December 1997

A Measurement of Total Quality Management in Selected North Carolina Community Colleges

Gene C. Couch
East Tennessee State University

A MEASUREMENT OF TOTAL QUALITY MANAGEMENT IN SELECTED NORTH CAROLINA COMMUNITY COLLEGES

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
Gene C. Couch, Jr.
December 1997

APPROVAL

This is to certify that the Graduate Committee of

GENE C. COUCH, JR.

met on the

twentieth day of October, 1997

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

Approved:

Dr. Terrence Tollefson, Committee Chair

Dr. Marie Hill

Dr. Gunapala Edirisooriya

Dr. Elizabeth Ralston

Signed on behalf of
the Graduate Council

Interim Dean, School of Graduate Studies

Abstract

A MEASUREMENT OF TOTAL QUALITY MANAGEMENT IN SELECTED NORTH CAROLINA COMMUNITY COLLEGES

by

Gene C. Couch, Jr.

Many of the colleges in the North Carolina Community College System have embarked on a "quality" journey to continuously improve the educational programs and services that they provide to their communities. The primary focus of this study was to determine the level of Total Quality Management (TQM) principles implemented in selected North Carolina community colleges and to determine if there was a difference in the perception of its implementation between administrators and faculty. Additionally, this study examined the influence of the following variables on the implementation of TQM in selected North Carolina community colleges: personal factors (age, gender, ethnicity, and length of employment) and organizational factors (length of institutional involvement in TQM, institutional service area, institutional size, and institutional participation in the Carolina Quality Consortium). Furthermore, the study also gathered data about the positive and negative outcomes as a result of TQM/quality.

Data for this study were obtained from a survey instrument that was based on the Malcolm Baldridge National Quality Award. The survey instrument was mailed to eight full-time administrators and eight full-time faculty members from 29 North Carolina community colleges. Twenty of the institutions belonged to the Carolina Quality Consortium. The remaining institutions represented a convenient sample of the 36 North Carolina community colleges that were not members of the Carolina Quality Consortium. Four hundred sixty-four surveys were mailed and 368 were returned. The overall percentage of survey return was 79.3. The Statistical Package for the Social Sciences (SPSS) was used for the analysis of data. An alpha level of .05 was used for all statistical tests.

The major conclusions were: (1) there are different levels of TQM implementation among the community colleges identified in this study, (2) there is a difference between the perception of TQM between administrators and faculty members, (3) the length of employment at the institution is a factor in the perception of the implementation of TQM, (4) age, gender, and ethnicity are not factors on the perceptions of the implementation of TQM, (5) the length of involvement in TQM, the service area, the size of the institution, and participation in the Carolina Quality Consortium are not factors on the overall quality ratings, (6) the positive outcomes perceived as having resulted from TQM/quality initiatives included improved communication, improved support systems, customer service, and increased involvement in planning and decision-making, and (7) the negative outcomes perceived as having resulted from TQM/quality were incongruence in philosophy and practice, too much time wasted, work overloads, and endless paperwork.

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:	A Measurement of Total Quality Management in Selected North Carolina Community Colleges
Principal Investigator:	Gene C. Couch, Jr.
Department:	Educational Leadership and Policy Analysis
Date Submitted:	April 7, 1997

David N. Wallace MD

Institutional Review Board, Chair _____

Dedication

This dissertation is dedicated to my wife, Judy Ellen, and my sons, Jarrod and Jordon Couch. Judy's support of my efforts enabled me to complete this work and receive this degree. Without the love and patience of my family, I could not have accomplished this. This has truly been a team effort.

Acknowledgments

This work could not have been completed without the support and guidance of many individuals. I extend my sincere appreciation to all the people who have contributed to this study. The counsel and guidance of Dr. Terrence Tollefson, Committee Chair, were timely and invaluable during my research and graduate study at East Tennessee State University. Gratitude is extended to the other committee members: Drs. Marie Hill, Gunapala Edirisooriya, and Elizabeth Ralston. Their encouragement and advice was critical to the completion of this project.

I also want to acknowledge my mother, Thelma Couch, who has provided a lifetime of encouragement and instilled self-confidence and pride in accomplishment.

Special acknowledgment rests with my wife, Judy Couch, and my sons, Jarrod and Jordon. They have borne many sacrifices during the completion of this work.

Table of Contents

Page

LIST OF TABLES

Tables Page

CHAPTER 1

INTRODUCTION

Total Quality Management (TQM) is a continuous improvement journey. This process consists of a scientific, systematic approach to meeting the needs of external and internal customers by continuously improving processes and systems.

TQM is only one of many acronyms or terms used to label the concept. Some of the other terms/acronyms used to denote the concepts are TQ - Total Quality, CQI - Continuous Quality Improvement, CI - Continuous Improvement. Other terms are specific to given companies or organizations.

TQM Is a concept that has moved from business to higher education. Many question the need for a renewed focus on quality in higher education and/or the appropriateness of applying the concepts of total quality to the academy. Lewis and Smith (1994) make a rather compelling argument for higher education to embrace concepts of quality. Some of these arguments stem from the following sources. First, over the past decade, numerous books, reports, and commentaries have expressed increasing dissatisfaction with the performance of our American higher education system. Second, the world in which institutions of higher learning operate is changing dramatically. Higher education is experiencing shifts in student enrollments. Meeting the needs of older, and increasingly part-time, students will require new approaches in the delivery of educational services. The third reason for a focus on quality involves

increased market forces and competition in higher education. Fourth, competition among colleges and universities will be encouraged by technological developments and the reality of distance education. Finally, there is an increased competition for funding of education with other human service areas such as health and public safety.

It can be argued that it is appropriate to apply total quality to higher education because total quality emphasizes principles that are firmly enshrined in the educational enterprise. These include an emphasis on knowledge and education, experimentation and management by fact, continuous improvement, and respect for and the ongoing development of people.

Statement of the Problem

The problem of this study was to assess the level of implementation of total quality management in selected North Carolina community colleges. In addition to determining the overall level of TQM implementation, the study determined if a difference exists between the administration and faculty members' perception of TQM at their respective institutions. This study also determined the perceived positive and negative outcomes of TQM/quality initiatives at their respective institutions.

Research Questions

This study assessed the degree of implementation of TQM principles in selected North Carolina Community Colleges and determined whether a difference exists in the perception of its implementation between administrators and faculty.

Specific research questions were:

1. To what extent have selected community colleges implemented TQM?
2. Is there a difference between the perceptions of administrators and faculty members with regard to the level of implementation of TQM in selected community colleges?
3. Is age a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges?
4. Is gender a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges?
5. Is ethnicity a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges?
6. Is the length of employment a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges?
7. Is the length of involvement in TQM a factor in the overall quality rating in selected North Carolina community colleges?
8. Is the service area of the institution a factor in the overall quality rating in selected North Carolina community colleges?
9. Is the size of the institution a factor in the overall quality rating in selected North Carolina community colleges?
10. Is participation in the Carolina Quality Consortium a factor in overall quality rating in selected North Carolina community colleges?
11. What, if any, positive outcome(s) have been perceived as a result of TQM/quality at selected North Carolina community colleges?

12. What, if any, negative outcome(s) have been perceived as a result of TQM/quality at selected North Carolina community colleges?

Significance

Vaughan (1995) suggests that one of the key issues facing community colleges is how they will be organized and led. The community college has borrowed heavily from business and industrial models of management. Total quality has clearly entered the vocabulary of community college leaders and the idea of continuous quality improvement has a great deal of appeal. As community college leaders explore quality initiatives, they will need to identify the perceptions of total quality from the viewpoints of both faculty and administration. Findings from this study could provide valuable insights into these perceptions. From a practical viewpoint, information obtained in this study may be useful to community college leaders interested in implementing TQM in their institution, to quality consultants, and to human resource development officers. Furthermore, this study will provide respondents with a quality index rating of their institution allowing them to determine the strengths and weaknesses of quality initiatives.

Limitations

This study was subject to the following limitations:

1. This study is limited to the extent to which the individuals completed the surveys represented their respective categories of administration and faculty at their institutions.

2. This study omitted a group of individuals in support positions, e.g. secretaries, counselors, and a number of student service personnel. This group of individuals represents a significant portion of each institution's employees.
3. This study is limited by the extent to which the individuals completing the surveys were willing to report their true feelings and beliefs.

Definitions of Terms

For the purpose of clarification, the following definitions and explanations of terms were established for use through the study:

- **Administration/Administrators** - those individuals who were identified, either by the college's catalog or employee list provided by the college's personnel office, as full-time administrators. For the purpose of this study, the author has categorized the following positions as administrators: President, Vice-President, Dean, Associate Dean, Assistant Dean, Division Chair, and Director.
- **Carolina Quality Consortium (CQC)** - a voluntary organization that has a mission to "expand and strengthen the implementation of continuous quality improvement concepts and practices (CQI) in North Carolina community colleges through collaboration and cooperation" (Carolina Quality Consortium Mission, 1994, p.1). Currently, there are 22 community colleges that voluntarily belong to this consortium. The North Carolina Community College System provides funding to the consortium. Criteria established for consortium membership include:

1. Commitment of the college president to support the internal college continuous improvement initiative and the Carolina Quality Consortium.
2. Designation of a college quality leader with a direct line to the top leadership of the college.
3. A written framework or plan for the college quality program initiative.
4. Commitment to identify and support a cadre of internal trainers who will participate in train-the-trainer regional programs.
5. Identification of a specialty program/topic to develop and share with the consortium membership during the year.
6. Willingness to send a top management leadership team to a three-day CQC Executive Quality Institute.

Community colleges that meet those criteria and have an interest in joining the consortium submit an application to the CQC Leadership Team.

- **North Carolina Community College** - A state supported two-year college in the state of North Carolina. The names of the institutions may vary from community college to technical college to technical community colleges. There are 58 institutions that comprise the system. Some of these institutions have off-campus centers, and some have service areas greater than one county per college. For the purpose of this study, all colleges were treated equally.
- **Total Quality Management (TQM)** - a continuous improvement process consisting of a scientific, systematic approach to meeting the needs of external and internal customers by continuously improving systems. Names that are

approximately synonymous are: Continuous Quality Improvement (CQI), Total Quality Control (TQC), Continuous Improvement (CI), and Total Quality Systems (TQS).

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

This chapter contains the conceptual framework for the study. The review of related research pertaining to TQM and its application to institutions of higher education is provided. A review of the literature pertaining to application of TQM principles in an academic setting is organized in specific categories under the headings: History, Early Leaders in the Total Quality Movement, Quality Defined, TQM in Higher Education, Implementation Strategies, and the Malcolm Baldridge Award.

History

According to Walton (1986), the term Total Quality Management was first coined in 1985 by Nancy Warren, a behavioral scientist in the U.S. Navy. Ambiguity abounds when attempting to define TQM. To some, TQM is a process; to others it is a philosophy. Most people say it is both. Paton (1994) suggests that TQM has no creator because TQM is really nothing more than the application of common sense, respect, and hard work in everything that a person does. Further development of this theme would suggest that the TQM concept of continuous improvement was at work when the wheel was invented. Therefore, some elements of total quality have been present since the beginning of time. People have always tried to make improvement to processes and products.

The formal Quality Movement (see Figure 1) began in the early part of this century and certain key thinkers and/or events have made contributions to this concept. TQM is an American concept that was tested and enriched in Japan.

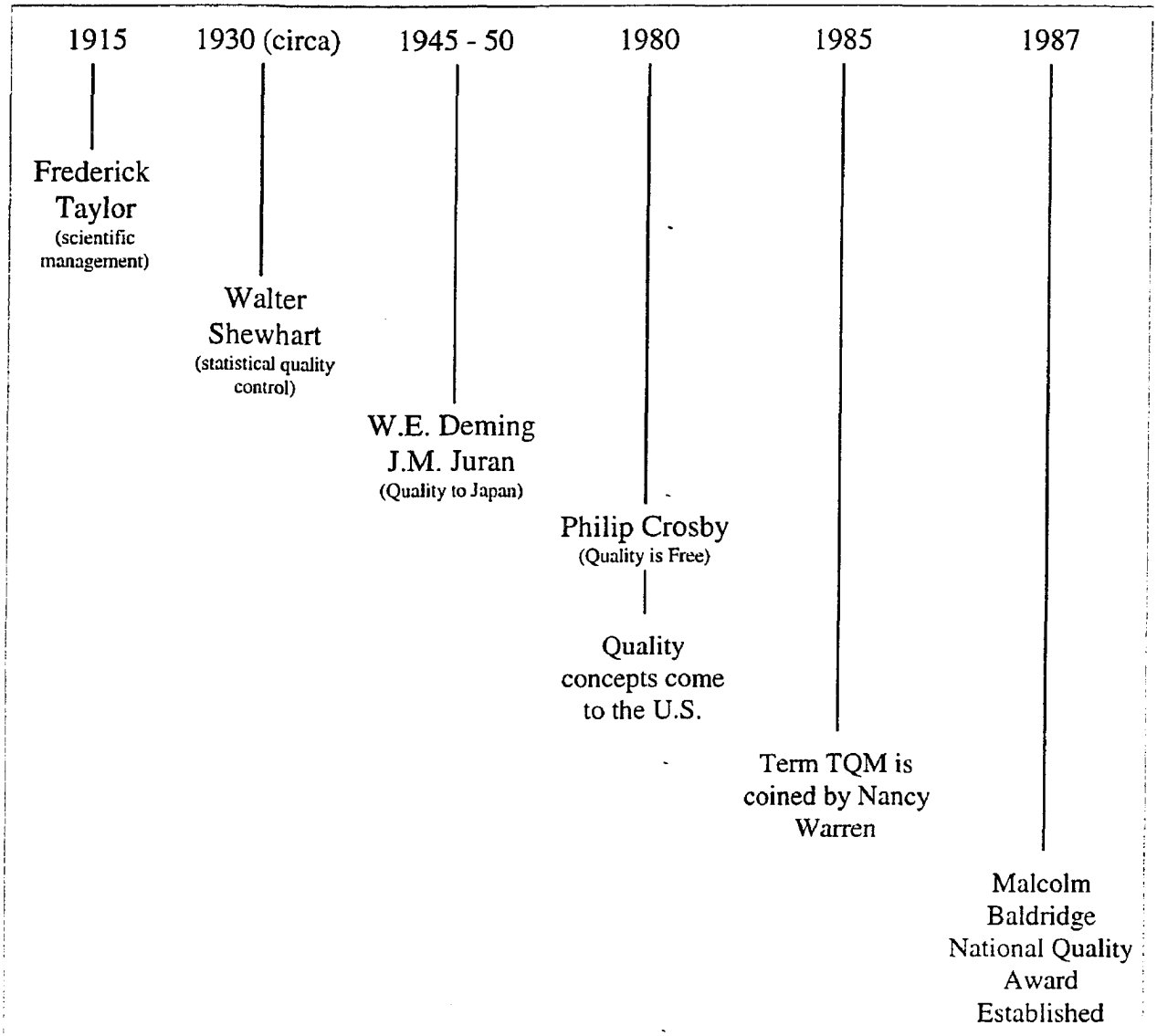

Figure 1: The Quality Movement

The first identifiable phase in quality thinking might be associated with Frederick Winslow Taylor. In 1911, he published his landmark book *The Principles of Scientific Management.* Taylor suggested that the best way to manage an operation was for management to analyze every job in detail and decide by analysis what would be the best way to do the job.

Walter Shewhart is also credited with developing some of the components of today's total quality management. Shewhart was an engineer, scientist, and philosopher. Shewhart worked at Bell Laboratories in New Jersey, where he was a gifted statistician who developed a statistical quality control approach. In 1924, he developed the control chart. The control limits on Shewhart's control charts provided guides for acting on the process in order to eliminate assignable causes of variation. By using data, there was a shift in the manufacturing emphasis from correction of problems to prevention of problems and improvement of processes. The U.S. Bureau of the Census in the 1930s used quality principles. W. Edwards Deming is noted as the "the man who discovered quality" (Gabor, 1990). He took Shewhart's teachings and expanded them.

