A Dissertation

entitled

The Effect of the Use of the Ohio Baldrige Initiative Training in the Pilot Districts on the Sustained Use of Quality Tools by Classroom Teachers

By

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Submitted as partial fulfillment of the requirements for

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An Abstract of

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In the late 1990s, teachers in five pilot districts in Ohio were trained during the Baldrige in Education Initiative (BiE IN). Training included Baldrige’s theory, quality process and quality tools. The study was a follow-up to determine the effect of the use of the Ohio Baldrige Initiative training in the pilot districts (and other early innovator districts) on the sustained use of quality tools by classroom teachers in grades three through six. The study also examined reasons teachers may have discontinued to use the tools in their classrooms.

For the purpose of answering the research questions, this study followed a descriptive, quantitative research design. The sample population included 124 teachers in grades three through six in four school districts in Ohio. The Spearman rho (\(\rho\)) statistical analysis, Kendall Tau statistical analysis, paired t-tests and descriptive statistics
were used in the study. The data collection was completed using an online survey program, Survey Monkey™.

The findings of the study indicate that there is a relationship between professional development training and the continued use of quality tools for the teachers in grades three through six. The study also found that there is no relationship between teachers' perceptions of produced benefits in their grades three through six classrooms and the teachers' perceptions of their students' academic improvement when using quality tools. Additionally, the study considered factors that teachers cited for discontinuing the use of quality tools.

The researcher analyzed scores from both users and non-users of quality tools, using paired t-tests and comparing the 2007-08 passing rate percentage to the passing rates in 2004-05, to look at the percentage of students who passed the reading and math Ohio Achievement Tests. The 2004-05 passing rates were then compared to the passing rates in 2005-06. Other variables, in addition to the use of quality tools, account for differences in passing rates on the OAT.

The results of the study indicate that further research is needed in professional development training and the implementation of monitoring systems in schools, to ensure the continuation of changes when new administration takes over district leadership.
I want to dedicate this dissertation to my mother, Joan B. Chapman, who introduced me to the world of education when I was 4 years old. She showed my sister and me a red and white checked elephant that she made when she went to Bowling Green State University. She told us she made it when she was in college. When I asked her what college was, she replied that it was a place I would want to go someday, when I grew up. She said that it was a place where you go to learn, get an education and have fun. Then, college seemed like such a long time away. My mother was my first exposure to the world of education and my greatest supporter.
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I want to express my sincere appreciation to my family and friends. My dear mother, Joan Chapman, was always the “wind beneath my wings.” She first told me to get an education so “you have something to fall back on” if ever needed. Little did I know I would indeed “fall back.” I also want to thank my sons, daughters-in law, and beloved grandchildren for their continued support throughout the journey.

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Finally, I am grateful to myself for staying the course, especially at difficult times and at this late stage in my life. It is now time to do the things I have delayed doing and reward myself for the many sacrifices I have made during the long, lonely journey.
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Chapter One

Introduction

From the inception of public education in America, improvements and reforms have been sought. The attempt to restructure education was more rigorous during the first half of the twentieth century than at any other time in the history of the United States (Tyack & Cuban, 1995). Many reform initiatives were developed by the federal government, then passed on to the state level and finally, to individual school districts for implementation at the local level (Houston, 2007; Kelly, 1999; Tyack & Cuban, 1995). These reforms utilized new programs or initiatives to introduce and then implement the proposed change. Many of these program proponents acknowledged the importance of training (Chenoweth & Everhart, 2002; Mouradian, 2002). Some reform initiatives have been introduced gradually, and some have been implemented through pilot programs (Tyack & Cuban, 1995; Senge, 2000; Chenoweth & Everhart, 2002; Adelman & Taylor, 2007). Others, however, have been implemented without adequate preparation for the participants involved (Kelly, 1999). While some of these change reforms have lasted, many have not been sustained over longer periods of time for a variety of reasons (Senge, 2000). Fullen (2001) contended that change is an involved, intricate process that leaders need to understand before implementing reform initiatives. Similarly, Tyack and Cuba (1995) agreed that the process of developing and implementing reforms is an exceedingly complicated task for schools.
Historically, educators have undertaken numerous efforts to implement reforms that not only change the educational process but also improve it (Jenkins 2003). This study examined one of these reforms, the Baldrige in Education Initiative (BiE IN), specifically, the quality tools component that was implemented in Ohio in 1999. The study sought to determine whether teachers have continued to use the quality tools component after the initial BiE IN training in Ohio and, if so, what has helped or hindered the change process that occurred as a result of using the quality tools component.

The quality movement, most popularly associated with W. Edwards Deming, was one of the models adapted for effective educational reform in the late 1980s (Maurial, Bauerly & Jenni, 1995; Leuenberger & Whitaker, 1993). Businesses, first in Japan and later in the United States, experienced considerable improvement when applying Deming’s quality principles (Terry, 1996). After studying the success of the quality processes used by Deming and other quality experts in business, educators began adapting these quality processes for use in schools in the United States (Bonstingl, 1992). Leaders in education began to utilize Total Quality Management processes in education to use for continuous improvement in their schools (Bonstingl, 1992; Maurial et al., 1995).

The National Alliance of Business and the American Productivity and Quality Center created the BiE IN, in 1999 (Ohio Department of Education [ODE], 2007). The primary purpose for developing the initiative was to form a comprehensive system of continuous improvement in student performance. Six states were invited to participate in
an effort to make positive educational changes by implementing the BiE IN. The purpose of this effort was to assist state educational organizations in developing training for the school systems they served (Myers, 2001; ODE, 2007).

The Ohio Department of Education (ODE) began its involvement with Baldrige in 1999, when Ohio became one of six states chosen to participate in the BiE IN. Illinois, Indiana, Maryland, New Mexico, and Texas were the other original pilot states. Many organizations utilize a buy-in period to introduce the proposed change to their various stakeholders (Chenoweth & Everhart, 2002). The purpose of a buy-in period was to attract and gather support from a large group of people who backed the change initiative (Siegel, 2000; Chenoweth & Everhart, 2002). Chenoweth and Everhart (2002) likened this critical, early phase of the initiative to a “courtship” period, when stakeholders in the organization develop an understanding and acceptance of the change. Organizational leaders can then begin to build commitment and support for it.

The BiE IN’s main objective was to raise the achievement level of every student, not by reforming, but rather by transforming the way in which the state education system and school districts operated (ODE, 2007). In order for a major change to last, the goal of the change must be to better achieve the specific learning outcomes of students and individuals in the organization (Senge, 2000; Chenoweth & Everhart, 2002; Jenkins, 2003). This goal was to be accomplished primarily by training teachers how to effectively use the various quality tools common to quality initiatives. State leadership teams utilized trainers and coaches to assist in the training efforts for teachers in both initial and follow-up professional development during the BiE IN implementation (Siegal, 2001).
In Ohio, five school districts were chosen to be Baldrige pilot sites. These districts led the way for the other districts in Ohio by taking the lead in establishing training programs and implementing the tools. Senge (2000) found that pilot programs are conducive to implementing effective change. Conversely, research findings from Adelman and Taylor (2007) and The Center for Mental Health in Schools at UCLA suggest that many people perceive pilot programs as short-lived and transitory (UCLA Center, 2007). This perception of pilot groups is discussed in more detail in Chapter 2.

By the summer of 2000, the ODE began developing its regional service delivery system to support Baldrige training in school districts in Ohio. Since then, more than 583 schools in 266 districts in Ohio have received Baldrige training as one component of their professional development (ODE, 2007).

Many teachers in Ohio were trained to use quality tools. However, little, if any, research was conducted in examining the BiE IN initiative or in exploring the results of the training (Walpole & Noeth, 2002). Several studies focus on a single school or district rather than the widespread implementation but do not provide specific details (Walpole & Noeth, 2002). This study sought to determine whether there were lasting effects from the initial BiE IN training. The study also sought to determine whether teachers who were trained in the original Baldrige pilot program and other early innovators still use the quality tools that were a central part of the training. Further, the study considered improvements in student achievement and behaviors that teachers had observed through the use of quality tools.
Research Problem

The state and federal government invested much time, funding, and resources in the Baldrige initiative. However, little research has been conducted to evaluate the sustainability and effectiveness of the initiative since the initial training took place in the late 1990s. Moreover, follow-up training is still being delivered (Jerry Marshall, personal communication, January 19, 2009). The pilot schools’ educators and other early innovators initially attended and hosted conclaves, conferences, and other trainings to help educators implement the Baldrige quality tools, but the research literature was unclear about whether the effects of the training lasted. It was unknown whether teachers in the initial pilot group, including other early innovators, were still using the quality tools they were trained to use. It was also unclear whether teachers noted any student improvements as a result of using the quality tools. This study sought to address this gap in research.

Purpose of the Study

There were several purposes to this study. First, the study determined whether the use of quality tools was sustained over time for educators who were trained during the initial training process. Second, the study identified factors that resulted in the continued use or discontinued use of quality tools. Finally, the study determined whether the use of quality tools had an impact on student achievement in reading and math.

