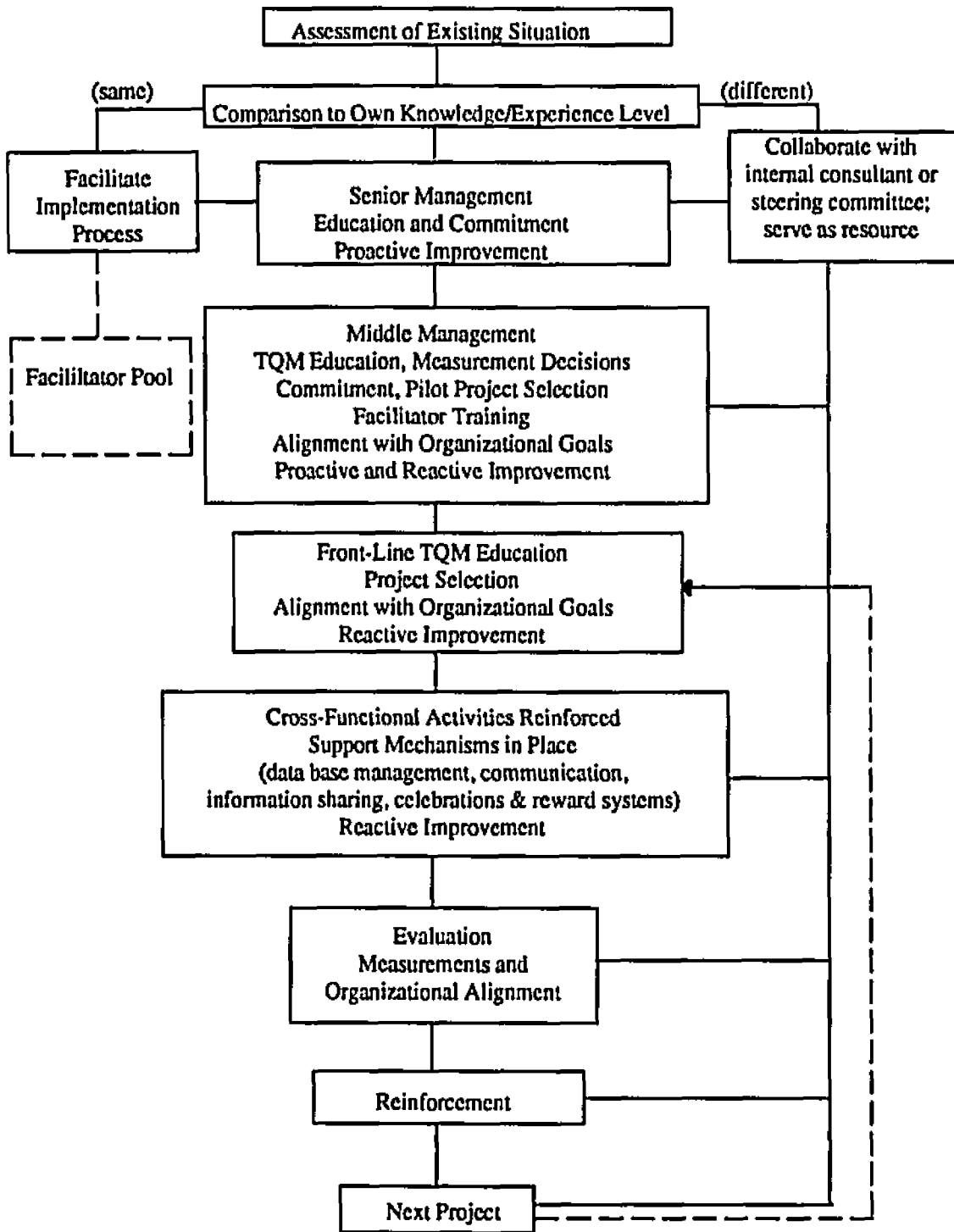


Figure 4. TQM Facilitator Model for Different Organizational Settings

If the facilitator is knowledgeable about the organization and its culture, it is not necessary to use internal resources for industry-specific language. However, collaboration with other facilitators may be important, especially when groups reach an impasse or when the facilitator is in unfamiliar territory.

Facilitation begins at the senior management level. The purpose of the facilitator is to educate management and enable it to understand the commitment needed for successful implementation. Senior management engages primarily in proactive strategic planning activities that set the direction of the organization. This corresponds with moving senior management through the policy phase of the organizational involvement model.

As the organization enters Phase 2, facilitators provide training for unit heads and middle managers. Training at this level includes TQM education, facilitation and coaching. Selecting pilot projects and determining appropriate measurements give middle managers experience. At the same time, the facilitator works with managers to gain their commitment. It is the managers' responsibility to see that projects are aligned with organizational goals. To accomplish this, middle managers are involved in both proactive improvement through planning and reactive improvement through improving existing processes.

Once middle managers are exposed to TQM, front-line operational personnel become trained in TQM. Team members should be selected and matched with projects. Team composition should include individuals who are part of the process, representing all levels, as well as those who may be affected by the process. Projects with front-line personnel use mostly reactive improvement methods; that is, existing processes are studied and improved upon. As teams find they are lacking in techniques or knowledge, such as determining or interpreting measurements, training should be provided on an as-needed basis.