In the early 1940s Deming and Shewhart were asked by the U.S. Government during World War II to establish better quality guidelines for defense contractors using statistical process controls (SPC). U.S. manufacturers of munitions, weapons, and other war materials in World War II used SPC to a great advantage.

According to Chaffee and Sheer (1992), after World War II, U.S. Government officials who were responsible for helping Japan rebuild its economy brought TQM to Japan. As a result of Deming's early work in Japan, and because of a series of lectures he

gave to Japanese industrial experts and academics in 1951, the Japanese became permanently enamored of his quality control methods. Deming's contemporary, Joseph M. Juran, of the Shewhart School, was also well received in Japan. However, Deming very early became a highly revered figure, and the statistical methods he used were met with great enthusiasm. Today, Japan's highest national quality award is called the "Deming Prize." Many Japanese industries embraced TQM fully and have developed its concepts and applications over the past 40 years.

By the early 1980s such books as Philips Crosby's *Quality is Free* were proposing a revolution in manufacturing quality methods. Crosby showed that improved quality could lower overall costs, dispelling the popular belief that high quality meant higher total cost for an organization. With fewer parts reworked, less material wasted, and less time spent inspecting finished goods, the organization's total cost can actually decline (Cummings & Worley, 1993).

The turning point of TQM in the United States was sparked by a 1980 NBC documentary featuring Deming called *If Japan Can, Why Can't We?* (Albrecht, 1993). This report catapulted Deming into a level of stardom in this country comparable to what he enjoyed in Japan. Some of the early companies to embrace the quality movement were Ford, American Express, IBM, Xerox, Motorola, and Procter & Gamble.

In 1987, the U.S. Congress created the Malcolm Baldridge National Quality Award, named for a former Secretary of Commerce, that is similar to Japan's Deming Prize. Some of the early winners of the Baldridge Award have been Motorola, Cadillac, Federal Express, and Xerox. The concepts of total quality were initially developed for

manufacturing industry; however, the service sector and the educational arena have stretched the application of total quality to their enterprises.

Early Leaders in the Total Quality Movement

W. Edwards Deming, Joseph S. Juran, and Philip Crosby are the three individuals most frequently associated with the quality movement. Their works are so often cited that they have been tabbed as the "gurus" of the movement. Each has spent a significant portion of his life telling companies that quality improvement is simple and critical for survival in the global market place. All three have insisted that quality improvement is a never-ending process. Their quality concepts are articulated in very straightforward, understandable language.

W. Edwards Deming is considered to be "the man who discovered quality" (Gabor, 1990). He was born in Sioux City, Iowa on October 14, 1900, and was raised in Powell, Wyoming, the son of a struggling lawyer. The family lived for a time in a tarpaper shack, and young Deming worked to help pay for food. He was educated at the University of Wyoming, the University of Colorado, and Yale University. He earned his doctorate in mathematics and physics from Yale in 1928 (Lewis & Smith, 1994). He began work at the U.S. Department of Agriculture in 1928, and there he first became interested in matters of quality control and statistical process control. His thinking was shaped by Walter Shewhart's work on statistical process control. In 1939, he joined the U.S. Census Bureau as its head mathematician and statistician. There he developed his fundamental concepts of quality control in both manufacturing and non-manufacturing

environments and began giving lectures on quality control across the United States. Unfortunately, industrialists did not respond to his concepts at that time. Deming focused on constant improvement and quality. He stressed statistical process control (SPC) and a 14 point process for managers to improve quality and productivity. His theories are humanistic, as they treat people as intelligent human beings who want to do their jobs well. These 14 points are as follows:

1. Create a constancy of purpose for the improvement of product and service, with the aim of becoming competitive, staying in business and providing jobs.
2. Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, learn their responsibilities and take on leadership for change.
3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.
4. End the practice of awarding business on the basis of price tag alone. Move toward a single supplier for any one item on the basis of a long-term relationship of loyalty and trust. Minimize total cost by working with a single supplier.
5. Improve constantly and forever every process for planning, production and service to improve quality and productivity, and constantly decrease costs.
6. Institute training on the job.
7. Adopt and institute leadership. The aim of supervision should be to help people, machines and gadgets do a better job. Supervision of management and production workers is in need of overhaul.
8. Drive out fear so everyone can work effectively for the company.
9. Break down barriers between departments. People in research, design, sales and production must work as a team to foresee problems of production and those that may be encountered with the product or service.
10. Eliminate slogans, exhortations and targets for the work force that ask for zero defects or new levels of productivity. Such exhortations only create adversarial relationships, since the bulk of the causes of low quality and productivity belong to the system and thus lie beyond the power of the work force.

11a. Eliminate work standards (quotas) on the factory floor. Substitute leadership.
11b. Eliminate management by objectives. Eliminate management by numbers and numerical goals. Substitute leadership.
12a. Remove barriers that rob hourly workers of their right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality.
12b. Remove barriers that rob people in management and engineering of their right to pride of workmanship. This means, *inter alia*, abolishment of the annual or merit rating and of management by objective.
13. Institute a vigorous program of education and self-improvement.
14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job. (Deming 1986, p. 23).

Deming also identified "diseases" that were potentially fatal to a company's quality efforts. The Seven Deadly Diseases are as follows:

1. Lack of constancy of purpose. A company that is without constancy of purpose has no long-range plans for staying in business. Management is insecure, and so are employees.
2. Emphasis on short-term profits. Looking to increase the quarterly dividend undermines quality and productivity.
3. Evaluation by performance, merit rating, or annual review of performance. The effects of these are devastating - teamwork is destroyed, rivalry is nurtured. Performance ratings build fear, and leave people bitter, despondent, and beaten. They also encourage mobility of management.
4. Mobility of management. Job-hopping managers never understand the companies that they work for and are never there long enough to follow through on long-term changes that are necessary for quality and productivity.
5. Running a company on visible figures alone. The most important figures are unknown and unknowable - the multiple effects of a happy customer, for example.

Diseases 6 and 7 are pertinent only to the United States:

6. Excessive medical costs.
7. Excessive costs of warranty, fueled by lawyers that work on contingency fees. (Walton, 1986, p.36).

In 1960, the Emperor of Japan awarded the Second Order Medal of the Sacred Treasure to Deming. In 1986, Ronald Reagan, the President of the United States, awarded the National Medal of Technology to Deming. Deming also received honorary degrees from a number of colleges and universities. He authored several books and papers. He mostly lived in Washington, D.C., while holding the position of Professor of Statistics in the Graduate School of Business Administration at New York University. Deming died at the age of 93 on December 20, 1993.

Joseph M. Juran, an immigrant from Romania, is known as another quality "guru." The first in his family to attend college, Juran graduated from the University of Minnesota with a degree in electrical engineering. He began his industrial career at Western Electric's Hawthorne plant before World War II. He later worked at Bell Laboratories in the area of quality assurance. The 1951 publication of Juran's *Quality Control Handbook* established him as an authority on quality, and it became an international standard reference for the quality movement. He worked as a government administrator, university professor, and labor arbitrator before establishing his own consulting firm, the Juran Institute, in Wilton, Connecticut. In the 1950s he was invited by Japan to do a series of lectures just after the lecture tour of W. Edwards Deming. Juran's concept of quality included the managerial dimensions of quality planning, quality control, and quality improvement (known as the Juran Trilogy) and focused on the responsibility of management to achieve quality and the need to establish goals. Juran's 10 steps to quality are as follows:

1. Build awareness of opportunities to improve.
2. Set goals for improvement.
3. Organize to reach goals.
4. Provide training.
5. Carry out projects to solve problems.
6. Report progress.
7. Give recognition.
8. Communicate results.
9. Keep score.
10. Maintain momentum by making annual improvement part of the regular systems and processes of the company.

Juran also received Japan's Award, the Order of the Sacred Treasure and the VIS. Award - the National Medal of Technology for his work in quality (Juran, 1995).

The third "guru" is Philip B. Crosby. Crosby studied to be a podiatrist not a statistician or engineer. After serving in the Korean War, Crosby joined ITT as an inspector on an assembly line. After 13 years, he emerged as a corporate vice-president. In 1978, Crosby catapulted Quality Management into the mainstream of American management theory through his first book, *Quality is Free*. Crosby awakened the world to the notion that quality rests in the hands of management, not in the quality control department. In 1980, he established the Quality College and used that vehicle to promote his quality concepts (Crosby, 1996). Crosby contends that the system of quality should be based on prevention. He encourages a performance standard of "zero defects" and says

that the measurement of quality is the price of non-conformance. Like Deming, Crosby (1984, p.99) has 14 steps for quality:

1. Commitment from management.
2. Quality improvement teams.
3. Measurement
4. Cost of quality.
5. Quality awareness.
6. Corrective action.
7. Zero defects planning.
8. Employee education.
9. Zero defects day.
10. Goal-setting.
11. Error-cause removal.
12. Recognition.
13. Quality councils.
14. Do it over again.

Crosby also adds four "quality absolutes": a definition of quality, a prevention (rather than appraisal) system of quality, a performance standard (zero defects), and the measurement of quality (the cost of non-conformance) (Lewis & Smith, 1994).

The fundamental message of all three "gurus" is basically the same: commit to quality improvement throughout the entire organization. Attack the system rather than the employee. Find and eliminate problems that prevent quality. Identify and satisfy your

customers, both internal and external. Eliminate waste, instill pride and teamwork, and create an atmosphere of innovation for continued improvement. Following these steps leads to competitiveness and profit. The "gurus" also differ in concept. Attention is often focused on the differences among these men, but most agree that their similarities are far more important (Oberle, 1990).

Two other individuals who have a measure of recognition in the area of quality are Kaoru Ishikawa and Armand Feigenbaum.

Key Concepts/Principles

What is Total Quality? Burgdorf (1992) defines total quality as a customer-oriented philosophy of management that uses total employee involvement in the relentless, daily search for improvement of quality of products and services through the use of statistical methods, employee teams and performance management.

Cartin (1993) asserts that "Total" is an appropriate term because this management process involves everyone in the organization - every function and activity. Total involvement recognizes that every activity contributes or detracts from quality and productivity; and that the people working in those activities (processes) are in the best position to know what needs improvement. Quality is the dimension by which the value of the method is measured. It focuses on improving the quality of all functions, systems, and processes. This includes not only the elimination of undesirable output, but the improvement of acceptable products and services. The result is customer satisfaction or customer delight. Management in this context is not administrative personnel directing or

controlling the work of a group of employees. It is the actions involved in applying TQM principles and techniques to all activities. It is actually the first truly scientific management method, in that it relies on older, proven principles and methods as well as some that are new. One of the old ideas postulates that employees want to do high quality work and tools such as statistical process control (SPC) are important aids in the achievement of quality. The new principles are related to continuous process improvement and internal/external customer satisfaction.

There are several major elements that provide the foundations of TQM. These major elements are: processes and systems, customer focus, continuous improvement, management by fact, and respect for people.

- Processes and Systems - A process is the combination of tasks and steps necessary to accomplish a given result. A system refers to an arrangement of persons, places, things, and/or circumstances that makes, facilitates, or permits things to happen. One of Deming's key observations is that the organized activity of work takes place in a system where at least 85% of the systems are controlled by management and 15% are controlled by workers.
- Customer Service - The two most basic questions for all organizations, public and private are: "What is our mission?" and "Who are our customers?" With TQM, quality is defined by what the customer says it is. Therefore, the objective is to provide goods or services that meet or exceed customer expectations. According to Marchese (1993), a customer

focus impels organizations to be specific about the parties they serve. Who are the customers? Customers are the users of the goods or services produced by an organization. Those users are both external and internal to the organization.

- Continuous Improvement - Continuous improvement is both a commitment and a process. The Japanese word for this concept is "Kaizen," and is often attributed to the Japanese succession in the global marketplace. Continuous improvement is dependent on two elements: learning the appropriate processes, tools, and skills and practicing these skills on achievable projects. The process for continuous improvement, first advanced many years ago by Shewhart and implemented by Deming, is Plan, Do, Check, and Act (PDCA), a never-ending cycle of improvement that occurs in all phases of the organization. While no rigid rules are required to carry out the process, the general framework of each step can be described. The first step, Plan, asks such key questions as what changes are needed, what are the needed results, what obstacles need to be overcome, what data are available, and what new information is needed. Do is for the implementation of a small-scale change or pilot test to provide data for answers. Check is the assessment and measurement of the effects of change or test. Act, the final step, analyzes these results and a determination is made to implement or not. This process continues, expanding knowledge and further improvement. See Figure 2 for a visual

reference. One of the components of this cycle is benchmarking. Benchmarking refers to the systematic search for the best practice.

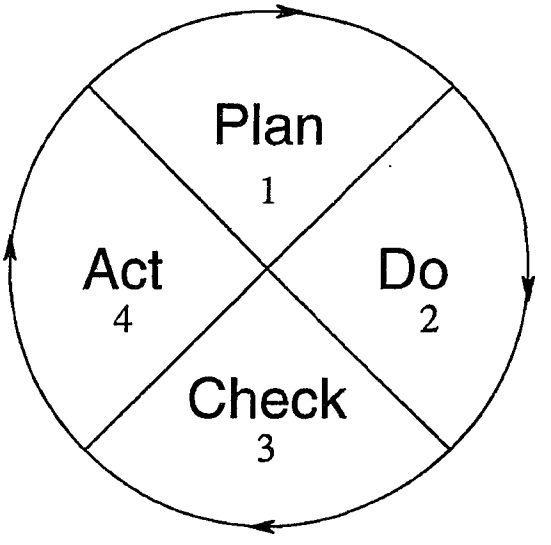

Figure 2: Plan, Do, Check, Act

- Management by Fact - There is a statement attributed to Deming, "In God we trust, all others must bring data." Too often, the management of a program is based on intuition, influence, hunches or organizational politics. Managing with facts requires two actions. First, collect data so that information is valid. Second, whenever possible, manage according to this information, not according to instinct, preconceptions, or other factors. To achieve this there are a variety of tools designed to gather and analyze data and make decisions based on facts. Seven basic, highly effective tools are commonly used in the total quality movement: fishbone or cause-and-effect diagram, control chart or run chart, Pareto diagram,

flow-charting, brainstorming, nominal group technique, and affinity diagram. Appendix A defines the above tools.

- Respect for People - This area is where Deming directed 8 of his 14 points. Every employee must be fully developed and involved. The result will be an empowered individual - a value-added resource, with loyalty to the program, the team, and the entire organization. Respect for people also boils down to such simple things as:
  - Creating a sense of purpose in the workplace so that people are motivated to do their best.
  - Keeping people informed and involved, and showing them how they are a part of the bigger picture.
  - Educating and developing people so that each individual is the best that he or she can be at what they do.
  - Helping people communicate well so that they can perform their jobs with peak effectiveness.
  - Delegating responsibility and authority down so that people are not just doing what they are told, but are taking the initiative to try to do better work.

Marchese (1993) suggested that an organization avid for improvement sees people as its greatest resource. It does everything possible to give every employee the preparation, tools, and initiative to contribute to the company goals. In this system, the employee watchwords become training, teamwork, responsibility, and mutual

accountability; for leaders, it is incumbent to provide vision and strategy, to coach, mentor, and be a team player.

TQM in Higher Education

It can be argued that there has always been a demand from the public for accountability in higher education. According to Russell (1995), over the years people have become increasingly aware of their rights to expect excellence from the educational institutions they attend and their tax dollars support. Over the years as demands for accountability have changed, our institutions have responded accordingly to meet those demands. While calls for accountability are not new, there is a growing interest in the dialogue. In the past few years it seems that all publicly supported educational institutions are under scrutiny because people are no longer satisfied with mere words of assurance. Instead, they want to see outcomes as evidenced by such measures as employment rates, state examination passing rates, balanced budgets, sound spending decisions, and careful attention to community needs. This demand for stricter accountability is not limited to higher education, because virtually every area of government and the health care industry are faced with the challenge of finding better ways to meet customer and constituent expectations.