Significance of the Study

This study was significant for administrators at the district and state level. Examining the long-term effect of the BiE IN training has given insight into the sustainability of a major initiative. Examining the support for and barriers to change
from teachers’ perspectives has provided information that could aid in the planning and implementing of professional development for teachers. This study is specific to the lasting effects of the quality tools training in Ohio.

**Assumptions**

Several assumptions were fundamental to this study. First, it was assumed that all of the study’s participants would answer survey questions in an open, timely, and honest manner. A second assumption was that the participants who took part in the initial pilot training understood the concepts and applied them appropriately in their positions. A further assumption was that participants remembered the training they received.

**Limitations and Delimitations**

Limitations of the study included locating teachers who were trained in the use of quality tools. Many of the original participants have relocated to other districts, retired, or left education, which affected the size of the sample. Another limitation was the limited number of school districts in the pilot program. A major limitation was the willingness of school district administration to permit the researcher to survey the teachers in grades three through six. Another key limitation included the willingness of individuals to complete the survey and respond in a timely manner. Finally, a limiting factor was the degree to which the study was generalized due to the limited sample size.

Delimitations of the study included the size of the study, which was limited to classroom teachers in grades three, four, five, and six in the pilot districts, as well as teachers in other early innovator districts. Another delimitation of the study was that all of the districts are located in Ohio. A further delimitation was the survey’s design in
seeking information only on one component of the original training, i.e., the use of quality tools, and not all aspects of the initial training.

Research Design

The research data was collected using quantitative methodology. Teachers in two of the five original districts and other early innovator districts were surveyed. The goal of this study was to answer the following research questions and explore the following hypotheses:

RQ1-Is there a relationship between grade three through six teachers’ professional development training and their continued use of quality tools?

RH1- There is a relationship between grade three through six teachers’ professional development training and their continued use of quality tools.

NH1- There is no relationship between grade three through six teachers’ professional development training and their continued use of quality tools.

RQ2-Is there a relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools?

RH2- There is a relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools.

NH2- There is no relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools.
RQ3- What factors, if any, were responsible for the BiE IN training not resulting in sustained use of quality tools?

RQ4- What tools are currently used by the teachers who were included in the initial BiE IN training?

RQ5- Is there a difference between teachers in grades three through six who use quality tools and improvement in the percentage of their students who passed the reading Ohio Achievement Tests when compared to the non-users of quality tools?

RH5a- There is a difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2004-2005 reading OAT.

NH5a- There is no difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2004-2005 reading OAT.

RH5b- There is a difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2005-2006 reading OAT.

NH5b- There is no difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement
in the percentage of their students who passed the 2007-2008 reading Ohio
Achievement Tests when compared to the 2005-2006 reading OAT.

RQ_e. Is there a difference between teachers in grades three through six who use
quality tools and improvement in the percentage of their students who passed the
math Ohio Achievement Tests when compared to the non-users of quality tools?

RH_{6a}. There is a difference between teachers in grades three through six who use
quality tools and the teachers who are non-users of quality tools and improvement
in the percentage of their students who passed the 2007-2008 math Ohio
Achievement Tests when compared to the 2004-2005 math OAT.

NH_{6a}. There is no difference between teachers in grades three through six who use
quality tools and the teachers who are non-users of quality tools and improvement
in the percentage of their students who passed the 2007-2008 math Ohio
Achievement Tests when compared to the 2004-2005 math OAT.

RH_{6b}. There is a difference between teachers in grades three through six who use
quality tools and the teachers who are non-users of quality tools and improvement
in the percentage of their students who passed the 2007-2008 math Ohio
Achievement Tests when compared to the 2005-2006 math OAT.

NH_{5b}. There is no difference between teachers in grades three through six who use
quality tools and the teachers who are non-users of quality tools and improvement
in the percentage of their students who passed the 2007-2008 math Ohio
Achievement Tests when compared to the 2005-2006 math OAT.
Variables in the Study

In research question one, the dependent variable is the continued use of quality tools, and the independent variable is professional development training. In research question two, the dependent variable is teachers’ perceptions and the independent variable is the use of quality tools. Research question three utilized descriptive statistics where the data is classified, summarized or described (Hinkle, Wiersma & Jurs, 2003). Research question four also used descriptive statistics. The specific quality tools the teachers currently use are summarized in the survey. In research question five\textsubscript{a}, the independent variable is quality tools and the dependent variable is improvement in the percentage of students with teachers using quality tools who passed the reading OAT. In research question five\textsubscript{b}, the independent variable is quality tools and the dependent variable is improvement in the percentage of students with teachers not using quality tools who passed the reading OAT. In research question six\textsubscript{a}, the independent variable is quality tools, and the dependent variable is improvement in the percentage of students with teachers using quality tools who passed the math OAT. In research question six\textsubscript{b}, the independent variable is quality tools and the dependent variable is improvement in the percentage of students with teachers not using quality tools who passed the math OAT.

Sample and Population

The sample that was surveyed for this study included teachers from two of the original Baldrige pilot school districts and other early innovators in Ohio. The sample size included 124 teachers in grades three, four, five and six who completed the surveys.
**Definition of Terms**

The following words are important to the study; therefore, definitions are provided to help increase understanding of the study.

*Affinity Diagram.* This quality tool allows a group to generate and share a variety of ideas within a concept and then organize these ideas by groupings in order to visualize and gain an understanding of the problem so that solutions can be formulated.

*BiE-IN.* BiE IN refers to the Baldrige in Education Initiative.

*Consensogram.* This quality tool allows a group to identify the opinions of the group on a given issue/topic. It is often used for pre- and post-assessment.

*Continuous Improvement.* Continuous improvement is ongoing improvement that is cyclical in nature; it continuously improves quality.

*Empowerment.* Empowerment is the act of giving employees and other stakeholders the opportunity to make decisions, solve problems, and have input about various aspects of their jobs.

*Fishbone Diagram.* A quality tool that is used to identify root cause, rather than symptoms of a problem.

*Histogram.* A quality tool that allows a group to summarize data from a process that has been collected over a period of time and present it graphically in a frequency distribution in bar form.

*Issue Bin.* A quality tool in chart form that allows a group to ask questions or give comments with minimal disruption to the schedule. It provides a forum for ideas, questions or comments that require further, future discussion or clarification.
Quality Principles. Quality Principles are the characteristics and components of the Total Quality Movement.

Quality Tools. Quality tools are graphic organizers, charts, and processes that present data in a visual, understandable manner that are used by individuals to manage data, solve problems, and make decisions.

Scatter Diagram. A quality tool in graph-like form that shows the strength between two variables.

Stakeholders. Stakeholders are people, including employees, parents, students, community members and other customers who have an interest in an organization (Fullan, 2008).

Systemic Change. Systemic change is the major change needed in education when the improvements needed make it necessary to change the entire system (Holzman, 1993); it involves modifications that amount to a cultural shift in institutional values, i.e. reculturalization (Adelman & Taylor, 2007).

Run Chart. A quality tool that allows a group to study collected data in order to look for trends or patterns over a specific time period.

TQM (Total Quality Management). Total Quality Management refers to an empowerment model that teachers, students, parents, and educators use to work together to clearly define problems and develop creative solutions (Streeter, Brannen, & Franklin, 1994). Total Quality Management (TQM) is a philosophy that involves reviewing, restructuring, and improving processes within a company.
Summary

The United States government has played a central role in much of the education reform movement. One reform supported by the federal government was the use of Baldrige in Education. The BiE IN initiative was one way the government sought to implement this change, and it was piloted in six states. This research considered the implications of this change initiative 10 years after the initial training in pilot and early innovator districts in Ohio.

Chapter 2 examines the literature that is relevant to this study. Chapter 3 addresses the research methodology that was used for the study. Chapter 4 presents the analysis of the data, interpretation of the data, and results of the study. Chapter 5 includes a discussion of the results and conclusions. It also provides recommendations and implications for future research for educational leaders at the national, state, and local levels who plan and implement change initiatives.
Chapter Two

Literature Review

Introduction

Successful changes in educational reform have been debated and scrutinized for years. Components and processes of sustained change have been widely studied and replicated. One of these changes was the Baldrige in Education Initiative (BiE IN). Ohio was one of six states in which the Baldrige in Education initiative was implemented in 1999 (Ohio Department of Education, 2007). Subsequently, more than 266 districts, including the five pilot districts, have received training in the use of Baldrige’s quality tools since the summer of 1999 (ODE, 2007). The problem addressed in this study is whether the pilot schools have sustained the use of quality tools 9 years after receiving the pilot district training. A thorough review of the relevant literature suggests that few, if any, research studies have been conducted regarding the quality tools change initiative in the state of Ohio (Walpole & Noeth, 2002).

The research questions for the study include the following:

1. Is there a relationship between grade three through six teachers’ professional development training and their continued use of quality tools?

2. Is there a relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools?
3. What factors, if any, were responsible for the BiE IN training not resulting in sustained use of quality tools?

4. What tools are currently used by the teachers who were included in the initial BiE IN training?

5. Is there a difference between teachers in grades three through six who use quality tools and improvement in the percentage of their students who passed the reading Ohio Achievement Tests when compared to the non-users of quality tools?

