A study of the beliefs for total quality management comparing superintendents, board members, and classroom teachers in Iowa schools

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A study of the beliefs for total quality management comparing superintendents, board members, and classroom teachers in Iowa schools

Teigland, Michael David, Ph.D.

Iowa State University, 1993
A study of the beliefs for total quality management 
comparing superintendents, board members, and classroom teachers 
in Iowa schools 

by 

Michael David Teigland 

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For the Graduate College 

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1993
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CHAPTER I. INTRODUCTION

The call for reform in our nation's schools over the past twenty years has been varied and strong.

Few would deny that the 1980s has earned the distinction of being one of the most active decades of educational reform in recent memory. The "Nation at Risk Report" (1983) charged that the "educational foundations of society are presently being eroded by a rising tide of mediocrity." The early 1980s witnessed a groundswell of public and political energy and enthusiasm for improving education that has yet to subside (Boyer, 1983; Business-Higher Education Forum, 1983; Gardner, 1971; Goodlad, 1984; Lightfoot, 1983; National Commission on Excellence in Education for Economic Growth, 1983; Ravitch, 1984; Sizer, 1984; Twentieth Century Fund Task Force on Federal Elementary and Secondary Policy, 1983).

At all levels--local, state, and federal--the amount of sustained activity and commitment to improving education has been almost unprecedented. Additional funds have been allocated in support of education; new policies and regulations have been developed and instituted; school improvement initiatives have been designed and implemented; curriculum has been reviewed and revised; standards for students and faculty have been raised (Harvey & Crandell, 1988; Manatt & Stow, 1986; Bush, 1991; Lezotte & Jacoby, 1990; Lepley, 1988; Branstad, 1991).

Consequently, in what might be considered a second wave of reform reports, new concerns began to be voiced more loudly in 1986 and 1987.
about the health of the educational enterprise. The Carnegie Forum on Education and the Economy, the National Governors’ Association, the Holmes Group, and the National Commission on Excellence in Educational Administration, among others, brought about another call for excellence in education. However, there was a difference in the second wave of reform efforts and recommendations. Many of the proposals of the more prominent commissions and task forces of the first wave of reform represented little more than a recommendation for more of the same--take schools as they are, for better or worse, and treat their problems by adding more, e.g., more time on task, more course requirements. As a result, fundamentals regarding structure, organization, management, curriculum, instruction, and so forth were seldom addressed (Danner, 1986; Sizer, 1990; Lezotte, 1991).

In a presentation at "School Year 2000: An International Seminar on Creating Effective Schools of the Future," C. L. Hutchins (1987), executive director of the Mid-Continent Regional Educational Laboratory, stated that although "American education is better today than it was five, ten, twenty-five, fifty years ago" and that public schools "reach more students, provide more services, and produce a higher level than schools of the past," the current structure of American schools is nevertheless "not sufficiently powerful to meet the needs of students who will live and work in the 21st century."

Since the second round of reform movements that occurred in the second half of the 1980s, continuous reform is spreading across the country. Kentucky’s far-reaching Education Reform Act of 1990 has school
board members watching as that state embarks on what many describe as the most radical state reform act in decades (Lueker, 1990).

Charged with overhauling the entire K-12 system of public education, the Kentucky General Assembly in the spring of 1990 developed a landmark school reform scheme. This plan, according to Lueker, mandates site-based management, abolishes the existing state department of education, and institutes an ambitious system of rewards and sanctions designed to hold school accountable for their students' performance.

Similarly, the public schools in Chicago are decentralizing and pushing a parent-driven site-based school governance. Passed by the Illinois State Legislature in November 1988 and implemented in the summer of 1989, the reform act is creating a new way of doing things for the public schools in Chicago. School reform in Chicago significantly dilutes the power of the central administration and school board and places authority for hiring, planning curriculum, and budgeting with local school councils, each made up of a majority of parents (Rist, 1990).

Statement of the Problem

Educators and businesses are becoming increasingly frustrated that the education system is inflexible and cannot meet the demands of society and the needs of students. Restructuring has become the byword in education for a movement that questions whether the rules, standards, and practices of today's schools can meet the high-stakes challenges of the decades ahead. Changes in the family structure, shifting demographics,
and more demands placed on schools by society are placing greater pressure on the education system.

The past experience of public schools has suggested that the bureaucratic organizational structure employed by most schools does not cultivate excellence in teaching and learning. Bureaucratic schools operate through clear lines of authority with rules devised by superiors to manage subordinates. Planning, decision-making, and evaluation of school programs are often centralized. This centralization often tends to impede change rather than facilitate it. The bureaucratic school seems to be inadequate for promoting excellence and efficiency in education. Moreover, changes in the structure of society and the nature of learning have made it impossible for any one person to have all of the knowledge and skills necessary to carry out the many complex tasks of leading and managing a school.

Tremendous changes in the way schools do business will have to take place in coming years for meaningful reform to occur. The leadership in the public schools will also have to change. How will this happen? What type of managerial style will bring about the most successful change?

Are educators in Iowa prepared to adopt the philosophical tenets proposed by Edward Deming and the total quality management approach?

Purpose of the Study

Efforts to involve staff members in decision making, to increase cooperation within schools, and to provide training and support systems for educators are occurring in many forward-looking school districts in
Iowa and the nation. Some Iowa schools are exploring shared decision-making systems that put more responsibility at the building level with staff members who work directly with students. Others are developing new partnerships among schools and social service agencies to provide much-needed services to children and families.

"We're at a critical moment because our entire system is becoming unstuck," said W. P. (Pat) Dolan, who facilitated the recent ISEA conference held February 21-22, 1991 in Des Moines. "We're beginning to change the culture and decision-making process to allow for school-focused leadership" (Dolan, 1991).

Under the theme, "Leadership for Productive Decision Making," the conference was a follow-up to one held in September of 1990, where teams of teachers, administrators, and school board members from 28 selected districts gathered together in a first-in-the-nation pilot project designed to help them examine their respective roles, relationships, and responsibilities.

Dolan, a nationally recognized labor-management consultant from Kansas City, contends that the way schools are currently structured is a major block to what is, and what can be, in classrooms.

At the heart of the problem, Dolan says, is that the current military model—or organizational pyramid, as he calls it—doesn't allow for improving both quality and productivity.

In addition, Dolan says that the top level management must be willing to share information with those workers at the bottom so that they are
fully equipped to make decisions that impact them and the ultimate workers in the pyramid--namely the students.

It appears that major school improvement is needed and in order for it to happen, radical change will need to be involved.

Total quality leadership seems to be the most promising "radical change." TQM is an approach that focuses on giving top value to the customer by building excellence into every aspect of the organization. This is done by creating an environment that allows and encourages everyone to contribute to the organization and by developing the skills that will enable them to scientifically study and constantly improve every process by which work is accomplished (Joiner, 1985; Jesperson, 1989; Vansina, 1989; Atkinson, 1991; Butler, 1990; Johnson, 1991).

The primary purposes of this study are to:
1. Identify key components of total quality management for schools.
2. Assess the beliefs of teachers, superintendents, and school board members toward adopting and utilizing the key components of total quality management.

Basic Assumptions

The research design of this study is based on a number of assumptions and observations. These basic assumptions and observations are based upon the research conducted on school reform and the total quality management system. The basic assumptions are:
1. A management style based upon the total quality management system is one important variable of the total school improvement movement.

2. Beliefs for quality management by school administrators, board members, and classroom teachers can be measured.

3. Expectations for quality from schools is increasing.

4. Effective leadership is essential to quality improvement in schools.

5. Achieving total quality in schools will involve organizational change.

6. Persons completing the survey are knowledgeable about their personal beliefs and current school practice.

7. Respondents will provide complete and accurate information.

Glossary

The following are operational definitions as used in this study:

1. Reform - to form again.

2. Restructuring - the manner of rebuilding, reconstructing, or reorganizing.

3. School transformation - the act of changing the form, outward appearance, condition, nature, or function of schools.

4. School improvement - a continuing process that enables a school to become better and better.

5. Culture - the concepts, habits, skills, arts, instruments, and institutions of a given people in a given period.

6. Paradigm - a mindset, pattern, example, or model.
CHAPTER II. REVIEW OF LITERATURE

A review of literature necessitates a survey of the history of leadership and change in America's schools to properly understand the context of attempted reform in the present and future age.

The Bureaucratic Model

By the beginning of the 20th century, the bureaucratic model of supervision was well-entrenched in American education--perhaps with good reason. The teaching force in the early part of this century was young, transient, poorly paid, and for the most part only slightly better educated than the students to be taught (Evenden, Gamble, & Blud, 1933; Sherman, 1931).

Furthermore, teaching in America was originally a male occupation, but several events in the last half of the 19th century changed that. With the advent of the Industrial Revolution, males drifted into manufacturing, trade, and business, where compensation promised to be better than in education. The Civil War displaced many male teachers, who were expected to go into the army. Women soon replaced them and economics sealed this trend (Woody, 1928; Dawson, 1943). Because differentiated salary schedules were universal, women were simply much cheaper to employ than men (Atkinson & Naleska, 1965; Douglas, 1947).

Consequently, schools were left largely to women. Willard Elsbree (1939) summed up the circumstance well when he wrote: "The removal of men from the profession had its unfortunate results. The wages of females
were uniformly lower, and salary policies tended more and more to be established in terms of the going rates for women, accounting, in part, for the relatively low rate of compensation which has been accorded members of the public-school teaching profession" (p. 207).

Moreover, women teachers were a transient group, withdrawing after a few years of service to be married (Winship, 1932). This reduced their political effectiveness, slowed up educational reforms, and impeded the improvement of professional welfare (Elsbree, 1939; Belding, 1931).

Other evidence of the condition of the teaching force in the first half of the 20th century came from early surveys conducted by the National Education Association (NEA). In 1923 the NEA reported that 57 percent of rural teachers had less than three years of experience and that 77 percent had less than two years of training beyond elementary school (National Education Association, 1923).

Similarly, a report from the U.S. Office of Education acknowledged the transient nature of the work force in the public schools. The report stated that "...the high rate of transiency among teachers in the public school system in the past has been detrimental not only to educational planning but unquestionably has been of significance in lowering the professional status of teachers in the public mind" (Evenden, Gamble, & Blud, 1933, p. 32).

In 1920 half of the classroom teachers in the United States had less than four years of teaching experience. By 1940 that figure had increased to approximately ten years of experience. A conclusion in a 1940 NEA research bulletin stated, "Teaching has not yet become a life-career
service, but the tendency is definitely in that direction" (National Education Association, 1940, p. 59).

Consequently, the administrative solution to this lack of stable, career-oriented teachers was to create a system of bureaucratic control with decision making and authority tested above the level of the classroom (Kellog, 1940; Hronicek, 1981). No one planned or structured the system for professional, career-motivated teachers. Indeed, efforts were directed largely toward "teacher proofing" the schools. A great deal of attention was paid to teacher's guides, specified courses of study, and other "directive" controls (National Education Association, 1940). In other words, until recent years, supervision was focused on the teacher. It was largely a matter of evaluating personalities, determining cleverness or lack of it in discipline, and checking on the details of classroom procedure. Such supervision emphasized uniformity and demanded strict adherence to detailed courses of study that had been designed to include certain knowledge and common skills (Eginton, 1931; Kincaid, 1931). There were two fundamental criteria: Could the teacher control the class? And were administrative edicts being strictly followed (Atkinson & Maleska, 1965; Kellog, 1940)?

The Beginnings of Change

The building of a career-oriented teaching force was gaining momentum. Several societal forces combined to stimulate this needed change.
With the end of the World War II came the baby boom. The schools soon needed an expanded supply of teachers. Large numbers of men came home from the war motivated to seek an education and they were financed in achieving their goal by the G.I. Bill. Supply and demand dovetailed well. The number of men seeking employment as teachers increased steadily, and this increasing proportion of men favored the growing career of teachers (Atkinson & Maleska, 1965; Stokes, 1947; Walters, 1984).

Equally important was the growing career focus of the women who sought teaching positions. The wartime society had sanctioned the idea that married women could work outside the home. In 1923, 75 percent of urban school districts refused to hire married women; rural districts were even more conservative. This figure dropped to 58 percent of urban districts in 1941 and to only 8 percent in 1951 (National Education Association, 1952).

As teachers who viewed their teaching positions as careers increased, so did frustration with the bureaucratic model of supervision that they found embedded in the public school system (Atkinson & Maleska, 1965; Stucker, 1985; Reavis, 1949; Hronicek, 1981).

Consequently, by the late 1950s discontent with the system and a desire for professional status was manifesting itself throughout the nation. According to Atkinson and Maleska, commentators on education began using labels that are now regarded as clichés. Such phrases as "angry young men," "teacher advocacy movement," and "old ladies in tennis shoes" all conveyed the growing recognition that change was on its way.
As a result, it appears that no one should have underestimated the sincerity and depth of feeling of the teaching force in postwar America. Teachers truly wanted increased access to the means of building a better-compensated career and of doing a better job in the classroom (Price, 1949; Hronicek, 1981; Stucker, 1985). Their objectives were both economic and professional. The best means at hand for teachers to achieve these ambitious goals were the processes of collective bargaining and political action. By 1970 the "advocacy revolution" was in full swing, and the drive for a new form of professionalism was under way (Hronicek, 1981; Stucker, 1985; Walters, 1984).

The thrust for empowerment became an outright attack on the unilateral decision making that was the foundation of the bureaucratic model of supervision. At first the attack was broad in scope and included not only matters of compensation but also professional, curricular, and pedagogical concerns. According to Stucker and Walters, the institutional forces struggling to preserve the status quo gave ground on the matters of wages, hours, and conditions of employment as traditionally defined in labor law. But they drew the line on broader issues, arguing that such professional matters were not appropriate for the collective bargaining table. While teachers were successful in achieving bilateral decision making on some matters in some school districts, bureaucratic systems were generally preserved (Hronicek, 1981).

Throughout the nation, strategies for school reform and restructuring in the 1970s and 1980s have been as wide-ranging and diverse as the settings in which they occurred. Two, however, appear consistently as
part of school reform plans--teacher empowerment and school-based management (Glasser, 1990; Lezotte, 1989; Lezotte & Jacoby, 1990; Hixson, 1990; Glickman, 1990). Both have become the hallmarks of attempts to improve the nation's public schools.

Teacher Empowerment

The calls for teacher empowerment are based on 1) a growing frustration with the apparent inability of centralized "bureaucracies" to significantly improve schools, and 2) a growing body of research from the private and corporate sectors on the benefits of "employee involvement" and decentralized decision making (Hixson, 1990; Cook, 1990; Duke & Showers, 1980; Glasser, 1990; Glickman, 1990; Lezotte, 1991).

 Calls for empowerment of teachers often derive from four premises or assumptions:

1. Increasing the professional roles and responsibilities of teachers requires that they become more directly involved in issues affecting the overall status of the profession, such as certification, selection, preservice and inservice training, and evaluation.

2. Centralized decisions about classroom practices deprive teachers of the opportunity to make professional judgments about what strategies will work.

3. Decisions about what should happen in classrooms on a daily basis should be made by those who will be responsible for implementation and accountability.
4. Instructional and curricular decisions can best be made by those who are most knowledgeable about the students they will affect (Clune & White, 1988; Lezotte, 1991; Lezotte & Jacoby, 1990; Glickman, 1990).

Proponents of increased teacher empowerment argue that allowing teachers to exercise professional judgment, discretion, and autonomy in making decisions (about curriculum, instruction, and classroom management) will result in: 1) better and more appropriate decisions; 2) increased commitment and enhanced teacher performance; 3) increased willingness of teachers to assume responsibility for instructional results; and most importantly, 4) improved student achievement (Hixson, 1990; Lezotte, 1991; Tucker & Mandel, 1986; Glickman, 1990; Lezotte and Jacoby, 1990).

School-Based Management

School improvement based on the Effective Schools Research (ESR) represents a struggle that has now spanned nearly twenty years (Lezotte, 1990). The struggle of this vision of school improvement, according to Lezotte, has successfully overcome numerous barriers and has demonstrated, with accelerating frequency, that schools can successfully teach all of the children whose schooling is of interest to educators.

An outgrowth of the effective schools movement has been increased interest in school-based management. This movement is also referred to as site-based management, building-based management, and school-centered decision making (Clune & White, 1988; Casner-Lotto, 1988; Lezotte, 1991; Lezotte & Jacoby, 1991; Hixson, 1990). With the increasing view that the
School is the fundamental unit of change, many building level administrators are clamoring to increase decision-making responsibility at the school level (Casner-Lotto, 1988; Duke, Showers, & Imber, 1980; Hixson, 1990; Sickler, 1988). Collaboration and staff empowerment must increase if building level staff are going to become meaningfully involved in the planning, problem solving, and evaluation of their schools' programs. By doing this, decision making will be more decentralized as the individual school is recognized as the production center of public education and, therefore, the strategic unit for planned change (Lezotte, 1991; Sizer, 1990; Glasser, 1990; Nardini & Mandel, 1986; Lezotte & Jacoby, 1990).

School-based management has become an important issue in educational policy. School-based management (SBM) refers to a program or philosophy adopted by schools or school districts to improve education by increasing the autonomy of the school staff to make school site decisions (White, 1988; Duke, Showers, & Imber, 1980; Decker, 1977).

However, much ambiguity surrounds the notion of SBM. Researchers, practitioners, and policy makers interpret SBM differently, and there are numerous variations within districts and schools regarding the levels of authority, the actors involved, and the areas of control (Casner-Lotto, 1988; Lueker, 1990; Nardini & Mandel, 1986; Sickler, 1988; Rist, 1990).

While decentralization is a broad concept that refers to the delegation of decision-making authority to subunits, SBM is a system of decentralization in which authority over school policy is shared by the
central office and the school site (David, Purkey, & White, 1988; White, 1988).

Nevertheless, the impetus for SBM may come from superintendents, school boards, or school personnel. While it was most common for SBM districts to allocate greater decision-making authority to principals, school districts have also initiated SBM programs or incorporated SBM philosophies that emphasize increased authority of teachers, students, parents, and community members (Clune & White, 1988; Pierce, 1980; Luiker, 1990; Rist, 1990).

Past and Current Practices of School-Based Management

School-based management is not a new idea. Several movements were initiated in the 1960s and 1970s. For example, New York City began a city-wide decentralization program in 1967, and Detroit adopted a decentralization plan in 1970 (Fantini & Gettell, 1973).

Although strategies for teacher empowerment have often been linked to various forms of school-based management, there are also several types of "empowerment" initiatives that vary a great deal in how they function.

For example, New York City’s 1985 school improvement plan has focused on community participation in school decision making; the ABC School District in Cerritos, California, initiated a plan in 1976 that focuses on teacher empowerment. Since 1985 schools in Hammond, Indiana, have implemented a school improvement program that includes the active involvement of teachers, students, parents, and other community members (Casner-Lotto, 1988; Kelly, 1988; Sickler, 1988).
Another form of SBM that several school districts in Iowa are exploring is called vertical leader teams. There appears to be several benefits:

1. Vertical leader teams improve communication between parents, teachers, administrators, and school board members.
2. Vertical leader teams enable the vision for the district to become the shared vision for everyone.
3. Vertical leader teams establish the communication link between the central office and the individual buildings which helps to provide common direction on a daily basis (Newsome & McCormick, 1992).

How widespread is SBM? In California alone more than sixty districts were managed in the early seventies under a philosophy of shared decision making or have incorporated SBM programs (Decker et al., 1977). There is no exact figure, however, the 1980s have seen many school districts across the country experimenting and becoming more involved with some form of school-based management (Clune & White, 1988; Rosenholtz, 1987; Sickler, 1988).

Benefits of School-Based Management

What has been learned from these various experiences? Some of the beneficial outcomes for empowering teachers follow (White, 1988; Lezotte, 1991; Lezotte & Jacoby, 1989; Glickman, 1990).

1. Encourage making decisions more carefully and appropriately matched to student needs.
2. Minimize "surprise" changes in programs, goals, and fiscal allocations.

3. Increase feelings of professionalism among staff.

4. Increase interest, ownership, commitment, and excitement about the school and/or program.

5. Encourage reexamination of current programs and strategies and developments of new innovative approaches.

6. Shorten time lines for decision making and program implementation.

7. Increase faculty interest in their own professional growth and development.

8. Improve the level of community and parent support and involvement in the school.

9. Improve collaboration among faculty and encourage better utilization of faculty experience and expertise.


Furthermore, school-based management appears to give greater flexibility, increased participation of school staff in school decisions, and the ability to provide more appropriate services to meet the specific needs of students (Lezotte & Jacoby, 1990; Nardini & Mandel, 1986; Prasch, 1984; Dolan, 1992). There is some evidence that SBM is related to student achievement. School effectiveness literature supports the need for school personnel to play an important role in school decision making to increase the academic performance of students (Purkey & Smith, 1983).
Levin (1988) suggests that school site decision making is related to student learning and achievement. However, the direct relationship is not clear. According to Levin, it is difficult to draw a cause and effect relationship between SBM and student achievement since any impact of SBM is complicated by other trends at the school site, or local, state, and national level.

In addition to improved learning and academic achievement, there are other benefits of SBM. Increased authority at the school site may improve self-esteem, morale, and efficiency of school personnel. The greater standardization of schooling, centralization, and top-down controls throughout the 1980s have added to declining morale of school personnel (Duke, Showers, & Imber, 1980; Pierce, 1980). Increased discretion over decision making provides incentives for school staff to be more efficient.

Rosenholtz (1987) has suggested that autonomy enhances performance. Jobs that give people autonomy and discretion require that they exercise judgment and choice; in doing so, they become aware of themselves as causal agents in their own performance. Loss of the capacity to control the terms of work or to determine what work is to be done, how the work is to be done, or what its aim is to be, widens the gap between the knowledge of one's unique contributions to work and any performance efficacy that can be derived from it (p. 540).

School-based management improves communication among school staff and the community (Nebgen, 1991; Newsome & McCormick, 1992). Participation in school budget, curriculum, and staffing decisions gives school personnel the opportunity collectively to develop ideas about what is important to
emphasize in teaching (Sickler, 1988; Rist, 1990). According to Little (1981), the most successful schools appear to be those where school staff members frequently exchange ideas about teaching. SBM opens up communication between parents, teachers, and students, and improves educational services by giving them a larger voice in educational decisions.

Furthermore, increased authority at the school site may help to attract and retain quality staff. Poor teacher working conditions, including low status and low pay, have made it increasingly difficult to attract bright students to the teaching profession (McNeil, 1987; Nyberg & Farber, 1986). By providing increased discretion and autonomy of objectives to teachers, the role of the teacher may gain increased respect and raise teachers' interest and motivation in teaching.

Limitations of School-Based Management

Many problems may arise in implementing school-based management. It may create confusion in roles and responsibilities. It may be difficult for teachers, administrators, parents, and students to adapt to new roles, and they may become frustrated if they do not know what is expected of them (Decker et al., 1977; Glickman, 1990). Principals may not know which decisions must be made in consultation with teachers and which they should make on their own.

Cook (1990) states that local school boards of education have traditionally been concerned that SBM undermines the authority of elected officials of public schools. According to Cook, local boards are not just
interested in effective schools. They are responsible for effective school systems. Consequently, board members often fear that accepting SBM means abdicating legal responsibility for the entire system.

According to Lezotte (1991), school-based management may become a power struggle among administrators, teachers, parents, and students. Contradictions may arise among central administrators who endorse the philosophy of SBM but find it difficult to allocate decision-making authority to principals. Principals may want more control over their own destiny but are resistant to change. Teachers, parents, and students may want greater ownership over objectives but do not have the time to spend away from the classroom, their jobs, their family, or their hobbies to develop curricula, make budget recommendations, or interview personnel.

SBM encourages administrators, parents, and school staff to work together on school policy issues. According to Lezotte, however, it is not necessarily a case of these individuals struggling collectively to obtain great authority. For example, teachers may fear that greater parental authority will interfere with their own power, goals, and objectives.

As a result, many authors speak of the problems in reaching a balance between centralization and decentralization (Brooke, 1984; Decker et al., 1977; Glickman, 1990). It is neither practical nor feasible for a district to develop a fully centralized or decentralized system of school management. There is a tension between providing too much freedom for school staff and risking confusion and inconsistency, and the problem of
allowing too little freedom and facing a staff that feels restrained or inefficient (Rosenholtz, 1987; Glickman, 1990).

According to Beaubier and Thayer (1973), "As contrary as it may seem, it is absolutely essential to centralize some aspects of a district's operations for successful decentralization of the operating unit" (p. 20).

Problems in implementing SBM may arise from the structure of school organization and the nesting of individual schools with a series of larger organizations, such as conflicting state mandates, standardized curricula, and budget and personnel constraints at the district and state level (Duke, Showers, & Imber, 1980; Prasch, 1984; Glickman, 1990).

Consequently, increased involvement of school staff and community members in school policy decisions may conflict with state mandates prescribing curriculum form and content (Darling-Hammond & Berry, 1988). For example, Florida has imposed legislative action regarding curriculum standardization and some districts with SBM programs have requested special status to diverge from state requirements (National School Boards Association, 1988).

SBM may increase the authority of school personnel regarding budget issues. Decisions regarding instructional salaries, the number of teachers, and instructional materials and equipment will be limited by the amount of resources available (Gideonse, Holm, & Westheimer, 1981). In addition, hiring decisions will be limited by enrollment trends, district agreements with teacher unions, and state teacher-student ratio requirements (Johnson, 1984).
School-based management raises potential conflicts in collective bargaining issues. By allocating administrative responsibilities to teachers and engaging school staff in decisions that might normally be a management right in union contracts (Glickman, 1990). As Johnson (1984) suggests, collective bargaining often results in standardization of procedures. SBM, on the other hand, often leads to diversity and differentiation in procedures from school to school. While teachers' unions have traditionally emphasized material incentives such as pay raises and benefits, SBM emphasizes ownership over objectives such as what is taught and what materials are used.

Nevertheless, SBM advocates do not believe SBM runs counter to union strategies. In most instances, teachers' unions have not served as obstacles to the implementation of SBM. In school districts such as Dade County, Florida, and Hammond, Indiana, the unions have worked cooperatively with the district to obtain SBM (National School Boards Association, 1988). In districts where union leaders have played an important role in the initiation and implementation of SBM, the unions believe that SBM offers a method to move beyond traditional collective bargaining strategies and to acquire the status and autonomy desired by teachers (Casner-Lotto, 1988; David, Purkey, & White, 1988; McDonnell & Pascal, 1988).