There is evidence that higher education is moving ever closer to the center of the magnifying glass. During the 1980s, a plethora of reports from diverse national organizations focused on college and university accountability. This call for accountability came from reports of the American Council on Education in 1982, the

National Commission on Excellence in 1983, the National Institute of Education Study Group in 1984, and the Association of American Colleges in 1985 (Peterson, 1993).

With a growing recognition by higher education leaders of the need to examine the effectiveness of their institutions, many of them are turning to the concept of TQM. TQM began in manufacturing, and in the last decade it has taken hold in service organizations. Chaffee and Sherr (1992) indicated that this shift from manufacturing to service environments requires redefining some components of TQM. No sector of the American economy, manufacturing or service, has been left untouched by increased global competition and expectations of higher quality.

Is TQM right for higher education? A number of authors (Chaffee & Sherr, 1992; Cornesky et al., 1992; Lewis & Smith, 1994; Wallin & Ryan, 1995) indicate that it is right for several reasons. Some of these reasons are:

- TQM builds on the tradition of quality that is associated with higher education.
- TQM supports the development of people - administrators, faculty, staff, and students.
- TQM concepts can be applied to both the administrative processes of the organization as well as the classroom.
- TQM is a philosophy, with principles and tools. Unlike many innovations, TQM is not a recipe of ingredients and steps that must be followed to produce the intended result. Therefore, institutions can "customize" it to fit their particular needs.

- TQM uses many known principles and tools of good management/ leadership — continuous improvement, teamwork, quality, decisions based on data, and customer satisfaction.

Arguably, student learning is the core function of higher education and therefore should be emphasized in all discussions of quality. The two traditional approaches to assuring quality in higher education are accreditation and outcome assessment. In the past, the focus of accreditation has been on the inputs of the institution, such as faculty degrees, facilities, and physical resources. The base assumption of this approach is that if high quality input exist, quality output result. Dissatisfaction with the focus on input led to the emergence of the outcome assessment movement. Outcome assessment emphasizes such things as student achievement, graduation, and employment. Unfortunately, knowledge of educational outputs alone does not provide information about the processes of the institution.

Total quality provides a means for developing an integrated approach to the educational enterprise. Figure 3 provides a pictorial reference for the above concept.

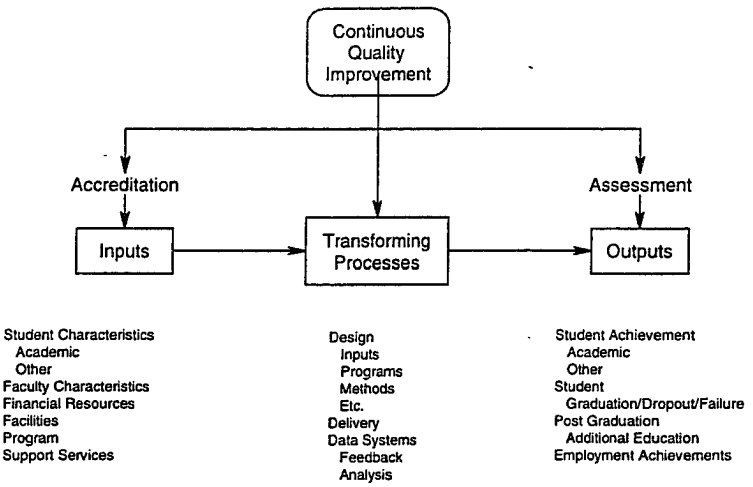

Figure 3: Total Quality: Integrating Quality in Higher Education

Source: Lewis, R.G., & Smith, D.H. (1994). Total Quality in Higher Education. Delray Beach, FL: St. Lucie Press

Several sources, (Lewis & Smith, 1994; Sherr & Tector, 1991; Yudof & Busch-Vishniac, 1996), suggest important differences exist between business and higher education that make it necessary to carefully examine and adapt a business concept to a collegial setting. Some of these differences are:

- Some key words or phrases associated with total quality management do not always work well in higher education. The most obvious negative of TQM is simply its name. It can be difficult for the academy to embrace anything with the word "management" in its title. Another area equally troubling to some educators is calling students "customers." Perhaps a better way to refer to higher education constituencies is "shareholders" or

"clients." The term "minimize variation" implies limits on creativity and an overwhelming drive toward standardization and uniformity.

- The organizational structure presents difficulties. There is a dual organizational structure between administrative and academic functions.
- There is intensive divisionalization. Faculty have a loyalty to their discipline and/or department before the institution.
- There is a unique culture of higher education. Various values, practices, and policies present conditions that may hinder quality. For example, the emphasis on individualism may inhibit the teamwork required for TQM to be effective.
- There is an inherent conservatism in higher education. People are reluctant to change something that has worked well in the past.
- Higher education's investment in human resources is much more complex than the bottom line profitability in business.
- The power of higher education administration is greatly diffused when there is a quest for improvement and new initiatives in teaching and learning. The administration must rely on persuasion and leadership. Faculty members can be key ingredients to these kinds of change. The level of individual autonomy granted to faculty is viewed as a fundamental component of the academy.

According to Klaus (1996) *Quality Progress* began a survey in 1991 to determine the impact TQM was having on the educational community. Their project identified

institutions that had implemented quality tools in their administration and/or were offering quality-related courses and/or degrees in quality. Since its debut in 1991, the Quality in Education Survey list has grown from 133 to its current 451 institutions. This survey includes K-12, colleges, and universities, and community colleges. In the 1996 survey, the number of colleges and universities responding to the survey was 216 and the number of community colleges was 79.

Other information from the 1996 survey included:

- Eighty -four percent of colleges and universities that responded are implementing quality practices in their administrations and more than 26% of them have been doing so for more than four years.
- Eighty percent of responding community colleges use quality principles in their administrations, and 21% of them have been doing so for more than four years.
- Fifty-seven percent of colleges and universities offer quality-related certificates, concentrations, minors, or degrees.
- Seventy-five percent of community colleges offer quality-related certificates, concentrations, minors, or degrees.

Quality Progress qualifies their results by saying that their listing does not include all of the educational institutions involved in quality, but only the ones completing the survey. A number of institutions of higher education embraced the concepts of quality in the late 1980s and early 1990s. Some of the early users of TQM in higher education are:

Fox Valley Technical College, Oregon State University, Delaware County Community College, and Pennsylvania State University.

Implementation Strategies

Many institutions of higher education have begun to study and apply total quality management (TQM) in one or more forms. The review of the literature yields several thoughts about approaches to implementing TQM in higher education. Implementation of TQM is a complex process that is not easy to accomplish. Successful total quality initiatives require change over a fairly long time, often estimated as three to five years.

According to Axland (1991) the educational institutions that have successfully adopted TQM offer success stories of improved communication, higher employee morale, increased productivity, improved process efficiency, and reduction in defects and costs. There are several implementation strategies. The strategies all have some common elements with a few twists. Cornesky (1996) recommends six steps to be considered before implementing TQM in an educational setting. These are listed below with a brief summary:

1. Educate the administration. Senior level management must acquire a shared appreciation and understanding of quality concepts.
2. Establish the commitment of the administration. Senior management must develop a plan to introduce quality improvement concepts to the campus community, including an implementation schedule.

3. Establish an awareness. There must be a comprehensive, progressive training program to educate employees at all levels of the institution.
4. Establish baseline data to show constant improvement in operations.
5. Set institutional improvement goals.
6. Establish a recognition program. The process is enhanced by recognizing employees who develop quality ideas and improve effectiveness and efficiency of the institution.

LeTarte (1993) suggests a seven step program for implementing TQM. His seven steps are below:

1. Understand the concept.
2. CEO commitment.
3. Create a core of committed, knowledgeable people.
4. Establish TQM principles early.
5. Build on past strengths.
6. Be prepared to think and act differently.
7. Systems thinking.

Miller (1995) suggests that an organization can succeed using the following five ingredients:

1. Management commitment and leadership.
2. Focus and alignment.
3. Training.
4. Measurement and feedback.

5. Fun and creativity.

Motwani (1995) asserts that there are five stages to the implementation of a quality program: awareness and commitment, planning, programming, implementation, and evaluation.

Many quality initiatives begin with improvement projects in areas such as registration and mail distribution. Cross (1993) suggests that the faculty should be involved for an organization to be truly quality-driven, customer-oriented, marked by teamwork, and avid about improvement. It is the faculty who control quality. If the classroom does not work, the college does not work, no matter how well managed the support services.

The quality approach is supported by at least four major associations: The American Society for Quality Control, the Association for Quality and Participation, the Quality and Productivity Management Association, and the American Productivity and Quality Center. Together, these groups represent over ninety thousand members and are actively supporting TQM by sponsoring quality training workshops and conferences (Cummings & Worley, 1993).

The ideas presented here on implementation strategies clearly provide a framework, but it is also clear there is no one way to go; in the end, each organization needs to find its own way to implement total quality.

Baldridge Award

The Malcolm Baldridge National Quality Award (MBNQA) is an annual award to recognize U.S. companies for business excellence. The award program was established by the Congress as "The Malcolm Baldridge National Quality Improvement Act of 1987 (Public Law 100-107)." The purposes of the Award are to promote awareness of quality excellence, to recognize quality achievements of U.S. companies, and to publicize successful quality strategies. Responsibility for the Award is assigned to the Department of Commerce. The National Institute of Standards and Technology (NIST), an agency of the Commerce Department, manages the Award Program. The American Society for Quality Control assists in administering the Award Program under contract to NIST. Therefore, it is a joint public-private program, administered by the government (Dobyns & Crawford-Mason, 1991).

The award is named for Malcolm Baldridge, a popular secretary of Commerce who died in a rodeo accident in 1987. The Award itself is a 14-inch crystal stand with a 22-karat gold-plated medal embedded in the top. On one side of the award is the Presidential seal and on the other side are the inscriptions "Malcolm Baldridge National Quality Award" and "The Quest for Excellence." The Baldridge Award is presented each year at a presidential ceremony. No matter how many applications there are, only two awards are given in each of three categories - manufacturing, small business, and service. If no company is judged worthy of quality standards, no award is given.

The award criteria provide organizations with an integrated, results-oriented framework for implementing and assessing process for managing operations. The

following are the criteria for seven examination categories: leadership, information and analysis, strategic planning, human resource development and management, process management, business results, and customer focus and satisfaction.

In 1995, the NIST identified education and health care as pilot programs to explore possible expansion of the Malcolm Baldridge National Quality Award to include categories for these two sectors. The pilot programs were discontinued in 1996 because of a cut in federal funding. Health care and education organizations have been very interested in applying the benefits of the Baldridge evaluation process to their own specific needs, goals, and accomplishments. In 1995, 46 health care and 19 educational organizations submitted applications to participate in the pilots and NIST distributed over 20,000 copies of the Criteria for the pilot programs. While NIST did not accept applications in 1996, they will work to establish long-term, private-sector funding for the programs (Olson, 1996). With the development of the education pilot, modified criteria were also developed. The educational criteria framework encompasses seven categories. The categories are: Leadership, Information and Analysis, Strategic and Operational Planning, Human Resource Development and Management, Educational and Business Process Management, School Performance Results, and Student Focus and Student and Stakeholder Satisfaction.

The framework connecting and integrating the categories is provided as Appendix B. The framework has four basic elements:

Driver - Senior leadership sets direction, creates shared values, goals, and systems, and guides the pursuit of student and institutional improvement.

System - Comprises the set of well-defined and well-designed processes for improving the school's performance.

Measure of Progress - provide a results-oriented basis for channeling actions to delivery, ever-improving student and school performance.

Goal - The basic aims of the system are the delivery of ever-improving educational services, leading to success and satisfaction.

The survey instrument used in this study was developed from the Educational Criteria of the Malcolm Baldridge National Quality Award.

This chapter provided a historical perspective with an explanation of the key concepts and principles. It also addressed why TQM is appropriate for higher education with a number of implementation strategies. Additionally, background information was provided for the Baldridge Award and why it has potential for the educational enterprise.

CHAPTER 3

RESEARCH METHODOLOGY

This study was designed to measure the perception of implementation of Total Quality Management in selected North Carolina Community Colleges by surveying a representative group of both faculty and administrators. This chapter includes a description of the research design, population and sample of subjects, instrumentation, data collection, and analysis of data.

Research Design

This study made use of a survey research design, a method widely used to investigate educational issues (Borg & Gall, 1989). Survey research has considerable credibility and widespread acceptance. The design of this study primarily made use of quantitative methodologies. A survey questionnaire was used to collect data on the perceptions of TQM at the respondents respective community colleges. The instrument is related to the assessment categories contained in the Malcolm Baldridge National Quality Award (MBNQA).

Population and Sample of Subjects

The groups identified to be surveyed for this study were full-time faculty and administrative personnel from 20 North Carolina community colleges that belong to the Carolina Quality Consortium and nine North Carolina community colleges that do not

belong to the Carolina Quality Consortium. These nine colleges represent a convenient sample of the 36 North Carolina community colleges that are not members of the Carolina Quality Consortium. The nine colleges included three from the east, three from the west and three from the central part of the state. An attempt was made to balance the distribution of the nine colleges equally among small, medium, and large institutions. See Appendix C for participating colleges.

The names of the subjects were obtained either from the institutions current college catalogs or from employee lists provided by the human resource officers (personnel officers) of the colleges. Current catalog and a current employee listing were requested directly from each college. The college's list of employees was divided into two categories: full-time curriculum faculty and full-time administrators. In some cases, colleges classified their employee listings based on administrators or faculty. Many others did not, and for this study the administrators were defined to include: president, vice-president(s), dean(s), associate dean(s), assistant dean(s), division chair(s), and director(s).

Subjects were randomly identified for the study. One hundred sixty full-time faculty belonging to the Carolina Quality Consortium received surveys, 160 administrators belonging to the Carolina Quality Consortium also received surveys. These numbers were determined by selecting eight faculty members and eight administrators from each college. Seventy-two full-time faculty, not belonging to the Carolina Quality Consortium received surveys as well as 72 administrators not belonging to the Carolina Quality Consortium. Again, eight faculty and eight administrators were

identified for surveys from each of the non-consortium community colleges. In summary, a total of 29 North Carolina community colleges were surveyed with faculty and administrators each receiving 232 surveys.

Development and Description of the Instrument

The instrument used to collect the data was a mailed questionnaire. A copy of the questionnaire is included in Appendix D. The instrument had 29 items. The first six items were related to demographic data (position, gender, ethnicity, and length of employment). Items seven through 27 used a six-point Likert-type scale (0-no knowledge of statement, 1-strongly disagree, 2-disagree, 3-neither agree nor disagree, 4 - agree, 5 - strongly agree) related to quality. The statements were worded positively regarding Total Quality Management. Responses toward the low end of the scale indicate a perception of little implementation of Total Quality Management in the respondents' respective community colleges. Responses toward the high end of the scale indicate perceived high levels of implementation of TQM in the respective colleges. The survey instrument included two open-ended questions related to outcomes for both Carolina Quality Consortium member colleges and Carolina Quality Consortium non-member colleges. The two open-ended questions for the Carolina Quality Consortium colleges requested for responses related to outcomes, both positive and negatives as a result of TQM at their respective institutions. The two open-ended questions for the Carolina Quality Consortium non-member colleges requested responses related to outcomes, both positive and negative, as a result of attempts to improve quality at their respective institutions.

The instrument was based on the seven categories of the Malcolm Baldridge National Quality Award. The survey used in this study was developed from the framework of the 1995 Education Pilot Criteria (NIST, 1995). The seven categories were: leadership, information and analysis, strategic and operational planning, human resource development and management, education and business process management, community college performance results, and student focus and student stakeholder satisfaction. The data obtained from the survey provide a summary quality rating that places the institution in one of four categories: not yet quality oriented, pioneer, continuous improvement, and world class. Appendix E provides a quality index rating sheet.