6. Is there a difference between teachers in grades three through six who use quality tools and improvement in the percentage of their students who passed the math Ohio Achievement Tests when compared to the non-users of quality tools?

In order to inform this research project, a comprehensive review of current, relative literature has been conducted. This research includes background on the quality movement, with special focus on the Baldrige in Education Initiative in Ohio. The study also examines change theory, components of organizational change, professional development, continuous improvement and barriers to change initiatives.

**Background of the Quality Movement**

The Quality Movement in the United States gained momentum following World War II in Japan, when an economic crisis threatened Japan’s national economy and trade with other countries in the world (Mouradian, 2002). At that time, products that were made in pre-war Japan were described as “junk” (Mouradian, 2002, p. 105) or “acceptance of just about anything” (Mouradian, 2002, p. 127). There was an enormous
need to rethink and restructure manufacturing processes and systems in order to sustain or improve the country’s economy. W. Edwards Deming was an American quality expert whose ideas were not widely accepted in the United States at that time (Mouradian, 2002). He was instrumental in helping the Japanese improve their business and industrial processes by teaching “systems thinking” and showing how his economic principles of management could result in higher levels of quality and production (Mouradian, 2002). Although there were several other prominent quality theorists at the time who also provided valuable contributions to the field of systems improvements, Deming was credited as being the innovator and revitalizing the economy of Japan (Walpole & Noeth, 2002).

Total Quality Management became popular in the early 1970s and continued as a foundation for American businesses until the late 1980s (Walpole & Noeth, 2002; Bonstingl, 1992; Neves & Nakhai, 1993; Terry, 1996). After he had been recognized with prestigious awards by the Japanese for his contributions to their economic successes, Deming began to gain recognition in the United States, where he became well known and respected. Deming began to conduct numerous seminars and lectures at American businesses and higher learning institutions during the 1980s (Mouradian, 2002). He began to assist business leaders by teaching his quality techniques, skills, and systems theory. American business leaders studied the Japanese techniques that substantially increased the quality of their products, and soon these business leaders began to adopt techniques that would aid them as well (Mouradian, 2002). According to Mouradian, “In some respects the reawakening of America in the late 1980s was quite revolutionary. American industry had to improve quality or it would cease to exist or suffer dearly”
Deming’s systems model, Total Quality Management (TQM) became a well-known and respected process as a result of his successful experience in Japan (Bonstingl, 1992; Neves & Nakhai, 1993; Terry, 1996; Blankstein, 1996). The primary features of this approach to quality improvement included recognizing the needs of the customer, the notion that improvement should be continuous, encouraging involvement from stakeholders in the organization, and stressing the importance of teamwork in the organization (Mouradian, 2002; Walpole & Noeth, 2002).

Baldrige

Malcolm Baldrige, the Secretary of Commerce during President Reagan’s tenure developed criteria that also emphasized the importance of systems thinking and the use of processes for ongoing organizational improvement (Walpole & Noeth, 2002). The Malcolm Baldrige National Quality Award was established in 1987 following Baldrige’s death (Mathews, 2002; Walpole & Noeth, 2002). The award was based on the following criteria: leadership, strategic planning, customer focus, information and analysis, human resources focus, process management, and business results (Walpole & Noeth, 2002, p.4).

Because education had been receiving increasingly harsh criticism at the time and American businesses that used Baldrige and Deming’s quality principles were improving, many educators began theorizing that perhaps quality methods used in business settings could be adapted to the field of education (Walpole & Noeth, 2002). While important distinctions are reflected in these models, they do overlap each other in important ways: “Although theoretically distinct, TQM, Deming’s model, and the Baldrige criteria are often used interchangeably in the literature, making it at times difficult to report efforts
tied solely to the Baldrige criteria—they are both forerunners of the Baldrige criteria” (Walpole & Noeth, 2002, p.5). Despite their differences, the most common core criteria among the models include vision, ongoing and continuous improvement through effective use of data, long-term planning, utilization of a systems approach, a focus on improvement of systems processes, collaboration, and stakeholder involvement (Walpole & Noeth, 2002). Key to data collection and analysis for improving organizational systems is the use of quality tools, which includes charts, checklists, and other graphic organizers which can assist educators in problem solving (Walpole & Noeth, 2002). While popular with many educational advocates, others in the school setting heartily disagreed with adapting quality principles which had previously been utilized in the business sector to schools (Walpole & Noeth, 2002).

Many school districts in the United States began using the Baldrige Education Criteria for Performance Excellence in the 1980s as a framework for improving learning (Cokely, Byrnes, Markley & Keely, 2007; Byrnes & Baxter, 2005). The quality movement advanced in educational organizations in the 1990s, following the creation of the Malcolm Baldrige Award, established in 1987. Because the Baldrige Award began to achieve national recognition, many educators realized its value and focused on improvements that could be made to the education field by using a systems approach process (Cokely et al., 2007; Byrnes & Baxter, 2005). In the education field, implementation of Baldrige principles began by training teachers and other school officials, who then, in turn, formed partnerships with community-based organizations and members. Baldrige intended to involve the community and a wide variety of stakeholders in the continuous improvement process (Cokely et al., 2007; Byrnes & Baxter, 2005).
Baldrige recommended specific criteria, interrelated core values and concepts that were considered essential in creating a high-performing, results-based organization (Cokely et al. 2007). The Baldrige criteria (Cokely et al., 2007; Byrnes & Baxter, 2005) include visionary leadership, customer-driven excellence, organization and personal learning, valuing employees and partners, agility, focus on the future, managing for innovation, management by fact, social responsibility, focus on results and creating value, and a systems perspective (p. 18).

According to Byrnes and Baxter (2005), the Baldrige Framework adapted for a classroom is composed of the following seven criteria: leadership; strategic planning; student/stakeholder focus; measurement, analysis, and knowledge management; student as a worker focus; process management; and organizational performance results (p. 31).

Leadership, strategic planning, and the student/stakeholder focus are the three major components known as the driver triad, a term that was used during the initial Baldrige training in 1999 (Byrnes & Baxter, 2005). The driver triad is the “cog” in the wheel that keeps the system moving in a continuous manner, thus improving student learning (Brynes & Baxter, 2005). These components, utilized as an on-going process help to ensure that improvements result. The teacher (leader) aligns the classroom system with the district’s vision, mission and goals (strategic planning). The students, colleagues, and parents look at data, provide input and work together to modify instruction for improved results. This is known as student/stakeholder involvement (Brynes & Baxter, 2005).
Total Quality Movement in Education. The quality movement in public schools has been manifested in several different ways. One is the Total Quality Management (TQM) approach. Schools can successfully adapt Deming’s business principles if they have a cyclical, ongoing plan of action with clear, measurable goals; quality staff development; and an approach to teamwork that encourages the involvement of leaders and monitors progress (Terry, 1996; Bonstingl, 1992). Implementing TQM principles resulted in increased test scores, more effective classroom instruction and reduced dropout rates (Terry, 1996; Bonstingl, 1992). Bonstingl (1992) viewed quality as a process for continuous improvement that includes the following attributes: 1) focus on the customer; 2) commitment by the stakeholders; 3) a reputation as an organization that values ongoing processes; 4) management that is willing to take responsibility for the success of TQM through commitment and dedication.

A valuable component of the TQM framework is the feedback that is received from students, instructors, and employers (Prabhu & Ramarapu, 1994). Prabhu and Ramarapu (1994) examined TQM in education and the ways that applying its principles have helped improve courses and instruction. Four areas that are particularly helpful in education include: 1) commitment to quality, 2) partnerships between the customer and employer, 3) intense training, and 4) key leadership.

Strowder and Strowder (2000) examined the need to apply Total Quality Management principles in order to create a Total Quality Education System. They acknowledged the problem that education has not kept up with the changes in society and
industry while finding that TQM principles utilize a comprehensive process rather than a piece-by-piece method for improvement.

Curley (1995) studied ways that using TQM can better prepare students to compete in a diverse, multi-cultural society. Curley (1995) stated that TQM should effectively transform education just as it did with business if practitioners follow its principles and use it as an ongoing process rather than a short-term solution.

Quality in Schools

Following World War II and the acceptance of Deming’s work with Total Quality Management, first businesses and, later, education professionals began to embrace the quality movement (Marino & Raines, 2004). Early in the 1990s, education began to use quality principles, especially those advanced by the Malcolm Baldrige Award, for continuous improvement planning (Siegal, 2001; Walpole & Noeth, 2002; Marion & Raines, 2004). Teachers and administrators began learning about quality tools and processes and then began to use them as instructional tools with students to help improve student learning (Marino & Raines, 2004; Benjamin, 2007).

An examination of the literature focusing on the qualities of a reform reveals that many reforms have been implemented too quickly (Tyack & Cuban, 1995; Senge, 2000; Fuhrman, 1995), causing some to believe that reforms are trendy, temporary and sometimes lacking in relevance. Senge (2000) also found that reforms are best sustained when they start small, progress slowly, and advance as a result of input from within an organization. Fuhrman (1995) agreed with the idea that reforms need an adequate time frame for teachers to become familiar with and knowledgeable about a planned change initiative. Siegal (2001) maintained that educational leaders do not have to give up the
reforms they already have in place when using Baldrige. If their current processes are effective, Baldrige can assist the efforts already in place by helping to strengthen them. Conversely, Tyack and Cuban (1995) found that when examining the interaction of reforms with each other, there is a layer-upon-layer effect, whereby initiatives do not “replace” but rather “add to.” When this occurs, confusion results and organizations become too complex to be efficient.