Another important component of successful TQM implementation is organizational support. Systems should be arranged so that data can be used according to team needs; communication networks are established to share information and progress on a timely basis. Again, cross-functional teams are established to insure organizational alignment and support of teams.

Evaluation to measure effectiveness includes selection of measurements, measuring outcomes, learning why deviances may have occurred, and correcting them. Recognition of TQM efforts is designed to reinforce willingness to continue to operate in a continuous improvement environment. Selection of the next project takes the cycle back to the team project level. It is at this point that teams should



determine whether or not they have a continuing need for a facilitator.

Facilitation at the senior- and middle-management levels is primarily directed toward enabling managers to understand and become committed to TQM. TQM application for senior management means ensuring that team improvement activities are aligned with organizational goals and that organizational mechanisms support team efforts. The operational levels are the crux of TQM. This is where the product or service quality occurs. Facilitation at the team level is directed toward quality improvement activities based on input and perspectives from a variety of people. For this reason, teams are encouraged to operate in an open, trusting, collegial manner. Team skills are critical at this level.

#### Areas for Future Research

TQM is sometimes perceived as a universally applicable approach to improving organizational effectiveness. Based on this single study of two organizations with two different purposes, it is evident that TQM implementation is a contingency approach in that the facilitators considered different elements of each organization's context and proceeded accordingly. As noted throughout this study, the primary research literature for facilitators in TQM implementation is quite limited.

TQM implementation appears to be contingent upon various elements within the organization, although a cause-and-effect relationship was not determined. Future research needs to be performed in order to examine the degree to which these variables influence or are influenced by the TQM implementation process and to identify any other variables which influence or are influenced by this process.

The Weisbord framework for diagnosing organizations was used to explain some of the differences in the organizations studied. The study at East Tennessee State University was concluded at the end of the policy phase, whereas the Eastman study was conducted after practices became institutionalized. Changes in the organizational context could not be compared between the two organizations. A continuing longitudinal study at ETSU would be useful for a comprehensive comparative study of changes in organizational variables when or if TQM becomes institutionalized at the university.

Further study of TQM facilitation in other organizations is also recommended to determine additional cultural and language barriers and to verify barriers associated with this study. In the current study, it was determined that changes in some terminology were needed to make the model acceptable in the institution of higher education. A study of implementation barriers in other types of organizations, such as other service or government

industries, would be useful to facilitators working across industries and agencies.

Studies of facilitator activities in relationship to different phases of organizational involvement as outlined in Table 1 (page 66) could be developed to determine which interventions and activities were used, when they were used, and why they were selected for various organizations.

It was reported in the study that progression through vision, values, and goals development occurred more quickly at ETSU than Eastman. The assumption was that Eastman evaluated TQM implementation events, and the organization learned from its mistakes. That learning was passed to ETSU. There may be other reasons which were not explored. For instance, to what degree do structure, ownership, and timing of TQM implementation influence the speed of the events? What other factors influence the speed of the implementation process?

Empirical research on how to measure and control service-related processes as opposed to calibrated measures often associated with manufacturing processes would be invaluable to those service organizations seeking to implement total quality management.

Finally, the model developed appears to be representative of TQM implementation as described in the literature and observed at ECC. The model should be tested

further to determine if it is useful for different types of organizational settings.