Glickman (1990) suggests some additional considerations that should be taken into account in the planning and implementation of any "empowerment" effort. Among Glickman's "ironies" of empowerment are the following:
1. The more an empowered school improves, the more apparent it is that there's more to be improved.

2. The more an empowered school is recognized for its success, the more non-empowered schools criticize it.

3. The more an empowered school works collectively, the more individual differences and tensions among staff members become obvious.

4. The more an empowered school becomes a model of success, the less the school becomes a practical model to be imitated by other schools.

Finally, there is a limit to what SBM can do. Although many policy makers advocate the decentralization of authority at the school site, most supporters recognize that SBM alone will not solve all school problems such as low teacher salaries, poorly trained teachers, discipline problems, or societal tensions. Researchers argue that major changes in school effectiveness cannot occur unless educational reforms move beyond a narrow focus on the schools (Canoy & Levin, 1976).

Preliminary Conclusions of School-Based Management

As schools and districts explore the potential of increased teacher empowerment and autonomy or school-based management as vehicles for school reform, restructuring, and improvement, research by Hixson (1990) and Clune and White (1988) suggests six basic areas that should receive more attention and consideration than has typically been the case:
1. Improved delineation and coordination of rules, roles, and responsibilities within the schools, between the school and central office, and between the school/central office and state departments of education.

2. Massive increases and improvement in the quantity and quality of training and support.


4. Redefining contractual relationships and provisions between teachers and school systems.

5. Increased attention to process as well as outcomes.

6. Changes in the preservice preparation of both teachers and administrators.

In addition, Clune and White suggest that school staff must be aware of the various challenges, "ironies," and contradictions they will likely encounter along the path toward empowerment, and make provisions to avoid or account for them from the beginning of the process.

It appears that strategies for empowering teachers and moving decision-making authority to the local school level provide important vehicles for improving and ultimately restructuring public schools. Both strategies may well be necessary, but they are not, in and of themselves, sufficient to solve the complex problems faced by the schools, their students, and the communities which they serve. Nevertheless, increasing the opportunities for teachers and local schools to serve a more central role in restructuring efforts appears to be a significant first step in the right direction.
Strategic Planning

Along with school-based management, strategic planning is another form of managing schools that has become quite popular in America's schools.

Strategic planning has had a long history. Its origins are military and it has been used by generals to help formulate battles for hundreds, perhaps thousands, of years (Quinn, 1980). Around the turn of the 20th century, its value for international policy was recognized and strategic planning became a commonly used geopolitical decision-making tool (Mahan, 1890; Makinder, 1919). It was adopted as a corporate planning process in the mid-20th century and introduced to the public, not-for-profit sector shortly thereafter (VonNeuman & Morgenstern, 1947; Wilkinson 1986).


One of America's leading experts in the past on strategic planning, George Steinre (1979), says there is no clear consensus among those writing about the topic. However, he and others (Herman & Kaufman, 1991; Brandt, 1991; Meca & Adams, 1991; Cook 1992; McCune, 1986; Bennis & Nanus, 1985) have described several themes underlying strategic planning. These themes represent the key principles and beliefs upon which this planning process is based:
1. People can influence the future. Strategic planners believe that what is done today can help shape what happens tomorrow, next year, and even the next decade.

2. Today's trends can help people anticipate the future. Strategic planners believe that many current events presage future events. By "reading" the trends shown in these current events and extrapolating from them, people can describe a limited number of probable alternative future scenarios--outline descriptions of what will happen in years to come.

3. Today's decisions can help people realize the future scenario that is best for them. Strategic planners believe that with a series of systematically arrived at decisions and plans, people can exploit opportunities, avoid pitfalls, and bring about a desired future.

In education, strategic planning has not been well defined. School administrators talk about strategic planning, but there is a distressing overabundance of ideas about what strategic planning really is (Cook, 1988). Nevertheless, there is sufficient similarity among definitions to permit a rough draft of classification. A sampling of some representative definitions of strategic planning include the following:

1. Strategic planning is "a process consisting of an examination of the current environmental circumstances; the establishment of a statement of purpose or mission with related time-frame goals; supporting operational objectives and specific plans to carry out these objectives; and resource analysis" (Spikes, 1985, pp. 3-4).
2. Strategic planning is "a process for organizational renewal and transformation which provides a framework for improvement and restructuring of programs, management, collaborations, and evaluation of the organization's progress" (McCune, 1986, p. 34).

3. Strategic planning is "a process designed to move an educational organization through the steps of understanding changes in the external environment, assessing organizational strengths and weaknesses, developing a vision of a desired future and ways to achieve that mission, developing and implementing specific plans, and motivating that implementation so that necessary changes can be made" (Brown & Marshall, 1987, p. 1).

4. Strategic planning is "the means by which an organization constantly recreates itself to achieve common purpose (Cook, 1990).

5. Strategic planning can express a clear vision of the future for a school district, as reflected in every facet of school operations. Strategic planning helps school employees, students, and the community rally around the vision and set goals to achieve it. It creates a system to monitor the district's progress toward that vision--and to renew daily and yearly plans to achieve the strategic goals and objectives. It holds people accountable and judges progress on the basis of results. It gives school employees, students, and community members a greater knowledge and sense of ownership of their school system. It allows the school board and administration to identify, justify,
and integrate the needs to the school organization with the needs of society (Herman & Kaufman, 1991).

While these definitions differ slightly, they identify three essential elements of strategic planning: 1) an orientation toward the future, 2) a vision or mission, and 3) widespread participation of faculty and community members in the planning process (Spikes, 1985; McCune, 1986; Brown & Marshall, 1987; Cook, 1991; Herman & Kaufman, 1991; Mecca & Adams; Blum & Kneidek; Below & Morrisey, 1987; Brandt, 1991).

Strategic planning within a school district does not eliminate the need for traditional planning activities. Rather, it provides the framework or superordinate set (a mission and strategic goals) to guide other planning, decision making, and management (McCune, 1986; pp. 35-36). Strategic planning assumes an open system whereby organizations must constantly change as the needs of the larger society change (Boulton & Lindsay, 1982; Bennis & Nanus, 1985; Cook, 1990). It focuses on the process of planning, building a vision, internal and external environmental scanning, and faculty and community development (Cook, 1992; Herman & Kaufman, 1991). Strategic planning is done by a small group of planners with widespread involvement of stakeholders. It uses current and projected trends to make current decisions (Wooley & Croteau, 1991; Mecca & Adams, 1991; Bennis & Nanus, 1985; McCune, 1986). Strategic planning emphasizes changes outside the organization, organizational values, and proactive action (Boulton & Lindsay, 1982; Below & Morrisey, 1987; Cook, 1990; Herman & Kaufman, 1991). Strategic planners ask what decision is appropriate now based on an understanding of the situation five years from
now. Finally, strategic planning depends upon intuitive and creative
decision making as to how to guide the organization over time in a dynamic
environment, and an organization-wide process that anticipates the future,
makes decisions, and behaves according to an agreed-upon vision (Herman &
Kaufman, 1991; Cook, 1988; Blum & Kniedek, 1991; Below & Morrisey, 1987;
Cook, 1992; Nebgen, 1991; McCune, 1986).

A Thrust for Total Quality Management in Education

Education has been at the forefront of the national agenda for over a
decade; public dissatisfaction with the American educational system is
continually more apparent. Therefore, it seems natural to inquire as to
whether that educational system should follow the lead of the private
sector in pursuing total quality management.

Since the early 1980s, after seeing the impressive industrial
successes of the Japanese, American business, government, and service
organizations have begun to embrace the concepts of total quality
management (Geber, 1990; Bernard, 1991; Sensenbrenner, 1991; Burstein &
Sedlak, 1988; Tribus, 1991; Therrien, 1991; Peterson, Kelly, Weber, and
Armstrong, 1991; Siler & Garland, 1991). By redirecting their focus to
serve the needs of their "customers," and through processes aimed at
"getting it right the first time," they too are experiencing success.

Now, school leaders and reformers have begun to look to the
principles of total quality management to help transform schools and the
American education system so that both their processes and their results
reflect the goals that are being held for them (Rhodes, 1990; Stampen, 
1987; Glasser, 1990; Moen, 1991; Melvin, 1991; Meaney, 1991; Tribus, 1991; 

It seems to be essential to determine whether organizations as 
distinct as private corporations and public schools may benefit from 
similar management philosophies. As Lois and Miles (1990) caution, "There 
are many books in the business management literature focusing on leading 
and managing change. But many of them advise strategies based on an image 
of organizations that does not fit well with the reality of life in 
schools" (p. 13).

Is it possible then to determine what the essential characteristics, 
philosophies, and practices are in TQM and affirm that they are 
potentially desirable for the administration of America's public schools?

An important question to ask appears to be, "What characteristics of 
the corporate culture suggest that TQM might be an appropriate management 
approach?" Scott (1989) cites the failure of organizations to cooperate 
and neglect of human resources as being prime causes of lack of quality 
and lack of success in private organizations. Furthermore, he cites 
outmoded strategies grounded in mass production and inward focused 
marketing, a near-sighted economic outlook centered on short-term profits, 
a weakness in the technology of production, emphasis on elegant, high 
technology designs at the expense of a quality first focus, and strained 
relations and mistrust between industry and government as characteristics 
that might lead private sector organizations to consider the 
implementation of TQM. Drucker (1980) describes the major barriers to
corporate productivity as a lack of clear performance targets, trying to
do too many things at once, lack of experimental attitude, lack of
evaluation, and a reluctance to abandon less-productive programs.

In his examination of public sector organizations, Milakovich (1991)
cites the attempt to balance multiple, vague, conflicting goals of diverse
interest groups, a focus on short-term political rewards, and the
inability to control and define markets as being key factors that lead
these organizations to failure and make them prime candidates for the
implementation of TQM. If, indeed, these factors of organizational
culture were instrumental in leading other public and private sector
organizations to embrace TQM, the question remains as to the comparability
of the public school culture.

Studies of the public school culture, e.g., Boyer (1983), Goodlad
(1984), Lightfoot (1983), Powell, Cohen, and Farrar (1984), and Sizer
(1984), suggest that public schools suffer from remarkably similar
conditions to those noted by Scott, Drucker, Milakovich, and others. The
most common characteristics of the school culture seem to be the isolation
of teachers, the lack of clearly defined goals, and the continuing failure
of schools to measure the quality of their products to these goals.

Although much reform and restructuring efforts have taken place
during the past decade, the culture of the American school still remains
much the same. Support for this is found in Glickman's (1990) description
of the legacy of the one-room schoolhouse. He describes teachers as
isolated and individualistic, often incapable of working collaboratively.
He characterizes the school environment as an incessant stream of
psychological encounters, generally mediated by resorting to routines, which in themselves are typically imposed by administrators. He notes that after the intense challenge teachers face in their initial year, there is little mobility or job enhancement available. Teachers seldom discuss instruction or key issues with their peers, nor are they involved in key issues with their peers, nor are they involved in key decisions affecting the school.

Fullan (1991) supports this characterization of isolation, finding that 91 percent of teachers would choose to use additional time (if available) on tasks which they typically perform alone (p. 121). In his massive qualitative study of schooling, Goodlad (1984) found precisely the same quality of isolation to be prevalent. Louis and Miles (1990) conclude that this pattern results in teachers struggling privately with their anxieties and problems, thus failing to develop a common technical culture.

The critical issue of the lack of congruent goals was also a key finding of Goodlad's (1982) study, which found that the greatest predictor of school success was goal congruence among teachers, administrators, students, and parents. Leithwood (1990) supports this finding, concluding that goals are "the glue that holds together the myriad decisions of highly effective principals" (p. 85). Both studies recognized the general lack of such clear, congruent goals in American public education.
Similarities between Total Quality Management and Education

Former studies that compared the ideas of W. Edwards Deming to the ideas and research from effective schools have shown to offer guidelines that are quite similar (Table 1) (Mackenzie, 1983; Purkey & Smith, 1983, 1985).

School practitioners and others are finding that many of their management strategies, such as strategic planning and site-based management, are enhanced by total quality processes (Meaney, 1991; Tribus, 1990; Houlihan, 1991; McLeod, 1991; Melvin, 1991). TQM is not another add-on, but a systematic, all-over approach that provides for the "top-down" enablement of "bottom-up" decisions. Total quality management empowers employees, managers, organizations, and even whole communities (Rhodes, 1991).

Rhodes contends that many of the principles of total quality are "naturals" for educators. The most basic beliefs about people--what motivates them and how they grow and learn--are embedded in the foundation of TQM. Educators and others are finding that TQM frees them to change their systems, processes, policies, and practices so they are better aligned with their long-held personal and professional beliefs and values. Unlike school improvement processes, total quality management process that is based on the belief that people are already self-improving beings who regularly put forth their best efforts and need a work setting that supports them so that each day they are successful.
Table 1. Relationship between Deming's 14 points and results of effective school research

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<thead>
<tr>
<th>14 points (Deming, 1986)</th>
<th>Improvement effectiveness correlates (Mackenzie, 1983)</th>
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<tbody>
<tr>
<td>1. Constancy of purpose toward long-range improvement</td>
<td>Long-range goal-focused activity Clear goals and high expectations commonly shared</td>
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<td>2. Reject commonly accepted levels of delays, mistakes</td>
<td>High and positive achievement expectations Strategies to avoid nonpromotion of students School-wide emphasis on basic and higher order skills Effective use of instructional time</td>
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<td>3. Improve input and seek statistical evidence of quality</td>
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<tr>
<td>4. Seek long-term overall (rather than piecemeal) efficiency</td>
<td>School-wide development</td>
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<td>5. Look for problems in the system</td>
<td>Continuous diagnosis, evaluation, and feedback</td>
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<td>6. Institute on-the-job training</td>
<td>Inservice training for effective teaching</td>
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<td>7. Use modern methods of supervision (managers learn from employees)</td>
<td>Positive climate and atmosphere Shared consensus on values and goals Parental involvement and support</td>
</tr>
<tr>
<td>8. Drive out fear</td>
<td>Stability and continuity of key staff Sense of community</td>
</tr>
<tr>
<td>9. Break down barriers between departments</td>
<td>Total staff involvement in school improvement Collaborative planning and collegial relationships</td>
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Table 1. Continued

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<tr>
<th>14 points (Deming, 1986)</th>
<th>Improvement effectiveness correlates (Mackenzie, 1983)</th>
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<td>10. Eliminate slogans, provide effective methods</td>
<td>Appropriate level of difficulty for learning tasks</td>
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<td>Visible rewards for academic excellence and growth</td>
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<td>Well-structured classroom activities</td>
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<td>Instruction guided by content coverage</td>
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<td>Orderly and disciplined school and classroom environments</td>
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<td>Teacher empathy and rapport with students</td>
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<td>Emphasis on homework and study</td>
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<td>Curriculum articulation and organization</td>
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<td>11. Eliminate work standards</td>
<td>Autonomy and flexibility to implement adaptive practices</td>
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<td>12. Enable pride of workmanship</td>
<td>Teacher-directed classroom management and decision making</td>
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<td>District support for school improvement</td>
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<td>Recognition of academic success</td>
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<tr>
<td>13. Institute vigorous program of education and retraining</td>
<td>Positive accountability, acceptance of responsibility for learning outcomes</td>
</tr>
<tr>
<td>14. Create management structure for constant improvement of knowledge and effectiveness</td>
<td>Autonomous school-site management</td>
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The Beginning of Total Quality Management

Peter Drucker, in his book on management, reported details of group activities that took place in Germany during the late 1800s. One of the companies that Drucker highlighted was the Zeiss Company, known for its optical products. Ernest Abbe collaborated with his workers, turning the responsibility for working out jobs to the employees themselves. He gathered the plant's masters and journeymen together, outlined the procedures and principles, and left the organization and the actual work up to them. He insisted that the machinery be developed by the skilled workers, aided by scientists and engineers. Using group problem-solving techniques as well as feedback from workers and respected craftsmen, he helped the Zeiss Company achieve recognition in the optical business (Drucker, 1974, p. 259).

In the 1940s the basic notion of worker participation was used effectively by a lot of people. Prominent among them was Walt Disney. He was fond of calling the wives and children of his employees every week for a talk. He would say, "I get good, useful ideas from children and mothers." It is assumed that he might have obtained his best ideas from them (Ingle, 1982, p. 6).

Administratively, Disney encouraged worker participation in all his projects. Any time a new attraction was built, he would call the employees together for their impressions and suggestions. On a particular occasion, one of the key attractions was reviewed by several employees. A janitor did not like the setup, mainly the atmosphere. When asked why, he replied, "It does not resemble the actual conditions" (Ingle, 1982, p. 6).
He then explained the differences between what Disney had built and the way conditions had been. When questioned as to how he knew so many details, he said, "I was born there and lived there for twenty years; I should know something about the place." The attraction was then modified according to his suggestions. This practice of worker involvement enabled Disney to establish a record for quality and near perfection in his work (Ingle, 1982, p. 6).

Other great businessmen used similar techniques to promote employee involvement. Although no formal records exist, one can readily see that communication within the companies was good and that employees were closer to management (Ingle, 1982, p. 6).

In the late 1940s, IBM also used total quality management techniques. As one of the first electronic computers was being developed, the great demand for it caused production to begin before the engineering details were completed. Engineers, foremen, and workers cooperatively worked out the details, resulting in a superior design in which the production engineering was significantly better, cheaper, and faster. Because each worker shared in the engineering of the product, each employee's total level of involvement increased, as seen in the better and more productive work (Ingle, 1982, p. 7).

The birth of total quality management (TQM) resulted from adversity. In 1942 the Allied cause was suffering. Facing an unprecedented demand for materials, the U.S. War Department established a quality control section, staffed largely by employees from Bell Telephone Laboratories (Pines, 1990; Port, 1991; Gail, 1991; Gabor, 1990).
Eleven years earlier, a Bell Labs statistician, Walter A. Shewart, had published ideas on quality control. Noting that all manufacturing processes entailed variation, Shewart defined acceptable upper and lower limits for tasks. One could thereby detect variations outside of these limits and find their causes. Shewart introduced "statistical control" charts that workers on the factory floor could use to plot and adjust variations (Nolan & Provost, 1990; Port, 1991; Psihoyos, 1991; Maguire, 1991).

Shewart's statistics had made quality a science. Monitoring manufacturing according to measurable information brought a process under control and made its future performance predictable. According to Nolan and Provost, it also replaced traditional end-line inspection with an "on-line" awareness of variation.

Furthermore, this advantage of acceptable quality levels (AQL)--a progressive idea in the 1930s--held an obvious appeal for Army procurement officials, acquiring large volumes of armaments from many suppliers. The next step was rapidly teaching statistical methods to those engaged in wartime production (Pines, 1990; Port, 1991; Psihoyos, 1991; Perine, 1990).

One of Shewart's disciples, W. Edwards Deming, became greatly involved in Shewart's work. In July 1941, Deming taught the first of 23 courses he would present over the next five years (Nolan & Provost, 1990; Psihoyos, 1991).

In addition, statistical control proved a key element in the war effort. Quality techniques became military secrets. America's defense
needs had given birth to a highly guarded, valuable "body of quality knowledge" (Pines, 1990; Port; 1991).

Consequently, when the war ended, the files were opened to businesses and industries. But by that time, an America enjoying the war's legacy of consumer prosperity did not have the same interest in quality. However, such was not the case with the country it had just defeated (Pines, 1990; Psihoyos, 1991; Port, 1991; Perine, 1990; Reilly, 1991).

Quality Circles in Japan

After World War II, people in Japan were more interested in surviving the aftermath than in maintaining a high level of quality control of their products. The quality of goods became so poor that the identification "Made in Japan" came to symbolize poor and shoddy quality to the rest of the world (Dreyfack, 1982, p. 131).

General Douglas MacArthur felt that significant changes should be made to improve the nation's image as well as its products, and he requested assistance from the government of the United States. The U.S. government complied and sent Dr. Edwards Deming, a government statistician, to teach quality control methods to Japanese management leaders. Deming worked with the Japanese from 1948 to 1950 and was honored for his services in 1951 when the Japanese government created the Deming Prize.

Deming's system is based upon the concept that everyone should:
1) plan (a production plan is created); 2) do (plan is implemented on a small scale); 3) study (production is studied to make sure it conforms to
the plan); 4) act (lessons learned in the study stage are used to modify the ongoing production process so that a new set of data can be used in creating and implementing the next plan of a larger scale). Then the circle must keep rotating (Moen, 1989; Ingle, 1982, p. 8). This four-step improvement cycle which Deming (1990) calls the "Shewart cycle for learning and improvement" is commonly referred to as the "Deming Wheel."

On July 13, 1950, W. Edwards Deming addressed the presidents of Japan's leading companies. These leaders, representing diverse industries, were each striving to reestablish a still faltering economy. There was a felt need to implement ideas that could make a difference (Port, 1991; Psihoyos, 1991; Perine, 1990; Maguire, 1991).

Deming's premise was that quality was essential to survival and he urged the Japanese manufacturers to work in partnership with their vendors, to develop instrumentation, and to gain control over their processes. Deming emphasized that the customer is the most important part of the production line (Schaff, 1991; Port, 1991).

From 1954 to 1955 another prominent consultant, J. M. Juran, made a series of visits to Japan. While there, he lectured and preached what is known as total quality control. In this program, quality begins in the design stage and ends only after satisfactory services are provided to the consumer; for a company to be successful, quality must be viewed as a total, all-encompassing concept. At this time, the Japanese government was also deeply involved in this service aspect for a quality improvement program. Under a comprehensive plan, many programs on quality control, statistics, and related subjects were broadcast on radio and television.
The month of November was proclaimed Quality Month with "Q" flags, slogans, seminars, and conventions initiated during the month to promote the drive for quality.

During 1961, Kaoru Ishikawa and the Union of Japanese Scientists and Engineers (JUSE) tied the theories of the behavioral scientists together with those of the quality sciences. The result was the concept of quality circles, commonly known in Japan as quality control circles. The first circles were registered with JUSE during May of 1962. The phenomenon grew in Japan to involve millions of employees.

It took the United States until the 1970s to realize the competitive aspects of this new discipline and that "made in Japan" had become a new standard for quality. This change in quality was not magic, nor was it accomplished overnight. It took Japan thirty years of hardship and dedication to quality for that country to become the third industrial power in the present world. The new quality standard meant more than efficient mass production; it meant providing service and product to meet the customer's expectations throughout the life of the product (Port, 1991; Gabor, 1990; Maguire, 1991).

Japan's success triggered an evolution in quality improvement. Insightful leaders began to give new energy to providing "quality" in their organization's products.

Eventually, American executives began to pay attention to the Japanese model of quality control and visited Japanese companies in the early 1980s. The executives found that top management was as concerned with quality as with finance--perhaps more so. The Americans saw quality
precepts and practices permeating every level of enterprise, from the boardroom to the factory floor. The effort toward quality was, in a word, "total" (Nolan & Provost, 1990; Port, 1991; Psihoyos, 1991; Gabor, 1990).

Through the work of Deming and Juran, the Japanese introduced new concepts and processes to industry. Their focus on process control and the use of statistics to manage the processes led to a new discipline for the manufacturing arena (Pines, 1990; Oberle, 1990).

In the early days of the quality movement, the concern was focused on conformance to product specifications. This definition later evolved to meeting customer expectations which go beyond product quality to marketing, service, and technical support (Deming, 1986; Juran, 1980). In some cases billing terms or product availability have become as important as the product itself. Deming and Juran believe that product variables such as billing and technical service are part of the internal business systems that form a link in the chain supporting the delivery of products and services which satisfy customers.

Quality begins with planning and involves effective control of the manufacturing and business processes. All the processes are part of the delivery of quality that meet today's customer expectations in the consumer and industrial markets (Armstrong, 1991; Bernard, 1991; Morton, 1992; Woodruff & Levine, 1991; Sensenbrenner, 1991; Maguire, 1991).

A Closer Look at Quality Circles

The term "made in Japan" used to have a negative connotation for American consumers. Since the 1970s, however, Japanese products have
developed a reputation for superior quality. The quality circle management technique has been credited with this change in opinion (Zippo, 1980; Temple & Dale, 1989; Blair & Whitehead, 1984).

One of the first organizations to become involved in the quality circle movement in the United States was Hughes Aircraft Company. After years of working with quality circles, the company had expanded its program to include over 500 circles, with about 40 percent of them in white collar areas (Mohr, 1983). One successful implementation, however, is perhaps that of General Motors' Tarryton, New York plant. Over a period of years the plant went from one of the worst to one of the best in the system by using participatory problem-solving techniques of quality circles (Cohen, 1981).

By 1983 over 400 major manufacturers and service industries had implemented quality circles at a tremendous cost and were reporting both cost savings and optimistic long-term benefits (Roll & Roll, 1983). The literature gives some examples of some early successful quality circle programs which included: Beech Aircraft, Bendix, British Steel, Champion International, Chrysler Motors, Control Data, Frolic Footwear, General Motors, Honeywell, IBM Corporation, International Revenue Service, Lakeshore Technical Institute, Lane Community College, Lockheed Company, Mercury Marine, Middlesex County College, Motorola, Muskegon, Michigan Schools, New York City Public Schools (District 11), Norfolk Naval Shipyard, North Carolina State Department of Community Colleges (Raleigh), Northrup, Tektroniz, 3M, Union Carbide, Veterans Administration, and Xerox (Aquila, 1982; Bryant & Kearns, 1982; Burstein, 1983; Cohen & Cohen, 1983;

Although quality circles have been implemented throughout the United States in business and industry, many have also failed. Richard Whiteley (1991) of Forum Corporation states that "quality circles have failed miserably primarily because the infrastructure was not created, everybody was teaching everybody else how to 'do' quality circles, but we didn't teach people in the circles what the themes were, or how the themes should or would be selected, or how they would be recognized, or what would be done with the suggestions for implementation that came from the circles. We pumped people up and when we didn't follow through, we let them down."

Yet the concept of the quality circle is still valid and valuable, maintains J. M. Juran of the Juran Institute. "The basic concept is good," he contends. "The Japanese have made a big thing about that, but we went at it the wrong way. We botched it. Now we have to regroup and try it again" (Schaff, 1991).