Bonstingl (1993) recognized that in quality schools, the way students learn is what is different. Instead of the traditional school models where students are seen as the workers, students in quality schools learn by working in a collaborative relationship with their teachers and each other. Students must work together to develop their own unique learning communities. Bonstingl (1993) views quality environments as those in which there is trust and mutual support. Students learn how to evaluate their work and use goals to achieve ongoing improvement while they develop their skill sets. Students, in developing future leadership traits, discover a more democratic sense and way of thinking about things when they are able to analyze, scrutinize, evaluate and reflect on their own work and contributions to team projects (Bonstingl, 1993).

The quality movement requires a totally different way of thinking than the one supported and encouraged by more traditional educational models (Cramer, 1996). School district leaders must be knowledgeable of quality principles before adopting them for use. Cramer (1996) has identified nine “quality” assumptions: 1) all children are able to learn; 2) grades should be abolished; 3) excellence should be clearly defined; 4) the educational system is co-dependent on both internal and external customers; 5) creative problem recognition and creative problem solving are part of the process; 6) learning
should be fun; 7) intrinsic motivation should be emphasized more than extrinsic motivation; 8) competition is acceptable when eliminating waste or satisfying customers; 9) learning is the result of education.

Leuenberger and Whitaker (1993) found that if “quality” is to be an important component in any reform effort, it must be interwoven throughout the entire educational program in a school district, or otherwise its effects will be minimized. The quality elements that must permeate the educational organization include commitment by school leaders, high quality professional development and collaboration among organizational stakeholders (Leuenberger & Whitaker, 1993).

**Quality Tools**

Quality tools include charts, diagrams, graphs, and a vast array of visual organizers that have been used to solve problems as well as gather, organize, understand, and interpret data (Marino & Raines, 2004; Tague, 2005; Benjamin, 2007; Cleary & Duncan, 1997). In her book *The Quality Toolbox*, Tague explains what quality tools are by stating “Quality tools are the diagrams, charts, techniques and methods that, step by step, accomplish the work of quality improvement. They are the means to accomplish change” (Tague, 2005, p. 1). Tague thus recognizes the importance of using quality tools to enact change and improvement. In agreement with Tague, Marino and Raines, in their book *Quality Across the Curriculum*, provide a rationale for using quality tools. “These tools are not simply about change, they are about improvement: improvement for all students and stakeholders” (Marino & Raines, 2004, p.xiv). They are recognized as systematic methods and approaches designed to help educators, students, and support staff collect and analyze data, identify causes of problems, use data to identify best
practice strategies, and continually improve performance (Benjamin, 2007, p. xiv). Four fundamental components of quality tools are problem definition, data collection, solution generation, and action planning (Benjamin, 2007; Tague, 2005). Like common household tools, each quality tool has at least one specific purpose, while many have multiple purposes (Tague, 2005; Marino & Raines, 2004; Cleary & Duncan, 1997). According to Tague (2005), quality tools have been used for the following reasons: project planning, idea creation, process analysis, data collection and analysis, cause analysis, and evaluation and decision-making (p.2).

Cleary and Duncan (1997) found that many classroom teachers use quality tools, even if their districts have not been a part of the quality movement, simply because these tools offer innovative, flexible, and motivational solutions that stimulate the learning processes. Active learning is observed when children articulate knowledge generated by their use of these problem-solving tools, and teachers see student growth over time (Cleary & Duncan, 1997). In their book *Tools and Techniques to Inspire Classroom Learning*, Cleary and Duncan explain the importance of using quality tools. “Problem-solving and analytical tools that have come to be associated with quality improvement have given demonstrated support to the learning process” (Cleary & Duncan, 1997, p.xvii). Quality tools that were originally used in the business world have proven beneficial to teachers to help students with problem solving. The value in learning to solve problems using a variety of quality tools is threefold. First, employers want employees with effective, appropriate problem-solving skills. Secondly, employers want workers who can clearly communicate with colleagues. Finally, employers want workers
who can collaborate with peers and actively interact with team members in the workplace (Marino & Raines, 2004).

Quality tools can also be beneficial to improving student learning because of their connections to brain-based learning (Cleary & Duncan, 1997). These types of tools that students can use to analyze and solve problems have been proven to improve the learning process (Cleary & Duncan, 1997). In citing a benefit of using quality tools in their book *Tools and Techniques to Inspire Classroom Learning*, Cleary and Duncan (1997) stated, “Some of them support specific theories related to learning, such as Howard Gardner’s research on multiple intelligences” (p. xv). “It is not the tools alone, but tools within the context of process, and above all, of purpose, that will bring about lasting improvement in schools” (p. xviii). In recognizing the value of students’ use of quality tools, Cleary and Duncan (1997) found, “When students interpret the data from using various tools and also learn to design their own, they take responsibility for their own learning” (p.2).

When students take responsibility for their own learning, they become accountable and empowered.

*Background of the Quality in Education Reforms in Ohio*

When Ohio was identified as one of the six states where the Baldrige in Education Initiative would be implemented, 16 Ohio organizations pooled their resources to formulate a statewide flexible framework for continuous improvement (ODE, 2001). This initiative became known as BiE IN (ODE, 2001). The goal for these organizations was to align educational policies, professional development training, and other service delivery options that supported the BiE IN mission, which was “higher achievement for all students” (ODE, 2001). The BiE IN philosophy emphasized cooperation and
teamwork in order to create this alignment. It also emphasized the notion that administrators should empower teachers to solve problems by implementing solutions that actually work and that school leaders should provide resources that support these suggested solutions. These solutions, when shared with other outside organizations, became known as “best practices.”

In order to create alignment, the BiE IN organizational leaders set the following statewide educational goals:

- Assure high achievement of all learners
- Promote a safe and orderly learning environment
- Preserve and nurture enthusiasm for learning
- Foster the ability to learn
- Help every generation learn, enhance, and practice the character traits that are valued by their communities
- Support efficient, effective, and continuously improving systems of learning. (Baldrige in Education Initiative Brochure, 2001)

Fuhrman (1995) finds that states use a variety of methods to introduce reforms. Even though states and local school districts usually function in a parallel manner, some change initiatives are driven by the state while others are driven by the efforts of individual districts. This is because each state varies in the experience it has in dealing with statewide reforms.

Since the first official district report cards were issued in Ohio on February 28, 2000, schools have been held accountable for their results (Baldrige in Education Initiative Brochure, 2001). The three lowest designations school districts could earn
were continuous improvement, academic emergency and academic watch. Schools were expected to demonstrate accountability to their students and communities by showing continuous academic improvement. As student scores improved, schools and districts worked their way to the desired upper report card designations. The Baldrige in Education process was a method school districts could adopt to use for continuous improvement. In theory, this would lead to improved student learning and accountability, while earning each district a higher academic designation.

The BiE IN process provided a practical framework for teachers and administrators to align student learning outcomes, actual curricular content, and the skill set and knowledge base reflected in student exams. In an effort to inform and encourage educators to implement Baldrige principles, the Ohio Department of Education distributed brochures and online information. “Putting BiE IN into action is like learning any new talent or skill. It takes dedication and practice to get in shape” (Baldrige in Education Initiative Brochure, 2001).

The statewide Quality in Education movement began in October 2001 (Tri County Educational Service Center Brochure, 2007). Consultants at the Tri County Educational Service Center (ESC) developed a program that focused on increasing student achievement in classrooms in Ohio by using quality tools. At the initial planning meeting, 78 educators from various districts in Ohio met for a two-day summit to formulate a vision for a statewide quality movement. This movement became known as the Ohio Educational Conclave (Tri County ESC Brochure, 2007). This group was responsible for conducting many of the quality tools training sessions.
The first conclave was composed of teachers, principals, superintendents, board members, parents, and a variety of other concerned stakeholders. The participating districts included Ashland, Sandusky, Coldwater, Fredericktown, Gahanna, Mentor, West Carrollton, Rossford, and South Central. Since that initial meeting, the number of participants has grown to more than 12,000 people who have become involved in quality activities (Tri County ESC Brochure, 2007).

Quotations from teachers and administrators attribute improvements and successes to student enthusiasm, attitude and involvement, meaningful use of data, organizational goals and mission statements, alignment of standards, and effective instruction and assessment (Tri County ESC Brochure, 2007). Since their involvement with the quality movement, several districts have been recognized as schools of promise and have received the National Blue Ribbon School Award (Tri County ESC Brochure, 2007). Many other districts have seen their test scores steadily improve (Tri County ESC Brochure, 2007).