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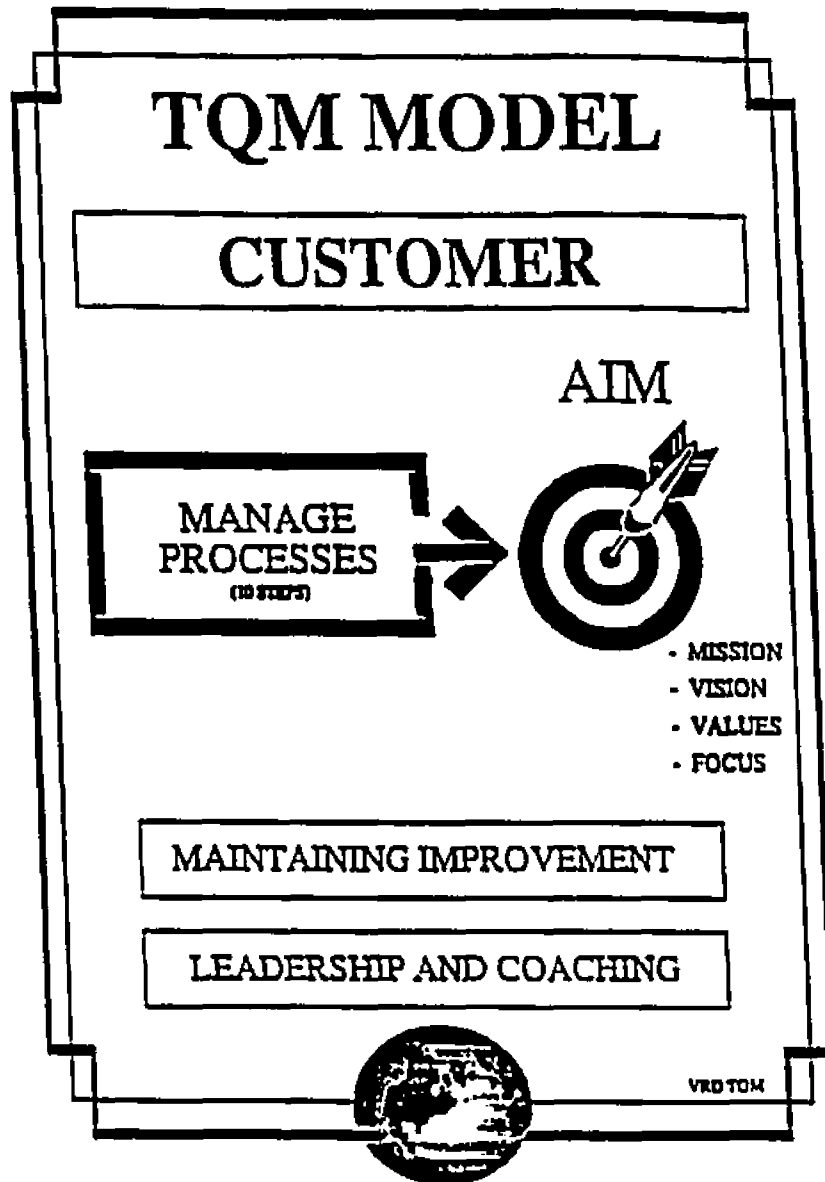
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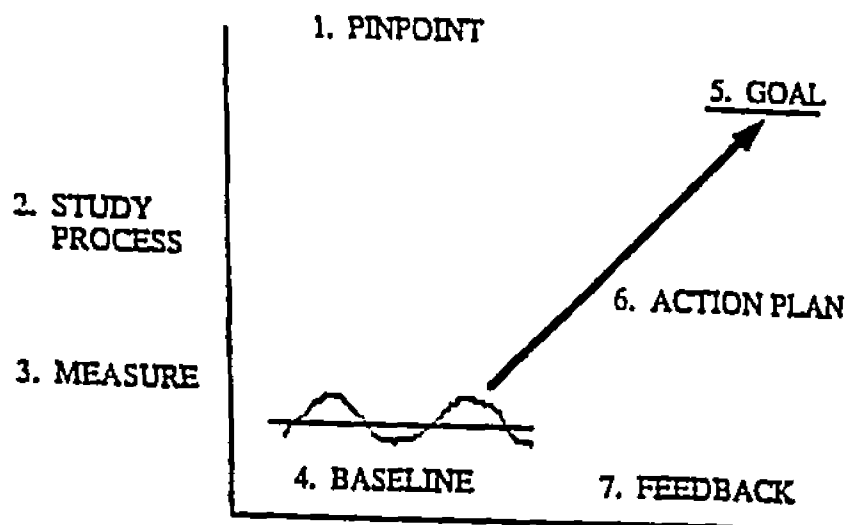
## APPENDICES

APPENDIX A  
10-STEP TQM MODEL





## DESIGN PLAN FOR CONTINUOUS IMPROVEMENT



8. REINFORCEMENT PLAN
9. DEPLOYMENT
10. MANAGING IMPROVEMENT

YKD TQM

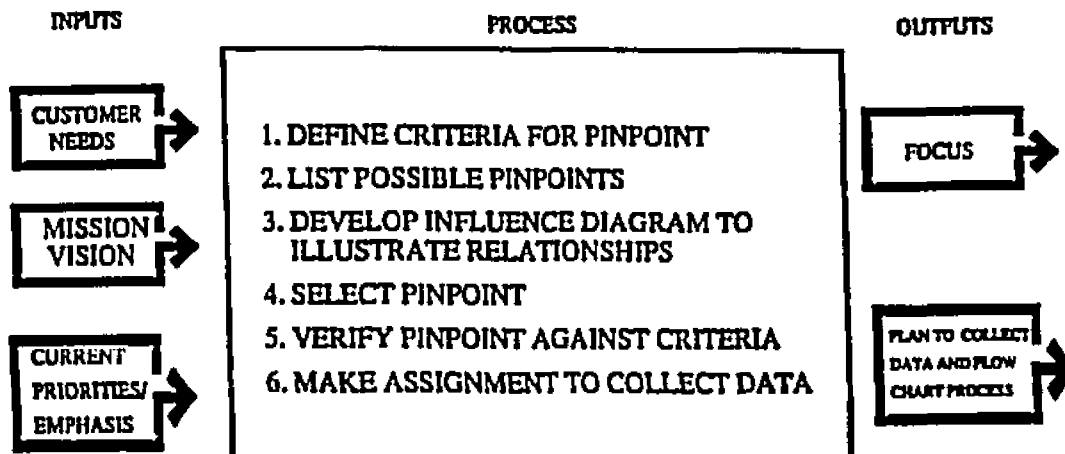
# PROCESS TO ACCELERATE IMPROVEMENT

① PINPOINT (chartable)  
( FOCUS )