Perhaps one of the main reasons for quality circle failure is directly related to what Dr. Edwards Deming describes as American management's five deadly diseases. Deming (1986) suggests that American managers:

1. Lack a consistency of purpose because they have not committed themselves to long-range planning;
2. Emphasize short-term thinking because of the desire for immediate benefit of the quarterly dividend;
3. Focus on an annual system of rating which utilizes fear or failure to accomplish results;
4. Produce mobility of managers because of employee dissatisfaction and frustration with the system;
5. Tend to only make use of visible statistics and figures resulting in shoddy products and services.

Deming refers to these quality circles as a network of study groups composed of individuals representing different functions and levels of responsibility within an organization (e.g., administrators, other professionals, and various workers). They work together to identify and solve organizational problems.

The specific procedure advocated by Deming is the quality control circle (QCC), invented in Japan by Ishikawa (Deming, 1986). Key characteristics specified by Deming include access to statistically controlled data and other information, rules, and procedures for efficient interaction among study group members, and direct access to top management.

Philosophy of management in Japan

Several authors have outlined basic influential concepts of Japanese management which affect outcomes in the operation of quality circles. It is a Japanese belief that 1) the group is more important than the individual; 2) workers intelligent enough to do the work are intelligent enough to improve productivity in general; 3) participatory management enhances leadership and motivational skills; 4) all workers form a family
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unit; and 5) the sharing of feelings in a social atmosphere as opposed to communicating ideas is an important part of a group communication context (Miller, 1989; Watanabe, 1991; Aston, 1983; Creagh & Smeltzer, 1985; Barrick & Alexander, 1987).

Definition of a quality circle

The quality circle is a group problem-solving technique in which six to fifteen workers from a given area gather several times a month on company time to study and solve problems that affect their production area. Quality circles use the skills and the know-how of the workers who deal with a problem on a daily basis and whose efforts ultimately determine the quality of the product. Due to the greater potential for worker job satisfaction, the common results from the implementation of quality circles include improved quality of products, lower production costs, better labor/management communication, higher productivity, and increased patents and inventions (Dewar, 1980; Miller, 1989; Watanabe, 1991; Torrance, 1982).

Objectives of quality circles

Much of the research seems to support the following areas as being the primary objectives of quality circles (Trades Union Congress, 1982; Honeycut, 1989; Watanabe, 1991; Tang, 1987; Bowman, 1989; Larson, 1989; Miller, 1989; Miljus, 1986; Alexander, 1984): 1) to promote individual job satisfaction, 2) to develop harmonious manager/worker relationships, 3) to improve communications within the organization, 4) to reduce errors
and enhance quality of work and product, 5) to create a problem-solving capability within the organization, 6) to increase employee motivation, 7) to promote personal and leadership development, 8) to inspire more effective team work, 9) to develop a greater safety awareness on the part of the employees, and 10) to build an attitude of "problem preventiveness."

There is a difference between quality circles and other types of committees and task forces. Alexander (1981) and Zippo and Greenberg (1982) have identified specific differences between quality circles and task forces: 1) quality circles are voluntary, while task forces are usually assigned management; 2) development of relationships is an important part of quality circles, whereas issues are the focus of task forces; 3) in quality circles members work together on a regular basis, while in a task force, members come together for a short time then disperse; 4) quality circle activity takes special skill and training, while task forces require no special expertise; 5) the work project is developed by members in quality circles, but in task forces the work project is assigned by management; 6) quality circle personnel implement their project, whereas a task force may or may not be a part of the implementation process.

**Advantages of using quality circles**

There appear to be many positive outcomes for organizations that become involved with quality circles: 1) Quality circles can have a positive effect on the quality of work life, 2) the team approach enhances
group spirit and enthusiasm toward reaching a goal, 3) participatory management is considered by management and participants as a common sense technique, 4) matching workers' needs to company goals can be accomplished through quality circles, 5) the improvement of quality ensures the improvement of productivity, 6) recognition of worker participation is a positive reinforcer and a positive motivator, 7) quality circles have resulted in improved operating effectiveness measured in terms of lowered absenteeism rates, reduced costs, improved product quality, higher morale, and greater job satisfaction, 8) quality circles can improve productivity and communication, 9) Maslow's highest level of needs, that of self-actualization, can be met through quality circles, and 10) the design of quality circles provides a vehicle for implementing McGregor's theory (Watanabe, 1991; Berry, 1984; Alexander, 1984; Tang, 1987; Larson, 1989; Berman & Hellweg, 1989; Lansing, 1989; Barrick & Alexander, 1987).

Disadvantages of using quality circles

Many times organizations have difficulty implementing quality circles. Many authors agree that: 1) the lack of objectives can cause lack of direction, 2) American industry is oriented toward tangible results and managers are unwilling to allow time for what may seem like intangible service, 3) problems with other unrelated programs can cause problems with circle implementation, 4) too high of an expectation from management can cause detrimental pressures, 5) closed policies inhibit realization of goals, 6) often management gives only "lip service" to implementation of concepts, 7) lack of appropriate training causes a
breakdown in skill development, 8) a poor communication system can cause problems in implementation, 9) the size of the organization can affect the success or failure, 10) failure to maintain enthusiasm and changes in management can cause problems, 11) management not following up on projects points to their lack of commitment, 12) lack of financial planning can mean loss of funding, 13) consultants who add quality circles to their list of program offerings, but have no first-hand experience, can impose their lack of expertise, 14) lack of union involvement can cause problems.

Attitudes of middle management and frontline supervisors toward quality circles and their lack of commitment are more of a stumbling block than opposition from union, 15) a rush to expand the program too fast can lead to poor decision making, 16) a "not for me" or "not possible here" attitude from members can mean lack of needed cooperation, and 17) no interest in the importance of quality work within the organization can affect the success or failure (Watanabe, 1991; Drago, 1988; Vogt & Hunt, 1988; Lawson & Tubbs, 1985; Ingle, 1982; Blue, 1988; Lawler, 1987; Bowman, 1989; Griffin, 1988; Barrick & Alexander, 1987; Alie, 1986; Coillard & Dale, 1985; Zahra, 1984; Dollar, 1983).

**Recommendations for success in quality circles**

After reviewing the advantages and disadvantages of quality circles, the literature supports the following recommendations to have successful quality circle programs: 1) The focus must be on clear goals and on results of efforts, 2) organizations must be committed to quality,
3) there must be advance planning for diffusion and institutionalization, 4) responsible facilitators are a must, 5) organizations must begin slowly with small pilot programs, 6) management must be willing to share responsibility, 7) management on every level must be honestly supportive, 8) policies and procedures must reflect supportive philosophy, 9) there must be extensive organizational orientation, 10) quality circles must be based upon trust, 11) intense and comprehensive training of employees to be more effective communicators is necessary, 12) programs must be voluntary, 13) quality circles work best in change-oriented environments, 14) use of organizational development strategies is recommended, 15) several needs assessment instruments are recommended to indicate organizational readiness, 16) open communication must exist so that there is (a) access to information and (b) no punishment for errors, 17) the importance of employee recognition and feedback cannot be overemphasized (Watanabe, 1991; Drago, 1988; Alexander, 1984; Barrick & Alexander, 1987; Bowman, 1989; Lansing, 1989; Miller, 1989; Miljus, 1986).

A Definition of Quality

Experts have given various definitions to the word "quality."

Phillip Crosby, founder and chairman of Phillip Crosby Associates Inc., defines quality as conformance to requirements. In other words, finding out what the customers desire, describing that desire, and then meeting that desire exactly (Burstein & Sedlak, 1988; Perine, 1990; Crosby, 1984).
Joseph Juran, founder and chairman emeritus of Juran Institute, Inc., offers two critical distinctions of quality. First, quality involves those features of what's being produced that respond to the customer's needs and that create the income. It's what enables the company to sell its products. Every company must provide products (goods or services) that meet the needs of its customers. Juran states this is important because it generates the income, and if one does not have the income, all the rest is academic (Pines, 1990; Perine, 1990; Juran, 1980; Oberle, 1990).

Juran's second definition of quality is freedom from waste, freedom from trouble, freedom from failure. According to Pines, it is mainly cost-oriented, instead of sales-oriented. Juran emphasizes the importance of distinguishing between the two by stating that generally, higher quality in the sense of product features costs more; higher quality in the sense of less failure costs less (Juran, 1980; Gryna, 1988).

Deming notes that quality could have no meaning without some reference to the customer. In Deming's opinion, quality is meeting and exceeding the customer's needs and expectations--and then continuing to improve (Deming, 1986).

An Overview of Total Quality Management

For the last decade, United States firms have been playing catch-up in the areas of quality and productivity. Japanese companies and other foreign competitors have entered markets once dominated by United States companies by producing higher quality products (Aly, Maytubby, &

Axline (1991) defines TQM as "a synthesized, pervasive, and unwavering commitment to quality through continuous process improvement by all members of the organization" (p. 64). Scott (1989) characterizes it as "doing the right thing, right the first time, on time, all the time, always striving for improvement, and always satisfying the customer" (p. 67). Krone (1990) considers its four essential elements to be: customer satisfaction, a supportive cultural environment, people teams and partnerships, and disciplined systems and processes. He expands on these four by discussing seven basic principles of TQM: 1) teamwork and participation at the lowest possible level and decision making at the lowest appropriate level, 2) strategic planning to establish a vision statement and improved projects with measurable milestones and goals, 3) getting the process right the first time and up-front through better planning, rather than fixing it later, 4) competition is replaced by cooperation, 5) networking of teams replacing hierarchies, 6) power and knowledge delegated to the lowest practical level, and 7) continual improvement, not snapshot or random fixes (p. 35).

Total quality management (TQM) is considered an effective method for achieving higher levels of quality and increasing productivity (Day, 1992; Kaufman, 1991; Scheuing, 1990; Leader, 1989). The purpose of TQM is to
implement a process that is long term and continuous, in which all managers participate in establishing continuous improvement initiatives throughout an organization starting with their own functions (Douglas & Wykowski, 1991; Hull, 1991; Jesperson, 1989). The primary goal is to incorporate quality and integrity into every function at every level of an organization (Cook, 1991; Vansina, 1989; Hendricks & Triplett, 1989; Aalbregtse, Hejna, & McNeley, 1991; Oberle, 1990; Wilkinson, Allen, & Snape, 1991; Kelaamp, 1989; Hull, 1991).

Scott (1989) singled out the following six points of emphasis as forming the cornerstone of this managerial approach: 1) developing close ties to customers and meeting their needs, 2) focus on continuous improvement of processes to reduce cost and improve quality of a product or service, 3) fostering closer quality-base relationships with a select group of suppliers, 4) breaking down organizational hierarchies to improve communication between traditional functional areas, 5) applying technology to advantage through a strategic, long-term approach, and 6) developing human resource policies and rewards that promote employee participation, teamwork, flexibility, and continuous learning (p. 70).

The literature supports the fact that total quality management is a powerful new approach to help management refocus its priorities on customers and produce superior quality products and services (Aly, Maytubby, & Elshennawy, 1990; Goodard, 1988; Guaspari, 1988; Douglas & Wykowski, 1991). TQM is a comprehensive management system for achieving continuous improvement in customer satisfaction. An integral part of TQM is allowing the customer to define quality (Cook, 1991; Deming, 1986;

The Malcolm Baldridge Award

Total quality management is different from other programs in that it involves all employees and constitutes a fundamental change in the way an organization is measured and managed (Aly, Maytubby, & Elshennawy, 1990; Wilkinson, Allen, & Snape, 1991; Day, 1992). In 1987 the institution of the Malcolm Baldridge National Quality Award provided a nationally accepted set of criteria for evaluating the extent to which a company had implemented TQM in the United States. The key principles of the award include: 1) customer driven quality, 2) continuous improvement, 3) measurement, 4) employee participation, 5) leadership, and 6) management decisions based upon data analysis (Rohan, 1989; McDonnell & Hudiburg, 1988; Aly, Maytubby, & Elshennawy, 1990).

These six themes appear throughout the criteria, which are divided into seven categories: 1) leadership, 2) information and analysis, 3) strategic quality planning, 4) human resource use, 5) quality assurance of products and services, 6) quality results, and 7) customer satisfaction (Finley, 1991; Rohan, 1989; Edowsomwan & Savage-Moore, 1991; McDonnell, 1988; Baatz, 1991; Spiker, 1991; Kiely, 1991; Brown, 1991).

The Spokespersons of TQM

After ten years of quality improvement efforts in some U.S. organizations and almost four decades of quality in Japan, the quality

Indeed, the list of those who qualify as "quality experts" has expanded, yet the trio of Edwards Deming, Joseph Juran, and Phillip Crosby are the real leaders (Port, 1991; Gabor, 1988; Gartner & Naughton, 1988; Perine, 1990). These three have made such terms as QC (quality control), TQI (total quality improvement), COQ (cost of quality), and SPC (statistical process control) familiar acronyms in the quality workplace (Deming, 1986; Juran, 1980; Crosby, 1979).

For more than four decades, W. Edwards Deming and J. M. Juran have been known as the key leaders in the quality movement. While they cross paths quite often, and maintain an air of cordiality, they are fierce competitors (Oberle, 1990; Pines, 1990; Gabor, 1988; Port, 1991).

Although Deming and Juran have their differences, their lives are somewhat similar (Gabor, 1990; Perine, 1990; Garner & Naughton, 1988; Port, 1991). Both were employed by the Western Electric Company in the 1920s. Deming and Juran came under the influence of Walter A. Shewart, the AT&T Bell Laboratories physicist who was turning statistical concepts that originated in agricultural research into a manufacturing discipline. After World War II, both Deming and Juran became independent consultants.

The basic message of all three is the same: Commit to quality improvement throughout the entire organization. Attack the system rather than the employee. Strip down the work process, whether it be the manufacturing of a product or customer service, to find and eliminate
problems that prevent quality. Identify your customer, external or internal, and satisfy that customer's requirements in the work process or the finished product. Eliminate waste, instill pride and teamwork, and create an atmosphere of innovation for continued and permanent quality improvement (Perine, 1990; Juran, 1980; Gryna, 1988; Crosby, 1979; Deming, 1986).

Although the basic message of the three leaders in TQM is the same, there are also some differences. One of Crosby's slogans calls for zero defects in a product, while Deming's tenth point is to "eliminate slogans, exhortations, and targets for the work force asking for zero defects and new levels of productivity" (Crosby, 1979; Perine, 1990; Deming, 1986). Deming's fourth point warns managers to "drive out fear" so that everyone can do their jobs, while Juran says, "fear can bring out the best in people." The second point of Juran's "breakthrough sequence" calls for problem analysis to "distinguish the vital few projects from the trivial many and set priorities based on problem frequency" (Juran, 1980). This differs from Crosby's eleventh point on error-cause removal, which encourages employees "to inform management of any problems that prevent them from performing error-free work," implying that no problem is too small (Crosby, 1979, 1984).

The other differences are not so clear cut. All three experts call for the use of statistical tools in process measurement, but Deming and Juran place more emphasis on them than Crosby. They all stress total company commitment, but Deming starts at the top and works down, while Juran says the process can begin with middle management and work up and
down the ranks; Crosby, focusing on conformance to requirements and product defects, appears to put more responsibility on operators (Deming, 1986; Deming, 1985; Juran, 1980; Gryna, 1988; Crosby, 1984).

Key Components of Total Quality Management


Customer satisfaction

The literature supports the fact that business and industries' main focus is the customer. Glenn (1991) makes a strong point for public sector organizations to maintain this same focus: "We forget that in the public sector, unlike the private sector, we don't have the luxury of losing our customers: our customers, like the poor, we always have with us. One of the worst things we can do is turn them into enemies" (p. 18).

This same author addresses the issue of which customers should be the source for determining an organization's product. He simply states:

Customers are worthy people, both honest and competent. It means treating them that way. If our customers are honest and competent people, they are perfectly capable of expressing their valid needs, although we may have to negotiate with them to translate those needs into measurable terms we can
work to fulfill. We can ask customers what they want, need, and expect. (p. 18)

Similar conclusions are reached by Hendricks and Triplett (1989), who affirm:

A vision must be presented and reinforced at all levels that everyone has customer responsibilities and that customer satisfaction depends on reliable service, credible representation, the customer's consistently favorable impressions about the company, responsive employees, and empathy to each customer's unique situation. (p. 47)

As Scott (1989) explains, one of the key components of TQM is maintaining a constant focus on the needs of the customer, and of defining quality in direct relation to those needs. He contends that "customers may be inside an organization or outside, but every person--from the chief executive to the janitor--has customers who receive and depend on that individual's product" (p. 68). Krone (1990) discusses the same issue, noting that each member of the organization must establish a clear vision of how to provide service to the customer, a vision which views that service as: "courteous, clear, concise, correct, complete, and concerned" (p. 35).

Glenn (1991) reinforces this theory on the customer, stating: "All we do is for their sake; without them, our work has no purpose. Therefore, if we are serious about quality, customers, no matter whether they are internal or external, have every right to have their requirements, needs, and expectations met the first time and every time" (p. 17).

In his report on TQM in the health care sector, Perry (1988) notes that customer needs are constantly being redefined, perhaps as much a
function of the increasing levels of education and sophistication of those customers in being able to express their needs than as a function of the actual needs themselves (p. 32).

It would seem that the concept of "customer" is not new to the professional literature in educational administration; it may, however, be more difficult to determine who is the customer in schools than it is in industry or commerce. Educators may be viewed as having multiple customers, including parents, students, school board members, community patrons, and employers. It would seem, however, that students are generally viewed as the primary "targets," if not customers, of education. Louis and Miles (1990) clearly define students as the "customers" of schools and contend that schools will need to meet the holistic needs of their students (pp. 25-26).

It appears then if students are the school's "customers," they should be the focus of the school's "product," the students' needs must then become the basis for goal-setting in public education. This is emphasized by Shanker (1990), who states: "Student success is the shared goal. Time, space, instruction, and people are organized to achieve that goal" (p. 93).

It appears that the keys to customer satisfaction are staying in touch with the customer to understand what customers value and determining how best to provide that value ahead of the competition at a profitable price.
Axline (1991) gives leadership a key role in TQM, stating: "When committed leadership is lacking, the various pieces of TQM do not fit together in a coherent pattern" (p. 64). Axline goes on to mention that leadership is required at all levels of the organization, not confined to or reserved for only the high-ranking executives.

Aalbregtse et al. (1991) help define the role of the leader in TQM:

Leadership involves defining the need for change, creating new visions, and using new frameworks to mobilize commitment to those visions--frameworks for thinking about strategy, structure, and people. Leadership emphasizes the ability to articulate those visions clearly and forcefully. Leaders provide focus by consolidating or challenging conventional wisdom, and translating their ideas into operational actions. (p. 30).

Glenn (1991) defines the role of the leader in the following terms:

- Leaders excite other people by communication, including action and inspiration.
- What leaders have in common in addition to their galvanizing vision are positiveness, passion, and humility.
- Leaders reach beyond mere facts to the what-could-be, to facts which have not yet come into existence.
- When leaders are leading, their focus is outside of themselves, on the goal--the vision they are committed to. (p. 18)

In her review of the principles of total quality management, Walton (1986) stresses such related leadership issues as ceasing reliance on mass inspection and, instead, enlisting workers in the ongoing improvement of the process; improving constantly the system of production and service; helping people to do a better job and learning by objective methods who is in need of individual help; driving out fear; and removing the barriers to
pride of workmanship. Koons (1991) further defines the leadership role in TQM, noting that at times it must go well beyond the support and facilitation modes:

Not all problems or issues are appropriate for team assignments. There is still a role for creative managers to identify opportunities for operational program enhancements under their control, and to take the necessary administrative actions to implement these enhancements. At some point decisions have to be made even though all of the subordinate staff may not agree. Even in a TQM environment, managers are not merely facilitators, but still must make some tough decisions that are not always popular. (p. 38)

These same concepts of leadership seem to exist in the professional literature in educational administration (see Edmonds, 1979; Fullan, 1991; Glatthorn, 1990; Clickman, 1990; Sarason, 1990; Snyder & Anderson, 1986; among others). However, the question remains as to how extensively this model of leadership is being implemented in the public schools.

It appears that the organization's leaders must develop a vision for how the organization needs to change and what it should become. They must become committed to leading the quality improvement process. Vision shapes the organization's culture; it motivates people to pursue improvement.

**Process control**

The issue of quality is clearly the foundation of Deming's (1986) work. He states:

The central problem in management, leadership, and production...is failure to understand the nature and interpretation of variation. Efforts and methods of improvement of quality and productivity are in most companies and in most government agencies fragmented,
with no overall competent guidance, no integrated system for continual improvement. (pp. 465-566)

Scott (1989) continues on by stating that the key to TQM is "pursuing a strategy of steady, continuous improvement by focusing on and understanding all elements of existing tasks. Ideally, every person in an organization is always looking for a better way to do a job" (p. 68). To accomplish this, he advocates, much as did Deming (1986), Feigenbaum (1954), Ishikawa (1985), Juran (1988), and others, the use of statistical tools to reduce variations in processes. The importance of this quality control issue is clearly highlighted in the qualitative research conducted in Japanese organizations by Atkinson and Naden (1989) and in Aalbregtse, Hejka, and McNeley (1991), who state: "If managers typically spend 40 percent of their time on production and cost issues and 10 percent on quality issues, then their priorities are clear" (p. 30).

Although schools have long been characterized by standardized, norm-referenced tests to measure quality, these mechanisms do not appear to be compatible with the TQM approach in that they generally do not have meaningful impact on "production," are imposed by external rather than internal forces, and do not measure quality in ways that are meaningful to the "customer," or student. Similarly, Glasser (1990) criticizes the validity of the standardized tests when compared to the "consumer’s" definition of quality:

Nothing of high quality, including schoolwork, can be measured by standardized, machine-scored tests. If we are truly interested in measuring what successful teachers in magnet schools are doing, we will need to conduct thorough interviews with them, collect observations of a statistically significant sample of them, and carry out follow-up studies to see if the
future academic performance of their students is enhanced. (p. 426)

Glasser (1990) asserts that each student will recognize what represents "quality" (or lack thereof) for that student and, more importantly, that it is the student's own assessment that should take priority over the assessments of teachers, parents, administrators, peers, etc. If the student is considered as the customer, rather than as a worker in the process, this stance shares Deming's insistence on satisfying the customer's concept and needs for quality.

Understanding the value of continuous improvement in systems and processes becomes a way of life in the total quality organization. Continuous improvement requires the use of statistical tools to understand and control the process and to then eliminate causes of problems within the system.

Employee ownership

Training, or staff development, has long been recognized as a key element in public school management (see Glatthorn, 1990; Glickman, 1990; Hunter, 1990; Leithwood, 1990; Louis & Miles, 1990; Shanker, 1990; Snyder & Anderson, 1986). Admittedly, it has not always been implemented as consistently as advocated under TQM or in as structured a manner as suggested by Glenn (1991). However, its importance has certainly been recognized. Hunter (1990) states: "A final criterion of a profession is that its practitioners never stop learning better ways of providing service for their clients" (p. xii). Shanker (1990) goes further, asserting: 1) Teachers are viewed as an important source of knowledge
that should inform what happens in schools; 2) teachers' learning comes about through continuous inquiry and interaction with colleagues, as well as through exposure to new research and ideas from the academic and broader communities; and 3) the focus for staff development is the school. It means that the school is structured so that staff development is an ongoing, continuous, and integral part of the school's mission. Teachers' time is legitimately spent in the improvement of practice (p. 93).

Hoy and Miskel (1991) assert that people work best when they are in, and feel part of, a team in which they can be trusted and trust each other to do their jobs; share leadership and make decisions; are accepted and respected; resolve issues with sensitivity and understanding; have the opportunity to accomplish challenging goals; and contribute to continuing improvement.

Axline (1991) assigns training a pivotal role in the implementation of TQM in organizations, asserting, "When there is a lack of follow-through in organization-wide TQM training, the concept and approach sometimes become a battleground" (p. 64). He further explains that: "Production-level workers, first-line supervisors, middle management and top executives often learn a great deal from one another when they're involved together in training and process actions teams" (p. 64).

Glenn (1991) defines these training needs in four basic categories: skills, statistical tools, interpersonal dynamics, and the basic principles of TQM. His contention is that all needs must be addressed on an ongoing basis, for all organizational members, yet in accordance with the specific roles occupied and skills needed by each.
It appears ownership begins with employees understanding their role in the quality process. By working on teams to achieve results, individuals become involved in quality improvement and take ownership of the quality process.

Implementation Efforts in Business, Government, Service Industries, and Universities

A recent Gallup survey conducted for the American Society for Quality Control (ASQC) says that 70 percent of adult Americans believe that jobs in America have been lost due to foreign competition (Morton, 1992). The survey also indicates that most feel that American businesses should continue to improve quality even though it may mean short-term losses.

Edward M. Baker (1989), director of Quality Planning and Statistical Methods for Ford Motor Company, stated that:

American enterprises have lost their leadership position to foreign competition as suppliers of high quality goods and services to world markets. Quality has become the primary differentiator in the marketplace. Customers are becoming increasingly more discerning and demanding...each new level of product and service quality which enterprise provides establishes a new minimum threshold of customers' expectations. Enterprises with the capability to improve and innovate products and services have the key to marketplace leadership.

Furthermore, world-class companies know that it no longer is enough to merely satisfy customers; rather, customers must become excited about products and services (Gufreda, Maynard, & Lytle, 1989; Harbour, 1988; Goodkin, 1990; Horton, 1989).

The growth of total quality management over the past fifteen years has been phenomenal. Roll and Roll (1983) stated that by 1983, over 400
major manufacturers and services industries had implemented quality
circles at a tremendous cost savings and optimistic long-term benefits.
By 1990 about one-fourth of United States manufacturing firms were
involved with total quality management programs (Moskal, 1991).