Additional information on such organizational attributes as the length of quality initiative, service area, size and involvement in the Carolina Quality Consortium was obtained from participating colleges. The 27 items in the survey instrument on quality initially were developed by Howard Paris, Associate Dean of Continuing Education at James Sprunt Community College and George A. Baker III, Joseph D. Moore, Distinguished Professor of Community College Leadership and Director of the National Institute for Leadership and Institutional Effectiveness (NILIE) at North Carolina State University. This survey instrument was developed as a part of Paris' doctoral dissertation entitled *Perceptions of Academic Deans in the North Carolina Community College System Regarding Current and Future Applications of Total Quality Management (TQM) Principles in an Academic Setting*. Paris studied the perception of academic deans in the North Carolina Community College System (NCCCS) as to current

and future applications of TQM principles at their community colleges. The survey instrument used in Paris' study had a reliability coefficient of .93. Additionally, the survey instrument was reviewed by eight members of the Carolina Quality Consortium Advisory Board for content and face validity (Paris, 1996). Permission was obtained from Howard Paris to use the instrument in this study. The authorization letter from Paris is provided as Appendix F.

In the Personal Profile portion of the survey, respondents were asked to identify their positions as either administrators or faculty members. To assist with the collection process, the questionnaires were color coded. The items were arranged for easy completion of the questionnaire and the font style and font size were selected for maximum readability.

Collection of Data

A letter was mailed to presidents of the community colleges selected to participate in this study. The letter described the project and requested permission for their institutions to participate in this study. The presidents were asked to respond to the request and Fax their response back to the researcher. A copy of this correspondence is provided as Appendix G. Upon agreement by the presidents for their colleges to participate, a key contact was identified at each college to facilitate the distribution and collection of the survey instrument at each institution. The contact at each institution, either the chief academic officer or the quality coordinator, was contacted by phone to

explain the data collection process. The quality coordinator of the Carolina Quality Consortium colleges is an individual with a direct line to the top leadership of the college.

The contact at each college was mailed a packet of surveys. This packet included a cover letter containing instructions about distribution and collection and returning the survey instruments. This correspondence is provided as Appendix H. Eight administrators and eight faculty members from each institution were randomly selected for the study. The researcher also provided a list of alternate participants - one administrator and four faculty members also randomly selected for each college in the event that any of the first 16 employees had left the employ of their colleges or were not on campus during the summer term. The surveys, along with a cover letter that gave instructions on how to complete the survey and its purpose in the study of Total Quality Management. A copy of this correspondence is provided as Appendix I. A self-addressed, postage paid envelope was provided to facilitate return of completed questionnaires to the researcher. Confidentiality of individual responses was assured in all correspondence.

The questionnaires were mailed June 3, 1997. A return rate was calculated for the administrative and faculty member categories for both Carolina Quality Consortium members and non-members. The overall return rate was also calculated. Table 1 provides the return rates for all categories.

TABLE 1: RETURN RATES FOR QUALITY SURVEYS

Categories	Administrators			Faculty Members			Total		
	Surveys Sent	Surveys Returned	Percent Return	Surveys Sent	Surveys Returned	Percent Return	Surveys Sent	Surveys Returned	Percent Return
Carolina Quality Consortium College	160	125	78.1%	160	121	75.6%	320	246	76.8%
Non-Carolina Quality Consortium Colleges	72	61	84.7%	72	61	84.7%	144	122	84.7%
Overall	232	186	80.1%	232	182	78.4%	464	368	79.3%

A letter of appreciation was sent to the president of each participating college. A copy of this correspondence is provided in Appendix J.

Tabulation and Organization of Data

Each questionnaire was coded for identification purposes. The responses from each questionnaire were entered into a personal computer. A data file was prepared utilizing WordPerfect 6.1 software. The data were saved to an ASCII file.

Hypotheses

The overall research question considered was: The level of TQM principles in selected North Carolina Community Colleges and if there are differences in the perception of its implementation between administrators and faculty. The specific research questions were identified on page 3 and 4.

Null hypotheses to address the specific research questions were:

1. There is no difference in the level of TQM implementation among the community colleges identified in this study.

2. There is no difference between the perception of administrators and faculty members with regard to the implementation of TQM in selected North Carolina community colleges.
3. Age is not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges.
4. Gender is not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges.
5. Ethnicity is not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges.
6. The length of employment is not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges.
7. The length of involvement in TQM is not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges.
8. The service area is not a factor in the overall quality rating in selected North Carolina community colleges.
9. The size of the institution is not a factor in the overall quality rating in selected North Carolina community colleges.
10. Participation in the Carolina Quality Consortium is not a factor in the overall quality rating in selected North Carolina community colleges.

Data Analysis

The major statistical methods used were frequency distribution, percentages, means, analysis of variance (ANOVA) and t-test. An alpha level of .05 was used for all statistical tests. The Statistical Package for the Social Sciences (SPSS) was used for the analysis of data.

The following procedures have been employed in the analysis of data:

1. The mean score for each of the seven Malcolm Baldridge National Quality Award categories was determined for each institution. These data were also used to complete a quality index rating sheet. Mean scores were converted to numerical scores, which were used to determine a category (I, II, III, IV) and description (world class, continuous improvement, pioneer, and not yet quality oriented).
2. The t-test was used to compare the means of faculty members with the means of administrator's responses.
3. Analysis of variance (ANOVA), and/or the t-test was used to compare the personal factors (age, gender, race, length of employment) and organizational factors (length of involvement in quality, service area, size of institution, and participation in the Carolina Quality Consortium).

Summary

Chapter Three identified the procedures used for this study, specifically, the selection of the participating colleges, description of the instrument, the way the

instruments were distributed and data collected, and the procedure for analyzing the data. The following chapter represents an analysis of the collected data.

CHAPTER 4

PRESENTATION AND ANALYSIS OF THE DATA

Findings

Each research question is presented followed by the relevant research findings.

Research Question 1 - To what extent have selected community colleges implemented TQM?

Each institution participating in this study was given an overall quality rating. Additional institutional ratings were determined for each of the seven categories: Leadership, Information and Analysis, Strategic and Organizational Planning, Human Resource Development and Management, Education and Business Process Management, Community College Performance Results, and Student Focus and Student Stakeholder Satisfaction. For each category, the mean scores were summed and divided by the number of items in each category. Each of these values was multiplied by a specific weight used in the Malcolm Baldridge National Quality Award for Education. Weights ranged from 1.5 for Strategic and Organizational Planning to 4.6 for Community College Performance Results and Student Focus and Student Stakeholder Satisfaction. Weights are specified on the Total Quality Rating Sheet in Appendix D. The totals for all categories were added together to determine an overall rating for the institution. Table 2 provides the category rating, the overall quality rating, and the associated descriptor for each institution. Table 3 provides a summary of the Quality Ratings.

TABLE 2: INSTITUTIONAL QUALITY RATINGS

Institution	Leadership	Information & Analysis	Strategic and Organizational Planning	Human Resource Development and Management	Education and Business Process Management	Community College Performance Results	Student Focus and Stakeholder Satisfaction	Overall Quality Rating	Quality Descriptor
1	7.29	5.29	6.21	12.13	9.67	11.50	17.38	69.55	III - Pioneer
2	6.25	4.88	5.88	11.25	10.15	13.80	15.81	70.09	II - Continuous Improvement
3	5.72	4.77	5.60	11.08	9.69	14.04	15.81	66.70	III - Pioneer
4	4.43	3.50	4.04	8.88	8.00	10.85	11.09	50.79	IV - Not Yet Quality Oriented
5	6.40	4.29	5.31	10.38	9.09	12.14	12.78	60.87	III - Pioneer
6	6.52	4.69	5.95	11.20	10.21	12.60	14.35	66.27	III - Pioneer
7	8.05	5.33	6.31	11.75	11.08	14.57	18.02	75.11	II - Continuous Improvement
8	5.78	4.14	4.84	10.36	9.18	11.43	16.17	61.90	III - Pioneer
9	7.06	4.00	5.42	10.33	8.79	12.60	13.14	60.59	III - Pioneer
10	6.69	4.79	5.46	11.68	10.17	14.90	16.43	71.19	II - Continuous Improvement
11	5.92	3.73	4.80	8.50	8.40	10.84	10.32	52.51	IV - Not Yet Quality Oriented
12	7.24	5.78	6.35	11.11	11.19	15.91	16.96	75.38	II - Continuous Improvement
13	6.86	4.96	5.89	11.09	10.57	15.22	16.10	70.70	II - Continuous Improvement
14	7.54	5.86	6.16	12.11	12.08	17.69	17.69	80.78	I - World Class
15	6.93	4.78	6.00	12.58	11.22	13.46	17.89	72.86	II - Continuous Improvement
16	7.20	5.67	6.60	12.90	10.90	14.82	18.55	74.66	II - Continuous Improvement
17	7.08	5.23	6.10	11.20	11.50	16.56	16.56	74.29	II - Continuous Improvement

Table 2 continues

TABLE 2: (CONTINUED)

Institution	Leadership	Information & Analysis	Strategic and Organizational Planning	Human Resource Development and Management	Education and Business Process Management	Community College Performance Results	Student Focus and Stakeholder Satisfaction	Overall Quality Rating	Quality Descriptor
18	6.30	4.79	5.80	10.81	9.58	13.42	17.51	70.07	II - Continuous Improvement
19	7.31	5.53	6.09	11.58	10.60	15.64	16.97	73.62	II - Continuous Improvement
20	5.90	4.58	4.25	9.88	8.83	11.35	15.08	60.00	III - Pioneer
21	6.92	4.73	6.00	11.25	10.23	15.33	16.39	70.30	II - Continuous Improvement
22	6.47	4.89	5.89	10.61	10.36	13.14	16.32	67.68	III - Pioneer
23	5.72	4.43	5.14	10.45	10.07	8.54	14.46	58.36	IV - Not Yet Quality Oriented
24	7.99	5.84	6.28	12.42	12.07	17.63	18.88	81.29	I - World Class
25	6.15	5.44	5.34	10.97	10.43	13.54	15.55	65.34	III - Pioneer
26	6.75	4.88	5.88	10.91	10.50	11.50	14.82	63.99	III - Pioneer
27	6.26	4.96	5.63	10.55	10.93	13.25	13.69	65.27	III - Pioneer
28	5.40	3.67	4.50	9.06	9.25	12.52	12.91	57.31	IV - Not Yet Quality Oriented
29	7.20	4.75	5.77	11.58	10.56	13.23	14.95	68.03	III - Pioneer

TABLE 3: SUMMARY OF QUALITY RATINGS

	Carolina Quality Consortium College		Non Carolina Quality Consortium College		Overall	
	Number	Percentage	Number	Percentage	Number	Percentage
I - World Class 80 - 100	1	5 %	1	11.11 %	2	6.89%
II - Continuous Improvement 70 - 79.9	10	50 %	1	11.11%	11	37.93 %
III - Pioneer 60 - 69.9	7	35 %	5	55.55 %	12	41.37 %
IV - Not Yet Quality Oriented 0.0 - 59.9	2	10 %	2	22.22 %	4	13.79 %

Research Question 2 - Is there a difference between the perceptions of administrators and faculty members with regard to the level of implementation of TQM in selected North Carolina community colleges?

The means of the responses were determined for two groups - administrators and faculty members. The "t" test was used as the statistical test to analyze the data. The areas analyzed were the seven subcategories and the overall category. Group one consisted of administrators and group two was composed of faculty members. Table 4 provides the comparisons between administrators and faculty member responses.

There was a statistically significant difference in the overall responses between the two groups — administrators and faculty members. Further, there was a statistically significant difference between the responses of administrators and faculty members in four of the seven categories. The categories which indicated a significant difference are as follows: Leadership, Information and Analysis, Education and Business Process Management, and Community College Performance Results.

TABLE 4: ADMINISTRATORS AND FACULTY RESPONSES

Category	Variable	Number of Cases	Mean	Standard Deviation	Standard Error	t-value	Degrees of Freedom	2-Tail Probability
Category I - Leadership	Group 1 (Administrators)	145	6.9103	1.637	.136	2.03	285	.043 *
	Group 2 (Faculty)	142	6.4859	1.891	.159			
Category 2 - Information and Analysis	Group 1 (Administrators)	145	5.0931	1.331	.111	2.43	287	.016 *
	Group 2 (Faculty)	144	4.6424	1.786	.149			
Category 3 - Strategic and Organizational Planning	Group 1 (Administrators)	145	5.8345	1.342	.111	1.63	286	.104
	Group 2 (Faculty)	143	5.5594	1.519	.127			
Category 4 - Human Resource Development and Management	Group 1 (Administrators)	146	11.2500	2.329	.193	1.30	287	.194
	Group 2 (Faculty)	143	10.8776	2.531	.212			
Category 5 - Education and Business Process Management	Group 1 (Administrators)	143	10.6993	2.447	.205	2.99	279	.003 *
	Group 2 (Faculty)	138	9.6957	3.154	.269			
Group 6 - Community College Performance Results	Group 1 (Administrators)	146	14.5142	4.672	.387	2.40	282	.017 *
	Group 2 (Faculty)	138	12.9333	6.329	.539			
Category 7 - Student Focus and Student Stakeholder Satisfaction	Group 1 (Administrators)	146	16.1945	4.658	.385	1.77	284	.077
	Group 2 (Faculty)	140	15.1252	5.522	.467			
Overall Quality Rating	Group 1 (Administrators)	141	70.6590	15.440	1.300	2.60	271	.010 *
	Group 2 (Faculty)	132	65.3740	18.112	1.576			

* significant at the .05 level

Research Question 3 - Is age a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges?

Age was analyzed to determine if it is a factor in the perceptions of TQM. The means of the responses were analyzed. The Analysis of Variance (ANOVA) was the statistical test used for this question.

Age was divided into four groupings:

Code 1 = 30 or below

Code 2 = 31 - 40

Code 3 = 41 - 50

Code 4 = Over 50

The areas analyzed were the seven subcategories and the overall category. Table 5 provides the results of the influence of age on the perception of the implementation of TQM.

Of the seven categories identified in the survey instrument, the only one that resulted in a statistically significant difference was Category 5 - Education and Business Process Management. The overall rating did not indicate there is a statistically significant difference in the perception of the implementation of TQM due to age.

TABLE 5: AGE AND TQM

Category	Code	N	Mean	Standard Deviation	F-Value	Significance of F
Category 1 - Leadership	1 (30 or below)	5	5.760	1.381	1.28	.280
	2 (31 - 40)	38	6.789	1.680		
	3 (41 - 50)	109	6.512	1.813		
	4 (over 50)	135	6.862	1.778		
Category 2 - Information and Analysis	1 (30 or below)	5	4.700	1.525	1.28	.283
	2 (31 - 40)	40	4.850	1.598		
	3 (41 - 50)	109	4.656	1.607		
	4 (over 50)	135	5.052	1.566		
Category 3 - Strategic and Organizational Planning	1 (30 or below)	5	5.550	1.006	.33	.804
	3 (41 - 50)	108	5.604	1.396		
	4 (over 50)	135	5.783	1.497		
Category 4 - Human Resource Development and Management	1 (30 or below)	5	10.500	2.054	.61	.608
	2 (31 - 40)	40	11.081	2.288		
	3 (41 - 50)	109	10.858	2.451		
	4 (over 50)	135	11.250	2.482		
Category 5 - Education and Business Process Management	1 (30 or below)	5	6.600	4.930	3.98	.008*
	2 (31 - 40)	38	9.711	3.360		
	3 (41 - 50)	108	10.093	2.326		
	4 (over 50)	130	10.206	2.914		
Category 6 - Community College Performance Results	1 (30 or below)	5	8.893	7.060	1.36	.256
	2 (31 - 40)	38	13.719	6.091		
	3 (41 - 50)	108	13.672	5.140		
	4 (over 50)	133	13.996	5.710		
Category 7 - Student Focus and Student Stakeholder Satisfaction	1 (30 or below)	5	11.040	7.060	2.17	.092
	2 (31 - 40)	39	16.198	5.059		
	3 (41 - 50)	109	15.179	4.776		
	4 (over 50)	133	16.094	5.267		
Overall Quality Rating	1 (30 or below)	5	53.043	11.300	1.94	.124
	2 (31 - 40)	35	68.317	17.598		
	3 (41 - 50)	103	66.750	15.394		
	4 (over 50)	130	69.698	17.911		

* significant at the .05 level

Research Question 4 - Is gender a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges?