- WHAT WE ARE IMPROVING
- REASON FOR IMPROVEMENT
- USE CRITERIA TO SELECT

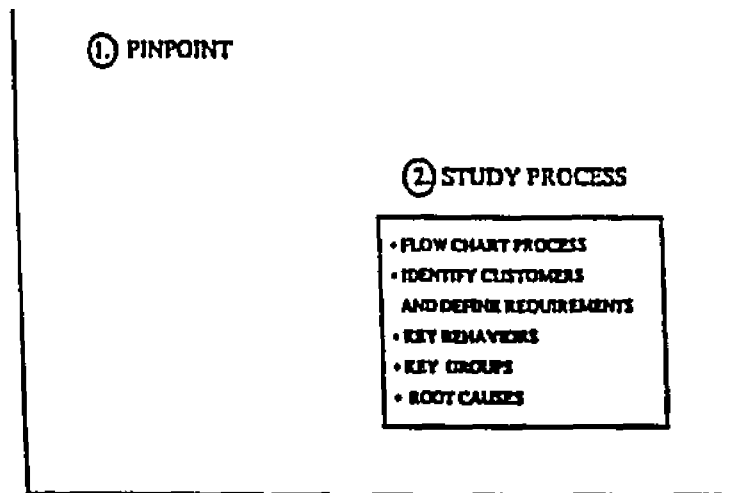
VTD TM

# PINPOINTING



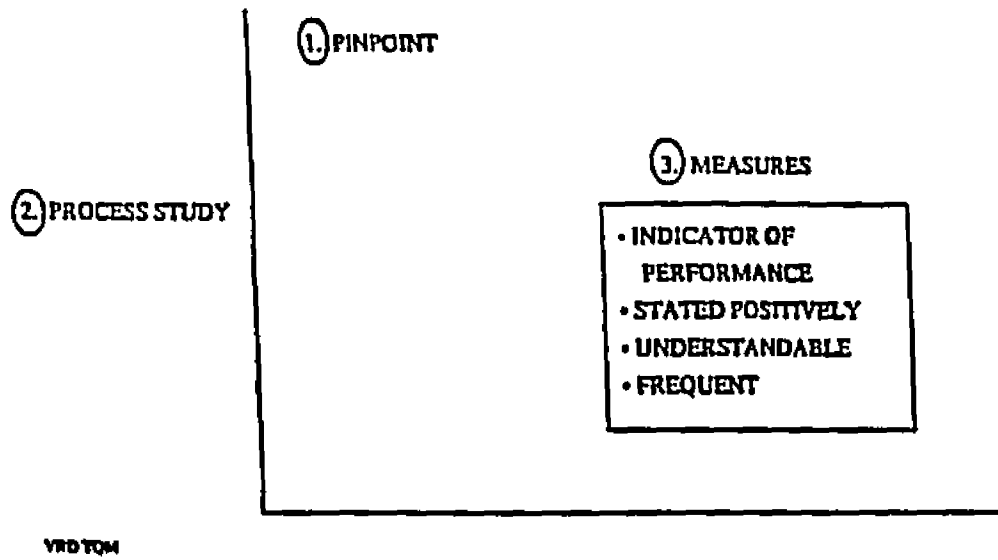
VRD TOM

# PROCESS TO ACCELERATE IMPROVEMENT

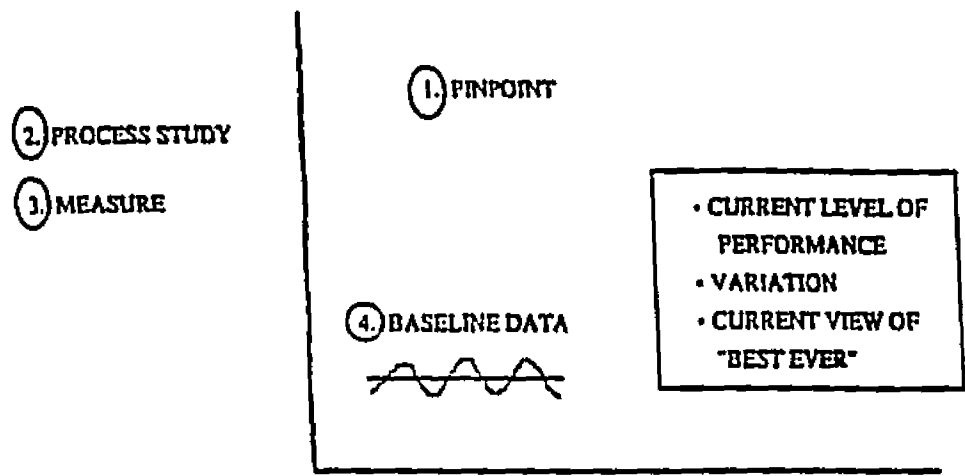