Today the literature supports organizations of all types that are
reaping savings by adapting quality techniques and processes on the
assembly line including: Toyota, Canon, Mercedes-Benz, IBM, 3M, Xerox
Westinghouse, Deere & Co., Exxon, General Electric Co., Rockwell
International, Colgate-Palmolive, Union Pacific Railroad, Corning, Dow
Chemical, Ford, Motorola, Monsanto, Interox Chemicals Ltd., Alcoa, Digital
Equipment, Convex Computer Corp., Martin Marietta, Target Stores, Texaco,
Florida Light and Power Co., Stouffer Hotels, Boeing, Black and Decker,
Renault, Cadillac Motor Division, and Federal Express (Peterson, Kelly, &
Velocci, 1991; Chapman, Clark, & Sloan, 1991; Reynolds, 1989; Morrow,

Total quality management is also beginning to make inroads in service
companies (Hammons & Maddux, 1989; Reynolds, 1989; Williamson, 1988;
Donebedian, 1988). Today, 10 percent of American service companies have
some type of quality program. However, by the year 2000, perhaps 70
percent of those with more than 500 employees will have formal quality
initiatives. The most aggressive will have formal quality initiatives.
The most aggressive will be financial service providers (Beer, Eisenstat,
& Spector, 1990), health care companies (McLaughlin & Kaluzny, 1990; Kaluzny, 1989; Berwick, 1989), and government, followed by retailers and universities (Placek, 1991; Coate, 1990; Morton, 1992).

The literature (Dawson & Patrickson, 1991; Thor, 1991; Hopkins, 1989) contends that in the 1990s, financial organizations will be leaner and more flexible. The most important concern will be quality of service. Managers will pay increased attention to external customers and will develop formal customer satisfaction systems for internal customers. Localization of decision making will require more local data in order to maintain accountability. Thor (1991) contends that leading banks must direct efforts toward a significant culture change to meet the needs of the 1990s. Since it involves profit improvement, competitive strength, and customer service, quality planning must be integrated into the bank's overall strategic business planning.


In health care today, TQM can be used as a means to such ends as cost containment and downsizing (McCarthy, 1991). TQM is a comprehensive, realistic, and practical approach that can help hospitals run the way they should. TQM in health care views all work as a process, whether that work be clinical or managerial. It teaches people to see beyond their own
immediate tasks and roles, and it makes everyone more aware of the larger work processes of which they are a part (Hagland, 1991; Weber, 1991; Labovitz, 1991; Eubanks, 1991). TQM in health care empowers people to work together to analyze and improve work processes. It is a top-down process, driven by senior managers who shape and communicate a unifying vision of quality, set clear quality improvement goals, and serve as the organization's most avid champions of continuous improvement (Burda, 1991; Donabedian, 1988; Rago, 1991).

In a TQM health care organization, the customer focus of TQM means that all constituencies in the delivery system are working on behalf of the patient (Labovitz, 1991; Donabedian, 1988; Biddix & McClearen, 1991).

Public service visionaries have successfully introduced total quality management ideas and techniques into a variety of governmental programs including the postal service, city government, Internal Revenue Service, the Naval Air Logistics Command (in the U.S. Navy), and the Forest Service (in the Department of Agriculture) (Sensenbrenner, 1991; Hammond & Maddux, 1989; McKenna, 1991; Penzer, 1991; Reynolds, 1989; Milakovich, 1991; Guaspari, 1988; Newman, 1991; Stratton, 1991).

In February 1986, a Presidential Executive Order was signed that aimed at making agencies in the executive branch significantly more productive by 1992. The intent was to emphasize productivity management practices in federal agencies to support future improvement efforts. This has remained the basic thrust of federal efforts, but the overall program has been modified to include a greater emphasis on quality management (Burstein & Sedlak, 1988).
Although United States colleges and universities are recognized worldwide for education and research, a number of problems threaten their strength and stability (Saunders & Walker, 1991; McWilliams, 1991; Bemowski, 1991). These include: 1) increasing costs and decreasing funding, 2) a decreasing number of high school graduates, and 3) competition. One source of competition is Europe, Japan, and other countries where world-class schools are being built. The second source of competition is major companies, such as Motorola and General Electric Co., which are educating their executives internally (Morton, 1992; McWilliams, 1991; Wachel, 1991).

On January 22, 1992, five major corporations joined eight universities in a TQM university challenge (Morton, 1992). According to Morton, IBM Corp. will participate with Massachusetts Institute of Technology and the Rochester Institute of Technology. Purdue University is participating with Motorola, Inc., Proctor & Gamble is joining in the Challenge with Tuskegee University and the University of Wisconsin at Madison. Carnegie Mellon University will participate with Xerox Corp. Milliken & Co. will join with North Carolina State University and the Georgia Institute of Technology.

Several colleges and universities have recognized their precarious state and have begun using the principles and practices of total quality management (TQM) to improve how they educate and generate knowledge. For example, Columbia University (New York) has incorporated TQM into its curriculum with education modules, courses on TQM, and a TQM master's degree program (Wachel, 1991; Placek, 1991; Coate, 1990).
Difficulties in Implementing Total Quality Management

Although total quality management has been successful in many organizations, the literature cites some difficulties that seem to exist when TQM is being implemented: 1) Managers do not truly understand how radically different a TQM work environment is when compared with more traditional management approaches; 2) for middle managers, TQM either may give them the power they need to manage their workers better or it may cost them their jobs because as top executives become more frustrated with the slow pace of corporate change, the middle manager becomes a target; 3) many organizations do not understand how to communicate quality; 4) inadequate measuring results; 5) mistaking the program initiative; 6) failing to develop a change strategy; 7) getting top management support; 8) failing to get customer feedback on quality measurement; 9) lack of employee training; 10) perceived as "just another program" or merely "more work"; 11) convincing management and staff of the long-term value; and 12) competing demands on time for the CEO and other managers in the organization (Kern, 1991; Holpp, 1989; Whiting, 1991; Sprackland, 1991; Wyszewianski, 1988; Hull, 1991; Quimby, Parker, & Weimerskirch, 1991; Berger & Sudman; Clemner, 1991; McLaughlin & Kaluzny, 1990; Kratochwill & Gaucher, 1991; Kwok, 1990).

Reasons for Successful Implementation in Total Quality Management

The literature shows the following attributes to be quite common in organizations that have successfully implemented total quality management: 1) a high degree of employee enthusiasm and empowerment, 2) top management
is totally committed, 3) there is total commitment throughout the organization, 4) the focus of the implementation strategy is across the entire organization, 5) a cross-functional quality team is set up for the purpose of managing the implementation process, with the aim of developing responsibility for quality management to the staff, 6) the strategic significance of the change and the enormity of the task is recognized from the outset, 7) the TQM process is backed up by the allocation of appropriate funds to ensure the success of the project, 8) key people such as facilitators are appointed on a full-time and long-term basis, 9) communication lines have been well developed, 10) there is a true team concept based on the environment that encourages candor, trust, and ethics throughout the organization, 11) measurement systems are in place and accessible to all levels, 12) employees are involved in developing the measurement systems, 13) there is a vision of quality throughout the organization, 14) there is a thorough understanding of the total quality management process throughout the organization, and 15) there is a motivation to change within the organization (Axland, 1991; Coombes, 1991; Scheuing, 1990; Fertik, 1991; Dawson & Patrickson, 1991; Leader, 1989; Jenkins, 1991; DeCieri, Samson, & Sohal, 1991; Perlman, 1989; Blackman, 1991; Varian, 1991; Sandholm, 1988; Axline, 1991; Hyde, 1990; Melum, 1990; Socolovsky, 1990; Melum, 1990).
Comparisons of Traditional Management and Total Quality Management

Perhaps the number one reason that TQM is somewhat difficult to instill in organizations is because it differs substantially from traditional management. The research supports several key differences between the two approaches: 1) Traditional management's focus is on its own requirements, while TQM focuses on the customer; 2) TQM takes the view that profits follow quality, while traditional management views profits as its first responsibility; 3) TQM considers quality as multidimensional and customer-oriented, while traditional management defines quality in terms of a single dimension; 4) TQM encourages every employee to find better ways to work, while, with traditional management, workers work and managers manage; and 5) TQM takes a long-term, process-oriented approach to improving process quality, while traditional management strives for short-term, results-oriented gains (Tobin, 1990; Jesperson, 1989; Butler, 1990; Johnson, 1991; Klelamp, 1989; Herrington, 1991; Guaspari, 1988).

In summarizing, many leaders are emphasizing a new type of leadership that is necessary for total quality management to occur including: 1) Commitment is the foundation of an effective total quality management (TQM) initiative; 2) leadership is the key issue in promoting commitment; 3) leaders should be charismatic, flexible, and inspiring--especially with regard to those they manage; 4) leaders must be able to inspire others to create and manage change, to take responsibility, and, above all, to take risks; 5) involving, participating, and actively listening to others is the only way managers can create genuine improvement; 6) transformational leaders are dependent, visionary, and inspirational and are driven by

Analytic and Enumerative Studies

Deming is a statistician. Much of his work is in statistical theory, and it is statistics that provides the theory behind the 14 points. Deming (1950, Chapter 7) introduced concepts labeled enumerative and analytic statistical studies. In any statistical study the ultimate aim is to provide a rational basis for action. Enumerative and analytic studies differ by where the action is taken. Deming (1975) summarized the distinction between enumerative and analytic studies as follows:

Enumerative study: A statistical study in which action will be taken on the frame being studied.

Analytic study: A statistical study in which action will be taken on the process or cause-system that produced the frame being studied, the aim being to improve practice in the future.

An enumerative study is a statistical study in which the focus is on judgment of results and an analytic study is one in which the focus is on improvement of the process or system which created the results being evaluated and which will continue creating results in the future. A statistical study can be enumerical or analytic, but according to Deming (1950), it cannot be both.
This distinction between enumerative and analytic studies is the theory behind the 14 points. Deming's philosophy is that management should be analytic instead of enumerative. In other words, management should focus on improvement of processes for the future instead of on judgment of current results (Deming, 1950).

Deming's Four Beliefs

Deming offers an alternative way of viewing an organization. The four basic beliefs, or components of profound knowledge as Deming (1982) sees them are:

1. Psychology. Deming believes that people are purposeful, cognitive beings with an intrinsic desire to learn and be innovative, and that each individual has the right to enjoy his or her work and be successful.

2. Systems. Deming believes that all organizations should be viewed as systems whose activities must be aimed at fulfilling the mission of the organization. The task of management is to optimize the whole.

3. Perceptual framework. Deming believes that knowledge is constructed from experience bound within a framework of theories and beliefs. Everyone within the organization needs the same theoretical road map.

4. Causes of variance. Deming believes that 80 or 90 percent of the variation from expected outcome is a result of problems within
the system or process, not the worker. To lessen the occurrence of variations, the system must be modified.

From a historical perspective over the past 40 years, these four beliefs have transformed the postwar economy of Japan into the revitalized, competitive system we see today (Walton, 1986). Now, following the rediscovery of Deming by American industry in 1980, the same is being done in the United States by industries interested in becoming better adapted to a changing environment. To date, application of these beliefs to K-12 public school systems is limited to only a few projects (Melvin, 1991; Meaney, 1991; Tribus, 1990; Houlihan, 1991; McLeod, 1991; Leonard, 1991; Glaub, 1990).

The Theory Behind Deming's 14 Points of Management

Many organizations are concluding that quality is critically important. Some believe it can provide a strategic advantage, while others see it as a requirement for survival. In pursuit of improving quality, many organizations have chosen to follow the management philosophy of W. Edwards Deming as embodied by his 14 points for management (Tviete, 1989; Stampen, 1987; Geber, 1990; Bernard, 1991; Geber, 1991; Sensenbrenner, 1991; Tribus, 1991; Melvin, 1991; Therrien, 1991; Peterson, Kelly, Weber, & Gross, 1991; Woodruff & Levine, 1991; Armstrong & Symonds, 1991; Siler & Garland, 1991).

Each of Deming's 14 points which follows are summarized by Deming (1986). Researchers and educators comment on each point's applicability to education.
Deming's 14 Points

1. Establish constancy of purpose.

Deming's first point is to create constancy of purpose toward the improvement of products and services by allocating resources for long-term planning, organizational research, and education of the workforce.

Deming contends that with constancy of purpose, management designs products, services, and processes to meet the needs of the customer, both now and in the future. Management also initiates efforts to continually improve the products and the processes of the organization. When top management establishes constancy of purpose, it creates an environment where everyone in the organization works toward the purpose, allowing the organization to move in a single direction with a longer term focus (Deming, 1986).

Educators must believe that all resources are aimed at student development. All programs that consume critical resources are examined and those that do not contribute to student achievement are eliminated. Students, parents, support staff, teachers, administrators, school board members, and the community at large must all share a common understanding of the desired outcomes, beliefs and mission, and a consistent belief that those outcomes can be accomplished. Educators must develop a willingness to measure progress and to change short term strategy to accomplish long-range objectives (McLeod, 1991; Tribus, 1991; Melvin, 1991; Glaub, 1990; Leonard, 1991).
2. Adopt a new philosophy.

   Deming's second point is to reject commonly accepted levels of delays, mistakes, defective materials, and defective workmanship. Organizations must constantly perfect processes aimed at finding problems, their causes, and ways of correcting them (Deming, 1986).

   A new philosophy for assuring quality education is being adopted within the school. This philosophy is a transformation to a new way of thinking and planning for student learning. Educators must refuse to accept the idea that students cannot learn at high levels under the right conditions of teaching and learning (McLeod, 1991).

   Educational management must awaken to the challenge, must learn their responsibilities, and take on leadership for change (Melvin, 1991; Tribus, 1990; Leonard, 1991; Glaub, 1990).

3. Cease dependence on mass inspection.

   Deming's third point is to cease mass inspection of purchased materials and services. Instead, improve selection processes and seek statistical evidence of quality (Deming, 1986).

   In education, concentration on a new philosophy emphasizes the move from the identification of student failure to preventing student failure through continuous improvement. A school system cannot wait until the end of the year to measure student progress. A school system must understand and use statistical assessment of student growth and development on a daily basis. The system must understand and agree upon the various

4. End the practice of awarding business on the basis of price alone.

Deming's fourth point advocates ending the practice of awarding business on the basis of price tag. Strive for the long-term reduction of total cost rather than piecemeal efficiency (Deming, 1986).

Educators should invest in quality, rather than just low cost. In the long run, high quality produces lower cost. Therefore, schools must choose, use, and evaluate facilities, textbooks, technologies, and other resources in teaching based on statistical evidence of success of the particular product and upon accepted outcome measurements (McLeod, 1991; Leonard, 1991; Glaub, 1990).

Tribus (1990) recommends to cease dependence on testing to achieve quality. The need for inspections on a mass basis by providing learning experience which create quality performance must be eliminated.

5. Constantly improve every system.

Deming's fifth point advocates looking for problems in the system. Managers and no one else, are responsible for finding and correcting systematic problems (Deming, 1986).

Educators believe that improvement is not a one-time effort. There is potential for improvement in each step taken to create or upgrade school programs and services. Making a commitment to constantly improve the system necessitates a long-term perspective. Schools should

Tribus (1990) recommends working cooperatively with the educational institutions from which students come. He suggests minimizing the total cost of education by improving the relationship with colleges of education and helping to improve the quality of students coming into the school system.

6. Institute training on the job.

Deming’s sixth point supports instituting modern methods of training on the job. Employees cannot perform well unless they know their jobs and feel free to inform managers of problems they encounter. Also, statistical methods must be used to identify when on-the-job training has achieved its purpose (Deming, 1986).

Schools need to constantly stay abreast of changing demands and requirements. A wide range of internal and external resources must be used for the managerial, professional and technical development of all division personnel. Resources should be geared toward positively contributing to student achievement (McLeod, 1991; Tribus, 1990; Glaub, 1990; Leonard, 1991; Melvin, 1991).

7. Institute leadership.

Deming’s seventh point advocates instituting modern methods of supervision. Supervision is one of the most important responsibilities of managers. They must learn from employees to help them do a better job
Deming (1986). Deming (1989) says that managers or supervisors must become leaders and that an effective leader: 1) must understand the meaning of a system, and how the work of groups supports the system, 2) sees the group as a function of the system, 3) understands that all people are different and try to optimize the education, skills, and abilities of everyone, and help everyone to improve, 4) is a coach and counselor, not a judge, 5) will study results with the aim to continuously improve, 6) will know when someone is in need of special help, 7) creates an environment conducive to trust, freedom, and innovation, 8) does not expect perfection; people can learn from mistakes, 9) listens and learns without passing judgments, and 10) understands the benefits of cooperation.

Educators believe that the job of management is not to tell people what to do, but rather to lead people in the right direction. They emphasize the quality of the total program rather than individual behaviors. Evaluations need to be programmatic, systematic, and formative rather than individual, personal, and summative (McLeod, 1991; Glaub, 1990; Leonard, 1991; Melvin, 1991; Tribus, 1990).

8. Drive out fear.

Deming's eighth point is to drive out fear so that everyone can work effectively. Employees must hold secure jobs and feel free to express ideas, ask questions, and ask for instructions. The elimination of fear is an important responsibility of managers (Deming, 1986).
"Respect for the basic human dignity of others." The belief is that one of the best ways to help an individual acquire a good self-image is not to do anything to damage it. Drive out fear. Encourage nonthreatening, two-way communications on quality outcomes between levels of the organization (McLeod, 1991; Tribus, 1990; Glaub, 1990; Leonard, 1991; Melvin, 1991).


Deming's ninth point advocates breaking down barriers between departments. Teams composed of people performing different functions can work effectively to improve products and services (Deming, 1986).

Schools need to be committed to rebuilding and nurturing an environment in which trust and respect can be applied to what is said, heard, read, and written. Barriers must be broken down by problem solving through teamwork and combining the efforts of people from different school areas (McLeod, 1991; Tribus, 1990; Glaub, 1990; Leonard, 1991; Melvin, 1991).

10. Abandon slogans.

Deming's tenth point recommends the elimination of goals, quotas, posters, and slogans asking for new levels of productivity without providing effective methods. Goals without "road maps are useless" (Deming, 1986).

Schools do not want employees searching for excuses and explanations. School employees should always strive to continually improve; however,
solving all problems in a school system at one time can never take place (McLeod, 1991; Leonard, 1991; Melvin, 1991).

Tribus (1990) recommends the elimination of slogans, exhortations, and targets for teachers and students asking for perfect performance and new levels of productivity. Exhortations create adversarial relationships. The bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the control of teachers and students (Glaub, 1990).

11. Eliminate numerical goals and quotas.

Deming's eleventh point is to eliminate work standards that prescribe numerical quotas. Such standards, according to Deming, are "fortresses" against the improvement of quality and provide appropriate supervision (Deming, 1986).

Numerical goals should be replaced with charts that measure progress and analyze the situation. This demonstrates that the school is committed to a long-term process. Numbers should be used constructively. Mandates and numerical goals should be eliminated. All educational employees must be involved in identifying problems, designing programs, planning, budgeting, and selecting materials (McLeod, 1991; Tribus, 1990; Glaub, 1991; Leonard, 1991; Melvin, 1991).

12. Remove barriers that rob people of pride in workmanship.

Deming's twelfth point recommends the removal of barriers to employee's rights to pride of workmanship. Pride of workmanship is
impossible without accurate definitions of acceptable workmanship. Definitions are the responsibilities of managers (Deming, 1986).

Schools need to remove barriers that rob the students, teachers, management, and support staff of their right to pride and job of workmanship. This includes abolition of the annual or merit rating and of management by objective. The responsibility of all educational managers must be changed from quantity to quality (Tribus, 1990; Glaub, 1990; Leonard, 1991; Melvin, 1991).


Deming's thirteenth point is to institute a vigorous program of education and retraining. Improvement in productivity means reassignment of personnel. Education and retraining will prepare people for new jobs and responsibilities. It is also necessary for everyone to learn the rudiments of statistical theory and application. The latter is a language of communication for organizational improvement (Deming, 1986).

Schools must provide all employees with training in quality leadership, measurement, analysis, problem solving, self-evaluation, and assertiveness training. They must recognize that different levels and functions in the organization require different types of training. Inservice cannot be a yearly or even monthly activity. It must be part of the normal work of the school (Tribus, 1990; Leonard, 1991; McLeod, 1991; Melvin, 1991).
14. Structure management to accomplish the transformation.

Deming's fourteenth point is to create a structure in top management that will encourage implementation of the above 13 points every day (Deming, 1986; p. 23-96).

Educational leaders must move toward processes that are geared towards problem prevention. It takes years to correct deficiencies and accomplish the complete transformation of the educational system. Everyone in the system (superintendents, central office personnel, principals, teachers, support staff, students, parents, community partners, and board members) is responsible for helping to bring about this transformation (McLeod, 1991; Glaub, 1990; Melvin, 1991).

A comprehensive understanding of the past, the ability to assess the events that led to the present, and the ability to forecast future needs and requirements, all demand an entrepreneurial approach. Conceptual skill is a critical ingredient in moving from traditional management practices to total quality management practices (Tribus, 1990; Leonard, 1991).

Deming's Process Tools

Along with Deming's philosophy and 14 points belong a set of process tools, that in his view, enable an organization to improve the quality of whatever it produces. In his judgment, to put his philosophy into practice, effective techniques are needed for harnessing the collective intelligence of everyone within an organization to discover and solve systematic problems. According to Deming (1986), this can be done by
developing processes (beyond standard system diagrams and flow charts) that embody three components: a master teacher of statistics, management and staff-development information systems, and manager-worker study groups.

The master teacher

According to Deming (1986), every sizable organization should employ a master teacher of statistics whose role is to establish organizational means of identifying and researching systematic problems. The most important function is to teach at varying levels of sophistication, depending on the nature of a manager or work responsibilities, statistical sampling, analytic techniques, tests of reliability, and other basic elements of experimental design. Other functions according to Deming include developing organizational studies and process-related information systems, maintaining data bases, and training apprentice statisticians as needed. The intent of all these efforts, according to Deming, is to develop self-correcting processes that will yield road maps for organizational improvement.

Information systems

According to Deming (1986), everyone within an organization should somehow be involved in constructing product or service-related information systems. The master teacher's role is to provide basic designs that managers and workers can perfect. Analytical (preferably longitudinal)
data should be in a state of statistical control (defined as follows in Deming, 1986):

Stability or the existence of a system is seldom a natural state. It is an accomplishment, the result of eliminating special causes one by one on statistical signal, leaving only the random variation of stable process. A stable process, one with no indication of a special cause of variation is said, following Shewart, to be statistical control. Its behavior in the future is predictable. (pp. 119-120)

**Study groups**

Deming's third tool is a network of study groups composed of individuals representing different functions and levels of responsibility within an organization (e.g., administrators, other professionals, and various workers). They work together to identify and solve organizational problems. The specific procedure advocated by Deming is the quality control circle (QCC), invented in Japan by Ishikawa (Deming, 1986). Key characteristics specified by Deming (1986, include access to statistically controlled data and other information, rules and procedures for efficient interaction among study group members, and direct access to top management.

**Summary**

Just how can the theories, principles, and practices of total quality management help in school transformation? Can something that is working well for some businesses also apply to education?

It appears that with the past success of total quality management in business, industry, and the public sector, the possibilities of applying
TQM to education seem to exist. If one looks back at past managerial practices in education, it seems that the latest trends in school-based management, strategic planning, effective schools, and school improvement literatures blend well with the total quality management philosophy.

However, the elements of TQM that appear to be significantly lacking in school reform/restructuring are: 1) Schools need process controls that are valid in order to give feedback for continuous improvement, 2) an individual who is educated in the use of statistical methods and in the development of information will be needed to teach faculty, other staff, and administrators how to use information effectively, and 3) there has to be "continual improvement, not snapshot or random fixes." As Leader (1989) notes: "Significant improvements to quality require managing a major, multi-yeared change effort" (p.69). When asked how long it would take an organization implementing TQM to attain Toyota Corporation's present level of development in this approach, Atkinson and Naden (1989) estimated that it would take a minimum of twenty years. After reviewing the literature in education administration, it appears that only in the past couple years has the TQM model been considered for implementation in public schools. Furthermore, with the amount of continuous employee training that will be needed, the typical day/calendar doesn't appear to be sufficient.

The American Association of School Administrators has enlisted the expertise of quality management expert W. Edwards Deming to offer school leaders a new lens through which to view the transformation of schools
that the president and governors are calling for by the year 2000 (Marx, 1991).

Among Deming's principles, which he promoted in a recent conversation with AASA staff are:

1. That education can only be transformed one system at a time;
2. That leaders must have a vision and must understand their system in order to put that vision into practice;
3. That schools must expect and design for variation among children;
4. That the goal of education leaders should not be achieving numerical goals, but transforming school systems. (Marx, 1991)

Educators who apply Deming's quality concepts to schools are demonstrating that any form of effective decision making closer to the "product" requires a different kind of support. For example, mid-management, or central office staff in schools, must serve as facilitators, rather than directors (Eckard, 1991).

Deming's approach also emphasizes something that has been understood for quite some time but ignored by many educational researchers and practitioners: namely, that the test of anyone's ideas for improving the quality of educational services is whether they can be shown to be effective. Deming and his track record argue persuasively that it is possible to determine whether a system is becoming better or worse, and he provides concepts and tools for sure-footed actions when the latter is the case.

School administrators will need to take a serious look at total quality management as one way to bring about needed change and continuous improvement in education.
CHAPTER III. METHODS

This study was designed to identify key components of total quality management for schools and to compare the beliefs of teachers, superintendents, and school board members for adopting and utilizing total quality management concepts at the local level. The four major elements of the study outlined in this chapter are: 1) identification and validation of the 42 belief statements, 2) the sample and population used in the study, 3) the administration of the instrument, and 4) the analysis of the data.

Identification and Validation of the 42 Attitude Statements

The instrument used in this study, "Educator Beliefs" (Appendix A), was developed by the researcher utilizing a two-step procedure. After the review of the literature was completed, 42 belief statements were created to assess and compare educators' beliefs concerning Deming's 14 points (three beliefs for each of the 14 points) as they apply to education.

Attitudes are often measured in educational research because of their possible predictive value. According to Borg and Gall (1989), an attitude is usually thought of as having three components: an affective component, which consists of the individual's feelings about the attitude object; a cognitive component, which is the individual's beliefs or knowledge about the attitude object; and a behavioral component, which is the individual's predisposition to act toward the attitude object in a particular way (Borg & Gall, 1989, p. 311).
This particular study dealt with the cognitive component which assessed and compared the three different groups' beliefs concerning total quality management.

A review of research on the effectiveness of attitude measures as predictors of behavior indicated that general attitude measures are not very accurate predictors of specific behavior (Fishbein & Ajzen, 1975, 1977). However, recent work suggests that specific behavior can be predicted from measures of attitude toward the specific behavior (Canary & Siebold, 1984).

The instrument in this particular study consisted of 42 belief statements (three beliefs for each of the 14 points). Respondents were asked to assess the degree to which they agreed or disagreed with each of the 42 belief statements using a five-point Likert scale.