Gender was analyzed to determine if it was a factor on the perceptions of TQM. The means of the responses were analyzed for two groups — male and female. The "t" test was used as the statistical test to analyze the data and the areas analyzed were the seven subcategories and the overall category. Group one was male and group two was female. Table 6 provides the comparisons between male and female responses.

There was not a statistically significant difference between responses of males and females in six of the seven sub-categories. The one subcategory that did show statistically significant difference was Category 3 - Strategic and Operational Planning. Comparisons of the overall ratings for male and female responses did not show a statistically significant difference.

TABLE 6: GENDER AND TQM

Category	Variable	Number of Cases	Mean	Standard Deviation	Standard Error	t-value	Degrees of Freedom	2-Tail Probability
Category I - Leadership	Group 1 (male)	166	6.5602	1.911	.148	-1.76	282	.079
	Group 2 (female)	118	6.9356	1.548	.143			
Category 2 - Information and Analysis	Group 1 (male)	166	4.7861	1.630	.126	-1.10	284	.271
	Group 2 (female)	120	4.9958	1.525	.139			
Category 3 - Strategic and Organizational Planning	Group 1 (male)	165	5.5545	1.565	.122	-2.05	283	.041 *
	Group 2 (female)	120	5.9063	1.224	.112			
Category 4 - Human Resource Development and Management	Group 1 (male)	167	10.9042	2.620	.203	-1.43	284	.154
	Group 2 (female)	119	11.3193	2.117	.194			
Category 5 - Education and Business Process Management	Group 1 (male)	161	10.1056	2.841	.224	-.78	276	.437
	Group 2 (female)	117	10.3761	2.885	.267			
Group 6 - Community College Performance Results	Group 1 (male)	165	13.6792	5.279	.411	-.29	280	.769
	Group 2 (female)	117	13.8786	6.050	.559			
Category 7 - Student Focus and Student Stakeholder Satisfaction	Group 1 (male)	166	15.4165	5.168	.401	-.99	281	.325
	Group 2 (female)	117	16.0279	5.087	.470			
Overall Quality Rating	Group 1 (male)	157	67.1779	17.655	1.409	-1.18	269	.239
	Group 2 (female)	114	69.6382	15.945	1.493			

* significant at the .05 level

Research Question 5 - Is ethnicity a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges?

Ethnicity was analyzed to determine if it is a factor in perceptions of TQM. The means of the responses were analyzed. A frequency distribution was done to determine the number of cases in each category. These data are provided in Table 7.

TABLE 7: FREQUENCY DISTRIBUTION OF ETHNIC BACKGROUND

Ethnic Category	Number of Cases
African-American	18
American-Indian	4
Asian - American	5
Caucasian	334
Hispanic	0
Other	5

Due to the limited number in the categories other than Caucasian, the categories were recoded to two categories — white and non-white. Group 1 was identified as white and Group 2 was identified as non-white. The "t" test was used as the statistical test to analyze the data. The areas analyzed were the seven subcategories and the overall category. Table 8 provides the comparisons between white and non-white responses.

TABLE 8: ETHNICITY AND TQM

Category	Variable	Number of Cases	Mean	Standard Deviation	Standard Error	t-value	Degrees of Freedom	2-Tail Probability
Category I - Leadership	Group 1 (white)	258	6.6860	1.787	.111	-.67	284	.506
	Group 2 (non-white)	28	6.9214	1.661	.314			
Category 2 - Information and Analysis	Group 1 (white)	260	4.8519	1.617	.100	-.69	286	.488
	Group 2 (non-white)	28	5.0714	1.296	.245			
Category 3 - Strategic and Organizational Planning	Group 1 (white)	259	5.6670	1.450	.090	-1.26	285	.209
	Group 2 (non-white)	28	6.0268	1.299	.245			
Category 4 - Human Resource Development and Management	Group 1 (white)	260	11.0308	2.459	.152	-1.07	286	.287
	Group 2 (non-white)	28	11.5446	2.065	.390			
Category 5 - Education and Business Process Management	Group 1 (white)	254	10.1850	2.836	.178	-.67	278	.505
	Group 2 (non-white)	26	10.5769	3.022	.593			
Group 6 - Community College Performance Results	Group 1 (white)	257	13.7045	5.604	.350	-.49	281	.623
	Group 2 (non-white)	26	14.2718	5.567	1.092			
Category 7 - Student Focus and Student Stakeholder Satisfaction	Group 1 (white)	258	15.5592	5.165	.322	-1.26	283	.208
	Group 2 (non-white)	27	16.8667	4.620	.889			
Overall Quality Rating	Group 1 (white)	247	67.9111	16.963	1.079	-.81	270	.416
	Group 2 (non-white)	25	70.8113	16.921	3.384			

There was not a statistically significant difference in the overall scores of whites and non-whites. Additionally, there was not a statistically significant difference in any of the seven subcategories.

Research Question 6 - Is the length of employment a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges?

The respondents' length of employment at their present institution was analyzed to determine if it is a factor in the perceptions of TQM. The survey instrument provided the respondents four options related to length of service at their present institution: 0-9, 10-19, 20-29, and 39 or more years. A frequency distribution was done to determine the number in each category. Due to the limited number in the 30 or more category, the last two options were combined and recoded. Therefore, the three new categories were: 0-9, 10-19, and 20 or more years. The Analysis of Variance (ANOVA) was the statistical test used to analyze the data for this question. The areas analyzed were the seven subcategories and the overall category. Table 9 provides the results of the length of employment on the perception of the implementation of TQM.

TABLE 9: LENGTH OF EMPLOYMENT AND TQM

Category	Code	N	Mean	Standard Deviation	F-Value	Significance of F
Category 1 - Leadership	1 (0 - 9 years)	101	6.333	2.114	3.55	.030 *
	2 (10 - 19 years)	90	6.973	1.474		
	3 (20 or more years)	96	6.831	1.592		
Category 2 - Information and Analysis	1 (0 - 9 years)	102	4.505	1.854	4.25	.015 *
	2 (10 - 19 years)	91	5.093	1.462		
	3 (20 or more years)	96	5.043	1.319		
Category 3 - Strategic and Organizational Planning	1 (0 - 9 years)	101	5.532	1.576	1.32	.269
	2 (10 - 19 years)	91	5.868	1.340		
	3 (20 or more years)	96	5.711	1.365		
Category 4 - Human Resource Development and Management	1 (0 - 9 years)	102	10.728	2.738	1.55	.214
	2 (10 - 19 years)	91	11.291	2.279		
	3 (20 or more years)	96	11.211	2.210		
Category 5 - Education and Business Process Management	1 (0 - 9 years)	101	9.515	3.443	4.75	.009 *
	2 (10 - 19 years)	89	10.573	2.310		
	3 (20 or more years)	91	10.615	2.480		
Category 6 - Community College Performance Results	1 (0 - 9 years)	102	13.003	6.338	1.44	.238
	2 (10 - 19 years)	89	14.265	4.917		
	3 (20 or more years)	93	14.064	5.271		
Category 7 - Student Focus and Student Stakeholder Satisfaction	1 (0 - 9 years)	103	14.827	5.763	2.21	.111
	2 (10 - 19 years)	89	16.109	4.738		
	3 (20 or more years)	94	16.182	4.623		
Overall Quality Rating	1 (0 - 9 years)	97	64.379	19.710	3.70	.026 *
	2 (10 - 19 years)	88	70.227	15.155		
	3 (20 or more years)	88	70.086	14.734		

* significant at the .05 level

There was a statistically significant difference in the overall rating among the three groups. Further analysis of the seven subcategories — Leadership, Information and Analysis, Strategic and Organizational Planning, Human Resource Development and Management, Education and Business Process Management, Community College Performance Results and Student Focus and Student and Stakeholder Satisfaction indicated a statistically significant difference in three of the categories. The three subcategories indicating statistically significant differences were Leadership, Information and Analysis, and Education and Business Process Management.

Research Question 7 - Is the length of involvement in TQM a factor in TQM on the overall quality rating in selected North Carolina community colleges?

The length of involvement of the institution in TQM on the overall quality rating was analyzed. The Analysis of Variance (ANOVA) was the statistical test used to analyze the data for this question. The survey instrument asked how long the respective institution had been involved in a quality initiative. The survey instrument provided four options: fewer than two years, two to four years, over four years, and not involved in quality initiatives. There were zero institutions that responded that they were involved in a quality initiative less than two years. Therefore, Code 2 represents an institution involved in quality two to four years; Code 3 represents an institution involved in quality over four years and Code 4 represents an institution not involved in quality initiatives. The areas analyzed were the seven subcategories for the institution and the institutional

overall quality rating. Table 10 provides the results of the length of involvement of the institution in TQM on the overall quality rating.

TABLE 10: LENGTH OF INVOLVEMENT IN TQM

Category	Code	N	Mean	Standard Deviation	F-Value	Significance of F
Category 1 - Leadership	2 (2 - 4 years)	16	6.489	.867	1.91	.168
	3 (over 4 years)	7	7.080	.668		
	4 (not involved in quality)	6	6.325	.538		
Category 2 - Information and Analysis	2 (2 - 4 years)	16	4.718	.667	1.26	.300
	3 (over 4 years)	7	5.161	.559		
	4 (not involved in quality)	6	4.762	.588		
Category 3 - Strategic and Organizational Planning	2 (2 - 4 years)	16	5.641	.682	.11	.892
	3 (over 4 years)	7	5.717	.702		
	4 (not involved in quality)	6	5.539	.561		
Category 4 - Human Resource Development and Management	2 (2 - 4 years)	16	10.838	1.080	2.52	.100
	3 (over 4 years)	7	11.689	.897		
	4 (not involved in quality)	6	10.559	.776		
Category 5 - Education and Business Process Management	2 (2 - 4 years)	16	9.880	1.024	2.13	.139
	3 (over 4 years)	7	10.791	1.140		
	4 (not involved in quality)	6	10.283	.559		
Category 6 - Community College Performance Results	2 (2 - 4 years)	16	13.051	2.139	1.93	.166
	3 (over 4 years)	7	14.842	2.356		
	4 (not involved in quality)	6	13.216	1.267		
Category 7 - Student Focus and Student Stakeholder Satisfaction	2 (2 - 4 years)	16	15.312	2.430	1.71	.201
	3 (over 4 years)	7	16.841	1.463		
	4 (not involved in quality)	6	14.947	1.422		
Overall Quality Rating	2 (2 - 4 years)	16	66.115	7.861	2.38	.113
	3 (over 4 years)	7	72.538	7.359		
	4 (not involved in quality)	6	64.981	4.374		

There was not a statistically significant difference in the overall quality rating based on length of time involved in a quality initiative. Additionally, there was not a statistically significant difference in any of the seven subcategories.

Research Question 8 - Is the service area of the institution a factor in the overall quality rating in selected North Carolina community colleges?

The service area of the institution was analyzed to determine if it is a factor on the overall quality rating. The survey instrument provided three descriptors related to service area: rural, urban, and suburban. Upon review of the frequency of distribution of the number of institutions in each of the three categories, there were limited colleges in the urban and suburban categories. Therefore, the researcher recoded the grouping into two areas: rural and urban/suburban. Group one represents rural service area and Group two represents urban/suburban service area. The Analysis of Variance (ANOVA) was the statistical test used to analyze the data for this question. The areas analyzed were the seven subcategories for the institution and the institutional overall quality rating. Table 11 provides an analysis of the impact of service area on the institutional quality rating.

There was not a statistically significant difference in the overall quality rating and the service area of the institution. Additionally, there was not a statistically significant difference in any of the seven subcategories.

TABLE 11: SERVICE AREA AND TQM

Category	Code	N	Mean	Standard Deviation	F-Value	Significance of F
Category 1 - Leadership	1 (rural)	24	6.547	.613	.57	.458
	2 (urban/suburban)	5	6.843	1.471		
Category 2 - Information and Analysis	1 (rural)	24	4.863	.571	.29	.593
	2 (urban/suburban)	5	4.693	.955		
Category 3 - Strategic and Organizational Planning	1 (rural)	24	5.666	.593	.26	.617
	2 (urban/suburban)	5	5.504	.924		
Category 4 - Human Resource Development and Management	1 (rural)	24	10.980	.984	.00	.951
	2 (urban/suburban)	5	11.012	1.412		
Category 5 - Education and Business Process Management	1 (rural)	24	10.217	.887	.15	.703
	2 (urban/suburban)	5	10.020	1.654		
Category 6 - Community College Performance Results	1 (rural)	24	13.395	2.064	.46	.504
	2 (urban/suburban)	5	14.108	2.557		
Category 7 - Student Focus and Student Stakeholder Satisfaction	1 (rural)	24	15.625	1.893	.01	.915
	2 (urban/suburban)	5	15.511	3.303		
Overall Quality Rating	1 (rural)	24	67.355	6.610	.01	.908
	2 (urban/suburban)	5	67.794	12.125		

Research Question 9 - Is the size of the institution a factor in the overall quality rating in selected North Carolina community colleges?

The size of the institution was analyzed to determine if it is a factor in the overall quality rating. The survey instrument asked for the institutional annual full-time equivalent. There were five categories: (a) 0-999, (b) 1,000-1,999, (c) 2,000-2,999, (d) 3,000-3,900, and (e) greater than 4,999. A frequency distribution was generated, and as a result, the categories were recoded. The new categories were: (a) 0-1,999, (b) 2,000-2,999 and (c) greater than 3,000. The Analysis of Variance (ANOVA) was the statistical test used to analyze the data for this research question. The areas analyzed were the seven subcategories for the institution and the overall institutional quality rating. Table 12 provides the results of size and its influence on the overall quality rating.

There was not a statistically significant difference in the overall quality rating and the size of the institution. Additionally, there was not a statistically significant difference in any of the seven subcategories — Leadership, Information and Analysis, Strategic and Organizational Planning, Human Resource Development and Management, Education and Business Process Management, Community College Performance Results and Student focus and Student and Stakeholder Satisfaction.

TABLE 12: INSTITUTIONAL SIZE AND TQM

Category	Code	N	Mean	Standard Deviation	F-Value	Significance of F
Category 1 - Leadership	2 (0-1,999)	19	6.517	.618	.32	.730
	3 (2,000-2,999)	5	6.830	.893		
	4 (greater than 3,000)	5	6.673	1.340		
Category 2 - Information and Analysis	2 (0-1,999)	19	4.834	.614	.07	.936
	3 (2,000-2,999)	5	4.910	.254		
	4 (greater than 3,000)	5	4.759	1.020		
Category 3 - Strategic and Organizational Planning	2 (0-1,999)	19	5.600	.624	.35	.709
	3 (2,000-2,999)	5	5.860	.299		
	4 (greater than 3,000)	5	5.561	.993		
Category 4 - Human Resource Development and Management	2 (0-1,999)	19	10.851	.990	.45	.645
	3 (2,000-2,999)	5	11.242	.467		
	4 (greater than 3,000)	5	11.242	1.638		
Category 5 - Education and Business Process Management	2 (0-1,999)	19	10.152	.961	.33	.724
	3 (2,000-2,999)	5	10.499	.560		
	4 (greater than 3,000)	5	9.984	1.627		
Category 6 - Community College Performance Results	2 (0-1,999)	19	13.200	2.249	.60	.556
	3 (2,000-2,999)	5	14.083	.898		
	4 (greater than 3,000)	5	14.159	2.571		
Category 7 - Student Focus and Student Stakeholder Satisfaction	2 (0-1,999)	19	15.559	1.957	.02	.982
	3 (2,000-2,999)	5	15.771	1.615		
	4 (greater than 3,000)	5	15.618	3.412		
Overall Quality Rating	2 (0-1,999)	19	66.925	7.204	.16	.857
	3 (2,000-2,999)	5	69.082	3.845		
	4 (greater than 3,000)	5	67.703	12.058		

Research Question 10 - Is participation in the Carolina Quality Consortium a factor in the overall quality rating in selected North Carolina community colleges?