VKDTON

# PROCESS TO ACCELERATE IMPROVEMENT

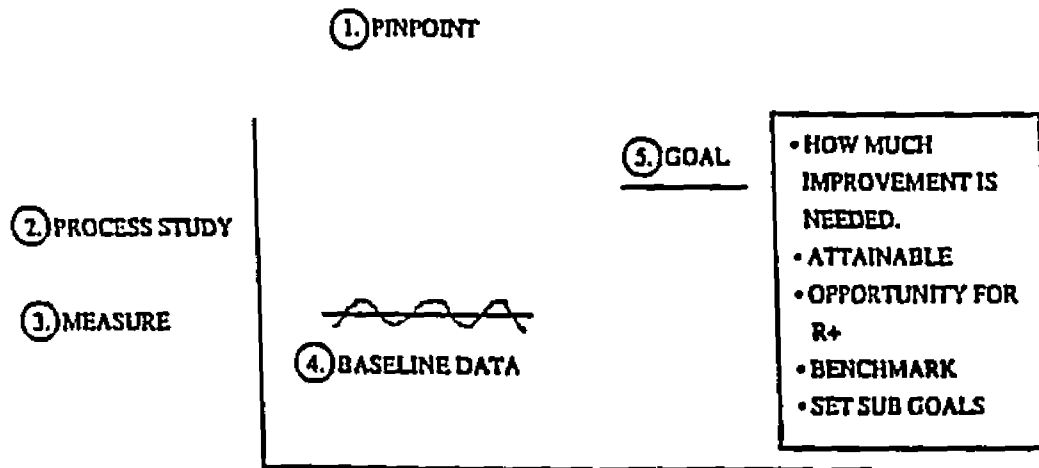


# PROCESS TO ACCELERATE IMPROVEMENT



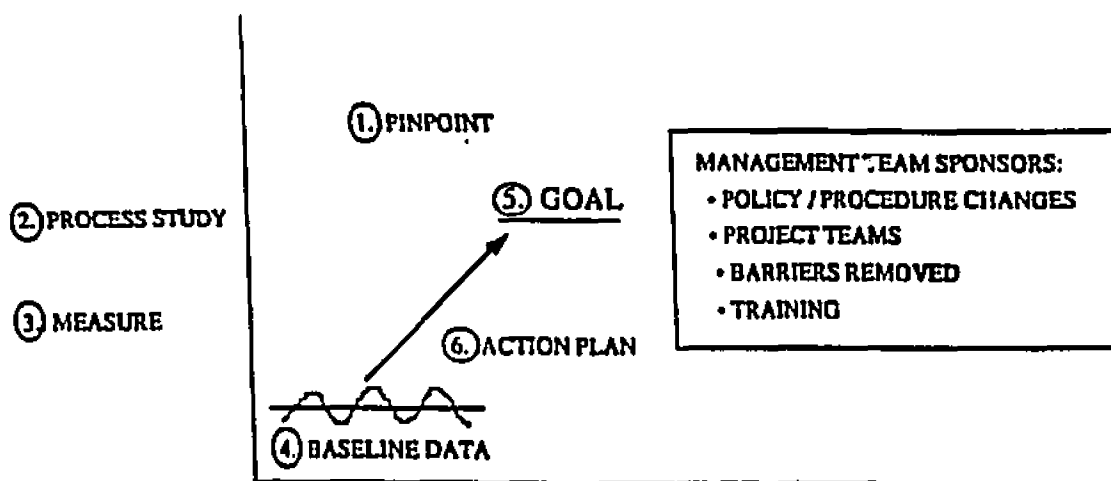
VRD TQM

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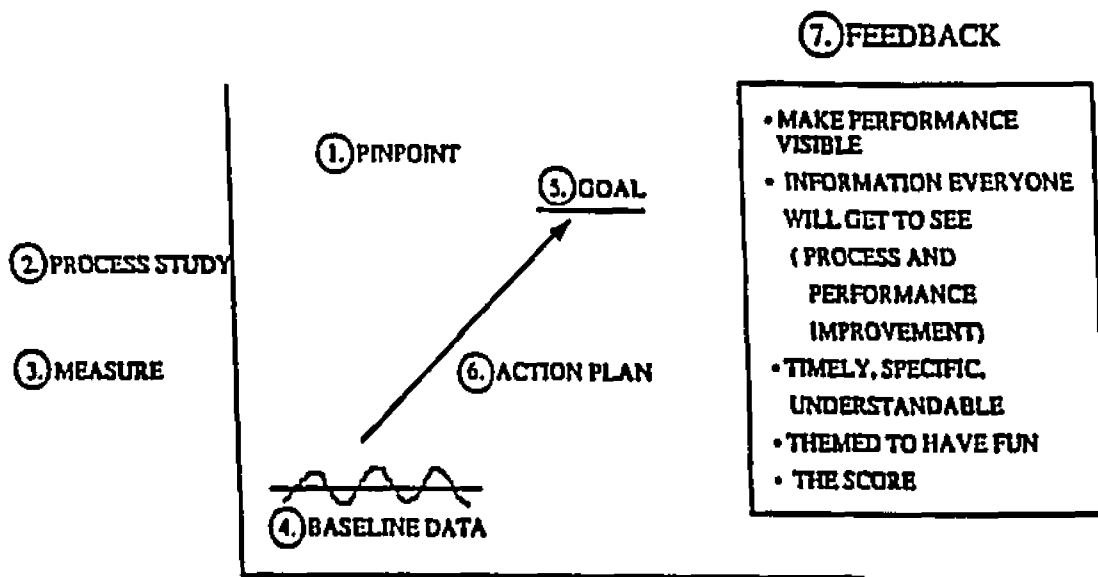