A rating of A was given by a respondent to a belief statement with which he/she strongly agreed. A rating of E was given to a belief statement with which he/she strongly disagreed. A rating of C indicated that the respondent was unsure of his/her belief. Reverse wording was used on some questions to avoid a response set so the reader could not fall into a pattern on marking the questionnaire (Orlich, 1978, p. 65).

It should be noted that the ratings of A, B, C, D, and E were given a number weighting of A=1, B=2, C=3, D=4, and E=5. The boundaries for the mean rating scores were as follows: Strongly agree = 1 to 1.49, Agree = 1.50 to 2.49, Not sure = 2.50 to 3.49, Disagree = 3.50 to 4.49, Strongly disagree = 4.50 to 5.00.
The survey instrument with the belief statements was submitted to a validating panel to assess the validity of the instrument. The people selected were not general experts, but were involved in using the TQM concepts in public schools. Panel members are listed in Table 2.

The panel members were asked to evaluate the items as to their validity in achieving the outcomes of the study (Appendix A). The validating panel was informed that three belief statements were developed for each of Deming's 14 points and the subheadings (14 points) would be deleted from the survey before it was mailed. The panel was also informed that reverse wording would be used on some of the belief statements.

The general responses from the panel dealt with: 1) what was going to be gained from the study, 2) how the results would be interpreted, and 3) the items appeared to be generally valid.

Table 2. Validation panel

<table>
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<tr>
<th>Name</th>
<th>Position</th>
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<tr>
<td>Lewis A. Rhodes</td>
<td>AASA Assoc. Exec. Director</td>
</tr>
<tr>
<td>Dr. David Meaney</td>
<td>Superintendent of Schools, Sacramento, CA</td>
</tr>
<tr>
<td>Myron Tribus</td>
<td>Consultant, Fremont, CA</td>
</tr>
<tr>
<td>Dr. Jacob Stampen</td>
<td>Professor-Education Admin., University of Wisconsin</td>
</tr>
<tr>
<td>Dr. Charles Melvin III</td>
<td>Superintendent of Schools, Beloit, WI</td>
</tr>
<tr>
<td>Dr. Willis McLeod</td>
<td>Superintendent of Schools, Petersburg, VA</td>
</tr>
</tbody>
</table>
The survey instruments were returned by the panelists in early April. The second and final version of "Educator Beliefs" was administered to the sample population in early May.

The Sample and Population Used in the Study

In order to properly represent educators' beliefs, the sample used in this study represented 42 school districts from the state of Iowa. To insure geographical population representation, three school districts were chosen at random from each of the 14 Area Education Agencies (AEA). The three school districts chosen from each AEA were selected based upon their student population. The student population categories chosen were 0 to 500, 501 to 1,500, and greater than 1,500 (Appendix C).

Superintendents of the selected districts were contacted by letter and asked to participate in this study (Appendix D). The superintendents were asked to distribute a copy of the same survey to a teacher in their district who is: 1) not an officer of the local district's teacher's association, 2) has been in the district for at least five years, and 3) is well respected by the rest of the staff (Appendix E).

A board member from each district was randomly selected and directly mailed a copy of the survey (Appendix F). After completing the survey the teachers, superintendents, and board members were instructed to return the surveys in self-addressed stamped envelopes. Sixty percent of the surveys were returned within the two weeks time allotted. A follow-up letter (Appendix G) and telephone calls were used to encourage the nonrespondents
to participate. The response rate increased to 83 percent after mailing the reminder and follow-up phone calls.

Administration of the Instrument

The instrument was mailed to participants of the study in late April 1992. Anonymity of the respondents was guaranteed by not using names on the survey instrument. A letter was enclosed with each survey instrument to 1) explain the purpose of the study, 2) assure the participants that their input was very valuable to this research effort, 3) assure the participants that total confidentiality of their responses was guaranteed, 4) ask the participants to place their completed audits in the individual envelopes provided, and 5) encourage the participants to return the completed surveys as soon as possible.

The Iowa State University Committee on the Use of Human Subjects in Research reviewed this project and concluded that the rights and welfare of the human subjects were adequately protected, that risks were outweighed by the potential benefits and expected value of the knowledge sought, that confidentiality of data was assured, and that informed consent was obtained by appropriate procedures.

Analysis of the Data

All data were collected during the month of May 1992. Completed surveys were collected from 104 participants. The scoring for negatively stated items of the survey was reversed and the data analyzed.
Initial data analysis involved four separate procedures. First, total means and standard deviations were calculated for the ratings given each of the 42 belief statements by the 104 respondents. Means and standard deviations across participants were calculated for the 14 subscales that were organized according to Deming's 14 points.

As a third statistical procedure, one-way analysis of variance was performed to test for significant differences among the mean ratings for each of the 14 points as well as for the 42 individual belief statements comparing the three participant groups. The one-way analysis of variance was used to test the research null hypothesis that there would be no significant differences among the mean scores of the beliefs, when comparing the three groups' responses to each of the 42 belief statements and the 14 points in the "Educator Beliefs" survey.

\[ H_0 : \mu_1 = \mu_2 = \mu_3 \]
\[ H_a : \text{At least two } \mu's \text{ are not equal} \]
\[ \alpha = .05. \]

It should be noted that since three respondents were sought from each school district, it was decided to block on district. Thus, the ANOVA will have the following lines: Districts (Block), Between groups, Error, and Total. Due to the fact that not all districts responded to each question, the degrees of freedom and the accompanying sums of squares for the blocks will vary by question.

The final statistical procedure involved conducting at the .05 level of significance, the Scheffé post hoc multiple range procedure.
CHAPTER IV. FINDINGS

Findings of the data collection process are presented in this chapter. Reporting is ordered in the following manner for purposes of clarity and accuracy: 1) a report of key demographic factors used in the study, 2) a report of methods used for presenting statistical findings, 3) an examination of the data, 4) testing for mean differences, and 5) summary.

Key Demographic Factors

The findings of this study are based on the results obtained by administering the survey instrument to a superintendent, teacher, and board member from each of the 42 school districts from the state of Iowa (Appendix C).

Demographic variables used in this study include gender of respondents, education level of respondents, age of respondents, positions held by respondents, and school size of respondents.

Table 3 reveals that out of 104 respondents, 71 were males and 32 were females. One person did not indicate his or her gender.

As indicated in Table 4, the highest educational level of respondents ranged anywhere from a high school diploma to a doctorate degree.

Out of the 104 respondents, 10 had bachelor's degrees, 28 had master's degrees, 30 had specialist degrees, 15 had doctorate degrees, and 21 had high school diplomas.
Table 3. Gender of respondents

<table>
<thead>
<tr>
<th>Gender</th>
<th>Number</th>
<th>Relative percent</th>
<th>Adjusted percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>71</td>
<td>68.3</td>
<td>68.3</td>
</tr>
<tr>
<td>Female</td>
<td>32</td>
<td>30.8</td>
<td>30.8</td>
</tr>
<tr>
<td>Not indicated</td>
<td>1</td>
<td>1.0</td>
<td>_ *a</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

*This respondent is not included in adjusted percentage calculations.

Table 4. Education level of respondents

<table>
<thead>
<tr>
<th>Education level</th>
<th>Number</th>
<th>Relative percent</th>
<th>Adjusted percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>High school</td>
<td>21</td>
<td>20.2</td>
<td>20.2</td>
</tr>
<tr>
<td>Bachelor</td>
<td>10</td>
<td>9.6</td>
<td>9.6</td>
</tr>
<tr>
<td>Master</td>
<td>28</td>
<td>29.6</td>
<td>26.9</td>
</tr>
<tr>
<td>Specialist</td>
<td>30</td>
<td>28.8</td>
<td>28.8</td>
</tr>
<tr>
<td>Doctorate</td>
<td>15</td>
<td>14.4</td>
<td>14.4</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Knowing that at least a bachelor's degree is required to become a teacher, the 21 high school graduates must represent board members.

Out of the 104 respondents (Table 5), 7 were 30 to 35 years old, which made up the smallest group. The largest group of respondents was 30, which included those that were 46 to 50 years old.
Table 5. Age of respondents

<table>
<thead>
<tr>
<th>Age</th>
<th>Number</th>
<th>Relative percent</th>
<th>Adjusted percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>30-35 years</td>
<td>7</td>
<td>6.7</td>
<td>6.9</td>
</tr>
<tr>
<td>36-40 years</td>
<td>17</td>
<td>16.3</td>
<td>16.7</td>
</tr>
<tr>
<td>41-45 years</td>
<td>20</td>
<td>19.2</td>
<td>19.6</td>
</tr>
<tr>
<td>46-50 years</td>
<td>30</td>
<td>28.8</td>
<td>29.4</td>
</tr>
<tr>
<td>51-55 years</td>
<td>14</td>
<td>13.5</td>
<td>13.7</td>
</tr>
<tr>
<td>56 years and above</td>
<td>14</td>
<td>13.5</td>
<td>13.7</td>
</tr>
<tr>
<td>Not indicated</td>
<td>2</td>
<td>1.9</td>
<td>--a</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

These respondents are not included in adjusted percentage calculations.

Table 6 shows that out of the 104 respondents, those that responded included 35 superintendents, 34 board members, and 35 teachers.

When comparing the size of the school districts used in this study, Table 7 indicates that out of the 104 districts that responded, 28 were from small districts (0-500), 38 were from medium size districts (501 to 1,500), and 38 were from large school districts (greater than 1,500).

It should be noted that when considering all Iowa schools, roughly 16 percent have enrollments greater than 1,500. Forty-four percent have enrollments between 501 and 1,500 students, and 40 percent of the schools in Iowa have an enrollment less than 500.
Table 6. Positions held by respondents

<table>
<thead>
<tr>
<th>Positions</th>
<th>Number</th>
<th>Relative percent</th>
<th>Adjusted percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>33.7</td>
<td>33.7</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>32.7</td>
<td>32.7</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>33.7</td>
<td>33.7</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 7. Number of respondents by school size

<table>
<thead>
<tr>
<th>School size</th>
<th>Number</th>
<th>Relative percent</th>
<th>Adjusted percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small (0-500)</td>
<td>28</td>
<td>26.9</td>
<td>26.9</td>
</tr>
<tr>
<td>Medium (501-1,500)</td>
<td>38</td>
<td>36.5</td>
<td>36.5</td>
</tr>
<tr>
<td>Large (greater than 1,500)</td>
<td>38</td>
<td>36.5</td>
<td>36.5</td>
</tr>
<tr>
<td>Total</td>
<td>104</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Methods Used for Presenting Statistical Findings

Statistical analyses comparing the three groups include: 1) the means and standard deviations for each of the 42 belief statements (three belief statements for each of the 14 points); 2) the means and standard deviations for each of the 14 points; 3) one-way analyses of variance were calculated to test for significant differences among the mean rating score for each of the 14 points as well as the 42 individual belief statements
comparing the three participant groups; and 4) the one-way analysis of variance was used to test the research null hypothesis that there would be no significant differences among the mean scores of the three groups when tested for response to each of the 42 belief statements in the "Educator Beliefs" survey and the 14 points.

\[ H_0 : \mu_1 = \mu_2 = \mu_3 \]

\[ H_r : \text{At least two } \mu's \text{ are not equal} \]

\[ a = .05. \]

The final statistical procedure involved conducting at the .05 level of significance the Scheffé post hoc multiple-range procedure. This procedure was used to identify any group means found to be significantly different at the .05 level. The critical value of the F-statistic with 2 and 61 degrees of freedom is 3.55. An F-statistic greater than 3.55 will be needed to reject the null hypothesis that there are no significant differences in the mean scores.

Examination of the Data

Appendix H shows tables that will give a condensed version of the means and standard deviations for the 14 points and the three belief statements that make up each point.

The following tables beginning with Table 8 also reveal the means and the standard deviations for each of the 14 points and the three belief statements that represent each point. Preceding each table is the discussion of the table content that explains the responses given by superintendents, board members, and teachers.
As indicated in Table 8, superintendents (1.31), board members (1.33), and teachers (1.29) agree strongly that schools should create constancy of purpose toward improvement of product and service. The mean rating scores of the three groups were very comparable. Standard deviations for the item means ranged from .307 to .342.

Table 8 also shows that the three groups agreed with the first belief statement (la) that schools should create constancy of purpose toward improvement of the entire school system and its purposes. The mean rating scores were similar between superintendents (1.24), teachers (1.24), and board members (1.50). Standard deviations for the item means ranged from .431 to .496.

The second belief statement (lb) indicates that all three groups agreed that schools should aim to create the best quality students capable of improving all forms of processes and entering meaningful positions in society. Board members (1.38) gave similar mean rating scores as superintendents (1.54) and teachers (1.51). Standard deviations for the item means varied from .493 to .657.

When comparing the three groups' responses to the belief statement (lc) that schools should strive to be as good as they can be and have a continuous desire to improve, all three groups agreed very strongly and their mean rating scores were comparable. Standard deviations for the item means ranged from .327 to .404.

All three groups agree that schools need to adopt a new philosophy which states that commonly accepted levels of mistakes, delays, and defects will no longer be tolerated (Table 9). Superintendents (1.49) and
Table 8. Item means and standard deviations for Deming's first point and the three related belief statements (la, lb, lc)^a

<table>
<thead>
<tr>
<th>Deming’s point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deming Pt. 1. Schools should create constancy of purpose toward improvement of product and service.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.31</td>
<td>.342</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.33</td>
<td>.307</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.29</td>
<td>.325</td>
</tr>
<tr>
<td>Belief la. Schools should create constancy of purpose toward improvement of the entire school system and its purposes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>34</td>
<td>1.24</td>
<td>.496</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.50</td>
<td>.564</td>
</tr>
<tr>
<td>Teacher</td>
<td>34</td>
<td>1.24</td>
<td>.431</td>
</tr>
<tr>
<td>Belief lb. Schools should aim to create the best quality students capable of improving all forms of processes and entering meaningful positions in society.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.54</td>
<td>.657</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.38</td>
<td>.493</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.51</td>
<td>.562</td>
</tr>
<tr>
<td>Belief lc. Schools should strive to be as good as they can be and have a continuous desire to improve.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.17</td>
<td>.382</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.12</td>
<td>.327</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.11</td>
<td>.404</td>
</tr>
</tbody>
</table>

^aFive-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.
board members (1.52) gave similar mean rating scores as teachers (1.70) when comparing the three groups. Standard deviations for the item means ranged from .451 to .520.

When contrasting the three groups and their responses to the first belief statement (2a), superintendents (1.39) and board members (1.42) gave comparable mean rating scores as teachers (1.71) when asked if educational management must awaken to the challenge, must learn their responsibilities, and take on leadership for change. Standard deviations for the item means varied from .561 to .788.

The second belief statement (2b) reveals that all three groups were in agreement that schools must accept the idea that students can learn at high levels under the right conditions of teaching and learning. Superintendents (1.44) gave a similar mean rating score as board members (1.59) and teachers (1.51). Standard deviations for the item means ranged from .504 (superintendents) and .658 (teachers) to .857 (board members).

When responding to the third belief statement (2c), all three groups agreed that schools must not accept underachievement from anyone in the system, including board members, administrators, staff, students, or parents. It appears that superintendents (1.51), board members (1.56), and teachers (1.89) gave similar mean rating scores. Standard deviations for the item means varied from .562 (superintendent) to .963 (teacher).

All three groups agree that schools need to cease dependence upon mass inspection (Table 10). The item mean rating scores for Deming's third point included superintendents (1.91), board members (2.21), and
Table 9. Item means and standard deviations for Deming's second point and the three related belief statements (2a, 2b, 2c)

<table>
<thead>
<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deming Pt. 2.</strong> Schools need to adopt a new philosophy which states that commonly accepted levels of mistakes, delays, and defects will no longer be tolerated.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.49</td>
<td>.520</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.52</td>
<td>.451</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.70</td>
<td>.516</td>
</tr>
<tr>
<td><strong>Belief 2a.</strong> Educational management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>33</td>
<td>1.39</td>
<td>.788</td>
</tr>
<tr>
<td>Board member</td>
<td>33</td>
<td>1.42</td>
<td>.561</td>
</tr>
<tr>
<td>Teacher</td>
<td>34</td>
<td>1.71</td>
<td>.760</td>
</tr>
<tr>
<td><strong>Belief 2b.</strong> Schools must accept the idea that students can learn at high levels under the right conditions of teaching and learning.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>34</td>
<td>1.44</td>
<td>.504</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.59</td>
<td>.857</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.51</td>
<td>.658</td>
</tr>
<tr>
<td><strong>Belief 2c.</strong> Schools must not accept underachievement from anyone in the system: board members, administrators, staff, students, or parents.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.51</td>
<td>.562</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.56</td>
<td>.660</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.89</td>
<td>.963</td>
</tr>
</tbody>
</table>

*Five-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.*
teachers (2.10). Standard deviations for the item means ranged from .534 to .596.

The first belief statement (3a) reveals that all three groups were in agreement that schools need to concentrate on a new philosophy emphasizing the move from the identification of student failure to preventing student failure through continuous improvement. Superintendents (1.54), board members (1.68), and teachers (1.97) gave similar mean rating scores. Standard deviations for the item means varied from .741 to .985.

When examining the second belief statement (3b), board members (2.29) and superintendents (2.46) agreed slightly that schools need to understand and use statistical assessment of student growth and development on a daily basis. Teachers (2.63) were not sure how to respond to this statement. Standard deviations ranged from .906 to 1.060.

The third belief statement (3c) indicates that teachers (1.69) and superintendents (1.74) agreed that schools must find other ways to assess students without dependency on tests and grades. Board members indicated that they were not sure of this belief statement by giving a mean rating score of 2.65 (p<.01). Standard deviations for the item means varied from .657 (superintendents) to .900 (teachers).

Table 11 indicates that the single classification analysis of variance produced significant differences (F[2.61]=17.17) between the mean scores of the 42 sampled school districts. The H₀ was rejected and through the Scheffé multiple-range procedure, the mean scores between the three groups were significantly different at the .05 level and beyond.
Table 10. Item means and standard deviations for Deming's third point and the three related belief statements (3a, 3b, 3c)\(^a\)

<table>
<thead>
<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deming Pt. 3. Schools need to cease dependence upon mass inspection.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.91</td>
<td>0.596</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.21</td>
<td>0.544</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.10</td>
<td>0.534</td>
</tr>
<tr>
<td>Belief 3a. Schools need to concentrate on a new philosophy emphasizing the move from the identification of student failure to preventing student failure through continuous improvement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>34</td>
<td>1.54</td>
<td>0.741</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.68</td>
<td>0.727</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.97</td>
<td>0.985</td>
</tr>
<tr>
<td>Belief 3b. Schools need to understand and use statistical assessment of student growth and development on a daily basis.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.46</td>
<td>0.950</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.29</td>
<td>0.906</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.63</td>
<td>1.060</td>
</tr>
<tr>
<td>Belief 3c. Schools must find other ways to assess students without dependency on tests and grades.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.74</td>
<td>0.657</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.65**</td>
<td>0.981</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.69</td>
<td>0.900</td>
</tr>
</tbody>
</table>

\(^a\)Five-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.

**Significant at the .01 level.
Table 11. One-way analysis of variance: Schools must find other ways to assess students without dependency on tests and grades (Point 3/Belief 3c)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Fcv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Districts (block)</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between groups</td>
<td>2</td>
<td>20.05</td>
<td>10.03</td>
<td>17.17**</td>
<td>3.55</td>
</tr>
<tr>
<td>Error</td>
<td>61</td>
<td>35.62</td>
<td>.58</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teacher</th>
<th>Superintendent</th>
<th>Board member</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>--**</td>
<td>--**</td>
</tr>
</tbody>
</table>

**Significant at the .01 level.

(Fcv=5.38 at a=.01). There was a significant difference when comparing board members with the other two groups.

The three groups agreed that schools must end the practice of basing decisions on cost alone (Table 12). However, there appears to be a significant difference with the responses of board members (2.19, p<.01) when compared with the other two groups. Superintendents (1.86) and teachers (1.86) appeared to be in stronger agreement with this point. Standard deviations for the item means ranged from .420 to .538.

When comparing the three groups with the first belief statement, all three groups agreed that schools should invest in quality rather than just low cost. The mean rating scores of superintendents (1.20), teachers (1.31), and board members (1.50) were similar. Standard deviations varied from .564 (board members) to .719 (superintendents).
Table 12. Item means and standard deviations for Deming's fourth point and the three related belief statements (4a, 4b, 4c)\(^a\)

<table>
<thead>
<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deming Pt. 4.</strong> Schools must end the practice of basing decisions on cost alone.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.86</td>
<td>.538</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.19**</td>
<td>.420</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.86</td>
<td>.438</td>
</tr>
<tr>
<td><strong>Belief 4a.</strong> Schools should invest in quality rather than just low cost.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.20</td>
<td>.719</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.50</td>
<td>.564</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.31</td>
<td>.631</td>
</tr>
<tr>
<td><strong>Belief 4b.</strong> Schools should choose, use, and evaluate facilities, textbooks, technologies, and other resources in teaching based on statistical evidence of success of the particular product and upon accepted outcome measurements.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.20</td>
<td>.933</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.03</td>
<td>.577</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.17</td>
<td>.954</td>
</tr>
<tr>
<td><strong>Belief 4c.</strong> Schools need to cease dependence on testing to achieve quality and instead provide learning experiences which create quality performance.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.17</td>
<td>.923</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>3.03**</td>
<td>.993</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.09</td>
<td>.818</td>
</tr>
</tbody>
</table>

\(^a\)Five-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.

\(^{**}\)Significant at the .01 level.
All three groups agreed with the second belief statement that schools should choose, use, and evaluate facilities, textbooks, technologies, and other resources in teaching based on statistical evidence of success of the particular product and upon accepted outcome measurements. The mean rating scores given were fairly comparable ranging from 2.03 to 2.20. Standard deviations for the item means ranged from .577 (board members) to .933 (superintendents) and .954 (teachers).

When examining the responses from the three groups to the third belief statement, there was a significant difference. Superintendents (2.17) and teachers (2.09) agreed that schools need to cease dependence on testing to achieve quality and instead provide learning experiences which create quality performance. Board members (3.03, p<.01) were not sure when responding to this particular belief statement. Standard deviations for the item means ranged from .818 (teachers) to .993 (board members).

Table 13 indicates that the single classification analysis of variance produced significant differences (F[2,61]=16.3252) between the mean scores of the 42 sampled school districts. The $H_0$ was rejected and through the Scheffé multiple-range procedure, the mean scores between the three groups were significantly different at the .05 level and beyond (Fcv=5.38 at a=.01). There was a significant difference when comparing board members with the other two groups.

When comparing the three groups in Table 14 with Deming's fifth point, all three groups agreed that schools must constantly and forever improve the system of production and service. Superintendents' (1.52)
Table 13. One-way analysis of variance: Schools must end the practice of basing decisions on cost alone (Point 4)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Fcv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Districts (block)</td>
<td>40</td>
<td>2.4921</td>
<td>1.2461</td>
<td>6.3252**</td>
<td>3.55</td>
</tr>
<tr>
<td>Between groups</td>
<td>2</td>
<td>12.0170</td>
<td>.1970</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>61</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Superintendent     Teacher     Board member
---                 --         ---**      ---**

**Significant at the .01 level.

mean rating score was similar to board members (1.66) and teachers (1.66). Standard deviations for the item means ranged from .422 to .461.

The first belief statement (5a) showed all three groups agreeing that administrators and no one else are responsible for finding and correcting systematic problems. It should be noted, however, that there is a significant difference between the mean rating scores of the three groups. Superintendents (1.57) and board members (1.47) appear to agree much more strongly than teachers (1.94, p<.01). Standard deviations for the item means varied from .655 (superintendent) and .622 (board member) to .906 (teacher).

When contrasting the three groups with the second belief statement (5b), there was agreement with all three that schools should continually identify barriers and seek workable solutions to improve processes. Superintendents (1.46) strongly agreed with this belief statement and
Table 14. Item means and standard deviations for Deming's fifth point and the three related belief statements (5a, 5b, 5c)

<table>
<thead>
<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deming Pt. 5.</strong> Schools must constantly and forever improve the system of production and service.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.52</td>
<td>.430</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.66</td>
<td>.422</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.66</td>
<td>.461</td>
</tr>
<tr>
<td><strong>Belief 5a.</strong> Administrators and no one else are responsible for finding and correcting systematic problems.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.57</td>
<td>.655</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.47</td>
<td>.662</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.94**</td>
<td>.906</td>
</tr>
<tr>
<td><strong>Belief 5b.</strong> Schools should continually identify barriers and seek workable solutions to improve processes.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.46</td>
<td>.505</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.71</td>
<td>.462</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.57</td>
<td>.502</td>
</tr>
<tr>
<td><strong>Belief 5c.</strong> Schools must work with the educational institutions to help improve the quality of teachers coming into the system.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.54</td>
<td>.657</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.79</td>
<td>.729</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.46</td>
<td>.505</td>
</tr>
</tbody>
</table>

*Five-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.

**Significant at the .01 level.
teachers (1.57) and board members (1.71) also agreed. Standard deviations for the item mean scores ranged from .462 to .505.

All three groups agreed that schools must work with the educational institutions to help improve the quality of teachers coming into the system. Teachers (1.46) agreed strongly with the third belief statement (5c), with board members (1.79) and superintendents (1.54) also agreeing. Standard deviations for the item mean scores varied from .505 to .729.

The single classification analysis of variance produced significant differences ($F[2, 61] = 16.3252$) between the mean scores of the 42 sampled school districts (Table 15). The $H_0$ was rejected and through the Scheffé multiple-range procedure, the mean scores between the three groups were significantly different at the .05 level and beyond ($F_{cv} = 5.38$ at $a = .01$).

Table 15. One-way analysis of variance: Administrators and no one else are responsible for finding and correcting systematic problems (Point 5/Belief 1a)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>$F_{cv}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Districts (block)</td>
<td>40</td>
<td>4.2546</td>
<td>2.1273</td>
<td>3.7785*</td>
<td>3.55</td>
</tr>
<tr>
<td>Between groups</td>
<td>2</td>
<td>4.2546</td>
<td>2.1273</td>
<td>3.7785*</td>
<td>3.55</td>
</tr>
<tr>
<td>Error</td>
<td>.61</td>
<td>34.3430</td>
<td>.5630</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>34.3430</td>
<td>.5630</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Board member</th>
<th>Superintendent</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board member</td>
<td>-**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>-**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher</td>
<td>-**</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at the .05 level.