Participation in the Carolina Quality Consortium was analyzed to determined if it is a factor in the overall institutional quality rating. This analysis is at the institutional level. The "t" test was used as the statistical test to analyze the data. The overall quality rating along with the seven subcategories was analyzed. Group one represents institutions that are members of the Carolina Quality Consortium and Group two represents institutions that are not members of the Carolina Quality Consortium. Table 13 provides the comparisons between consortium and non-consortium institutions.

There was not a statistically significant difference in the overall quality rating between institutions that participate in the Carolina Quality Consortium and those institutions that did not participate in the Carolina Quality Consortium. Additionally, there was not a statistically significant difference in any of the seven subcategories — Leadership, Information and Analysis, Strategic and Organizational Planning, Human Resource Development and Management, Education and Business Process Management, Community College Performance Results and Student focus and Student and Stakeholder Satisfaction.

TABLE 13: QUALITY CONSORTIUM PARTICIPATION AND TQM

Category	Variable	Number of Cases	Mean	Standard Deviation	Standard Error	t-value	Degrees of Freedom	2-Tail Probability
Category I - Leadership	Group 1 (Member of Carolina Quality Consortium)	20	6.6238	.818	1.83	.26	27	.798
	Group 2 (Non-Member of Carolina Quality Consortium)	9	6.5399	.784	2.61			
Category 2 - Information and Analysis	Group 1 (Member of Carolina Quality Consortium)	20	4.8297	.662	.148	-.05	27	.958
	Group 2 (Non-Member of Carolina Quality Consortium)	9	4.8436	.607	.202			
Category 3 - Strategic and Organizational Planning	Group 1 (Member of Carolina Quality Consortium)	20	5.6541	.699	.156	.19	27	.847
	Group 2 (Non-Member of Carolina Quality Consortium)	9	5.6029	.536	.179			
Category 4 - Human Resource Development and Management	Group 1 (Member of Carolina Quality Consortium)	20	11.0394	1.109	.248	.41	27	.686
	Group 2 (Non-Member of Carolina Quality Consortium)	9	10.8664	.914	.305			
Category 5 - Education and Business Process Management	Group 1 (Member of Carolina Quality Consortium)	20	10.0458	1.112	.247	-1.08	27	.288
	Group 2 (Non-Member of Carolina Quality Consortium)	9	10.4884	.749	.250			
Group 6 - Community College Performance Results	Group 1 (Member of Carolina Quality Consortium)	20	13.6657	1.993	.446	.55	27	.585
	Group 2 (Non-Member of Carolina Quality Consortium)	9	13.1885	2.484	.828			
Category 7 - Student Focus and Student Stakeholder Satisfaction	Group 1 (Member of Carolina Quality Consortium)	20	15.7296	2.302	.515	.46	27	.648
	Group 2 (Non-Member of Carolina Quality Consortium)	9	15.3301	1.750	.583			
Overall Quality Rating	Group 1 (Member of Carolina Quality Consortium)	20	67.8969	7.891	1.765	.49	27	.629
	Group 2 (Non-Member of Carolina Quality Consortium)	9	66.3956	7.041	2.347			

Research Question 11- What, if any, positive outcome(s) have been perceived as a result of TQM/quality at selected North Carolina community colleges?

Two separate questions were used in the survey instrument based on the institution's membership in the Carolina Quality Consortium. Individuals who were employed by institutions that were members of the Carolina Quality Consortium received a survey instrument with a question worded — "What, if any, positive outcome(s) have been observed as a result of TQM at your institution?" Individuals employed by institutions that were not members of the Carolina Quality Consortium received a survey instrument with a question worded — "What, if any, positive outcome(s) have you observed as a result of attempts to improve quality at your institution?"

The responses to these questions are divided into four separate categories: Carolina Quality Consortium administrators, and Carolina Quality Consortium faculty members, Non-Carolina Quality Consortium administrators and Non-Carolina Quality Consortium faculty members.

Carolina Quality Consortium — Administrators. The number of surveys returned from administrators of institutions belonging to the Carolina Quality Consortium was 125 for a 78.1% return rate. The number of separate comments totaled 190. A summary of these comments follows.

Administrators at Carolina Quality Consortium colleges commented positively about improvements in processes. Some mentioned specific processes they felt had improved as a result of TQM and others reported that processes in general had improved.

Processes that had improved that were identified included time sheets, travel reimbursement, contracts, and planning.

Administrators also commented that they felt TQM had promoted total institutional involvement among personnel at all levels of the organization. They mentioned that cooperation, a sense of teamwork, and morale had all risen as a result of this involvement.

Administrators at the Carolina Quality Consortium colleges indicated that awareness of and improved customer services had also been a positive outcome of the institution's involvement in TQM. They talked about service to students as well as service in the community. They noted that employers and students were now asked to provide input and that this input had a positive impact on the institution.

Another commonly mentioned outcome was that of improved communication across campus. Administrators noted that communication between and within departments had improved as a result of TQM. This is illustrated by the comment "there are some heterogeneous committees that are helping to facilitate communication and cooperation between departments. This, of course, can only result in improved quality of service." Some, however, implied in their comments that not every department nor every employee participated in the improved communication.

Imbedded in the positive comments were also a handful of negative comments. Some administrators said that not everyone on campus had actually bought into the philosophy of TQM. Some pointed fingers at faculty and others at top administrators. There were five comments to the effect that TQM was no longer practiced or was

currently "on hold" at their institutions. These institutions seemed to be the ones where a change in top-level management had recently occurred.

Carolina Quality Consortium — Faculty Members. The number of surveys returned from faculty members of institutions belonging to the Carolina Quality Consortium was 121 for a 75.6% return rate. The number of separate comments totaled 97. A summary of these comments follows.

Faculty in the Carolina Quality Consortium colleges commented positively about improvements in specific processes, improved communications among personnel, clarification of vision and goals, and improved professional development opportunities. Additionally, "some TQM methods have focused participants on assessment and consequently making adjustments based on results of assessment."

Improved processes mentioned by faculty included employee recognition, new employee orientation, voice mail, improved information on telephone lists, faculty teaching load assignments and faculty/staff evaluation.

However, a surprising number of negative comments were expressed in answer to this request for positive comments. Five faculty respondents reported that TQM was a deception, a fraud, or no longer practiced at their institutions. In addition, two faculty members claimed to have no knowledge of TQM at their colleges, even though the college is a member of the Carolina Quality Consortium.

Non-Carolina Quality Consortium — Administrators. The number of surveys returned from administrators of institutions not belonging to the Carolina Quality

Consortium was 61 for a 84.7% return rate. The number of separate comments totaled 47. A summary of these comments follows.

Administrators at Non-Quality Carolina Consortium colleges mentioned a renewed interest in teaching and quality instruction as a positive outcome of efforts to improve quality on their campuses. They mentioned the fact that faculty had been rewarded for excellence and that merit pay increases had been implemented. One used the term "integrated" instruction and another talked about a paradigm shift. Another stated that the institution had become more "student outcomes" focused.

These administrators also commented about improved customer service. They talked about improved relationships with local universities and direct involvement with employers as well as improved services for non-traditional learners. They commented that the faculty had become more available for student advising as well.

One administrator stated that although his or her institution was not involved in a formalized TQM effort, many of the activities of the college leadership, faculty, and staff did address issues of quality education with favorable outcomes for students and employees. It was noted that "we continually strive to evaluate and improve our processes to improve the quality of our programs, systems, and the education level of our students."

There were five negative comments in this group in which administrators claimed that there were no attempts to improve quality at their institutions or that they felt the "more you do, the more you are given to do with little or no recognition for the effort."

Non-Carolina Quality Consortium — Faculty Members. The number of surveys returned from faculty members of institutions not belonging to the Carolina Quality Consortium was 61 for a 84.7% return rate. The number of separate comments totaled 54. A summary of these comments follows.

Positive comments from faculty at Non-Quality Carolina Consortium colleges appeared to be clustered into four major areas: students and learning, improved facilities, access to technology, and involvement of faculty in decision-making.

As could be predicted, instructors focused significant interest around students and the learning environment at their respective institutions. One instructor commented that "we are able to consider the special needs of our student body" and another said that "significant interest in learning has resulted in students desiring to continue their education beyond the two year degree."

There were a number of positive comments expressing approval of improvements in the facilities at the institutions. Some of these comments referred to new facilities and others to relocation of services that allowed personnel easier access to their program areas.

Many instructors noted that access to technology had greatly improved at their institutions and they also appreciated training and staff development activities that helped them learn to use the new technology. At least one said that access to e-mail had improved communication as well.

Finally, several comments addressed the involvement of faculty and other personnel in planning and decision-making. According to these instructors, this

involvement had a positive impact on morale at their institutions. One individual stated "there is a greater degree of networking and higher morale. When people feel that they are supported financially and academically in new strategies, they tend to react positively."

Research Question 12 - What, if any, negative outcome(s) have been perceived as a result of TQM/quality at selected North Carolina community colleges?

Two separate questions were used in the survey instrument based on the institution's membership in the Carolina Quality Consortium. Individuals employed at institutions that were members of the Carolina Quality Consortium received a survey instrument with a question worded — "What, if any, negative outcome(s) have been observed as a result of TQM at your institution?" Individuals employed by institutions that were not members of the Carolina Quality Consortium received a survey instrument with a question worded — "What, if any, negative outcome(s) have you observed as a result of attempts to improve quality at your institution?"

The responses to these questions are divided into four separate categories: Carolina Quality Consortium Administrators, Carolina Quality Consortium Faculty Members, Non-Carolina Quality Consortium Administrators, and Non-Carolina Quality Consortium Faculty Members.

Carolina Quality Consortium — Administrators. The number of surveys returned from administrators of institutions belonging to the Carolina Quality Consortium was 125

for a 78.1% return rate. The number of separate comments totaled 83. A summary of these comments follows.

Negative comments from Carolina Quality Consortium administrators can be grouped into three major areas: (1) employees are resisting, (2) senior leaders are resisting, and (3) too much time is wasted.

Administrators felt that employees think TQM is just another fad and they are, therefore, not buying into the philosophy. "Curriculum faculty members use this process to isolate themselves. They appear to consider it mechanical, business-like and an insult to their professional and intellectual status." They said employees do not believe senior leaders have bought in either. Ironically, administrators confirmed this notion by commenting they also felt that little buy-in existed at the highest administrative levels. In addition, the recurring theme expressed by all groups appeared again here. TQM takes too much time from the work week of people who already feel overworked. They commented that the process is too slow and too much time is spent in meetings.

Another area of concern among administrators was that they had seen little follow through after recommendations or suggestions were offered by teams. This perception is probably the most harmful to overall acceptance of TQM.

Carolina Quality Consortium — Faculty Members. The number of surveys returned from faculty members of institutions belonging to the Carolina Quality Consortium was 121 for a 75.6% return rate. The number of separate comments totaled 52. A summary of these comments follows.

The number one complaint among faculty at Carolina Quality Consortium colleges was that high level leaders did not really adhere to the philosophy of TQM. "Many faculty feel administration gives lip-service to TQM, but doesn't quite buy into it." They said that there was a great deal of paperwork and talk associated with TQM, but no real change. The comment that expressed this feeling best was, "after all is said and done, there is more said than done."

A negative impression emerged that, while upper- level administrators were not really "walking the talk," they were forcing people in the ranks to accept TQM philosophy and practices. A few said that personnel either did not understand the concept or just did not accept it. "The 'encouraged involvement' promoted by the administration is read by many to mean 'involvement or else,' which seems counter productive to the entire TQM effort." Others expressed the notion that TQM was just another in a series of fad management styles such as MBO and that this, too, would pass. Probably the most poignant comment was from a faculty member who said that TQM was "equivalent to beating one's head against a brick wall. Repeatedly."

Finally, a few of the faculty commented on the fact they felt TQM involved too much paperwork, too much wasted time, too many meetings, and that the process, overall, was just too slow. One commented that teams lacked focus as a result.

Non-Carolina Quality Consortium — Administrators. The number of surveys returned from administrators of institutions not belonging to the Carolina Quality

Consortium was 61 for a 84.7% return rate. The number of separate comments totaled 22. A summary of these comments follows.

Administrators at Non-Carolina Quality Consortium colleges said that negative efforts to improve quality at their institutions most often centered around excess time spent in meetings and increased workloads and paperwork for employees. Two comments also stated that attempts to make changes caused confusion and distress among employees. The recurring themes of wasted time and work overloads are common among personnel at all levels at Carolina Quality and Non-Carolina Quality Consortium colleges.

Non-Carolina Quality Consortium — Faculty Members. The number of surveys returned from faculty members of institutions not belonging to the Carolina Quality Consortium was 61 for a 84.7% return rate. The number of separate comments totaled 30. A summary of these comments follows.

The most often heard complaint among faculty in the Non-Carolina Quality Consortium colleges centered around processes that needed improvement such as mail delivery, location of copy machines, recruiting efforts, computer operations, student evaluations, and distribution of budget dollars —the very types of issues often addressed by teams.

In addition, faculty at the Non-Carolina Quality Consortium colleges also resented their heavy workloads and endless paperwork as did those at Carolina Quality Consortium colleges.

Summary

In this chapter, the research results were presented in a narrative format followed by statistical documentation. The data are presented in statistical format for the variables under investigation. The findings, conclusions, and recommendations for practice and for future research are presented in Chapter 5.

CHAPTER 5

FINDINGS, CONCLUSIONS, AND RECOMMENDATIONS FOR PRACTICE AND FUTURE RESEARCH

Introduction

This chapter presents the findings, conclusions, and recommendations for practice and further study. The primary purpose of this chapter is to draw conclusions from the study and present them within the context of the study design and the results obtained.

Findings

Each hypothesis was analyzed as follows:

Hypothesis 1 - There is no difference in the level of TQM implementation among the community colleges identified in this study. Each institution that participated in this study was given an overall quality rating. These data reflect a high Overall Quality Rating of 81.29 and a low institutional Quality Rating of 50.79. The research data from this study support the rejection of Hypothesis One.

Hypothesis 2 - There is no difference between the perception of administrators and faculty members with regard to the implementation of TQM in selected North

Carolina community colleges. The research data from this study support the rejection of Hypothesis Two.

Hypothesis 3 - Age is not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges. The research data from this study do not support the rejection of Hypothesis Three.

Hypothesis 4 - Gender is not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges. The research data from this study do not support the rejection of Hypothesis Four.

Hypothesis 5 - Ethnicity is not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges. The research data from this study do not support the rejection of Hypothesis Five.

Hypothesis 6 - The length of employment is not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges. The research data from this study support rejection of Hypothesis Six.

Hypothesis 7 - The length of involvement in TQM is not a factor in the overall quality rating in selected North Carolina community colleges. The research data from this study do not support rejection of Hypothesis Seven.

Hypothesis 8 - The service area is not a factor in the overall quality rating in selected North Carolina community colleges. The research data from this study do not support rejection of Hypothesis Eight.

Hypothesis 9 - The size of the institution is not a factor in the overall quality rating in selected North Carolina community colleges. The research data from this study do not support rejection of Hypothesis Nine.