## PROCESS TO ACCELERATE IMPROVEMENT

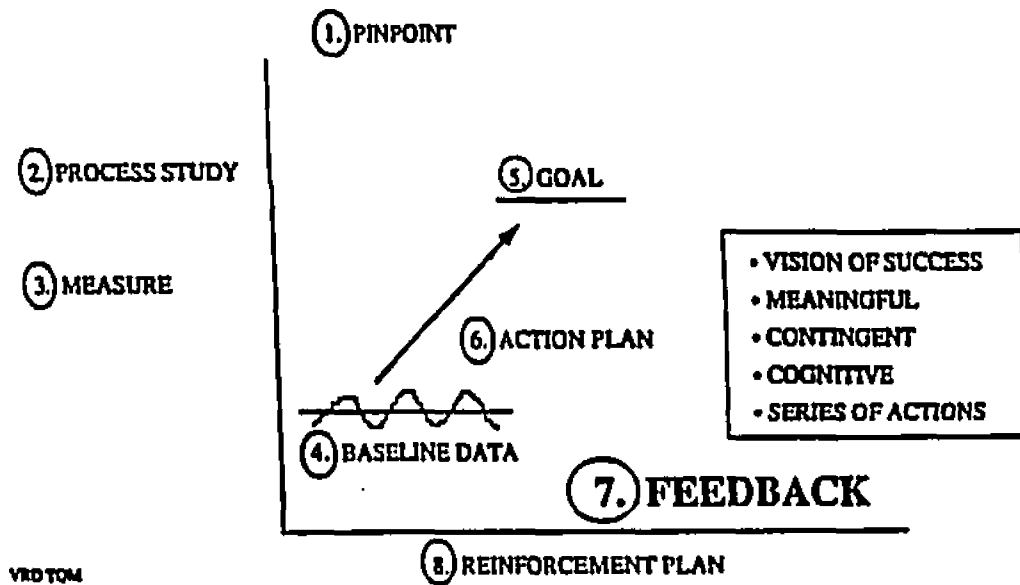


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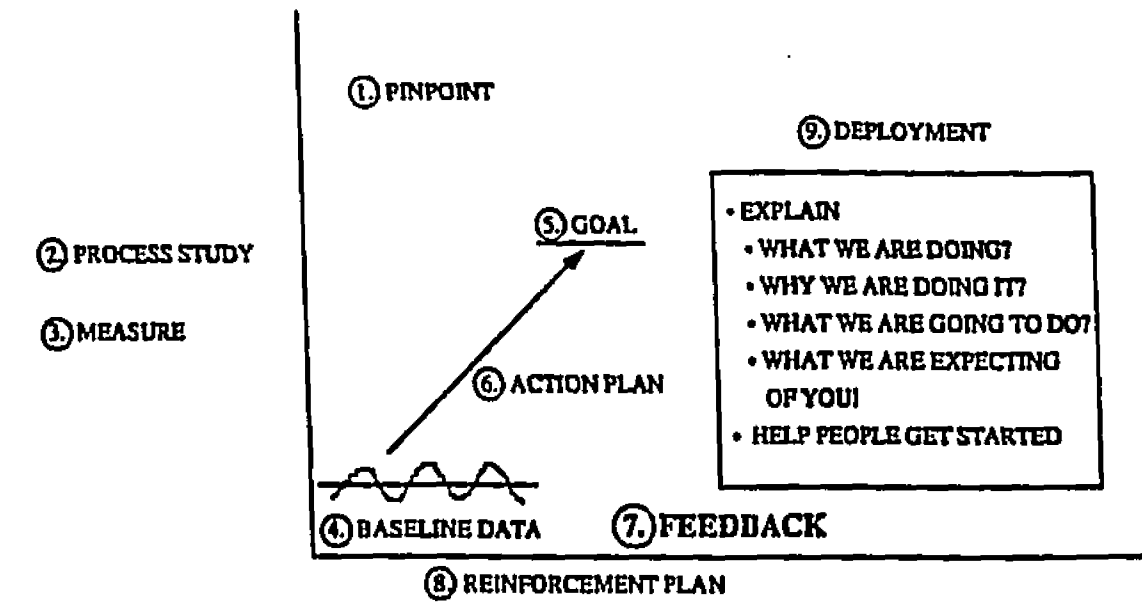