**Significant at the .01 level.
There was a significant difference when comparing board members with the other two groups.

When comparing the mean rating scores of the three groups (1.95), (1.89), and (2.03), all three are in agreement that schools must institute modern methods of training on the job (Table 16). Standard deviations for the item means ranged from .415 to .537.

The comparison between the three groups with the first belief statement (6a) indicates a significant difference when asked if school employees cannot perform well unless they know their jobs and feel free to inform administrators of problems they encounter. Board members (1.29) and teachers (1.34) agreed much more strongly with this statement than did superintendents (1.66, p<.01). Standard deviations for the item means ranged from .482 (teachers) and .524 (board members) to .765 (superintendents).

The second belief statement (6b) signifies that superintendents (2.34) and board members (2.45) agree that schools must use statistical methods to identify when on-the-job training has achieved its purpose. Teachers (2.51) were not sure when asked to respond to this particular belief statement. Standard deviations for the item means varied from .666 to .742.

When examining the responses from the three groups to the third belief statement (6c), it appears that there is agreement from all three groups when asked if resources for job training should be geared toward positively contributing to student achievement. Superintendents (1.86), board members (1.94), and teachers (2.24) gave similar mean rating scores.
Table 16. Item means and standard deviations for Deming's sixth point and the three related belief statements (6a, 6b, 6c)\(^a\)

<table>
<thead>
<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deming Pt. 6.</strong> Schools must institute modern methods of training on the job.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.95</td>
<td>.537</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.89</td>
<td>.455</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.03</td>
<td>.415</td>
</tr>
<tr>
<td><strong>Belief 6a.</strong> School employees cannot perform well unless they know their jobs and feel free to inform administrators of problems they encounter.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.66*</td>
<td>.765</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.29</td>
<td>.524</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.34</td>
<td>.482</td>
</tr>
<tr>
<td><strong>Belief 6b.</strong> Schools must use statistical methods to identify when on-the-job training has achieved its purpose.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.34</td>
<td>.725</td>
</tr>
<tr>
<td>Board member</td>
<td>33</td>
<td>2.45</td>
<td>.666</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.51</td>
<td>.742</td>
</tr>
<tr>
<td><strong>Belief 6c.</strong> Resources for job training should be geared toward positively contributing to student achievement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.86</td>
<td>.722</td>
</tr>
<tr>
<td>Board member</td>
<td>33</td>
<td>1.94</td>
<td>.966</td>
</tr>
<tr>
<td>Teacher</td>
<td>34</td>
<td>2.24</td>
<td>.781</td>
</tr>
</tbody>
</table>

\(^a\)Five-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.

\(*\)Significant at the .05 level.
Standard deviations for the item means ranged from .722 (superintendents) to .966 (board members).

The single classification analysis of variance produced significant differences ($F[2,61]=3.7449$) between the mean scores of the 42 sampled school districts (Table 17). The $H_0$ was rejected and through the Scheffé multiple-range procedure, the mean scores between the three groups were significantly different at the .05 level. There was a significant difference when comparing board members with the other two groups.

All three groups agreed that schools must do more to adopt and institute leadership and get leaders to take responsibility for quality (Table 18). Superintendents' (1.90) mean rating score was similar with board members (2.17) and teachers (2.09). Standard deviations for the item means ranged from .460 to .604.

Table 17. One-way analysis of variance: School employees cannot perform well unless they know their jobs and feel free to inform administrators of problems they encounter (Point 6/Belief 6a)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Fcv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Districts (block)</td>
<td>40</td>
<td>2.8012</td>
<td>1.4006</td>
<td>3.7449*</td>
<td>3.55</td>
</tr>
<tr>
<td>Between groups</td>
<td>2</td>
<td>2.8012</td>
<td>1.4006</td>
<td>3.7449*</td>
<td>3.55</td>
</tr>
<tr>
<td>Error</td>
<td>61</td>
<td>22.8140</td>
<td>.3740</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>25.6152</td>
<td>.3740</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board member</th>
<th>Teacher</th>
<th>Superintendent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board member</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td></td>
<td>--*</td>
</tr>
</tbody>
</table>

*Significant at the .05 level.
Table 18. Item means and standard deviations for Deming's seventh point and the three related belief statements (7a, 7b, 7c)\(^a\)

<table>
<thead>
<tr>
<th>Deming’s point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deming Pt. 7.</strong> Schools must do more to adopt and institute leadership and get leaders to take responsibility for quality.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.90</td>
<td>.553</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.17</td>
<td>.604</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.09</td>
<td>.460</td>
</tr>
<tr>
<td><strong>Belief 7a.</strong> The job of administrators is not management but leadership.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.80</td>
<td>.769</td>
</tr>
<tr>
<td>Board member</td>
<td>33</td>
<td>2.09</td>
<td>.932</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.74</td>
<td>.497</td>
</tr>
<tr>
<td><strong>Belief 7b.</strong> The aim of supervision should be to help people use resources to do a better job.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.91</td>
<td>.781</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.88</td>
<td>.729</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.83</td>
<td>.618</td>
</tr>
<tr>
<td><strong>Belief 7c.</strong> Evaluations need to be systematic, programmatic, and formative rather than individual, personal, and summative.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.97</td>
<td>.822</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.56</td>
<td>1.133</td>
</tr>
<tr>
<td>Teacher</td>
<td>34</td>
<td>2.71**</td>
<td>.906</td>
</tr>
</tbody>
</table>

\(^a\)Five-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.

\(^{**}\)Significant at the .01 level.
When contrasting the three groups with the first belief statement (7a), all three groups agree that the job of administrators is not management, but leadership. The mean rating scores for teachers (1.74) and superintendents (1.80) were comparable with those from board members (2.09). Standard deviations for the item means varied from .497 (teachers) to .932 (board members).

Comparing the three groups and their responses to the second belief statement (7b) indicates agreement that the aim of supervision should be to help people use resources to do a better job. It appears that the mean rating scores of the three groups were very comparable (1.83), (1.88), and (1.91). The standard deviations for the item means ranged from .618 to .781.

The third belief statement (7c) indicates superintendents (1.97) agreeing that evaluations need to be systematic, programmatic, and formative rather than individual, personal, and summative. It should be noted, however, that there is a significant difference between the mean rating scores of the three groups. Board members (2.56) and teachers (2.71, p<.01) were not sure how to respond when asked this question. Standard deviations for the item means varied from .822 (superintendents) and .906 (teachers) to 1.133 (board members).

Table 19 reveals that the single classification analysis of variance produced significant differences (F[2,60]=5.4813) between the mean scores of the 42 sampled school districts. The $H_0$ was rejected and through the Scheffé multiple-range procedure, the mean scores between the three groups were significantly different at the .05 level and beyond (F.cv=5.38 at
Table 19. One-way analysis of variance: Evaluations need to be systematic, programmatic, and formative rather than individual, personal, and summative (Point 7/Belief 7c)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Fcv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Districts (block)</td>
<td>41</td>
<td>10.6009</td>
<td>5.3005</td>
<td>5.4813**</td>
<td>3.55</td>
</tr>
<tr>
<td>Between groups</td>
<td>2</td>
<td>58.0200</td>
<td>.9670</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Superintendent
Board member
Teacher

**Significant at the .01 level.

a=.01). There was a significant difference when comparing the responses from teachers and those from superintendents.

The three groups agreed that schools must drive out fear so that everyone may work effectively for the organization (Table 20). Superintendents' (1.76) mean rating score was similar with board members (1.83) and teachers (1.86). Standard deviations for the item means ranged from .451 to .540.

When comparing the responses of all three groups with the first belief statement (8a), all three agreed that schools must drive out fear so that everyone can work effectively. Mean rating scores for board members (1.82), superintendents (2.00), and teachers (2.29) were similar. Standard deviations for the item means varied from .686 (superintendents) to .869 (board members) and .987 (teachers).
Table 20. Item means and standard deviations for Deming's eighth point and the three related belief statements (8a, 8b, 8c)

<table>
<thead>
<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deming Pt. 8. Schools must drive out fear so that everyone may work effectively for the organization.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.76</td>
<td>.540</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.83</td>
<td>.451</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.86</td>
<td>.452</td>
</tr>
<tr>
<td>Belief 8a. Schools must drive out fear so that everyone can work effectively.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.00</td>
<td>.686</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.82</td>
<td>.869</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.29</td>
<td>.987</td>
</tr>
<tr>
<td>Belief 8b. Schools must create an environment which encourages people to speak freely.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.63</td>
<td>.808</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.47</td>
<td>.563</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.60</td>
<td>.775</td>
</tr>
<tr>
<td>Belief 8c. Schools must create an atmosphere conducive to risk taking and experimentation without the fear of punishment for failure.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.66</td>
<td>.684</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.21**</td>
<td>.978</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.69</td>
<td>.530</td>
</tr>
</tbody>
</table>

*aFive-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.

**Significant at the .01 level.
The second belief statement (8b) indicates the three groups agree that schools must create an environment which encourages people to speak freely. Board members (1.47) indicated a similar mean rating score with those responses from superintendents (1.63) and teachers (1.60). Standard deviations for the item means ranged from .563 (board members) to .808 (superintendents).

When examining the responses for the third belief statement (8c), the three groups agree that schools must create an atmosphere conducive to risk taking and experimentation without fear of punishment for failure. However, there was a significant difference between the responses of board members (2.21, p≤.01) and those from superintendents (1.66) and/or teachers (1.69). Board members did not agree as strongly to this belief as did superintendents and teachers. Standard deviations for the item means ranged from .530 (teachers) and .684 (superintendents) to .978 (board members).

The single classification analysis of variance produced significant differences (F[2,61]=6.1710) between the mean scores of the 42 sampled school districts (Table 21). The $H_0$ was rejected and through the Scheffé multiple-range procedure, the mean scores between the three groups were significantly different at the .05 level and beyond (Fcv=5.38 at $a=.01$). There was a significant difference when comparing board members with superintendents and teachers.

Table 22 reveals that the three groups agree with Deming's ninth belief statement. Mean rating scores of superintendents (1.77) and board members (1.76) were similar with those of teachers (1.83) when asked if
Table 21. One-way analysis of variance: Schools must create an atmosphere conducive to risk taking and experimentation without the fear of punishment for failure (Point 8/Belief 8c)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Fcv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Districts (block)</td>
<td>40</td>
<td>6.5659</td>
<td>3.2829</td>
<td>6.1710**</td>
<td>3.55</td>
</tr>
<tr>
<td>Between groups</td>
<td>2</td>
<td>6.5659</td>
<td>3.2829</td>
<td>6.1710**</td>
<td>3.55</td>
</tr>
<tr>
<td>Error</td>
<td>61</td>
<td>32.4520</td>
<td>.5320</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td>39.0179</td>
<td>.3851</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Significant at the .01 level.

Schools must break down barriers between departments. Standard deviations for the item means ranged from .504 to .562.

When examining the responses from the three groups to the first belief statement (9a), all three groups agreed that schools need to be committed to rebuilding and nurturing an environment in which trust and respect can be applied to what is said, heard, read, and written. The mean rating scores of board members (1.67) were similar with superintendents (1.97) and teachers (2.03). Standard deviations for the item means varied from .990 (board members) to 1.291 (teachers) and 1.359 (superintendents).

The second belief statement (9b) in Table 22 reveals the three groups agreeing that schools need to break down barriers by problem solving through teamwork and combining the efforts of people from different school
Table 22. Item means and standard deviations for Deming’s ninth point and the three related belief statements (9a, 9b, 9c)

<table>
<thead>
<tr>
<th>Deming’s point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deming Pt. 9. Schools must break down barriers between departments.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.77</td>
<td>.553</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.76</td>
<td>.504</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.83</td>
<td>.562</td>
</tr>
<tr>
<td>Belief 9a. Schools need to be committed to rebuilding and nurturing an environment in which trust and respect can be applied to what is said, heard, read, and written.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>34</td>
<td>1.97</td>
<td>1.359</td>
</tr>
<tr>
<td>Board member</td>
<td>33</td>
<td>1.67</td>
<td>.990</td>
</tr>
<tr>
<td>Teacher</td>
<td>34</td>
<td>2.03</td>
<td>1.291</td>
</tr>
<tr>
<td>Belief 9b. Schools need to break down barriers by problem solving through teamwork and combining the efforts of people from different school areas.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.51</td>
<td>.507</td>
</tr>
<tr>
<td>Board member</td>
<td>33</td>
<td>1.61</td>
<td>.609</td>
</tr>
<tr>
<td>Teacher</td>
<td>34</td>
<td>1.68</td>
<td>.638</td>
</tr>
<tr>
<td>Belief 9c. Schools should reduce waste by encouraging the community, board of education, administrators, and staff to learn more about the problems of education.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>34</td>
<td>1.82</td>
<td>.797</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.00</td>
<td>.492</td>
</tr>
<tr>
<td>Teacher</td>
<td>33</td>
<td>1.85</td>
<td>.619</td>
</tr>
</tbody>
</table>

*Five-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.*
areas. When contrasting the three groups' mean scores, superintendents (1.51) gave a similar mean rating score as did board members (1.61) and teachers (1.68). Standard deviations for the item means ranged from .507 to .638.

When examining the third belief statement (9c), it appears that all three groups agreed that schools should reduce waste by encouraging the community, board of education, administrators, and staff to learn more about the problems of education. When comparing the mean scores of the three groups, superintendents (1.82) and teachers (1.85) were in similar agreement with board members (2.00). Standard deviations for the item means varied from .492 (board members) to .619 (teachers) and .797 (superintendents).

There were some different responses from the three groups when asked if schools must eliminate posters and slogans that ask staff for new levels of productivity without providing new methods (Table 23). Superintendents (3.48) were not sure when asked to respond to this item while board members (3.89, p<.01) and teachers (3.50) disagreed with Deming's ninth point. There was a significant difference between board members' responses and the mean rating score of one or both of the other groups. Standard deviations for the item means ranged from .391 (board members) and .579 (teachers) to .742 (superintendents).

When examining the first belief statement (10a), it appears that all three groups were not sure when asked if schools should eliminate the use of goals, targets, and slogans to encourage performance—unless training and administrative support are provided to meet the goals. Teachers
Table 23. Item means and standard deviations for Deming's tenth point and the three related belief statements (10a, 10b, 10c)\(^a\)

<table>
<thead>
<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deming Pt. 10. Schools must eliminate posters and slogans that ask staff for new levels of productivity without providing new methods.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>3.48</td>
<td>.742</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>3.89**</td>
<td>.391</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>3.50</td>
<td>.579</td>
</tr>
<tr>
<td>Belief 10a. Schools should eliminate the use of goals, targets, and slogans to encourage performance--unless training and administrative support are provided to meet the goals.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>34</td>
<td>2.97</td>
<td>1.029</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>3.29</td>
<td>1.315</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.71</td>
<td>.893</td>
</tr>
<tr>
<td>Belief 10b. The causes of low quality and low productivity belong to the system and thus lie beyond the control of teachers and students.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>4.14</td>
<td>.974</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>4.50</td>
<td>.663</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>4.00</td>
<td>.840</td>
</tr>
<tr>
<td>Belief 10c. Work quotas such as test results cause low morale in schools.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.31</td>
<td>1.051</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>3.00**</td>
<td>.816</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.37</td>
<td>1.060</td>
</tr>
</tbody>
</table>

\(^a\)Five-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.

**Significant at the .01 level.
(2.71) gave a similar mean rating score when compared to superintendents (2.97) and board members (3.29). Standard deviations for the item means ranged from .893 (teachers) and 1.029 (superintendents) to 1.315 (board members).

Table 23 reveals that all three groups disagreed that the causes of low quality and low productivity belong to the system and thus lie beyond the control of teachers and students. Mean rating scores of superintendents (4.14) and teachers (4.00) were very comparable in showing disagreement with the second belief statement (10b). However, board members (4.50) disagreed strongly with the statement. Standard deviations for the item means ranged from .663 (board members) and .840 (teachers) to .974 (superintendents).

The third belief statement (10c) indicates that the three groups differed in their opinion when asked if work quotas such as test results cause low morale in schools. Superintendents (2.31) and teachers (2.37) agreed with this statement while board members (3.00, p<.01) were not sure how to respond to this statement. Standard deviations for the item means varied from .816 to 1.060.

There is a significant difference between the response from board members and the responses from one or both of the other groups.

The single classification analysis of variance produced significant differences (F[2,61]=5.38) between the mean scores of the 42 sampled school districts (Table 24). The H₀ was rejected and through the Scheffé multiple-range procedure, the mean scores between the three groups were significantly different at the .05 level and beyond (Fcv=5.38 at a=.01).
Table 24. One-way analysis of variance: Schools must eliminate posters and slogans that ask staff for new levels of productivity without providing new methods (Point 10)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Fcv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Districts (block)</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between groups</td>
<td>2</td>
<td>3.747</td>
<td>1.873</td>
<td>5.38**</td>
<td>3.55</td>
</tr>
<tr>
<td>Error</td>
<td>61</td>
<td>21.235</td>
<td>.348</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Teacher                       Superintendent          Board member
Teacher                        -**                        -**
Superintendent                 -**                        -**
Board member                    -**                        -**

**Significant at the .01 level.

There was a significant difference when comparing board members with superintendents and teachers.

Table 25 shows that the single classification analysis of variance produced significant differences (F[2,61]=5.8733) between the mean scores of the 42 sampled school districts. The H₀ was rejected and through the Scheffé multiple-range procedure, the mean scores between the three groups were significantly different at the .05 level and beyond (Fcv=5.38 at a=.01). There was a significant difference when comparing board members with superintendents and teachers.

The three groups were not sure when asked to respond to whether or not schools must eliminate numerical goals and quotas for the work force (Table 26). The mean rating score for teachers (2.52) was similar with those responses from board members (2.81) and superintendents (2.71).
Table 25. One-way analysis of variance: Work quotas such as test results cause low morale in schools (Point 10/Belief 10c)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Fcv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Districts (block)</td>
<td>40</td>
<td>10.0315</td>
<td>5.0158</td>
<td>5.8733**</td>
<td>3.55</td>
</tr>
<tr>
<td>Between groups</td>
<td>2</td>
<td>10.0315</td>
<td>5.0158</td>
<td>5.8733**</td>
<td>3.55</td>
</tr>
<tr>
<td>Error</td>
<td>61</td>
<td>52.0940</td>
<td>.8540</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Superintendent  Teacher  Board member

- -**  - -**

**Significant at the .01 level.

Standard deviations for the item means ranged from .570 (teachers) and .576 (board members) to .755 (superintendents).

When examining the first belief statement (11a), all three groups agreed that all educational employees must be involved in identifying problems, designing program, planning, budgeting, and selecting material. When comparing the mean rating scores of the three groups, it appears that board members (1.65) gave a similar mean rating score as teachers (1.86) and superintendents (2.06). Standard deviations for the item means ranged from .734 (board members) to .998 (superintendents).

Table 26 indicates that all three groups were not sure when asked if schools must eliminate management by numbers and numerical goals and instead substitute leadership. There was a similar comparison in the mean rating scores between teachers (2.71), board members (3.29), and
Table 26. Item means and standard deviations for Deming's eleventh point and the three related belief statements (11a, 11b, 11c)

<table>
<thead>
<tr>
<th>Deming’s point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deming Pt. 11. Schools must eliminate numerical goals and quotas for the work force.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.71</td>
<td>.755</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.81</td>
<td>.576</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.52</td>
<td>.570</td>
</tr>
<tr>
<td>Belief 11a. All educational employees must be involved in identifying problems, designing program, planning, budgeting, and selecting material.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>34</td>
<td>2.06</td>
<td>.998</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.65</td>
<td>.734</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.86</td>
<td>.845</td>
</tr>
<tr>
<td>Belief 11b. Schools must eliminate management by numbers and numerical goals and instead substitute leadership.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>34</td>
<td>2.97</td>
<td>1.029</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>3.29</td>
<td>1.315</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.71</td>
<td>.893</td>
</tr>
<tr>
<td>Belief 11c. Grades and test scores do not motivate the student to learn, but rather drive out the joy of learning.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>3.09</td>
<td>3.121</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>3.50</td>
<td>.707</td>
</tr>
<tr>
<td>Teacher</td>
<td>34</td>
<td>3.03</td>
<td>1.243</td>
</tr>
</tbody>
</table>

*Five-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.*
superintendents (2.97). Standard deviations for the item means varied from .893 (teachers) to 1.029 (superintendents) and 1.315 (board members).

The third belief statement (3c) indicates somewhat of a difference in the responses from the three groups. Board members (3.50) disagreed when asked if grades and test scores do not motivate the students to learn, but rather drive out the joy of learning. Teachers (3.03) and superintendents (3.09) were not sure when responding to this statement. Standard deviations for the item means ranged from .707 (board members) and 1.243 (teachers) to 1.121 (superintendents).

Table 27 indicates that all three groups were not sure if schools must remove barriers that rob people of pride in workmanship and eliminate the annual rating or merit system. When comparing the mean rating scores of the three groups, superintendents (2.62), board members (2.67), and teachers (2.55) were similar. Standard deviations for the item means ranged from .435 to .567.

When examining the first belief statement (12a), it appears that the three groups were not sure when asked if traditional practices of teacher evaluation destroys teamwork, fosters mediocrity, and fosters short-term thinking--all detriments to continuing improvement. The mean scores of the three groups were somewhat similar, although teachers (2.74) tended to be closer to agreeing with this statement than did superintendents (2.94) or board members (3.00). Standard deviations for the item means varied from 1.067 (teachers) to 1.235 (superintendents) and 1.348 (board members).
Table 27. Item means and standard deviations for Deming's twelfth point and the three related belief statements (12a, 12b, 12c)^a

<table>
<thead>
<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deming Pt. 12. Schools must remove barriers that rob people of pride in workmanship and eliminate the annual rating or merit system.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.62</td>
<td>.567</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.67</td>
<td>.485</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.55</td>
<td>.435</td>
</tr>
<tr>
<td>Belief 12a. Traditional practices of teacher evaluation destroys teamwork, fosters mediocrity, and fosters short-term thinking—all detriments to continuing improvement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.94</td>
<td>1.235</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>3.00</td>
<td>1.348</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.74</td>
<td>1.067</td>
</tr>
<tr>
<td>Belief 12b. The responsibility of all educational administrators must be changed from quantity to quality.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.54</td>
<td>.751</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.38</td>
<td>.497</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.54</td>
<td>.564</td>
</tr>
<tr>
<td>Belief 12c. Schools need to place more resources toward evaluating the system rather than individuals.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>3.37</td>
<td>1.190</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>3.62</td>
<td>.551</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>3.37</td>
<td>.877</td>
</tr>
</tbody>
</table>

^aFive-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.
Table 27 reveals that the three groups agreed that the responsibility of all educational administrators must be changed from quantity to quality. Superintendents (1.54) and teachers (1.54) agreed with the second belief statement (12b), while board members (1.38) strongly agreed. Standard deviations for the item means ranged from .497 (board members) and .564 (teachers) to .751 (superintendents).

When examining the third belief statement (12c), the mean rating scores of superintendents (3.37) and teachers (3.37) indicated that they were not sure if schools need to place more resources toward evaluating the system rather than individuals. Board members (3.62) responded by disagreeing with the statement. Standard deviations for the item means ranged from .551 (board members) to .877 (teachers) and 1.190 (superintendents).

When comparing the three groups' responses to Deming's thirteenth point, there was a significant difference between the three groups (Table 28). The mean rating scores of superintendents (2.33, p<.01) and board members (2.02) agreed that schools must institute a vigorous program of education and self-improvement for everyone. Teachers (2.54, p<.01) indicated that they were not sure when responding to this particular point. Standard deviations for the item means ranged from .434 to .577.

When examining the three groups' responses to the first belief statement (13a), it appears that the three groups differed when asked if all personnel in the school should learn statistical theory and its application towards continuous improvement. Superintendents (3.20) and board members (2.68) indicated that they were not sure when asked this
Table 28. Item means and standard deviations for Deming's thirteenth point and the three related belief statements (13a, 13b, 13c)\(^a\)

<table>
<thead>
<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Deming Pt. 13.</strong> Schools must institute a vigorous program of education and self-improvement for everyone.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.33**</td>
<td>.577</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.02</td>
<td>.434</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.54**</td>
<td>.478</td>
</tr>
<tr>
<td><strong>Belief 13a.</strong> All personnel in the school should learn statistical theory and its application toward continuous improvement.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>3.20</td>
<td>2.079</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.68</td>
<td>.912</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>3.60*</td>
<td>.659</td>
</tr>
<tr>
<td><strong>Belief 13b.</strong> Schools must provide all employees with training in quality leadership, measurement, analysis, problem solving, self-evaluation, and assertiveness training.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.06</td>
<td>1.027</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.56</td>
<td>.660</td>
</tr>
<tr>
<td>Teacher</td>
<td>34</td>
<td>2.00</td>
<td>.921</td>
</tr>
<tr>
<td><strong>Belief 13c.</strong> Schools must recognize that different levels and functions in the organization require different types of training.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.74</td>
<td>.611</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.82</td>
<td>.459</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.00</td>
<td>.689</td>
</tr>
</tbody>
</table>

\(^a\)Five-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.

*Significant at the .05 level.

**Significant at the .01 level.
belief and their mean rating scores were somewhat different. The 
significant difference was with the teachers (3.60, p<.05) disagreeing 
with this belief statement. Standard deviations for the item means ranged 
from .659 (teachers) and .912 (board members) to 2.079 (superintendents).

Table 28 also reveals that the three groups agree that schools must 
recognize that different levels and functions in the organization require 
different types of training. The mean rating scores of the three groups 
were somewhat similar, with superintendents (1.74) and board members 
(1.82) agreeing with teachers (2.00). Standard deviations for the item 
means varied from .459 to .689.