The Ohio Educational Conclave participants have made educational videotapes and CDs that have been used for training in schools across Ohio. This group was responsible for creating the Quality Improvement Academy, which trains teachers in six regions of Ohio. In the 2005-06 school years, the conclave left the Tri-County ESC to develop DRM Productions, Educational Division, in Mansfield, Ohio. This group has continued to grow and has been invited to present at national forums (Tri-County ESC Brochure, 2007).

Due to the limited amount of available information regarding BiE IN in Ohio, the researcher interviewed Jerry Marshall via e-mail, one of the key experts on the quality
tools movement in Ohio, regarding his perceptions of the initiative’s current status (see full text in Appendix A). Marshall stated that the time frame for the BiE IN Initiative in Ohio was 1998-1999 (personal communication, January 19, 2009). This was when the researcher’s school district became involved as a pilot district.

In considering the time frame for the popularity of quality tools versus the Baldrige training, Marshall stated that they were doing large state-wide training academies in Akron, Ashland, Columbus, Cambridge, Youngstown, Rossford and other major cities in Ohio. He stated that quality tools were much more popular than Baldrige. He said that he thinks the Baldrige push from Columbus is long since dead. On the contrary, Marshall indicated that the quality tools movement is very much alive. He speculated that the state dropped the term “Baldrige” and began to use the term “quality tools” although he was not aware of exactly when this transition occurred as he was developing and implementing quality tools teams for workshops and academies.

Marshall said that research on Deming in the 1950s gives quality tools its origins and that he believes that the work he and his group of trainer colleagues does with the quality tools training makes them great process tools that can be utilized by any teacher, school improvement program or team. He feels that when quality tools are added as part of an improvement program, the results will lead to improvement and continued success.

Marshall indicated that he and his training team had access to 78 presenters from all across Ohio. Those individuals include many “practitioners” (teachers, principals, superintendents) that accounted for the success of the training group. Marshall also recognized Sally Duncan from PQ Systems in Miamisburg, Ohio, who does workshops relating to “data folders,” which are a part of quality tools.
When asked if Marshall continues to conduct trainings through workshops or academies, he replied that they have conducted workshops involving over 12,000 educators to date. He stated that some of the districts have even had board-adopted policies that make quality tools a district-wide process. Additionally, over three dozen buildings have been recognized as Schools of Promise and a half a dozen as National Blue Ribbon Schools.

When asked about the costs of the Baldrige in Education Initiative to the state of Ohio, Marshall stated he had no idea of how much money the state provided for the BiE IN training. Marshall stated that he and his trainers have also presented at several state-sponsored conferences recently: Title One, Schools of Promise, OASSA, etc. He said that when they began in 2001, people brought them in on “faith,” with limited data and now that they have experienced many successes, they have the necessary data that drives them to do what they do.

Review of Studies Conducted Regarding Quality Tools

An extensive review of the available literature has revealed that few, if any, formal studies have been conducted on the sustained use of quality tools following the Baldrige training that was conducted in the original pilot schools in Ohio (Walpole & Noeth, 2002). Studies have been conducted in other states, however, and have yielded valuable information regarding the general effectiveness of quality tools in the education field. Studies in school districts in Brazosport, Texas; Palatine, Illinois; and Jenks, Oklahoma have reported that using common quality processes has been successful (Goldberg & Cole, 2002; Nelson, 2004; Lehman, 2006; Daniels, 2006). The three districts found the following quality components central to Deming’s and Baldrige’s
processes to be of critical importance (Goldberg & Cole, 2002; Nelson, 2004; Lehman, 2006; Daniels, 2006):

- Systems/processes thinking
- Customer focus
- Strong leadership
- Professional development/training
- Decision making that is based on data
- Teamwork
- Stakeholder involvement
- Continuous improvement
- The presence of a mission, vision and goals.

Goldberg and Cole (2002), who conducted the research study on the Brazosport School District in Texas, found the most highly valued use of quality principles is in learning where it directly impacts students. In Brazosport, the positive effects of quality management were the greatest in teaching practices and improving student learning. Approximately half of Brazosport’s schools were partially comprised of students who were not meeting the passing rates. Following teacher training in quality management, the district implemented an eight-step program that focused primarily on instruction. These steps included looking at data, providing time for teachers to collaborate, identifying targeted areas, developing assessments as measures, facilitating teamwork, continuously improving the instructional techniques and implementing ongoing monitoring. Strong leadership and the practice of using data to support decisions were also recognized as factors contributing to the success of the sustained training in the use
of quality tools. Goldberg and Cole (2002) found an additional measure of the success in Brazosport: key decision makers were both willing and committed to making the systemic changes needed to sustain their improvement initiative. Brazosport won the Texas Quality Award in 1998 and received a site visit for the National Malcolm Baldrige Quality Award in 1999, the only school district to attain both prestigious honors, at that time, according to Goldberg and Cole (2002).

Similarly, Nelson (2004) identified quality changes that were implemented in the Community Consolidated School District 15 (D15) in Palatine, Illinois, in an effort to improve student outcomes. Nelson (2004) suggested that strong and supportive leadership was the key ingredient in effectively achieving the district’s mission and goals as well as establishing and maintaining its focus and direction. The Baldrige criteria were used to develop a strategic plan for improvement that consisted of a nine-step program originating with stakeholder input. Seven groups of key stakeholders were recognized with a strong focus on two-way communication. The leaders in D15 placed a high value on the importance of ongoing training, staff development, and process evaluation.

Palatine received validation for its efforts by virtue of being the only Malcolm Baldrige National Quality Education Award winner in 2003.

The Jenks School District in Jenks, Oklahoma, like Brazosport and the D15 district, also embraced the following quality principles: strong leadership, continuous improvement, customer focus, utilization of systems/processes, data-driven decision-making, training, and a focus on teamwork, according to Lehman (2006). The school district leaders credited the Baldrige criteria as a primary tool that helped them to identify
weak areas in their system. The Jenks School District received the Malcolm Baldrige Award in 2006.

**Theoretical Framework**

In examining systemic change, Fullan (2006) found that sustainability is a particularly difficult challenge for leaders of change:

The theory of sustainability is that it is constituted by a trinity of environmental soundness, social justice, and economic viability. If any of these three are weak or missing, the theory of sustainability says that the practice (what the organization is doing) will not prove sustainable over time. (pp. 28-29)

Fullan (2006) finds that change theory can be valuable in improving education, but only if those who are involved understand the change components and how they interact to create improvements. Fullan (2006) states, “Having a theory in use is not good enough, of itself. The people involved must also push to the next level, to make their theory of action explicit” (p.2). Fullan suggests that there are many change theories; some have imperfections while others get the results they were intended to get. Fullan (2006) describes seven core components for a change “theory of action”: 1) focus on motivation; 2) capacity building (with a focus on results); 3) learning in context; 4) changing context; 5) a bias toward reflective action; 6) engagement at several levels (school, district, state); 7) persistence and flexibility in staying the course (p. 6).

Change theory can be used to enact changes at the district or state levels. It does not provide instantaneous results because it is difficult to learn the information that the change involves (Fullan, 2006). Scholtes (1998) concurs with Fullan when considering theory and application. Scholtes (1998) states, “Theories by themselves prove nothing. It
means nothing until tested against an application. Learning is the result of dynamic interplay between the two” (p. 32). In agreement with Fullan and Scholtes, Joyce and Showers (2002) find that theory is an important first step in staff development training. They maintain that teachers will more readily accept and use the training concepts when they understand the rationale that supports the newly learned methods.

During the initial introduction of the Baldrige in Education Initiative, early training centered on system theory. Quality tools were discussed, but theory was the primary focus during this initial training. Wycoff, Nash Juntune and MacKay (2003) provided the following recommendation: “Programs must balance theory with knowledge and skills immediately transferable to the classroom (p. 40). Feedback from teachers involved in the BiE IN training suggested that the training was top heavy—i.e., too much theory and not enough practical strategies they could use for instructional purposes in their classrooms.

Systemic Change

Systemic change is a challenging and complex process for a variety of reasons (Adelman & Taylor, 2003; Chenoweth & Everhart, 2002; Fullan, 2001). In commenting on this complexity, Wagner (1993) has stated, “[The fact that] there are so few examples of sustained, systemic changes in our nation’s schools should not come as a great surprise” (p. 24). As they searched for ways to make more meaningful improvements and improve student learning outcomes, many educators began to look at business models in order to discover a more effective process that could be adapted to meet the needs of educational systemic change (Wagner, 1993).
An important part of creating successful systemic change is understanding the change process and its components (Fullan, 2001; Thornton, Shepperson & Canavero, 2007). Jenkins (2008) has stated that systems cannot be sustained until leaders determine the organization’s weaknesses and begin to eliminate them. Jenkins (2008) suggested that education needs “systems thinking followed by a system transformation” before systemic change can be effectively accomplished. Adelman and Taylor (2003) identify five key areas of change: creating readiness, initial implementation, institutionalization, ongoing evolution, and creative renewal (p. 5).

Chenoweth and Everhart (2002) support a change process that is holistic in nature. They suggest that change must focus on improved student learning; school change must be comprehensive, not piecemeal; effective school change demands shared leadership; all relevant stakeholders must be involved in the change process; and effective change means changing school cultures (p.5). Likewise, Cleary and Duncan (1997) concur with Chenoweth and Everhart that any improvement processes and plans in school districts must focus on increasing student learning. Increasing student learning is what systemic improvement must address.