VKD TEAM

# PROCESS TO ACCELERATE IMPROVEMENT

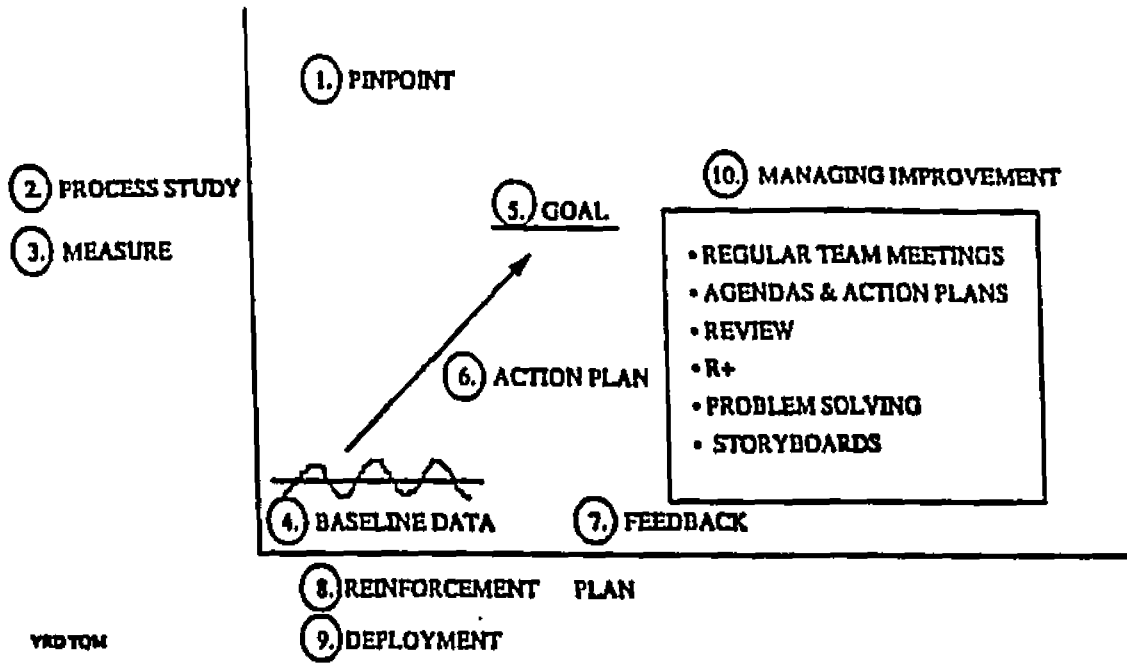


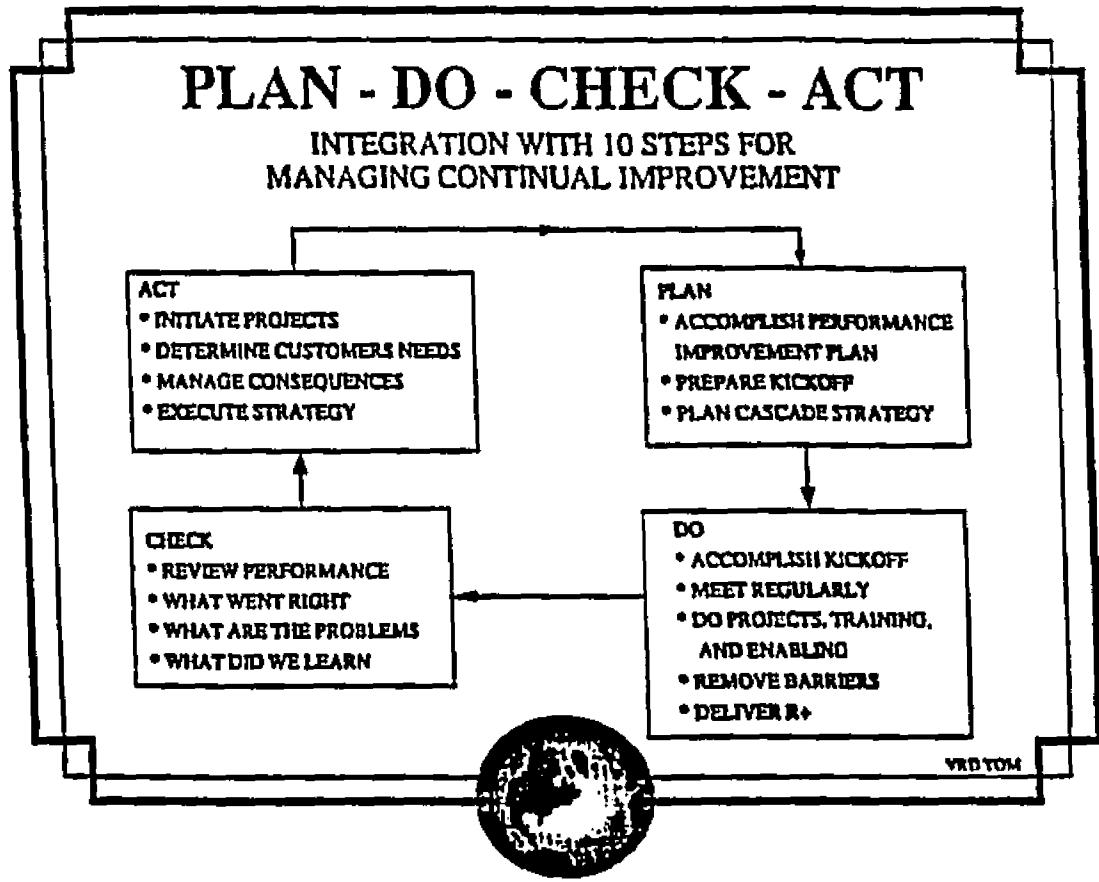
# PROCESS TO ACCELERATE IMPROVEMENT



VRDTQM

# PROCESS TO ACCELERATE IMPROVEMENT





## ACCELERATING THE RATE OF CONTINUAL IMPROVEMENT REQUIRES:

1. DEFINING *WHAT* TO REINFORCE (pinpointing)
  - BEHAVIORS, EVENTS, & RESULTS (goals) R+ THE RIGHT THINGS
2. KNOWING *WHEN* TO REINFORCE
  - MEASUREMENT AND DETECTION R+ AT THE RIGHT TIME
3. KNOWING *HOW* TO REINFORCE
  - SELECTING & DELIVERING R+ THE RIGHT WAY