The single classification analysis of variance produced significant 
differences (F[2,61]=9.164) between the mean scores of the 42 sampled 
school districts (Table 29). The H₀ was rejected and through the Scheffé 
multiple-range procedure, the mean scores between the three groups were

Table 29. One-way analysis of variance: Schools must institute a 
vigorous program of education and self-improvement for 
everyone (Point 13)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>Fcv</th>
</tr>
</thead>
<tbody>
<tr>
<td>Districts (block)</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between groups</td>
<td>2</td>
<td>4.7131</td>
<td>2.3565</td>
<td>9.1694**</td>
<td>3.55</td>
</tr>
<tr>
<td>Error</td>
<td>61</td>
<td>15.6770</td>
<td>.2570</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Board member</th>
<th>Superintendent</th>
<th>Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board Member</td>
<td>- - **</td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>- - **</td>
<td></td>
</tr>
<tr>
<td>Teacher</td>
<td>- - **</td>
<td></td>
</tr>
</tbody>
</table>

**Significant at the .01 level.
significantly different at the .05 level and beyond ($F_{cv}=5.38$ at $a=.01$). There was a significant difference when comparing board members' responses with those responses from superintendents and teachers.

Table 30 reveals that the single classification analysis of variance produced significant differences ($F[2,61]=8.8654$) between the mean scores of the 42 sampled school districts. The $H_o$ was rejected and through the Scheffé multiple-range procedure, the mean scores between the three groups were significantly different at the .05 level and beyond ($F_{cv}=5.38$ at $a=.01$). There was a significant difference when comparing teachers with board members.

When examining the responses to Deming's fourteenth point, it appears the three groups were in agreement that schools must put everybody in the

Table 30. One-way analysis of variance: All personnel in the school should learn statistical theory and its application toward continuous improvement (Point 13/Belief 13a)

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>$F_{cv}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Districts (block)</td>
<td>40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Between groups</td>
<td>2</td>
<td>14.6634</td>
<td>7.3317</td>
<td>8.8654**</td>
<td>3.55</td>
</tr>
<tr>
<td>Error</td>
<td>61</td>
<td>50.4470</td>
<td>.8270</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>103</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Board Member Superintendent Teacher

**Significant at the .01 level.
organization to work to accomplish the transformation (Table 31). The mean rating scores of superintendents (2.14), board members (2.21), and teachers (2.06) were similar. Standard deviations for the item means ranged from .479 to .683.

When responding to the first belief statement (14a), it appears that all three groups were not sure when asked if school administrators have been ineffective in bringing about needed change in schools. When comparing the mean scores of the three groups, superintendents (3.37), teachers (3.06), and board members (3.12) were similar. Standard deviations for the item means ranged from .844 (board members) to 1.083 (teachers) and 1.165 (superintendents).

The second belief statement (14b) in Table 31 shows all three groups agreeing that schools as they are traditionally designed will not meet the needs of a changing society. The mean rating scores for superintendents (1.86) and teachers (2.03) were similar with board members (2.26). Standard deviations for the item means ranged from .931 to 1.033.

In response to the third belief statement (14c), all three groups agreed strongly that every individual in the system (superintendents, central office personnel, principals, teachers, support staff, students, parents, community partners) plays a major role in providing a quality education. The mean rating scores of teachers (1.09), superintendents (1.20), and board members (1.24) were quite similar. Standard deviations for the item means varied from .284 (teachers) to .406 (superintendents) and .431 (board members).
Table 31. Item means and standard deviations for Deming's fourteenth point and the three related belief statements (14a, 14b, 14c)

<table>
<thead>
<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deming Pt. 14. Schools must put everybody in the organization to work to accomplish the transformation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>2.14</td>
<td>.683</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.21</td>
<td>.479</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.06</td>
<td>.580</td>
</tr>
<tr>
<td>Belief 14a. School administrators have been ineffective in bringing about needed changes in schools.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>3.37</td>
<td>1.165</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>3.12</td>
<td>.844</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>3.06</td>
<td>1.083</td>
</tr>
<tr>
<td>Belief 14b. Schools as they are traditionally designed will not meet the needs of a changing society.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.86</td>
<td>1.033</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>2.26</td>
<td>.931</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>2.03</td>
<td>.985</td>
</tr>
<tr>
<td>Belief 14c. Every individual in the system (superintendents, central office personnel, principals, teachers, support staff, students, parents, community partners) plays a major role in providing a quality education.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.20</td>
<td>.406</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.24</td>
<td>.431</td>
</tr>
<tr>
<td>Teacher</td>
<td>35</td>
<td>1.09</td>
<td>.284</td>
</tr>
</tbody>
</table>

*Five-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.*
Summary of Findings

When comparing the three groups' beliefs toward total quality management, there appears to be some agreement, disagreement, and uncertainty with the 14 points and the 42 belief statements.

Findings related to the 14 points

The following points were found to be agreed upon by superintendents, board members, and teachers:

(1) Schools should create constancy of purpose toward improvement of product and service.
(2) Schools need to adopt a new philosophy which states that commonly accepted levels of mistakes, delays, and defects will no longer be tolerated.
(3) Schools need to cease dependence upon mass inspection.
(4) Schools must end the practice of basing decisions on cost alone.
(5) Schools must constantly and forever improve the system of production and service.
(6) Schools must institute modern methods of training on the job.
(7) Schools must do more to adopt and institute leadership and get leaders to take on responsibility for quality.
(8) Schools must drive out fear so that everyone can work effectively.
(9) Schools must break down barriers between departments.
(14) Schools must put everybody in the organization to work to accomplish the transformation.
The following points were found to be answered "not sure" by superintendents, board members, and teachers:

11. Schools must eliminate numerical goals and quotas for the workforce.

12. Schools must remove barriers that rob people of pride in workmanship and eliminate the annual rating or merit system.

The following point was disagreed upon by superintendents, board members, and teachers.

10. Schools must eliminate posters and slogans that ask staff for new levels of productivity without providing new methods.

Findings related to the 42 belief statements

When comparing the three groups and their responses to the 42 belief statements, there appears to be some agreement, disagreement, and uncertainty.

Superintendents, board members, and teachers were all in agreement with the following belief statements:

1a. Schools should create constancy of purpose toward improvement of the entire school system and its purposes.

1b. Schools should aim to create the best quality students capable of improving all forms of processes and entering meaningful positions in society.

1c. Schools should strive to be as good as they can be and have a continuous desire to improve.
(2a) Educational management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.

(2b) Schools must accept the idea that students can learn at high levels under the right conditions of teaching and learning.

(2c) Schools must not accept underachievement from anyone in the system: board members, administrators, staff, students, or parents.

(3a) Schools need to concentrate on a new philosophy emphasizing the move from the identification of student failure to preventing student failure through continuous improvement.

(4a) Schools should invest in quality rather than just low cost.

(4b) Schools should choose, use, and evaluate facilities, textbooks, technologies, and other resources in teaching based on statistical evidence of success of the particular product and upon accepted outcome measurements.

(5a) Administrators and no one else are responsible for finding and correcting systematic problems.

(5b) Schools should continually identify barriers and seek workable solutions to improve processes.

(5c) Schools must work with the educational institutions to help improve the quality of teachers coming into the system.

(6a) School employees cannot perform well unless they know their jobs and feel free to inform administrators of problems they encounter.
(6c) Resources for job training should be geared toward positively contributing to student achievement.

(7a) The job of administrators is not management, but leadership.

(7b) The aim of supervision should be to help people use resources to do a better job.

(8a) Schools must drive out fear so that everyone can work effectively.

(8b) Schools must create an environment which encourages people to speak freely.

(8c) Schools must create an atmosphere conducive to risk taking and experimentation without the fear of punishment for failure.

(9a) Schools need to be committed to rebuilding and nurturing an environment in which trust and respect can be applied to what is said, heard, read, and written.

(9b) Schools need to break down barriers by problem solving through teamwork and combining the efforts of people from different school areas.

(9c) Schools should reduce waste by encouraging the community, board of education, administrators, and staff to learn more about the problems of education.

(11a) All educational employees must be involved in identifying problems, designing program, planning, budgeting, and selecting material.

(12b) The responsibility of all school administrators must be changed from quantity to quality.
(13b) Schools must provide all employees with training in quality leadership, measurement, analysis, problem solving, self-evaluation, and assertiveness training.

(13c) Schools must recognize that different levels and functions in the organization require different types of training.

(14b) Schools as they are traditionally designed will not meet the needs of a changing society.

(14c) Every individual in the system (superintendents, central office personnel, principals, teachers, support staff, students, parents, community partners) plays a major role in providing a quality education.

The following belief statements were found to be answered "not sure" by superintendents, board members, and teachers:

(10a) Schools should eliminate the use of goals, targets, and slogans to encourage performance--unless training and administrative support are provided to meet the goals.

(11b) Schools must eliminate management by numbers and numerical goals and instead substitute leadership.

(12a) Traditional practices of teacher evaluation destroys teamwork, fosters mediocrity, and fosters short-term thinking--all detriments to continuing improvement.

(14a) School administrators have been ineffective in bringing about needed changes in schools.
Superintendents, board members, and teachers all disagreed with the following belief statement:

(10b) The causes of low quality and low productivity belong to the system and thus lie beyond the control of teachers and students.

The following belief statements were answered differently (but not significantly different) by superintendents, board members, and teachers:

(3b) Schools need to understand and use statistical assessment of student growth and development on a daily basis. (Superintendents agree, board members agree, teachers not sure.)

(6b) Schools must use statistical methods to identify when on-the-job training has achieved its purpose. (Superintendents agree, board members agree, teachers not sure.)

(11c) Grades and test scores do not motivate the student to learn, but rather drive out the joy of learning. (Superintendents not sure, board members disagree, teachers not sure.)

(12c) Schools need to place more resources toward evaluating the system rather than individuals. (Superintendents not sure, board members disagree, teachers not sure.)

Findings related to the significant differences between the three groups when comparing the item mean scores

When comparing the three groups' beliefs toward total quality management, there appear to be some significant differences among the 14
points and the 42 belief statements. In order to visually portray these differences, Tables 32 and 33 were created.

There is a significant difference in beliefs when comparing the three groups on Points 4, 10, and 13.

When comparing the attitudes of the three groups toward the 42 belief statements, significant differences were found with belief statements 3c, 4c, 5a, 6a, 7c, 8c, 10c, and 13a.

Table 32. Summary of significant differences by groups concerning Deming's 14 points

<table>
<thead>
<tr>
<th>Respondent group</th>
<th>Direction of difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Board members</td>
<td>(a) Are less willing to agree that schools must end the practice of basing decisions on cost alone.</td>
</tr>
<tr>
<td>10. Board members</td>
<td>(a) Are more willing to disagree that schools must eliminate posters and slogans that ask staff for new levels of productivity without providing new methods.</td>
</tr>
<tr>
<td>13. Superintendents and teachers</td>
<td>(b) Are less willing to agree that schools must institute a vigorous program of education and self-improvement for everyone.</td>
</tr>
<tr>
<td>4. Teachers</td>
<td>(c) Are not as sure if schools must institute a vigorous program of education and self-improvement for everyone.</td>
</tr>
</tbody>
</table>
Table 33. Summary of significant differences by groups when examining the 42 belief statements

<table>
<thead>
<tr>
<th>Respondent group</th>
<th>Direction of difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>3c. Board members</td>
<td>(a) Do not agree that schools must find other ways to assess students without dependency on tests and grades.</td>
</tr>
<tr>
<td>4c. Board members</td>
<td>(b) Are not sure if schools need to cease dependence on testing to achieve quality and instead provide learning experiences which create quality performance.</td>
</tr>
<tr>
<td>5a. Teachers</td>
<td>(c) Are less willing to agree that administrators and no one else are responsible for finding and correcting systematic problems.</td>
</tr>
<tr>
<td>6a. Superintendents</td>
<td>(d) Are less likely to agree that school employees cannot perform well unless they know their jobs and feel free to inform administrators of problems they encounter.</td>
</tr>
<tr>
<td>7c. Teachers</td>
<td>(e) Are less likely to agree that evaluations need to be systematic, programmatic, and formative rather than individual, personal, and summative.</td>
</tr>
<tr>
<td>8c. Board members</td>
<td>(f) Are less likely to agree that schools must create an atmosphere conducive to risk taking and experimentation without the fear of punishment for failure.</td>
</tr>
<tr>
<td>10c. Board members</td>
<td>(g) Are not sure if work quotas such as test results cause low morale in schools.</td>
</tr>
<tr>
<td>13a. Teachers</td>
<td>(h) Do not agree that all personnel in the school should learn statistical theory and its application toward continuous improvement.</td>
</tr>
</tbody>
</table>
CHAPTER V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study, conducted during the spring and summer of 1992, was to assess the beliefs of superintendents, board members, and teachers regarding total quality management.

The survey instrument used in this study was developed by the researcher using a two-step procedure. After the review of literature was completed, 42 belief statements were created to assess and compare educators' beliefs concerning Deming's 14 points (three beliefs for each of the 14 points) as they apply to education. These 42 belief statements were submitted to a validating panel to assess the validity of the instrument.

In order to properly represent educators' beliefs, the sample used in this study represented 42 school districts from the state of Iowa. To insure geographical and population representation, three school districts were chosen at random from each of the 14 Area Education Agencies (AEA). The three school districts chosen from each AEA were selected based upon their student population. The student population categories chosen were 0 to 500, 501 to 1,500, and greater than 1,500 (Appendix C).

Superintendents of the selected districts were contacted by letter and asked to participate in this study (Appendix D). One superintendent contacted the researcher and refused to participate because he felt that this type of study would possibly cause future problems for educators.
The superintendents were asked to distribute a copy of the same survey to a teacher in their district who was: 1) not an officer of the local district's teachers' association, 2) has been in the district at least five years, and 3) is well respected by the rest of the staff (Appendix E).

A board member from each district was randomly selected and directly mailed a copy of the survey (Appendix F). After completing the survey, the teachers, superintendents, and board members were instructed to return the surveys in self-addressed stamped envelopes. Sixty percent of the surveys were returned within the two weeks' time allotted. A follow-up letter and telephone calls were used to encourage the nonrespondents to participate. The response rate increased to 83 percent after mailing the reminder and making follow-up phone calls.

All data were collected during the month of May 1992. Completed surveys were collected from 104 participants which included 35 superintendents, 34 board members, and 35 teachers. The scoring for negatively stated items of the survey was reversed before the data were analyzed.

Initial data analysis involved four separate procedures. First, total means and standard deviations were calculated for the ratings given each of the 42 belief statements by the 104 respondents. Means and standard deviations across participants were calculated for the 14 subscales that were organized according to Deming's 14 points. As a third statistical procedure, one-way analysis of variance was performed to test for significant differences among the mean ratings for each of the 14
points as well as for the 42 individual belief statements comparing the three participant groups. The one-way analysis of variance was used to test the research null hypothesis that there would be no significant differences among the mean scores of the beliefs, when comparing the three groups' response to each of the 42 belief statements and the 14 points in the "Educator Beliefs" survey.

\[ H_0 : \mu_1 = \mu_2 = \mu_3 \]

\[ H_r : \text{At least two } \mu's \text{ are not equal} \]

\[ a = .05. \]

The final statistical procedure involved conducting the Scheffé post hoc multiple range procedure (p<.05).

**Summarization of findings**

In summary, if schools are going to implement total quality management, there appear to be several major areas that are going to have to be addressed: 1) continuous improvement, 2) the use of goals and slogans in schools, 3) the use of tests and grades in schools, 4) using statistical assessment in schools, and 5) the current employee evaluation and merit system.

Several belief statements emphasized the need for continuous improvement in schools, and generally all three groups were in agreement with this philosophy.

However, the concept of giving up the use of goals and slogans in schools met with some resistance. All three groups expressed uncertainty
and some disagreement when asked if goals, targets, and slogans should be eliminated to encourage performance.

Several belief statements addressed the current practice of using tests and grades in schools, and the three groups had different viewpoints. Teachers and superintendents agreed that schools must find other ways to assess students without dependency on tests and grades while board members indicated that they were not sure.

The idea that test scores and grades do not motivate the students to learn, but rather drive out the joy in learning, was disagreed with by board members while teachers and superintendents expressed uncertainty. Furthermore, teachers and superintendents agreed that work quotas such as test results cause low morale in school while board members disagreed with this belief statement.

The belief that all personnel in schools should learn statistical theory and its application toward school improvement was met with uncertainty and disagreement by the three groups. Superintendents and board members indicated uncertainty while teachers disagreed with this belief statement.

Several belief statements indicated that the three groups would have problems when examining the areas of employee evaluation and the merit pay system. Board members disagreed that schools need to place more resources toward evaluating the system rather than individuals while superintendents and teachers indicated that they were not sure. Furthermore, superintendents, board members, and teachers all disagreed that the causes
of low quality and low productivity belong to the system and thus lie
beyond the control of teachers and students.

All three groups indicated resistance when asked to respond to
eliminating the annual rating or merit pay system. The three groups
indicated that they were not sure.

Conclusions

Piecemeal interventions within our current educational system have
done little to increase the productivity or usefulness of most schools.
Recent evaluations indicate that the educational improvement strategies
advocated by various interest groups in the early 1980s have not resulted
in any significant changes or payoffs. Some argue that our current
system's effectiveness and efficiency has reached its upper limit and,
therefore, significant improvements can be made only through a fundamental
restructuring of the system.

It is evident that tremendous changes in the way schools do business
will have to take place in coming years for meaningful reform to occur.
The leadership in the public schools will also have to change. How will
this happen? It appears that with the past success of TQM in business,
industry, and the public sector, the possibilities of applying TQM to
education seem to exist.

What type of managerial style will bring about the most successful
change? An analysis of the literature and practice in both educational
and management suggests that we are moving from a "coercive" to a
"participative" style in recent years and total quality management seems
to blend in well with this type of approach. Creating an environment which allows and encourages everyone to contribute to the organization seems to be essential.

Are educators in Iowa prepared to adopt the philosophical tenets proposed by Edward Deming and the total quality management approach? The results from this study seem to indicate that educators are currently involved with several of TQM's fundamental beliefs, but not ready for the complete system that TQM requires.

There are several major philosophical differences that will need to be agreed upon before organizations can become a "comprehensive" TQM organization. The results of this study indicated that superintendents, board members, and teachers were most unwilling to change their ideas in such areas as: 1) eliminating goals and slogans, 2) abolishing grades and tests, 3) evaluating or blaming the system rather than individuals, along with eliminating the merit pay system, and 4) becoming trained in statistical theory.

Another major philosophical difference is with continuous improvement. Although superintendents, teachers, and board members agreed that continuous improvement is necessary upon reflection, this research may imply that most educators' ideas of continuous improvement don't carry the magnitude that Deming's TQM would entail.

Discussion

When analyzing the purposes of this study as set forth in Chapter I, it would seem that many of the beliefs from superintendents, board
members, and teachers are a direct reflection upon the culture and paradigms that are embedded in public schools today.

If one had to name the single biggest influence on paradigms and public school culture during the past century, one candidate that would come to mind might be Frederick Winslow Taylor, the father of "scientific management." It appears that the philosophy of educational management may have been patterned similar to that of Frederick Taylor’s philosophy and his book entitled *Principles of Scientific Management*. The major thrust of Taylor’s management philosophy when compared to Deming’s TQM makes it evident why the current culture and paradigms in schools exist.

According to Barker (1990), paradigms oftentimes keep people from accepting new ideas. There is a tendency for people to adjust data and information by filtering it through scientific mindsets that agree with their paradigms. Therefore, data or information that agree with the current paradigms are more likely to gain acceptance than data that disagree with the current paradigm. Barker contends that this is called the "paradigm effect," which tends to blind people and organizations to new opportunities. It causes them to try to discover the future through the current paradigm. This, of course, limits people’s thinking.

Further studies on culture in educational settings (Taylor, 1991; Snyder & Anderson, 1986; Boyer, 1983; Goodlad, 1984; Lightfoot, 1983; Powell, Cohen, & Farrar, 1984; Sizer, 1984) indicate several major cultural features which would appear contradictory to the TQM philosophy. Perhaps Snyder and Anderson (1986) summarize it best by stating the
following: 1) effort focus vs. results focus, 2) role isolation vs. working in groups, 3) individual deficits vs. individual contributions, 4) role generalizations vs. standards of productivity, 5) job protection vs. skill proficiency, and 6) personal interest vs. goal-based tasks.

The existing literature reveals that public schools are in the early stages with the quality movement (Stampen, 1987; Ballanca, 1982; Meaney, 1991; Tribus, 1990; Melvin, 1991; Houlihan, 1991; McLeod, 1991). The philosophy of continuous improvement seems to be commonly accepted throughout. However, it appears that continuous improvement is still difficult because most educators are accustomed to annual projects and programs as the definition of change. Furthermore, convincing staff that quality is not a quick fix also seems to be a problem with those schools involved. As mentioned earlier, most educators' ideas of continuous improvement don't carry the magnitude that Deming's TQM would entail.

The results of this study indicated that superintendents, board members, and teachers were most unwilling to change their ideas in such areas as: 1) eliminating goals and slogans, 2) abolishing grades and tests, 3) evaluating or blaming the system rather than individuals, along with eliminating the merit pay system, and 4) becoming trained in statistical theory. The existing literature would also support the fact that those schools involved with TQM are finding it most difficult to also make these major philosophical changes (Willis, 1993; Bonstingl, 1992; Thurber, 1992; Abernathy & Serfass, 1992; Harris & Harris, 1992; Andrade & Ryley, 1992; Hixson & Lovelace, 1992; Schmoker & Wilson, 1993).
Eliminating goals and slogans

The elimination of goals, objectives, and slogans appears to be a very controversial issue when compared to the words in Peter Drucker's standard MBO text. According to Drucker (1977), the whole organization "must be directed toward the performance goals of the business." Additionally, the core of the federal government's America 2000 is the six national goals for education; yet the belief that setting ambitious goals will enhance quality is part of the MBO doctrine that Deming rejects.

Furthermore, the effective schools movement and a major segment of strategic planning is based upon goals, objectives, and mission statements. The same exit objectives and goals-based thinking is a big part of outcome-based education (OBE), which again is at odds with the total quality management philosophy.

This writer contends that perhaps the reason Deming is against goals, slogans, and quotas, etc., is because for many years, organizations have focused on outcomes and didn't improve the processes that were involved in attaining those outcomes. It seems that such concepts as mission statements, goals, and objectives may be feasible if controls are built into the processes that help to determine whether or not an organization is continually improving.

Abolishing tests and grades

The entire idea of judging the effectiveness of an organization only on tests and grades appears to be a major problem with Deming because he believes that numbers are easy to collect, but fail to describe what
really matters. According to Deming, schools must focus on helping students to maximize their own potential through continuous improvement. Test scores are much less important.

Deming believes that the sole intent of improving district-wide test scores destroys interpersonal trust which is essential to success. Reliance on tests as the major means of assessment of student production is wasteful and often neither reliable or authentic. Tests and other indicators of student learning should be given as diagnostic and prescriptive instruments throughout the learning process. According to Deming, learning is best shown by the student's performance, applying information and skills to real-life challenges. Students must be taught how to assess their own work and progress if they are to take ownership of their own educational processes.

Consider, for example, the recommendation of two recent educational reports. The National Council on Education Standards and Testing declares that "national standards tied to assessments are desirable" in order to "measure and hold students, schools, school districts, states, and the nation accountable for educational performance." Additionally, the Commission on the Skills of the American Workforce pins its hopes on "a new educational performance standard" against which all 16-year-old students will be measured, using "a series of performance-based assessments."

TQM would emphasize that assignments and tests that focus attention on numerical or letter symbols of learning and production often do not fully reflect the quality of student progress and performance. When the
grade becomes the bottom-line product, short-term gains replace student investment in long-term learning, and this may prove counterproductive in the long run.

This philosophical difference between our current educational system and TQM seems to be worthy of examining quite closely. The idea of going away from testing and giving grades in schools is going to be a major challenge for educators.

Evaluating or blaming the system rather than individuals and eliminating the merit pay system

Another conflict that currently exists between public education and TQM is the conventional management practice of staff appraisal and merit systems. Deming rejects these completely because "it is necessary that people feel secure," and trust is a much better motivator than fear (Deming, 1990). According to Deming, the reason that organizations have problems is largely due to the "system" in which people work, not individuals.

Deming would contend that if management is doing its job, workers will be doing theirs. Cooperation is much more important to quality than competition. If some aspect of the process needs improvement, Deming's approach is not to allocate blame, but to bring together all those--including senior management--who can effect the process and establish a deliberative procedure that can arrive at a credible solution.

The entire concept of eliminating teacher evaluation and the merit pay system would be very difficult. Most states require that a written performance rating be filed on every teacher and administrator. Many
school districts have also negotiated agreements with teachers' organizations and unions that have agreements on how individual performance evaluations will take place. Any changes on these agreements would have to be negotiated.

Furthermore, for many years building administrators have been trained in teacher evaluation practices that are currently embedded in public schools. To begin discussing that the many hours of classroom observations and follow-up conferences was a waste of time may be difficult to accept by not only principals, but also classroom teachers.

**Becoming trained in statistical theory**

One of the key components of TQM is to have statistical controls built into the system to determine whether or not an organization is improving.

Deming believes that workers as well as managers be trained in statistical techniques so that they themselves can theorize about their own practice, if necessary, in formal discussion with managers and other interested parties, such as students, parents, and employers.

Furthermore, Deming believes that statistical process control concentrates more on the learning process, not on individual achievement data. Individual achievement data are determined by many variables, some of which the school has little or no control over. Therefore, for the school to attempt to exercise statistical control over these variables is counterproductive. However, the schools can exercise influence over the learning processes that are practiced by schools.
In examining a school setting, the literature supports that the following educational processes would be considered to be the statistical tools that need to be measured in some form or another: 1) instruction, 2) curriculum, 3) correlation between curriculum and assessment, 4) congruity between curriculum and instruction, 5) attendance of staff and students, 6) number of student dropouts, 7) educational environment, and 8) utilization of resources.

The entire concept of statistical process control will be difficult for schools to implement because the idea of having to learn statistics scares most people. Furthermore, learning statistics will require a great deal of time and training of all employees.

Perhaps another reason that the three groups gave the responses they did in this study was due to the roles that they represent. Board members are elected by the public and required by state law for holding school districts accountable. Their responses to goals, test scores, merit pay, and evaluation procedures reflect the wise beliefs and values that exist today among many board members. It is understandable that until TQM is proved to be "the answer," board members will hold firm on their current beliefs.

It appears that total quality management represents a major change in philosophy. School districts that adopt TQM will have to address and cope with a new philosophy while simultaneously grappling with the difficulties associated with any significant change along with the outside expectations of patrons and state statutes.
To implement total quality management, the people in the school system will have to change the way they view schools, and they must be willing to challenge some of the beliefs and paradigms upon which school management has been based for decades.