*Components of Organizational Change*

Fullan (2001) has suggested that effective leaders have the ability to build collective capacity among their organizational members. These leaders empower teachers and other stakeholders at all levels to develop the necessary skills to become future leaders. Similarly, Gluckman and Roome (1993) have recognized that leaders encourage colleagues to change, especially when modeling risk-taking and willingness to learn.
Jenkins, Roettger, and Roettger (2007) have identified the important role that positive support from school leaders plays in ensuring the success of any change initiative. It is important for district leaders to become knowledgeable about every aspect of the initiative so they can be visible cheerleaders for the change.

Senge (2000) maintains that for change to be successful, it must be supported by multiple layers of leadership, not just one administrator. These leaders must hold formal and informal positions within the organization; thus, leaders must be visible at every level and willing to help create enthusiasm for and dedication to the change initiative.

Effective leadership is an integral part of sustaining change because of the challenges that come with change (Chenoweth & Everhart 2002; Rice & Harris, 2003; Reeves, 2007; Duffy, 2008; Hopkins, 2008). Chenoweth and Everhart (2002) acknowledge that what appears to be successful change is often threatened or undermined without warning. These unforeseen roadblocks often cause educational leaders to make quick assessments of the problems and head off the consequences of the threat with weak, inadequate solutions.

Leonard (1996) recognized that a critical factor in improving the educational environment is ongoing communication. He cites lack of communication as a major barrier preventing project teams and other groups from working together effectively and sharing ideas. Jenkins (2003) found that superintendents and other top district leaders needed to communicate with teachers in a direct manner via in-person conversations or group meetings. He found that open forms of communication with teachers and other stakeholders result in valuable feedback and input for the benefit of continuous improvement throughout the district.
Both internal and external communication processes are essential to managing improvement initiatives (Jenkins et al., 2007; Duffy, 2008). Depending on the political and social context, communication should take place daily, weekly, bi-weekly, monthly, or a combination (Jenkins et al., 2007; Duffy, 2008).

The effective use of data is one of the major components of quality management. Relevant data (or the lack thereof) is usually a reliable indicator of both improvement and failure, respectively. Scholtes (1998) strongly supported the idea that using data to show improvement is necessary: “Without data, opinion prevails. Where opinion prevails, whoever has power is king” (p. 29). Scholtes (1998) has identified two reasons for measuring outcomes. One is to get an idea of whether and how much progress is being made. A second reason for measuring outcomes is to increase the ability to predict what will happen next. Data comes in a variety of formats and types. Scholtes (1998) found that data are available from a variety of sources and that school leaders need to determine which data are important to inform organizational improvement efforts.

The use of data and feedback are vitally important to helping districts learn from past mistakes (Schmoker & Wilson, 1993; Maurial et al., 1995). A lack of these two critical components has resulted in the early termination of many past school reform efforts. Specific feedback and assessment of meaningful outcomes are critical to improvement. Positive changes occur when educational organizations use the results of their outcome and processes measures to make improvements and changes. When organizations analyze their own data, they are more likely to make improvements to their own processes.
Miller (2006) has found that school leaders do possess data that indicate students’ successes and failures, but there is limited data that provide reasons or explanations for those successes or failures. Miller (2006) maintains that benchmarking data will help organizations measure their internal processes. It will help districts measure their progress against that of other similar districts and against their own innovative programs. Benchmarking can supply the data necessary to evaluate and assess the processes of every system at every level in a district. Benchmarking data can help with measuring key components of continuous improvement. It can provide district leaders with methods to help make improvements and increase effectiveness. The data that benchmarking provides is useful for evaluating the various systems in a school district. Data helps leaders to get a big picture to use when comparing themselves to other districts and can also lead to meaningful cost savings.

Chenoweth and Everhart (2002) have stated that effective school change is more likely to be sustained when organizational decisions are made with input from various stakeholders, using shared decision making that is modeled in a democratic environment. They have found that stakeholders have valuable skills that may help an initiative succeed if they are treated as equals during the reform process. Individuals who want to change schools and implement reforms need to rally relevant stakeholders for support of the change (Tyack & Cuban, 1995; Duffy, 2008). These key stakeholders include both internal and external individuals (parents, school board members, students, and other community members). Tyack & Cuban (1995) and Duffy (2008) state that ultimately, all citizens have a stake in making the best changes for the future of public education.
In agreement with Tyack, Cuban and Duffy, Adelman and Taylor (2003) have contended that when stakeholders are involved, they become motivated and work collaboratively to find innovative, successful ways of improving educational methods. Adelman and Taylor (2003) have further asserted that respected, informed stakeholders will help others understand the importance of and the need for any change initiative.

In addition to Adelman and Taylor (2003), Marcum (1995) also has underscored the importance of collaboration and teamwork. Marcum (1995) has defined teaming as “the power of collaboration among co-workers to solve problems and develop innovative processes” (p. 133). Marcum (1995) has further identified teaming as “a major path to quality and empowerment” and suggested that team-building helps participants feel a sense of empowerment. As a result, not only is teamwork merely important, but Connor (1997) has suggested that building teams is in fact the primary factor required for goal accomplishment and effective leadership behavior in an environment supported by quality principles.

Connor (1997) stated that the quality environment epitomizes the concept of empowerment. This suggests that environments in which quality principles are practiced are free from the “us versus them” adversarial relationships that often prevail in traditional top-down working atmospheres. Employee attitudes regarding empowerment affect performance and the resulting contributions in both positive and negative ways. Connor (1997) has further asserted that employers, in order to build trust, must provide employees with the freedom to take risks, even though those risks may result in failure. Conner (1997) suggested that leadership managers need to fully understand and practice
building trust and providing freedom by understanding that effective leadership is not about controlling people.

Connor (1997) further suggested that many quality-driven organizations fail because their team-building efforts are unsuccessful. Team-building is a complicated task with many factors involved. The quality movement’s commitment to team building would be more credible if there were as much discussion about ways that teams can manage conflict, elicit ideas and commitment, and offer their members meaningful opportunities to contribute as there is about statistical process control procedures (p. 505).

**Buy-In**

Chenoweth and Everhart (2002) have suggested that for a change effort to be effective, an organization should use a well-planned and researched design model as a framework to help connect the various components of the plan. A buy-in period is a phase during the change process in which leaders can introduce the change and begin to build support from district and community members for the initiative. Siegal (2000) cites buy-in as creating “buy-in spirit that builds common ground for increasing success for all students” (p.68). Chenoweth and Everhart (2002) state “The goal of this phase is to achieve a critical mass of support so that a comprehensive effort to improve your school can begin” (p. 22). This part of the process may begin with dialogues, meetings, visitations, conferences, and brain-storming sessions. Chenoweth and Everhart (2002) found that effective change requires affirmative responses to the following questions:

**Readiness for change**—Is there a high percentage of staff members who support the change initiative?

**School vision**—Is there a shared sense of commitment?
Understanding—Do stakeholders understand the complexity of the change process?

Success—Are there effective models that serve as examples? (p.24)

Jenkins (2003) has promoted staff commitment and buy-in through a somewhat different approach. He has suggested that leaders should ask their staff members what barriers hold them back from continuous improvement. When district leaders become aware of these barriers, they should work at getting them removed as quickly as possible. Doing so serves as a visible action by leaders and demonstrates to staff members that leaders are serious about their commitment to improvement and implementing quality principles. When members’ input is perceived as valued, staff buy-in has a better chance of occurring. Expressing a similar perspective on “buy-in” as Jenkins, Cole and Scott (2000) have recognized that need (for success, achievement, and praise) and fear (of falling behind or organizational failure) are two motivators for adopting quality principles for improvement. They state that resistance to change can be minimized if the change is visibly supported and encouraged by top leadership.

Duffy (2008) and Siegal (2000) recognize that leaders need to develop methods to introduce change to stakeholders, thus creating a “buy-in” spirit for the systemic change. Since change affects the entire organization, it should not be implemented quickly but rather over a reasonable period of time to allow for adjustments and gradual change. For this to occur, all organizational stakeholders must feel empowered to take ownership of the process, thus increasing the likelihood of their “buy-in” into the occurring change. Duffy (2008) called this “wide buy-in” and has stated that the most critical factor in obtaining buy-in is establishing and maintaining ongoing, purposeful communication
with both internal and external stakeholders. Siegal (2000) also considers the buy-in phase as one that provides common ground for various organizational stakeholders. Duffy (2008) states, “Strategic communication is the glue that can hold together the people and the connections” (p. 3).

**Pilot Programs**

Terms like “pilot programs” or “projects” often create the notion that a new initiative is a temporary change—one that will be gone when the next new innovation surfaces (Adelman & Taylor, 2007; UCLA Center for Mental Health in Schools, 2007). This type of thinking contributes to thoughts that the changes won’t last. Thus, it can lead to minimal, poorly planned organization of the change initiative. This way of thinking thwarts the kind of effective planning and organization that is necessary for lasting changes and organizational improvement. (Adelman & Taylor, 2007).