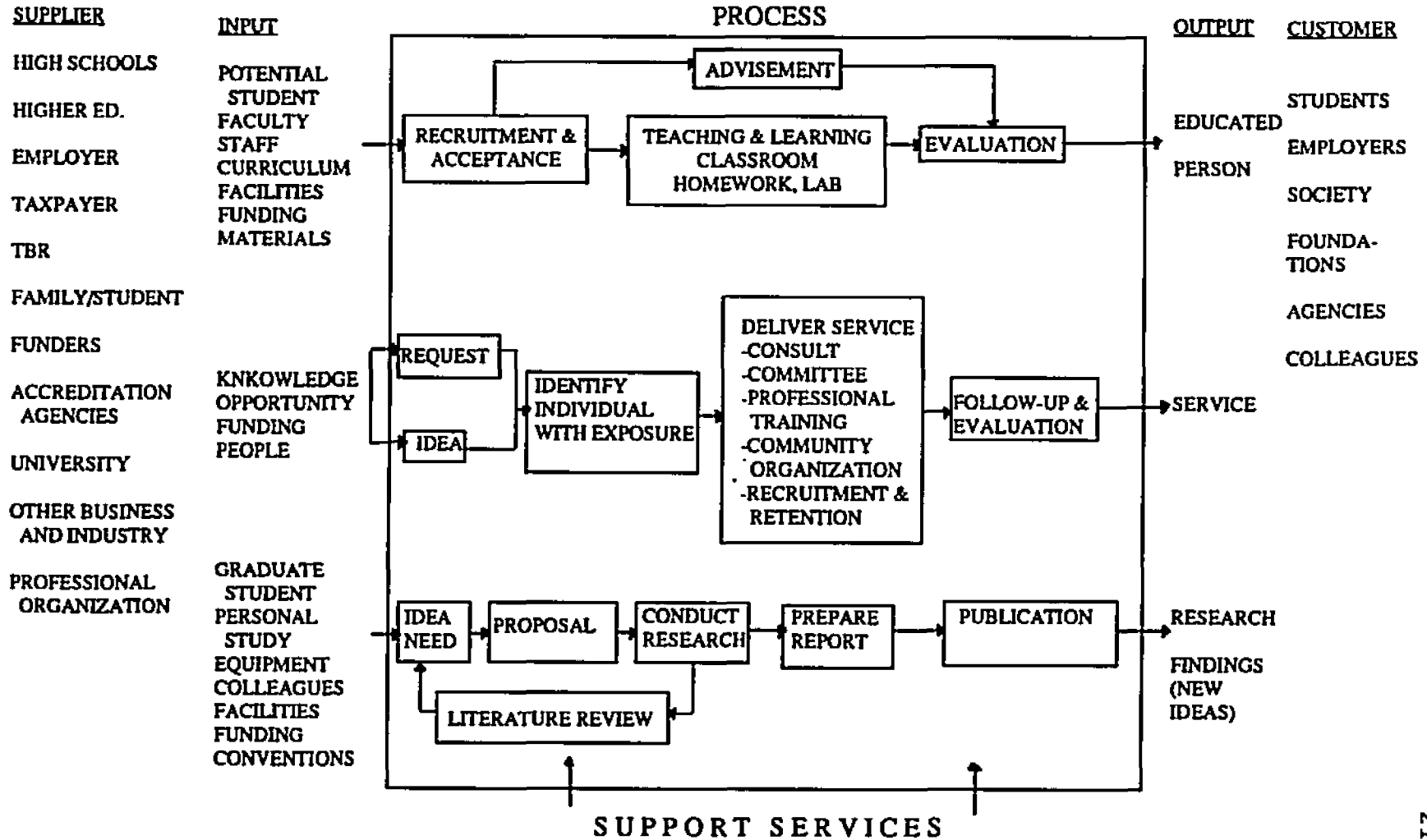
VPII TCM

APPENDIX B  
CAST SIPOC MODEL FOR  
RECRUITMENT, ADVISEMENT, AND RETENTION



## SCHOOL OF APPLIED SCIENCE AND TECHNOLOGY, ETSU

**MISSION STATEMENT** "To prepare educated persons who function constructively in the Applied Sciences for global service and leadership in a technological society and to add to the body of knowledge in our disciplines using our experience to the benefit of the University's several publics."



APPENDIX C  
AUDITOR'S LETTER  
DR. PENNY LITTLE SMITH

### Auditor's Report

Early in the planning stages of her dissertation, Ms. Nancy Bartell requested that I serve as auditor for her qualitative study. Early conversations centered on topics such as study design, possible pitfalls, the need for awareness of personal biases, the interview process, and collection and management of data. Discussions occurred through both formalized meetings and informal contacts such as telephone conversations.

As the study progressed the dialogue changed to areas such as initial findings, using the computer to assist with coding, access to participants, and Ms. Bartell's thoughts, concerns, and discoveries about the qualitative process. The researcher was found to be extremely conscientious and reflective throughout the process.

During the final phases discussions were focused on findings that emerged. Ms. Bartell shared chapters as completed giving me the opportunity to read the study at different phases as well as upon completion. I made suggestions for clarification and asked questions intended to determine how the researcher reached stated conclusions. I looked for indications of possible investigator bias as well as "leaps in logic". I found Ms. Bartell to be cognizant of possible bias resulting from her employment with the university and know that this issue was addressed throughout the study. Nancy was well-organized, focused, and meticulous in her approach and careful to include supporting evidence for conclusions reached. Conversations about this study and the involved participants led me to believe that the study was conducted in an ethical manner with attention given to confidentiality issues.

Serving as an auditor for this dissertation was both a privilege and a pleasure. I found the topic to be timely, the researcher to be conscientious and professional, and the final product capable of filling an existing void in the professional literature.



Penny Little Smith, Ed.D.  
Interim Assistant Dean for Academic Affairs  
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 Director, Management Development Programs,  
 The University of Illinois-Chicago,  
 Chicago, Illinois, 1978-1979  
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 The Institute of Financial Education,  
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- Professional Affiliations:** Academy of Management  
 American Society of Training and Development,  
 Chapter President, 1994; Board Member,  
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 Society of Human Resource Management  
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 Chapter President, 1996-1997;  
 Secretary, 1995-1996