Hypothesis 10 - Participation in the Carolina Quality Consortium is not a factor on the overall quality rating in selected North Carolina community colleges. The research data from this study do not support rejection of Hypothesis Ten.

Conclusions

The following represents a summary of the findings of this study:

- While there is presently no system-wide plan for the implementation of TQM , there are several colleges that have engaged, at varying levels, in TQM. Using the survey instrument in this study, colleges received overall quality ratings ranging from a high of 81.29 to a low of 57.31. Twenty-three or 79.31% of colleges identified in this study had an overall quality rating between 60 and 79.9.
- Based on this study, differences clearly exist between the perceptions of administrators and faculty members with regard to the level of implementation of TQM. Administrators viewed Total Quality Management as being implemented to a greater degree than was viewed by faculty members. According to Cross (1993), faculty constitute the major portion of any college's budget, and it is they who control quality.
- The study concluded that age was not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges.

- The study concluded that gender was not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges.
- The study concluded that ethnicity was not a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges.
- The study concluded that the length of employment at the institution was a factor in the perceptions of the implementation of TQM in selected North Carolina community colleges.
- The study concluded that the length of involvement in TQM was not a factor in the overall quality rating in selected North Carolina community colleges. The difference in the quality ratings of these three groups was not statistically significant. According to Lewis and Smith (1994)

> It is important to provide a few cautions for those who attempt to implement total quality in all or part of their college or university. An initial general comment is that it is not easy to accomplish. This is a truism for any organization, because successful total quality and continuous improvement efforts require change over a fairly long time, e.g., three to five years. (p.12)

This study supports the position of Lewis and Smith. Michael Fullan is a widely recognized leading authority on educational change. Fullan (1991) states that:

> Assume that effective change takes time. It is a process of "development in use." Unrealistic or undefined time lines fail to recognize that implementation occurs developmentally. Significant change in the form of implementing specific innovations can be expected to take a minimum of two or three years; bringing about institutional reforms can take five or more years. Persistence is a critical attribute of successful change. (p.106)

This conclusion is also consistent with the work of Fullan.

- The study concluded that the service area of the institution was not a factor in the overall quality rating in selected North Carolina community colleges.
- The study concluded that the size of the institution was not a factor in the overall quality rating in selected North Carolina community colleges.
- The study concluded that participation in the Carolina Quality Consortium was not a factor in the overall quality rating in selected North Carolina community colleges.
- The study concluded that the positive perceptions resulting from TQM/ quality at selected North Carolina community colleges could be grouped into four major categories. The categories were: improved communication, improved support systems, enhanced customer service, and increased involvement in planning and decision-making.
- The study concluded that the negative perceptions resulting from TQM/ quality at selected North Carolina community colleges could be grouped into four major categories. The categories were: incongruence in philosophy and practice, too much time wasted, work overloads, and endless paperwork.

Recommendations for Practice

Based on the review of literature and research findings the following recommendations are made for practice.

1. A summary of the institutional quality ratings should be provided to participating community colleges, and this information should be used for ongoing quality improvement efforts.
2. Community colleges use the survey instrument and quality rating system used in this study to periodically measure their effectiveness.
3. It is imperative that community college leaders narrow the gaps between their own perceptions of the institutions and those of their faculty members. Leaders must maintain sensitivity to their followers and the followers' needs.
4. In educational institutions, administrative or support areas are typically selected for TQM improvement teams. The core process of the educational enterprise is teaching and learning. Using this premise, then possible TQM applications to classroom use should be explored.
5. Institutions in this study that did not receive world class quality ratings should study the TQM/quality initiatives of the two institutions that were "best-in-class."

Recommendations for Further Research

Based on the review of literature and research findings, the following recommendations are made for further research.

1. Replicate the study at community colleges within another state system.

2. Conduct a comprehensive case study of the two institutions that attained the highest quality rating. One institution was a member of the Carolina Quality Consortium and one member was not. This should provide interesting information.

3. The present study focused on measuring the perceived level of TQM in the institutions. It is recommended that others conduct outcomes or output studies to determine the benefits, if any, TQM can bring to the institution.

4. Conduct a case study to determine the time lag between the decision to engage in a TQM initiative, the time of training and the length of time required for the implementation. Compare these data to the institutional quality ratings received in this study.

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APPENDICES

APPENDIX A, Quality Tools

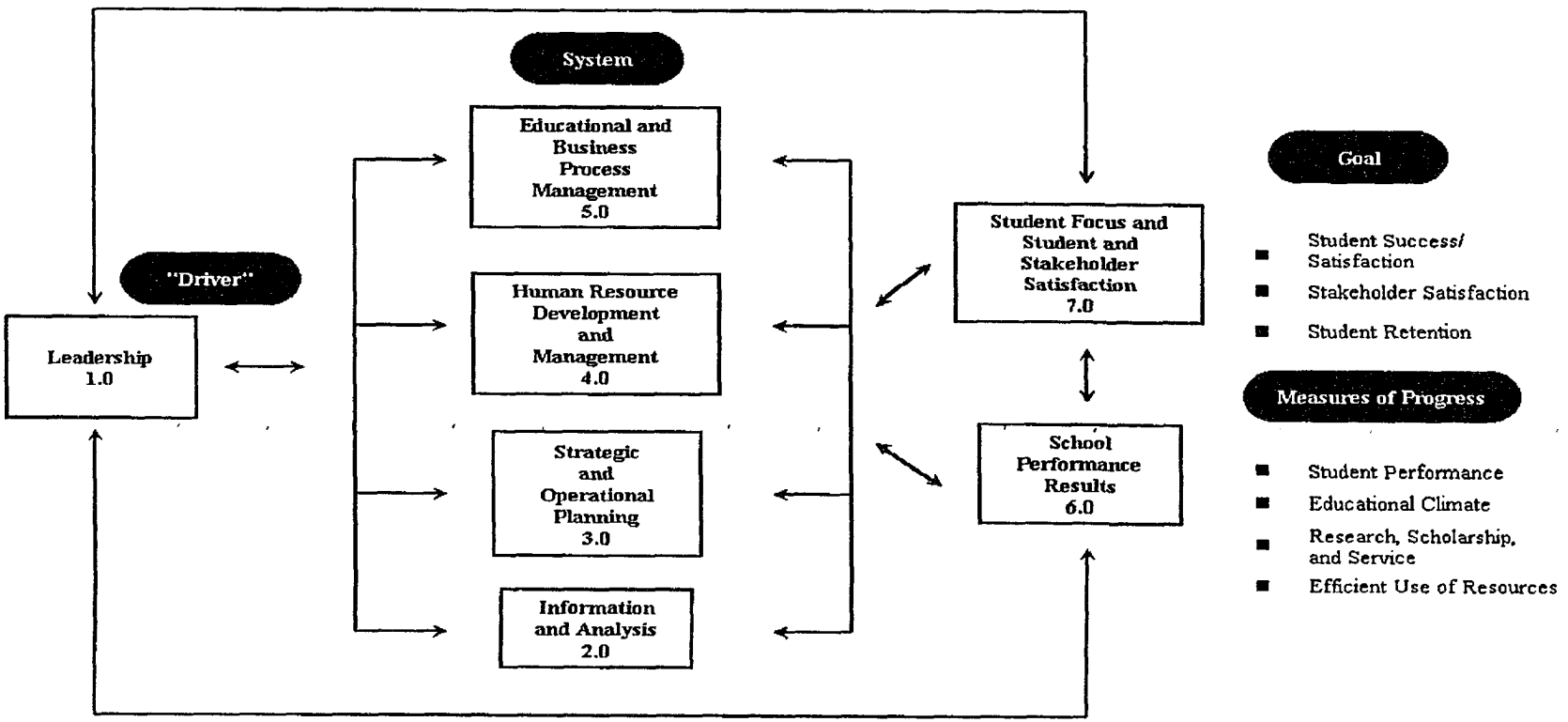
Quality Tools

1. **Fishbone or Cause-and-Effect Diagram.** Shows all possible causes of a specific problem or condition. Helps identify the root causes and cause-and-effect relationships.
2. **Control Chart or Run Chart.** Maintains the ongoing performance of a process, showing variance from a standard or objectives. Shows the results over time.
3. **Pareto Diagram.** A graphic technique for rank ordering causes or issues from the most to least important.
4. **Flow Charting.** A diagram of the sequence of steps and decisions in a process used to depict an activity or a series of activities.
5. **Brainstorming.** A group approach for stimulating and generating ideas against a stated objective.
6. **Nominal Group Technique.** A weighted ranking technique that allows a team to prioritize a large number of issues without creating "winners" and "losers."
7. **Affinity Diagram.** A group approach for generating ideas against a stated objective and then grouping the ideas into common categories.

APPENDIX B, Malcolm Baldridge National Quality Award Education Pilot Criteria

Framework, Dynamic Relationships

Malcolm Baldridge National Quality Award
EDUCATION PILOT CRITERIA FRAMEWORK
Dynamic Relationships



Source: National Institute of Standards and Technology (1995). Education Pilot Criteria. Gaittersburg, MD: Author.

APPENDIX C, List of Participant Colleges

List of Participant Colleges
Carolina Quality Consortium Colleges

	Name	City / State
1.	Anson Community College	Polkton
2.	Beaufort County Community College	Washington
3.	Caldwell Community College & Technical Institute	Hudson
4.	Catawba Valley Community College	Hickory
5.	Cleveland Community College	Shelby
6.	Craven Community College	New Bern
7.	Davidson County Community College	Lexington
8.	Edgecombe Community College	Tarboro
9.	Forsyth Technical Community College	Winston-Salem
10.	Guilford Technical Community College	Jamestown
11.	Haywood Community College	Clyde
12.	James Sprunt Community College	Kenansville
13.	Mayland Community College	Spruce Pine
14.	Mitchell Community College	Statesville
15.	Piedmont Community College	Roxboro
16.	Pitt Community College	Greenville
17.	Richmond Community College	Hamlet
18.	Rockingham Community College	Wentworth
19.	Southwestern Community College	Sylva
20.	Tri-County Community College	Murphy

List of Participant Colleges
Non-Carolina Quality Consortium Colleges

	Name	City / State
1.	Alamance Community College	Graham
2.	Blue Ridge Community College	Flat Rock
3.	Carteret Community College	Morehead City
4.	Fayetteville Technical Community College	Fayetteville
5.	Halifax Community College	Weldon
6.	Isothermal Community College	Spindale
7.	Lenoir Community College	Kinston
8.	Randolph Community College	Asheboro
9.	Wilkes Community College	Wilkesboro

APPENDIX D, Survey Instrument

Institutional Self-Assessment

This self-assessment provides a method of assessing the strengths and weaknesses of your community college's institutional quality efforts.

Part 1: Personal Profile

1. Name of your institution:_____

2. What is your position at your community college?
   a. Administrator
   b. Faculty

3. Age
   a. 30 or below
   b. 31 - 40
   c. 41 - 50
   d. over 50

4. What is your gender?
   a. male
   b. female

5. Which of the following describes your predominant ethnic background?
   a. African - American
   b. American - Indian
   c. Asian - American
   d. Caucasian
   e. Hispanic
   f. Other _____

6. How long have you been employed at your present institution?
   a. 0 - 9 years
   b. 10 - 19 years
   c. 20 - 29 years
   d. 30 or more years

Part II: Institutional Self-Assessment

Directions - Please read each statement and then circle the appropriate response based on your perceptions of the quality efforts at your college.

	Category 1: **Leadership**	No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
7.	**Administrative Leadership** Senior leadership* is actively involved in quality related activities (for example: goal setting, planning, reviewing institutional performance, communicating, and recognizing employee contributions).	0	1	2	3	4	5
8.	**Management for Quality** Quality values are integrated throughout the institution by the visible and active participation of senior leadership.*	0	1	2	3	4	5
9.	**Public Responsibility** Quality leadership is extended to the external community by modeling quality practices and principles.	0	1	2	3	4	5

	Category 2: **Information and Analysis**	No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
10.	**Scope and Management of Data and Information** Data and information are available to support planning, day-to-day management, and evaluation of quality.	0	1	2	3	4	5
11.	**Competitive Comparisons and Benchmarks** Comparisons with effective organizations are used to improve the performance at the institution.	0	1	2	3	4	5
12.	**Analysis of the Data and Information** The analysis process results in continuous improvement at the institution.	0	1	2	3	4	5

* The president, vice-presidents, and deans

Category 3: **Strategic and Operational Planning**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
13.	**Strategic Quality Planning Process** There is an effective process in place for goal setting and strategic planning to improve the overall organization and to facilitate student achievement.	0	1	2	3	4	5
14.	**Quality Goals and Plans** The organization has definable quality goals and strategies for achieving these goals.	0	1	2	3	4	5

Category 4: **Human Resource Development and Management**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
15.	**Human Resource Management** Quality goals, strategies and plans include means for training, development, involvement, empowerment, and recognition of personnel.	0	1	2	3	4	5
16.	**Employee Involvement** The faculty and staff are student-focused, cross-functional, cooperative, and high performers.	0	1	2	3	4	5
17.	**Faculty and Staff Development** Faculty and staff are provided education and/or training necessary to participate effectively in quality initiatives.	0	1	2	3	4	5
18.	**Faculty and Staff Well-Being and Satisfaction** The college maintains a work environment and a work climate conducive to the well-being and satisfaction of faculty and staff while maintaining congruence with the college's mission.	0	1	2	3	4	5

Category 5 **Education and Business Process Management**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
19.	**Design and Implementation of Quality Programs and Services.** Key processes are designed, effectively managed, evaluated, and continuously improved to achieve higher performance.	0	1	2	3	4	5
20.	**Educational Programs** Observations, measures, and indicators are used to provide timely information to assist students and faculty.	0	1	2	3	4	5
21.	**Support Services** Quality resources are obtained and allocated to support instructional programs.	0	1	2	3	4	5

Category 6 **Community College Performance Results**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
22.	**Student Performance Results** Measurement of graduate's performance reflects continuous improvement.	0	1	2	3	4	5
23.	**Climate Improvement Results** Measurement of the climate reflects continuous improvement.	0	1	2	3	4	5
24.	**Operational and Support Service Results** Measurement of business operations, which support educational programs, reflect continuous improvement.	0	1	2	3	4	5

Category 7: **Student Focus and Student and Stakeholder Satisfaction**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
25.	**Current Student Need and Expectations** There is an effective process to determine student needs and expectations, that is used to create an environment for active learning, well-being, and satisfaction of students.	0	1	2	3	4	5
26.	**Student and Stakeholder Satisfaction** Feedback from students and stakeholders reflects satisfaction relative to other providers.	0	1	2	3	4	5
27.	**Stakeholder Relationship Management** Linkages to key stakeholders ensure that mission-related services meet their needs and expectations.	0	1	2	3	4	5

Adapted from Paris, 1996

28. What, if any, positive outcome(s) have you observed as a result of TQM at your institution?

29. What, if any, negative outcome(s) have you observed as a result of TQM at your institution?

Institutional Self-Assessment

This self-assessment provides a method of assessing the strengths and weaknesses of your community college's institutional quality efforts.

Part 1: Personal Profile

1. Name of your institution:_____
   _

2. What is your position at your community college?
   a. Administrator
   b. Faculty

3. Age
   a. 30 or below
   b. 31 - 40
   c. 41 - 50
   d. over 50

4. What is your gender?
   a. male
   b. female

5. Which of the following describes your predominant ethnic background?
   a. African - American
   b. American - Indian
   c. Asian - American
   d. Caucasian
   e. Hispanic
   f. Other _____

6. How long have you been employed at your present institution?
   a. 0 - 9 years
   b. 10 - 19 years
   c. 20 - 29 years
   d. 30 or more years

Part II: Institutional Self-Assessment

Directions - Please read each statement and then circle the appropriate response based on your perceptions of the quality efforts at your college.