Using terms like “5-year initiative” and “Phase I of that initiative” rather than words like “project” or “pilot” are more likely to create a sense that the intended change is a more permanent organizational improvement (UCLA Center for Mental Health in Schools, 2007). This terminology modification depicts a sustained change and suggests a sense of extended duration when referring to the development, implementation, and maintenance of a particular innovation (UCLA Center for Mental Health in Schools, 2007).

In contrast to Adelman and Taylor, Senge (2000) has called pilot groups “incubators for change” (p. 273). He finds that the benefit to pilot programs is that organizational participants tend to view these smaller projects as experiments or rehearsal projects for the coming initiative. Senge (2000) maintains that as others witness the
development and implementation of these pilot projects, they become curious, eager, and willing to experience them.

**Professional Development/Training**

Although there are many types of professional development, various factors are responsible for those that result in lasting change. The value of professional development that improves teaching and learning has been found to be extremely limited because many of the programs are not high quality (Cohen & Hill, 2002; Hill, 2007; Birman, Desimone, Porter, & Garet, 2000). Many times, professional development is seen by teachers as wasted time, and the content presented lacks relevance and meaning for their instructional needs (Cohen & Hill, 2002; Birman et al., 2000; Wycoff et al., 2003). Chard (2004) has maintained that there is little experiential research to substantiate the reasons that make professional development successful. Hill (2007) has disagreed with Chard’s position by recognizing a research reform movement suggesting that when professional development is focused on specific content, it is effective in changing teachers’ knowledge and methods.

Wycoff et al. (2003) found that oftentimes professional development for teachers takes a “one size fits all” approach when teachers’ needs and skills are not predetermined before training occurs. According to one study conducted by Wycoff et al. (2003), “Teachers described the frustration of attending a workshop that is a repetition of knowledge and skills covered in previous experiences” (p.34).

Many states and school districts offer incentives for teachers to attend professional development opportunities and to use the knowledge they receive in the classroom (Hill, 2007; Chard, 2004). Chard (2004) cites a study by Klinger, Vaughn,
Hughes, and Arguelles (1999) that examined the sustained use of skills learned during a year-long professional development program. Six of the seven teachers continued to use one or more of the practices a few years after the initial training. The following factors were perceived as supports or incentives: development of a support network, principal support, documentation that students were benefiting from the practice, student acceptance of the instructional practice, flexibility in modifying and adapting the practice, and materials readily available to use.

Professional development has more meaning and relevancy when learning takes place while on the job rather than away from it (Fullan, 2008; Chard, 2004). “Instead of workers leaving work to learn, learning is the job” (Fullan, 2008, p. 85).

Professional development is more effective when it relates to current academic content standards that inspire updated instructional practices rather than outdated, traditional practices that have been used for years (Cohen & Hill, 2002; Birman et al., 2000). Cohen and Hill (2002) found that classroom instruction improves when it supports content standards, there is a specific curriculum that aligns with the training, and teachers have numerous chances to learn how to make the academic content understandable in such a way that it improves student learning. Birman et al. (2000) found that teachers are more responsive and more likely to change their instructional techniques when learning and using innovative reform methods.

Hill (2007) found that for professional development to be effective, it must have duration of several days and align with state and district subject standards and instructional goals. Likewise, Birman et al. (2000) agreed that training conducted over a longer duration of time resulted in teachers being better prepared to use their newly
learned skills in the classroom in a more successful manner. Hill (2007) also found that many professional development programs are not evaluated by researchers but rather by participants in the local training program who self-report their impressions of the professional development they received.

A critical aspect to professional development that results in lasting change is follow-up training (Joyce & Showers, 2002; Wyckoff et al., 2003). Joyce and Showers (2002) found that follow-up assistance is especially important, whether presenting new information or refreshing methods teachers already use. They also have pointed out that follow-up training is present in some districts’ professional development plans while other districts must take specific measures to ensure that it is part of the training process they design and use. Joyce and Showers (1980) found that by using feedback provided after extended follow-up training, transfer of skills in the classroom was more successful. Wycoff et al. (2003) have agreed that follow-up after initial training provides valuable opportunities for teachers to collaborate, ask questions, and share experiences related to the training. These authors have suggested that this follow-up training phase occur via collaborative efforts, such as observations or study groups, rather than through the traditional workshop-style format.

Joyce and Showers (1980, 2002) have contended that there are five critical components for successful training:

- Knowledge—Learn the theory and rationale for the strategies
- Modeling—Demonstrate new skills
- Practice—Practice new skills-in a real-life classroom setting
- Feedback—Provide feedback regarding performance of new skills
Peer coaching—Provide hands-on, in class assistance to promote transfer of skills to the actual classroom. (p.380)

Teachers are more likely to use the newly learned skills from training sessions if they can readily transfer them to the classroom level and watch them translate to improved student learning (Joyce & Showers, 2002; Chard, 2004; Hill, 2007; Wycoff et al., 2003). Additionally, Joyce & Showers (2002) found that other components such as theory, demonstration of the skill, practice of the skill, feedback and coaching must be present or the training will be incomplete, and therefore fewer teachers will be able to transfer the knowledge to their classrooms.

Adelman and Taylor (2007) found that important components of a comprehensive change plan include an initiative framework, a leadership team, a vision, an implementation plan process, and benchmarks to help create a mindset of lasting change. Benjamin (2007) examined time spent in formal training sessions and the processes by which the information and skills presented in the training sessions transferred into classrooms. He identified a cyclical pattern consisting of the following processes: initial interest of a few administrators, the development of quickly and poorly planned training for teachers, lackluster implementation, and eventual desertion of the newly learned skills. Benjamin (2007) described many training sessions as follows:

The cycle is typically one of initial interest among a few leaders, rapid-fire blasts of “training” for the troops, half-hearted deployment in some sections, and eventual abandonment of the new approach. Then the cycle begins anew with the “next greatest thing.” (p. 1)
Many who initiate changes lack knowledge of change management principles that could help sustain the change. Benjamin (2007) found that change is often viewed as a series of events instead of a process. After working with many districts, Benjamin (2007) found that training resulted in little change in as little time as one month. He suggested that the time spent on training and the degree of training provided by a school district is instrumental in creating and maintaining lasting changes. Benjamin (2007) recognized that district leadership has not employed hard and soft systems to ensure systemic change. “We want a lead-up to the event, then the event itself, and the discussion and implementation to follow it” (Benjamin, 2007, p.3). Benjamin (2007) stated, “The problem is that leaders have not established support systems that will ensure systematic deployment of the tools once the training has been completed. Support systems include clear expectations for deployment, ongoing coaching, a measurement tool (Classroom and School Quality Rubrics), and recognition” (p.56).

Early training in TQM, Baldrige and quality improvement often involved teams composed of school personnel, students, parent and community volunteers (Walpole & Noeth, 2002). “Training was often provided at monthly meetings, weekend retreats and summer institutes and commonly lacked important details (Walpole & Noeth, 2002, p. 10). The training component presented problems in schools because in many districts the training lacked consistency and on-going professional development (Walpole & Noeth, 2002). Many districts lacked funds for effective training. In some cases, training was voluntary and scheduled at inconvenient times for teachers. (Walpole & Noeth, 2002). In looking at the early Baldrige quality training, Walpole and Noeth (2002) found the following:
Very little empirical data exist that detail how, why, or in which contexts an implementation can succeed. Although training is considered critical, few specifics regarding training are provided. Outcomes and results are often reported with insufficient detail about what specifically changed and how outcomes were achieved (p. 19).

Continuous Improvement

Continuous improvement means that the improvement is ongoing and cyclical. In *Permission to Forget*, Jenkins (2005) has stated, “Another problem with programs and change is that they communicate that once something is implemented, we are done. Actually we are never done” (p.59).

In defending the use of Baldrige criteria as an organizational assessment tool for increasing student achievement, Siegal (2000) has acknowledged that children are not “widgets” (p. 66). Since states have adopted student performance standards, there has been a need for educators to find and implement a proven long-term method to ensure the presence of ongoing continuous improvement. This method must address improvement for all students. If a proven process like Baldrige is not used, a district may experience "random acts of improvement" (Siegal, 2000, p. 67). Unless a proven process is used, districts will not know what factors may have triggered an improvement. Siegal has highlighted school districts that have effectively used the Baldrige criteria. For example, the Pinellas County Schools in Florida saw a rise in student achievement and discovered that students who were taught to become accountable for their own learning actually improved. The district also saw another plus side in response to implementing the Baldrige criteria: accountability and less exhaustion due to reform overload. Siegal
(2000) has suggested that we treat students not as widgets but rather as active workers, their product being learning.

It is important in ongoing continuous improvement to use data to drive decisions, find the root cause of problems to prevent them from happening again, understand changes and the effects of actions, and elicit the involvement of stakeholders in the organizational processes (Marino & Raines, 2004; Scholtes, 1998).