Limitations

1. The sample used in this study represented roughly 10 percent of all the schools in Iowa. The teachers surveyed were chosen to participate in the study by their district's superintendent. The board members surveyed may not have given a true reflection of the entire board's thoughts. Generalizations from this study should be guarded.

2. This study utilized the scores from a single measurement. Single observed scores tell nothing about the error of measurement. As more studies are completed, the scores should become more meaningful and valid.

3. Although there is no evidence that the format utilized in the construction of the survey instrument affected the outcome of the research, the researcher has some concerns about the level of understanding of the participants in completing the survey.

The survey instrument used in this study likely didn't contain all of the belief statements that TQM would entail. Furthermore, some of the belief statements according to Deming would probably be more important than others, and in this particular study all of the belief statements were given equal weightings.
Recommendations for Practice

1. It is evident that the school districts involved in this study will need to have a thorough understanding of total quality management, including the similarities and major differences of current educational practices. In other words, are these school districts and communities ready to buy into the major paradigm shifts that TQM will bring?

2. The literature supports that a great deal of time will be needed in order to develop the readiness that school districts will need before they are ready to truly involve themselves with TQM. For instance, the Saturn Corporation of General Motors has given nearly 700 hours of training to their employees with the majority of the training going towards the fundamental beliefs of total quality management.

3. School districts in this study and across the state of Iowa will have to be patient. When asked how long it would take an organization implementing TQM to attain Toyota Corporation's present level of development in this approach, it was estimated that it would take a minimum of 20 years (Atkinson & Naden, 1989).

Although educators agree that continuous improvement is necessary, this writer contends that 20 years is not the general mindset among most educators.

4. Students, teachers, parents, board members, administrators, support staff, and community members across Iowa will need to have a thorough understanding of the radical change that will be involved. A tremendous amount of careful planning will have to take place before this happens.
Recommendations for Further Research

The writer is concerned that there may have been some confusion among survey participants regarding their understanding of the basic concepts in total quality management.

More observations and further surveying is essential. Only 42 school districts in Iowa were used with a sample size of 126. This makes generalizing beyond this limited population rather difficult. Perhaps entire staffs and all school board members should be surveyed to see if the findings would differ.

Future pilot testing should take place concurrently in schools that are routinely recognized as being outstanding in ever increasing quality and successful implementation of TQM principles and those that are not.

Further statistical analysis may involve the mean differences between schools by size, demography, geographic location, and other possible characteristics.

Qualitative research consisting of teacher, superintendent, and board member interviews may help to confirm the results of this research and also strengthen the validity of the survey items.

Further research might focus on exploring any of the belief statements that indicated a difference of opinion between the three groups concerning total quality management. In other words, why did a particular group differ when comparing their response to the other two groups?

Perhaps the most important area for further research deals with statistical quality control in schools. Are there any statistical
controls in place that measure student improvement in a school setting while at the same time truly reflecting Deming's beliefs?


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APPENDIX A.

SURVEY OF EDUCATOR BELIEFS
CONCERNING TOTAL QUALITY MANAGEMENT
Survey of Educator Beliefs

Directions: Please complete the following survey. It was designed to assess your opinion concerning your beliefs in education. Rate each of the following statements by marking the scale with one response from A to E. The rating scale is:

A= I agree strongly.
B= I agree.
C= I am not sure.
D= I disagree.
E= I disagree strongly

1. Schools should create constancy of purpose toward improvement of the entire school system and its purposes. A B C D E
2. Educational management must awaken to the challenge, must learn their responsibilities and take on leadership for change. A B C D E
3. Schools should concentrate on a new philosophy emphasizing the move from the identification of student failure to preventing student failure through continuous improvement. A B C D E
4. Schools should not invest in quality, but instead, invest in low cost. A B C D E
5. Administrators are not responsible for finding and correcting systematic problems. A B C D E
6. School employees cannot perform well unless they know their jobs and feel free to inform administrators of problems they encounter. A B C D E
7. The job of administrators is management rather than leadership. A B C D E
8. Schools must drive out fear so that everyone can work effectively. A B C D E
9. Schools need not be committed to rebuilding and nurturing an environment in which trust and respect can be applied to what is said, heard, read, and written. A B C D E
10. Schools should not eliminate the use of goals, targets, and slogans to encourage performance. A B C D E
11. All educational employees do not need to be involved in identifying problems, designing programs, planning, budgeting, and selecting material. A B C D E
12. Traditional practices of teacher evaluation destroys teamwork, fosters mediocrity, and fosters short term thinking. A B C D E
13. All personnel in the school should learn statistical theory and its application towards continuous improvement. A B C D E
14. School administrators have been ineffective in bringing about needed changes in schools. A B C D E
15. Schools should aim to create the best quality students capable of improving all forms of processes and entering meaningful positions in society. A B C D E
16. Schools should accept the idea that students can learn at high levels. A B C D E
17. Schools need not understand and use statistical assessment of student growth and development on a daily basis. A B C D E
18. Schools should choose, use, and evaluate facilities, textbooks, technologies, and other resources in teaching based on statistical evidence of success of the particular product and upon accepted outcome measurements. A B C D E
19. Schools should continually identify barriers and seek workable solutions to improve processes. A B C D E
20. Schools should not use statistical methods to identify when on the job training has
21. The aim of supervision should be to help people use resources to do a better job.

22. Schools should not create an environment which encourages people to speak freely.

23. Schools should break down barriers by problem solving through teamwork and combining the efforts of people from different school areas.

24. The causes of low quality and low productivity belong to the system and thus lie beyond the control of teachers and students.

25. Schools must eliminate management by numbers and numerical goals.

26. The responsibility of all educational administrators must be changed from quality to quantity.

27. Schools should not provide all employees with training in quality leadership, measurement, analysis, problem solving, self-evaluation, and assertiveness training.

28. Schools as they are traditionally designed, will meet the needs of a changing society.

29. Schools should strive to be as good as they can be and have a continuous desire to improve.

30. Schools must not accept underachievement from anyone in the system: board members, administrators, staff, students, or parents.

31. Schools must find other ways to assess students without dependency on tests and grades.

32. Schools should depend on testing to achieve quality.

33. Schools should work with the educational institutions to help improve the quality of teachers coming into the system.

34. Resources for job training should not be geared toward positively contributing to student achievement.

35. Evaluations should not be systematic, programatic, and formative.

36. Schools should not create an atmosphere conducive to risk taking and experimentation.

37. Schools should reduce waste by encouraging the community, board of, education, administrators, and staff to learn more about the problems of education.

38. Work quotas such as test results does not cause low morale in schools.

39. Grades and test scores do not motivate the student to learn, but rather drive out the joy of learning.

40. Schools should place more resources toward evaluating the individual rather than the system.

41. Schools must recognize that different levels and functions in the organization require different types of training.

42. Every individual in the system (superintendents, central office personnel, principals, teachers, support staff, students, parents, community partners) plays a major role in providing a quality education.

Please respond to the following questions:

1. Male____ Female____

2. Age____

3. Highest Level of Education  H.S.____B.A.____ Masters____ Specialist____ Doctorate____
Educator Beliefs Concerning Total Quality Management

Directions: Please complete the following survey. It was designed to assess your opinion concerning changes in the way schools should be run. Rate each of the following statements by marking the scale with one response from A to E. The rating scale is:

A= I agree strongly.
B= I agree.
C= I am not sure.
D= I disagree.
E= I disagree strongly

Schools should create constancy of purpose.

1. Schools should create constancy of purpose toward improvement of the entire school system and its purposes. They must think and plan for the long term needs of the school and its students, rather than short term requirements. A B C D E

2. Schools should aim to create the best quality students capable of improving all forms of processes and entering meaningful positions in society. A B C D E

3. Schools should strive to be as good as they can be and have a continuous desire to improve. A B C D E

Schools need to adopt a new philosophy.

1. Educational management must awaken to the challenge, must learn their responsibilities and take on leadership for change. A B C D E

2. Schools must accept the idea that students can learn at high levels under the right conditions of teaching and learning. A B C D E

3. Schools must not accept underachievement from anyone in the system: board members, administrators, staff, students, or parents. A B C D E

Schools need to cease dependence upon mass inspection.

1. Schools need to concentrate on a new philosophy emphasizing the move from the identification of student failure to preventing student failure through continuous improvement. A B C D E

2. Schools need to understand and use statistical assessment of student growth and development on a daily basis. A B C D E

3. Schools must find other ways to assess students without dependency on tests and grades. A B C D E

Schools must end the practice of basing decisions on cost alone.

1. Schools should invest in quality rather than just low cost. A B C D E

2. Schools should choose, use, and evaluate facilities, textbooks, technologies, and other resources in teaching based on statistical evidence of success of the particular product and upon accepted outcome measurements. A B C D E

3. Schools need to cease dependence on testing to achieve quality and instead A B C D E
provide earning experiences which create quality performance.

Schools constantly improve every system.
1. Administrators and no one else, are responsible for finding and correcting systematic problems. 
2. Schools should continually identify barriers and seek workable solutions to improve processes. 
3. Schools must work with the educational institutions to help improve the quality of teachers coming into the system. 

Schools must Institute training on the job for teachers. 
1. School employees cannot perform well unless they know their jobs and feel free to inform administrators of problems they encounter. 
2. Schools must use statistical methods to identify when on the job training has achieved its purpose. 
3. Resources for job training should be geared toward positively contributing to student achievement.

Schools must do more to institute leadership. 
1. The job of administrators in not management but leadership. 
2. The aim of supervision should be to help people use resources to do a better job. 
3. Evaluations need to be systematic, programmatic, and formative rather than individual, personal and summative. 

Schools must drive out fear. 
1. Schools must drive out fear so that every can work effectively. 
2. Schools must create an environment which encourages people to speak freely. 
3. Schools must create an atmosphere conducive to risk taking and experimentation without the fear of punishment for failure. 

Schools must break down barriers between departments. 
1. Schools need to be committed to rebuilding and nurturing an environment in which trust and respect can be applied to what is said, heard, read, and written. 
2. Schools need to break down barriers by problem solving through teamwork and combing the efforts of people from different school areas. 
3. Schools should reduce waste by encouraging the community, board of, education, administrators, and staff to learn more about the problems of education. 

Schools must abandon slogans. 
1. Schools should eliminate the use of goals, targets, and slogans to encourage performance - unless training and administrative support are provided to meet the goals.
2. The causes of low quality and low productivity belong to the system and thus lie beyond the control of teachers and students. A B C D E

3. Work quotas such as test results causes low morale in schools. A B C D E

Schools must eliminate numerical goals and quotas.

1. All educational employees must be involved in identifying problems, designing program, planning, budgeting, and selecting material. A B C D E

2. Schools must eliminate management by numbers and numerical goals and instead substitute leadership. A B C D E

3. Grades and test scores do not motivate the student to learn, but rather drive out the joy of learning. A B C D E

Schools must remove barriers that rob people of pride in workmanship.

1. Traditional practices of teacher evaluation destroys teamwork, fosters mediocrity, and fosters short term thinking - all detrimental to continuing improvement. A B C D E

2. The responsibility of all educational administrators must be changed from quantity to quality. A B C D E

3. Schools need to place more resources toward evaluating the system rather than individuals. A B C D E

Schools must promote education and self-improvement.

1. All personnel in the school should learn statistical theory and its application towards continuous improvement. A B C D E

2. Schools must provide all employees with training in quality leadership, measurement, analysis, problem solving, self-evaluation, and assertiveness training. A B C D E

3. Schools must recognize that different levels and functions in the organization require different types of training. A B C D E

Schools must structure management to accomplish the transformation.

1. School administrators have been ineffective in bringing about needed changes in schools. A B C D E

2. Schools as they are traditionally designed, will not meet the needs of a changing society. A B C D E

3. Every individual in the system (superintendents, central office personnel, principals, teachers, support staff, students, parents, community partners) plays a major role in providing a quality education. A B C D E
APPENDIX B.

LETTERS TO PANEL OF EXPERTS
March 26, 1992

Dr. Willis B. McLeod
Superintendent, Petersburg Public School
141 Wythe Street
Petersburg, Virginia 23803

Dear Dr. McLeod:

I am currently serving as a school superintendent in Iowa and I am also in the process of finishing my Doctorate work in Education Administration at Iowa State University. My dissertation topic is "Total Quality Management for Iowa Schools," and enclosed you will find a questionnaire that has been built upon the existing literature.

During my review of literature, I have realized your expertise and involvement with Total Quality Management. Would you please be willing to take a few minutes and critique my questionnaire?

You will note that I have taken Deming's fourteen points and have developed three statements for each point. I still need to use some reverse wording on many of the questions and I plan on deleting the fourteen statements (subheadings) before the survey is made out. I have left it in this form to provide more clarity for you.

When you have finished, please place it in the self-stamped envelope and mail it back to me.

I truly appreciate your help!

Sincerely,

Mike Teigland
Superintendent
March 26, 1992

Dr. Jacob Stampen  
Dept. Education Administration/  
Univ. Wisconsin-Madison  
1025 W. Johnson St.  
Madison, Wisconsin 53706

Dear Dr. Stampen:

I am currently serving as a school superintendent in Iowa and I am also in the process of finishing my Doctorate work in Education Administration at Iowa State University. My dissertation topic is "Total Quality Management for Iowa Schools," and enclosed you will find a questionnaire that has been built upon the existing literature.

During my review of literature, I have realized your expertise and involvement with Total Quality Management. Would you please be willing to take a few minutes and critique my questionnaire?

You will note that I have taken Deming's fourteen points and have developed three statements for each point. I still need to use some reverse wording on many of the questions and I plan on deleting the fourteen statements (subheadings) before the survey is made out. I have left it in this form to provide more clarity for you.

When you have finished, please place it in the self-stamped envelope and mail it back to me.

I truly appreciate your help!

Sincerely,

Mike Teigland  
Superintendent
March 26, 1992

Dr. Charles A. Melvin, III  
Superintendent  
School District of Beloit Turner  
1231 Inman Parkway  
Beloit, Wisconsin 53511  

Dear Dr. Melvin:

I am currently serving as a school superintendent in Iowa and I am also in the process of finishing my Doctorate work in Education Administration at Iowa State University. My dissertation topic is "Total Quality Management for Iowa Schools," and enclosed you will find a questionnaire that has been built upon the existing literature.

During my review of literature, I have realized your expertise and involvement with Total Quality Management. Would you please be willing to take a few minutes and critique my questionnaire?

You will note that I have taken Deming’s fourteen points and have developed three statements for each point. I still need to use some reverse wording on many of the questions and I plan on deleting the fourteen statements (subheadings) before the survey is made out. I have left it in this form to provide more clarity for you.

When you have finished, please place it in the self-stamped envelope and mail it back to me.

I truly appreciate your help!

Sincerely,

Mike Teigland  
Superintendent
March '92, 1992

Lewis A. Rhodes  
American Association of School Administrators  
1801 North Moore Street  
Arlington, Virginia 22209-9988

Dear Mr. Rhodes:

I am currently serving as a school superintendent in Iowa and I am also in the process of finishing my Doctorate work in Education Administration at Iowa State University. My dissertation topic is "Total Quality Management for Iowa Schools," and enclosed you will find a questionnaire that has been built upon the existing literature.

During my review of literature, I have realized your expertise and involvement with Total Quality Management. Would you please be willing to take a few minutes and critique my questionnaire?

You will note that I have taken Deming’s fourteen points and have developed three statements for each point. I still need to use some reverse wording on many of the questions and I plan on deleting the fourteen statements (subheadings) before the survey is made out. I have left it in this form to provide more clarity for you.

When you have finished, please place it in the self-stamped envelope and mail it back to me.

I truly appreciate your help!

Sincerely,

Mike Teigland  
Superintendent
March 26, 1992

Dr. David Meaney
Superintendent, Sacramento County Schools
Sacramento County Office of Education
9738 Lincoln Village Drive
Sacramento, California 95827

Dear Dr. Meaney:

I am currently serving as a school superintendent in Iowa and I am also in the process of finishing my Doctorate work in Education Administration at Iowa State University. My dissertation topic is "Total Quality Management for Iowa Schools," and enclosed you will find a questionnaire that has been built upon the existing literature.

During my review of literature, I have realized your expertise and involvement with Total Quality Management. Would you please be willing to take a few minutes and critique my questionnaire?

You will note that I have taken Deming's fourteen points and have developed three statements for each point. I still need to use some reverse wording on many of the questions and I plan on deleting the fourteen statements (subheadings) before the survey is made out. I have left it in this form to provide more clarity for you.

When you have finished, please place it in the self-stamped envelope and mail it back to me.

I truly appreciate your help!

Sincerely,

Mike Teigland
Superintendent
March 26, 1992

Mr. Myron Tribus  
Exergy Inc.  
Hayward, California 94541

Dear Mr. Tribus:

I am currently serving as a school superintendent in Iowa and I am also in the process of finishing my Doctorate work in Education Administration at Iowa State University. My dissertation topic is "Total Quality Management for Iowa Schools," and enclosed you will find a questionnaire that has been built upon the existing literature.

During my review of literature, I have realized your expertise and involvement with Total Quality Management. Would you please be willing to take a few minutes and critique my questionnaire?

You will note that I have taken Deming's fourteen points and have developed three statements for each point. I still need to use some reverse wording on many of the questions and I plan on deleting the fourteen statements (subheadings) before the survey is made out. I have left it in this form to provide more clarity for you.

When you have finished, please place it in the self-stamped envelope and mail it back to me.

I truly appreciate your help!

Sincerely,

Mike Teigland  
Superintendent
APPENDIX C.

SCHOOL DISTRICTS USED IN STUDY
## SCHOOL DISTRICTS USED IN STUDY

<table>
<thead>
<tr>
<th>AEA 1</th>
<th>Western Dubuque</th>
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<td>Fremont</td>
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</tbody>
</table>
APPENDIX D.

DIRECTIONS TO SUPERINTENDENTS
May 8, 1992

Dear Superintendent:

We are conducting research on educational leadership. The enclosed survey represents a study conducted by Iowa State University and it is designed to sample your beliefs about educational leadership in Iowa schools.

We are particularly interested in your responses. School superintendents, regular (general education) teachers, and school board members are being sampled on a state-wide basis. Please take ten minutes to complete the enclosed survey and return it in the enclosed, pre-stamped envelope by May 15, 1992.

Enclosed you will find another survey and pre-stamped envelope that I would like you to forward to a teacher in your district who is: 1) not an officer of the local district's teachers' association, 2) has been in the district at least five years, and 3) is well respected by the rest of the staff.

All collected data will be coded and remain strictly confidential. No respondent will be identified. Data will be used for a dissertation study and will be combined and reported with the replies of the other respondents. All questionnaires will be destroyed after analysis. The completion and return of the questionnaire acknowledges your willingness to participate voluntarily and anonymously.

Your participation in this study will give direction to state educators about educational leadership in the state of Iowa. If you have any questions, please contact Mike Teigland (712-643-5323).

Thank you for your consideration and time in completing this very important survey. The survey should be returned to Mike Teigland, 8 Parkview Circle, Dunlap, Iowa 51529.

Sincerely,

Mike Teigland, Researcher

Richard P. Manatt
Professor, Iowa State University
APPENDIX E.

DIRECTIONS TO TEACHER
May 8, 1992

Dear Fellow Educator:

We are conducting research on educational leadership. The enclosed survey represents a study conducted by Iowa State University and it is designed to sample your beliefs about educational leadership in Iowa schools.

We are particularly interested in your responses. School (general education) teachers, superintendents, and school board members are being sampled on a state-wide basis. Please take ten minutes to complete the enclosed survey and return it in the enclosed, pre-stamped envelope by May 15, 1992.

All collected data will be coded and remain strictly confidential. No respondent will be identified. Data will be used for a dissertation study and will be combined and reported with the replies of the other respondents. All questionnaires will be destroyed after analysis. The completion and return of the questionnaire acknowledges your willingness to participate voluntarily and anonymously.

Your participation in this study will give direction to state educators about educational leadership in the state of Iowa. If you have any questions, please contact Mike Teigland (712-643-5323).

Thank you for your consideration and time in completing this very important survey. The survey should be returned to Mike Teigland, 8 Parkview Circle, Dunlap, Iowa 51529.

Sincerely,  

Mike Teigland, Researcher

Sincerely,  

Richard P. Manatt

Professor, Iowa State University
APPENDIX F.

DIRECTIONS TO BOARD MEMBER
May 8, 1992

Dear Board Member:

We are conducting research on educational leadership. The enclosed survey represents a study conducted by Iowa State University and it is designed to sample your beliefs about educational leadership in Iowa schools.

We are particularly interested in your responses. School superintendents, regular (general education) teachers, and school board members are being sampled on a state-wide basis. Please take ten minutes to complete the enclosed survey and return it in the enclosed, pre-stamped envelope by May 15, 1992.

All collected data will be coded and remain strictly confidential. No respondent will be identified. Data will be used for a dissertation study and will be combined and reported with the replies of the other respondents. All questionnaires will be destroyed after analysis. The completion and return of the questionnaire acknowledges your willingness to participate voluntarily and anonymously.

Your participation in this study will give direction to state educators about educational leadership in the state of Iowa. If you have any questions, please contact Mike Teigland (712-643-5323).

Thank you for your consideration and time in completing this very important survey. The survey should be returned to Mike Teigland, 8 Parkview Circle, Dunlap, Iowa 51529.

Sincerely,

Mike Teigland, Researcher

Sincerely,

Richard P. Manatt
Professor, Iowa State University
APPENDIX G.

FOLLOW-UP LETTER
May 18, 1992

Dear Fellow Educator:

Approximately two weeks ago I mailed out a survey instrument for use in research for my dissertation study at Iowa State University.

If this survey instrument is still laying on your desk, would you please take ten to fifteen minutes to complete the form and return it to me. I would appreciate it greatly and I can assure you that your responses will be kept strictly anonymous.

Thanks again for your cooperation in this study. If you should happen to need another copy of the survey, I would be happy to mail you one.

Sincerely,

Mike Teigland
Researcher
APPENDIX H.

FOURTEEN POINTS AND FORTY-TWO BELIEF STATEMENTS
Table H.1. Item means and standard deviations for Deming's 14 points and the three related belief statements for each point

<table>
<thead>
<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Constancy of purpose</td>
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<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.31</td>
<td>.342</td>
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<td>1.33</td>
<td>.307</td>
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<tr>
<td>Teacher</td>
<td>35</td>
<td>1.29</td>
<td>.325</td>
</tr>
<tr>
<td>1a. Improvement of school system</td>
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<td></td>
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</tr>
<tr>
<td>Superintendent</td>
<td>34</td>
<td>1.24</td>
<td>.496</td>
</tr>
<tr>
<td>Board member</td>
<td>34</td>
<td>1.50</td>
<td>.564</td>
</tr>
<tr>
<td>Teacher</td>
<td>34</td>
<td>1.24</td>
<td>.431</td>
</tr>
<tr>
<td>1b. Aim to create best quality students</td>
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<td></td>
<td></td>
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<tr>
<td>Superintendent</td>
<td>35</td>
<td>1.54</td>
<td>.657</td>
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<tr>
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<td>.493</td>
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<tr>
<td>Teacher</td>
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<td>1.51</td>
<td>.562</td>
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<tr>
<td>1c. Continuous desire to improve</td>
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<tr>
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<td>1.17</td>
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<td>2. Adopt a new philosophy</td>
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<tr>
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<tr>
<td>Teacher</td>
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<td>2b. Students can learn at high levels</td>
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<tr>
<td>Teacher</td>
<td>35</td>
<td>1.51</td>
<td>.658</td>
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<tr>
<td>2c. Schools must not accept underachievement</td>
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<td></td>
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<tr>
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<td>35</td>
<td>1.51</td>
<td>.562</td>
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<td>Board member</td>
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<td>1.56</td>
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<tr>
<td>Teacher</td>
<td>35</td>
<td>1.89</td>
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<td>3. Cease dependence upon mass inspection</td>
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<tr>
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<tr>
<td>Teacher</td>
<td>35</td>
<td>2.10</td>
<td>.534</td>
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</table>

*aFive-point Likert scale: 1=Strongly agree, 2=Agree, 3=Not sure, 4=Disagree, 5=Strongly disagree.*
<table>
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<tr>
<th>Deming's point/Belief statements</th>
<th>N</th>
<th>Mean</th>
<th>S.D.</th>
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<td>5. Constantly and forever improve the system</td>
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<td>5a. Administrators and no one else responsible</td>
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*Significant at the .05 level.

**Significant at the .01 level.
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<td><strong>6. Institute modern methods of training</strong></td>
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<td>1.95</td>
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<td><strong>6a. School employees cannot perform well</strong></td>
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<td>Superintendent</td>
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<td><strong>6b. Schools must use statistical methods</strong></td>
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<td><strong>7. Schools must adopt and institute leadership</strong></td>
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Table H.1.  Continued

Deming's point/Belief statements                  N    Mean    S.D.

10b. Causes of low quality belongs to system
     Superintendent     35   4.14    .974
     Board member       34   4.50    .663
     Teacher            35   4.00    .840

10c. Test results causes low morale
     Superintendent     35   2.31    1.051
     Board member       34   3.00**  .816
     Teacher            35   2.37    1.060

11. Schools must eliminate goals and quotas
     Superintendent     35   2.71    .755
     Board member       34   2.81    .576
     Teacher            35   2.52    .570

11a. Employees involved in identifying problems
     Superintendent     34   2.06    .998
     Board member       34   1.65    .734
     Teacher            35   1.86    .845

11b. Eliminate management by numbers
     Superintendent     34   2.97    1.029
     Board member       34   3.29    1.315
     Teacher            35   2.71    .893

11c. Grades and test scores drive out joy
     Superintendent     35   3.09    3.121
     Board member       34   3.50    .707
     Teacher            34   3.03    1.243

12. Eliminate annual rating of merit system
     Superintendent     35   2.62    .567
     Board member       34   2.67    .485
     Teacher            35   2.55    .435

12a. Traditional evaluation destroys teamwork
     Superintendent     35   2.94    1.235
     Board member       34   3.00    1.348
     Teacher            35   2.74    1.067

12b. Administrator responsibility to quality
     Superintendent     35   1.54    .751
     Board member       34   1.38    .497
     Teacher            35   1.54    .564

12c. Evaluating the system rather than individuals
     Superintendent     35   3.37    1.190
     Board member       34   3.62    .551
     Teacher            35   3.37    .877
Table H.1. Continued

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