Category 1: **Leadership**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
7.	**Administrative Leadership** Senior leadership* is actively involved in quality related activities (for example: goal setting, planning, reviewing institutional performance, communicating, and recognizing employee contributions).	0	1	2	3	4	5
8.	**Management for Quality** Quality values are integrated throughout the institution by the visible and active participation of senior leadership.*	0	1	2	3	4	5
9.	**Public Responsibility** Quality leadership is extended to the external community by modeling quality practices and principles.	0	1	2	3	4	5

Category 2: **Information and Analysis**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
10.	**Scope and Management of Data and Information** Data and information are available to support planning, day-to-day management, and evaluation of quality.	0	1	2	3	4	5
11.	**Competitive Comparisons and Benchmarks** Comparisons with effective organizations are used to improve the performance at the institution.	0	1	2	3	4	5
12.	**Analysis of the Data and Information** The analysis process results in continuous improvement at the institution.	0	1	2	3	4	5

* The president, vice-presidents, and deans

Category 3: **Strategic and Operational Planning**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
13.	**Strategic Quality Planning Process** There is an effective process in place for goal setting and strategic planning to improve the overall organization and to facilitate student achievement.	0	1	2	3	4	5
14.	**Quality Goals and Plans** The organization has definable quality goals and strategies for achieving these goals.	0	1	2	3	4	5

Category 4: **Human Resource Development and Management**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
15.	**Human Resource Management** Quality goals, strategies and plans include means for training, development, involvement, empowerment, and recognition of personnel.	0	1	2	3	4	5
16.	**Employee Involvement** The faculty and staff are student-focused, cross-functional, cooperative, and high performers.	0	1	2	3	4	5
17.	**Faculty and Staff Development** Faculty and staff are provided education and/or training necessary to participate effectively in quality initiatives.	0	1	2	3	4	5
18.	**Faculty and Staff Well-Being and Satisfaction** The college maintains a work environment and a work climate conducive to the well-being and satisfaction of faculty and staff while maintaining congruence with the college's mission.	0	1	2	3	4	5

Category 5 **Education and Business Process Management**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
19.	**Design and Implementation of Quality Programs and Services.** Key processes are designed, effectively managed, evaluated, and continuously improved to achieve higher performance.	0	1	2	3	4	5
20.	**Educational Programs** Observations, measures, and indicators are used to provide timely information to assist students and faculty.	0	1	2	3	4	5
21.	**Support Services** Quality resources are obtained and allocated to support instructional programs.	0	1	2	3	4	5

Category 6 **Community College Performance Results**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
22.	**Student Performance Results** Measurement of graduate's performance reflects continuous improvement.	0	1	2	3	4	5
23.	**Climate Improvement Results** Measurement of the climate reflects continuous improvement.	0	1	2	3	4	5
24.	**Operational and Support Service Results** Measurement of business operations, which support educational programs, reflect continuous improvement.	0	1	2	3	4	5

Category 7: **Student Focus and Student and Stakeholder Satisfaction**		No Knowledge of the Statement	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
25.	**Current Student Need and Expectations** There is an effective process to determine student needs and expectations, that is used to create an environment for active learning, well-being, and satisfaction of students.	0	1	2	3	4	5
26.	**Student and Stakeholder Satisfaction** Feedback from students and stakeholders reflects satisfaction relative to other providers.	0	1	2	3	4	5
27.	**Stakeholder Relationship Management** Linkages to key stakeholders ensure that mission-related services meet their needs and expectations.	0	1	2	3	4	5

Adapted from Paris, 1996

28. What, if any, positive outcome(s) have you observed as a result of attempts to improve quality at your institution?

29. What, if any, negative outcome(s) have you observed as a result of attempts to improve quality at your institution?

APPENDIX E, Total Quality Rating Sheet

Total Quality Rating Sheet

The institutional quality rating is determined by taking the mean score from the respondents of each institution for each of the items numbered 7 - 27 in the survey instrument. For each category, the mean scores are summed and divided by the number of items in each category. This value is multiplied by a specific weighting which yields a total for that category. The totals for each category are added together to determine an overall rating for the institution. The weighting for each category was based on the weightings used in the Malcolm Baldridge National Quality Award for Education. The specific weighting for each category is provided below:

Category No.	Category Name	Weight
1	Leadership.....	1.8
2	Information and Analysis.....	1.5
3	Strategic and Organizational Planning.....	1.5
4	Human Resource Development and Management.....	3.0
5	Education and Business Process Management.....	3.0
6	Community College Performance Results.....	4.6
7	Student Focus and Student Stakeholder Satisfaction....	4.6

Category 1: **Leadership**

7. _____
8. _____
9. _____

_____ (total) ÷ 3 = _____ x 1.8 = _____

Category 2: **Information and Analysis**

10. _____
11. _____
12. _____

_____ (total) ÷ 3 = _____ x 1.5 = _____

Category 3: **Strategic and Operational Planning**

13. _____
14. _____

_____ (total) ÷ 2 = _____ x 1.5 = _____

Category 4: **Human Resource Development and Management**

15. _____
16. _____
17. _____
18. _____

_____ (total) ÷ 4 = _____ x 3.0 = _____

Category 5: **Educational and Business Process Management**

19. _____
20. _____
21. _____

_____ (total) ÷ 3 = _____ x 3.0 = _____

Category 6: **Community College Performance Results**

22. _____
23. _____
24. _____

_____ (total) ÷ 3 = _____ x 4.6 = _____

Category 7: **Student Focus and Student and Stakeholder Satisfaction**

25. _____
26. _____
27. _____

_____ (total) ÷ 3 = _____ x 4.6 = _____

Total of Categories 1 - 7 = _____

Category	Numerical Value	Descriptor
I	80 - 100	World Class
II	70 - 79.9	Continuous Improvement
III	60 - 69.9	Pioneer
IV	0.0 - 59.9	Not Yet Quality Oriented

Adapted from Paris, 1996

APPENDIX F, Authorization Letter from Paris

James Sprunt Community College

P. O. Box 398. Kenansville. NC 28349 • Telephone (910) 296-2400 • FAX (910) 296-1636

November 14, 1996

Mr. Gene C. Couch, Jr.
Chair Health and Human Services
Southwestern Community College
447 College Drive
Sylva, NC 28779

Dear Gene:

This is to confirm that you have my approval for use of the institutional self-assessment and quality index rating sheet that I had developed based on the Malcolm Baldrige National Quality Award and 1995 Education Pilot Criteria. Enclosed are copies of each item for your use.

Good luck on your research project and dissertation. Please contact me if I can be of assistance.

Sincerely;

Howard S. Paris

Howard S. Paris, Associate Dean
Continuing Education

acw
enclosures
pc: file

APPENDIX G, Correspondence to Presidents

Gene C. Couch, Jr.

219 Rivercrest Drive • Sylva, NC 28779 • (704) 586-4091 #308 (work) • (704) 586-3994 (home) • (704) 586-3994 (FAX)

May 14, 1997

FIELD(President)
FIELD(College)
FIELD(Address 1)
FIELD(Address 2)
FIELD(City), FIELD(State) FIELD(Zip)

Dear FIELD(Salutation):

The purpose of this letter is to request your support in a research project on Total Quality Management principles in selected North Carolina Community Colleges.

I am the Chairman of the Health and Human Services Division at Southwestern Community College working on the Doctorate in Educational Leadership and Policy Analysis at East Tennessee State University. I am currently in the data collection phase of my dissertation. FIELD(College) was selected for this research project because of its membership in the Carolina Quality Consortium.

I will be asking eight faculty members and eight administrators from your institution to complete a survey. These sixteen individuals will be randomly selected. In fact, you may be one of the sixteen. The survey instrument is based on the seven categories addressed in the Malcom Baldridge National Quality Award for Education. It should take approximately fifteen minutes to complete. The data will be reported in summary form and all responses will be anonymous and confidential. The results of this research are available upon request.

Please indicate your permission below for FIELD(College) to participate in this study and fax your response to me at (704)586-3129. If you need additional or clarifying information, please contact me.

Thank you very much for your support of this study.

Sincerely,

Gene C. Couch, Jr.
Chair, Health and Human Services Division
Southwestern Community College
Doctoral Candidate

I grant permission for my institution to participate in this study

_____

Signature Date

Gene C. Couch, Jr.

219 Rivercrest Drive • Sylva, NC 28779 • (704) 586-4091 #308 (work) • (704) 586-3994 (home) • (704) 586-3994 (FAX)

May 14, 1997

FIELD(President)
FIELD(College)
FIELD(Address 1)
FIELD(Address 2)
FIELD(City), FIELD(State) FIELD(Zip)

Dear FIELD(Salutation):

The purpose of this letter is to request your support in a research project on Total Quality Management principles in selected North Carolina Community Colleges.

I am the Chairman of the Health and Human Services Division at Southwestern Community College working on the Doctorate in Educational Leadership and Policy Analysis at East Tennessee State University. I am currently in the data collection phase of my dissertation.

I will be asking eight faculty members and eight administrators from your institution to complete a survey. These sixteen individuals will be randomly selected. In fact, you may be one of the sixteen. The survey instrument is based on the seven categories addressed in the Malcom Baldridge National Quality Award for Education. It should take approximately fifteen minutes to complete. The data will be reported in summary form and all responses will be anonymous and confidential. The results of this research are available upon request.

Please indicate your permission below for FIELD(College) to participate in this study and fax your response to me at (704)586-3129. If you need additional or clarifying information, please contact me.

Thank you very much for your support of this study.

Sincerely,

Gene C. Couch, Jr.
Chair, Health and Human Services Division
Southwestern Community College
Doctoral Candidate

I grant permission for my institution to participate in this study

Signature Date

APPENDIX H, Correspondence to College Contact

Gene C. Couch, Jr.

219 Rivercrest Drive • Sylva, NC 28779 • (704) 586-4091 #308 (work) • (704) 586-3994 (home) • (704) 586-3994 (FAX)

June 3, 1997

FIELD(Key Contact)
FIELD(College)
FIELD(Address 1)
FIELD(Address 2)
FIELD(City), FIELD(State) FIELD(Zip)

Dear FIELD(Key Contact Salu):

The purpose of this letter is to request your assistance in a research project on Total Quality Management principles in selected North Carolina Community Colleges.

I am the chairman of the Health and Human Services Division at Southwestern Community College working on the Doctorate in Educational Leadership and Policy Analysis at East Tennessee State University. I am currently in the data collection phase of my dissertation. My topic concerns the implementation of Total Quality Management principles in selected North Carolina Community Colleges.

I am asking that you distribute the enclosed questionnaire to the list of employees provided. Eight administrators and eight faculty members from your institution have been selected for this study. If any of these individuals have left the employ of the college or are not on campus for the summer term, I have provided a list of alternates - one administrator and four faculty members. All individuals were randomly selected. Participants have been asked to return their completed questionnaires, sealed in the envelope provided, to you by **Tuesday, June 17, 1997.**

I am also requesting that you complete the enclosed Organizational Profile, which provides data about your institution. Please **return all completed Questionnaires, the Organizational Profile, and the unused Questionnaires** in the self-addressed, stamped envelope by **Thursday, June 19, 1997.** The results of this research project will be available upon request.

Thank you very much for your assistance and support in this research project.

Sincerely,

Gene C. Couch, Jr.
Chair, Health and Human Services Division
Southwestern Community College
Doctoral Candidate

Enclosures

APPENDIX I, Cover Letter to Survey Participants

Gene C. Couch, Jr.
219 Rivercrest Drive • Sylva, NC 28779 • (704) 586-4091 #308 (work) • (704) 586-3994 (home) • (704) 586-3994 (FAX)

June 3, 1997

FIELD(Admin 1-8) FIELD(Faculty 1-8) FIELD(Alt Admin) FIELD(Alt Fac 1-4)
FIELD(College)
FIELD(Address 1)
FIELD(Address 2)
FIELD(City), FIELD(State) FIELD(Zip)

Dear FIELD(Admin Salu 1-8) FIELD(Faculty Salu 1-8) FIELD(Alt Admin Salu) FIELD(Alt Fac Salu 1-4)

I am the Chairman of the Health and Human Services Division at Southwestern Community College working on the Doctorate in Educational Leadership and Policy Analysis at East Tennessee State University. I am currently in the data collection phase of my dissertation. My topic concerns the implementation of Total Quality Management principles in selected North Carolina Community Colleges. You have been randomly selected to participate in this study and your responses will provide meaningful and useful data.

The enclosed questionnaire is based on the seven categories addressed in the Malcolm Baldridge National Quality Award for education. I am requesting that you assess your institution's relationship to these criteria.

Please take a few minutes to complete the enclosed questionnaire and **return,** sealed in the envelope provided, to **FIELD(Qual Leader)** by **Tuesday, June 17, 1997.** Your individual responses will be kept confidential. The data will be reported only in summary form and is available upon request. The questionnaires have been numbered to enable follow-up for non-respondents.

I know this is a busy time with the system converting to semesters, and I greatly appreciate your participation in this study.

Sincerely,

Gene C. Couch, Jr.
Chair, Health and Human Services Division
Southwestern Community College
Doctoral Candidate

Enclosure

APPENDIX J, Letter of Appreciation to Presidents

Gene C. Couch, Jr.

219 Rivercrest Drive • Sylva, NC 28779 • (704) 586-4091 #308 (work) • (704) 586-3994 (home) • (704) 586-3994 (FAX)

July 7, 1997

FIELD(President)
FIELD(College)
FIELD(Address 1)
FIELD(Address 2)
FIELD(City), FIELD(State) FIELD(Zip)

Dear FIELD(Salutation):

Thank you very much for allowing FIELD(College) to participate in the data collection phase of my dissertation - A Measurement of Total Quality Management in Selected North Carolina Community Colleges. I would like to especially recognize FIELD(Qual Leader) for coordinating and assisting with this project. The responses provided by the administrators and faculty members of FIELD(College) will provide meaningful and useful data.

Upon completion of the research a summary of findings will be made available to you at your request. Again, thank you and your staff for assisting me in this research project.

Sincerely,

Gene C. Couch, Jr.
Chair, Health and Human Services Division
Southwestern Community College
Doctoral Candidate

VITAE

GENE C. COUCH, JR.

Personal Data: Date of Birth: January 17, 1961
Place of Birth: Abingdon, Virginia
Marital Status: Married

Education: Castlewood High School, Castlewood, Virginia, 1979

Southwest Virginia Community College, Richlands, Virginia; Radiologic Technology, A.A.S., 1982

Mars Hill College, Mars Hill, North Carolina; Allied Health, B.S., 1983

Western Carolina University, Cullowhee, North Carolina; Educational Administration - Two Year College, M.A.Ed., 1987

Western Carolina University, Cullowhee, North Carolina; Educational Administration - Two Year College, Ed.S., 1995

Professional Experience: Staff Radiologic Technologist, Humana Hospital Clinch Valley; Richlands, Virginia, 1982

Radiologic Technology Instructor, East Tennessee State University; Johnson City, Tennessee, 1984

Radiologic Technology Instructor/Clinical Coordinator, Garland County Community College; Hot Springs, Arkansas, 1984-1985

Program Director of the Radiography Program, Southwestern Community College; Sylva, North Carolina, 1985-present

Weekend Staff Radiologic Technologist, Ridgecrest Hospital; Clayton, Georgia, 1988-1990

Chairman, Health Sciences Division, Southwestern Community College; Sylva, North Carolina, 1988-1992

Chairman, Health and Human Services Division, Southwestern Community College; Sylva, North Carolina, 1993-1997

Associate Vice President for Program Development, Southwestern Community College; Sylva, North Carolina, 1997-present

Honors and Awards:

- Phi Kappa Phi
- Gamma Beta Phi Society
- Pi Gamma Mu
- Who's Who in American Junior Colleges
- Phi Theta Kappa
- Received Ed.S. Degree - 4.0 GPA
- Received M.A.Ed. Degree - 3.63 GPA
- Received B.S. Degree - 4.0 GPA
- Received A.A.S. Degree - 3.78 GPA