Continuous improvement is often accomplished by a cyclical four-step model for planning for change: Plan, Do, Study, Act (PDSA) (Tague, 2005; Jenkins, 2005; Scholtes, 1998). Another variation of this same cycle is Plan, Do, Check, Improve (PDCI) (Benjamin, 2007). The PDSA process uses data to measure levels of performance and helps identify the root cause of problems (Marino & Raines, 2004; Byrnes & Baxter, 2005; Cokley et al., 2007; Jenkins, 2005; Scholtes, 1998). The cyclical process should be ongoing and repeated until the desired improvement has been attained (Benjamin, 2007). A vast variety of quality tools can be used to gather meaningful information throughout the PDSA cycle, depending on the purpose of the tool and outcome (Byrnes & Baxter, 2005).

Chenoweth and Everhart (2002) have stated, “Sustaining change means creating a structure and a culture dedicated to continuous improvement” (p.152). These researchers also found that for reform to be sustained, continuous improvement must be on-going and must result in an organization where learning is esteemed and valued. Similarly, Scholtes (1998) has agreed that continuous improvement is accomplished when individuals in the organization work together to identify systemic problems and solutions. Scholtes (1998) recognizes this as “mastering the methodology of improvement” (p. 382).
Barriers to Sustaining Change

Change is especially challenging because people do not like change (Blankstein, 1996; Terry, 1996). Many teachers are resistant to change because they are comfortable with traditional teaching methods, find it hard to implement new strategies, and do not understand why they need to change (Crawford & Shutler, 1999; Mathews, 2002).

As with other reforms, there are obstacles to using quality principles in the educational setting. Obstacles include the ideas that people fear change, leaders are supposed to be in charge, people are unmotivated, teachers are reluctant to give up traditional practices, knowledge and professional development are not highly regarded, and administrators often lack understanding of how to use data (Blankstein, 1996; Terry, 1996). Blankstein (1996) further maintains that state mandates often impede new initiatives.

Two major barriers to systemic change are overload and fragmentation (Fullan, 1996; Siegal, 2000). Overload occurs when changes come in an unplanned and unrelenting manner. Fragmentation happens when pressures and other reform factors do not come together in an organized manner, thus resulting in conflicting, confusing information for educators (Fullan, 2008).

A common barrier is that many teachers resist the notion and mindset that their students are customers (Schmidt, 1998; Siegal, 2000). Some teachers may resist working together in teams (Schmidt, 1998; Bonstingl, 1992). A further concern involves the use of reward systems that provide recognition for individuals instead of teams (Schmidt, 1998; Terry, 1996). The costs of funding training and the money it will divert from the classroom is also a major concern (Schmidt, 1998). In looking at a quality model,
Schmidt found that teacher compensation for attending training and using quality tools was a barrier since many viewed it as performance pay. In looking at funding as a major factor in sustaining change, Adelman and Taylor (2003) find that when funding runs out, reforms often fade and ultimately disappear.

Some leaders’ egos, fears of failure, jealousies from peers who aren’t risk takers, and need for control are additional obstacles (Connor, 1997; Tyack & Cuban, 1995). Many feel that they will be criticized for attempting to change things that others in the organization do not see as needing change. Tyack and Cuban (1995) also found that administrative turnover and teacher turnover result in the collapse of momentum during the implementation of a change initiative and lead to its ultimate demise.

Fuhrman (1995) finds that barriers to creating systemic change include the following:

- Increasingly growing workloads
- Limited financial resources
- Public skepticism
- Effective strategies for planning and implementing change
- A lack of perceived equity
- Other problems that compete with change reforms
- Strict adherence to a mental mindset of the way things were done in the past
- The inability to locate skilled leaders who can guide reforms
- The inability to build capacity for the purposes of buy-in
- An inadequate timeframe required to achieve the expected results (p. 1-5).
Mathews (2002) has suggested that a primary obstacle to implementing new innovations includes resistance to change as a result of strict adherence to tradition. According to some of the quality models he has written about, traditional systems have been abandoned in favor of students working at their own developmentally appropriate rates. Marcum (1995) has supported innovative processes, like Mathews, and has found that a way to overcome organizational barriers is by focusing on the customer. Terry (1996) has suggested that many districts see the change as a quick fix rather than a long-term process. Similarly, Bonstingl (1992) has recognized that the process takes a lot of time, commitment, and training. Time is a critical factor that needs to be considered when planning for any major change (Taylor et al. 1999; Joyce & Showers, 2002).

Further Implications

Further implications include the thought that individuals are usually willing to make changes if they are convinced that those changes will result in improvement and if those changes can be made gradually in a non-threatening manner (Brynes & Baxter, 2005). If the educational team feels it can play a part in the way changes occur and can see its relevance to their classroom activities, team members will be more willing, and possibly even eager, to commit to the plan and process manner (Brynes & Baxter, 2005). The educational team also has to understand that the process for improvement requires ongoing evaluation and must be cyclical in nature. Individuals must decide what data to use and provide sound reasoning to support any change that may be initiated. Then they must decide what to do with the data that is collected and how to design improvement plans based on the data to create positive changes in learning.
Chenoweth and Everhart (2002) have cited Darling-Hammond, who stated, “For school reform to succeed in the long run, policymakers and educators need to act on a shared understanding of what meaningful learning is, what it requires, and how it can be supported” (p. 217).

Summary

A great deal of time, energy, and money was spent on training for teachers in Ohio during the Baldrige in Education Initiative in the late 1990s and early 2000s. This study fills an important gap in the literature base because there are few, if any, studies that examine the impact of that initiative and the lasting effects of the training on process improvement and student learning (Walpole & Noeth, 2002). The purpose of this study is to determine to what extent quality tools are still being used by teachers in the classroom. The study also seeks to explore reasons the tools are still being used or, if they are not currently being used, factors that resulted in their discontinued use.
Chapter Three
Methodology

Overview

The focus of this study was to examine the relationship between the quality tools training and the continued use of the tools by classroom teachers in grades three, four, five and six in four of the Ohio Baldrige in Education Initiative (BiE IN) pilot districts in Ohio. This study sought to determine whether elementary teachers who received training in the use of quality tools from the original BiE IN schools have sustained the use of those quality tools in subsequent years following the training. But in order to determine the effectiveness of the Ohio Baldrige in Education Initiative and quality tools training, there was a need to know whether the training resulted in lasting change—that is, whether teachers have continued to use these educational tools. Much money, time, and additional resources were expended on this huge change initiative.

The study examined the following:

• whether a relationship existed between grade three through six teachers’ professional development training and their continued use of quality tools
• whether a relationship existed between teachers’ perceptions of produced benefits in their classrooms and teachers’ perceptions of their students’ academic improvement as a result of using quality tools
• factors that were responsible for the BiE IN training not resulting in sustained use of quality tools
tools are currently used by the teachers who were included in the initial BiE IN training?

whether teachers in grades three through six who use quality tools earned an improvement in the percentage of their students who passed both the reading and math Ohio Achievement Tests when compared to the non-users of quality tools

The research focusing on quality initiatives in education generally falls into three categories: Deming, Baldrige, and the Quality Movement. Although all three are associated with quality management, they are not the same. They are all similar in that they espouse customer focus, teamwork, stakeholder involvement and use of data to drive decisions. The primary difference between the three lies in how they are implemented in education. However, each process relies on the use of quality tools to support the initiative. Just as business used the Baldrige criteria, educators have also sought to use the education version of the Baldrige criteria to improve. In order to implement the criteria set forth by Baldrige, educators were trained to use quality tools.

Because the quality movement greatly benefited the business world, many school leaders were interested in its application in education (Bonstingl, 1992; Maurial et al., 1995). Currently, quality tools are increasingly being used by school district leaders to assist with progress and improvement. Siegel (2000) states that educators are increasingly using Baldrige processes to improve student achievement for all students. Since many schools look for methods of reform that assist them with ongoing ways to improve, this study sought to determine whether educators have continued to use quality tools following the training phase.
Schmidt (1998) maintains that since total quality management is a continuous process for improvement in business, schools are optimal places to use the quality principles. Jenkins, Roettger, and Roettger (2007) state, “Educational improvement will not occur until it translates to the classroom. Classrooms are the arenas for educational change” (p. 27).

**Conceptual Framework**

This study utilized a survey created by the researcher to gather information from a group of Ohio teachers in four of the original pilot schools who teach in grades three through six. The survey focused on several areas, including the type of teacher training each teacher had initially and the degree to which he or she continues to use the quality tools provided in that training.

The research was non-experimental in design and used a single group, descriptive process that employed correlation to compare the independent and dependent variables. Descriptive research often involves collecting information through data review, surveys, interviews, or observation (Fraenkel & Wallen, 2006). This type of research best describes a condition as it currently exists. In fact, new ideas and theories are often discovered and presented *post hoc* from this descriptive process.

In this study, the statistical measures that were used were the Spearman rho ($\rho$) Kendall Tau, descriptive statistics and paired t-tests.

The Spearman rho ($\rho$) is a correlation coefficient that is used when the level of measurement for both variables is ordinal (Hinkle et al., 2003). In research question one, ordinal levels of measurement (rankings) were used to determine if
there was a relationship between grade three through six teachers’ professional development training and their continued use of quality tools.

The Kendall Tau rank correlation coefficient statistical measure is often used in educational research. It reflects the strength of the relationship between two variables (Cliff & Charlin, 1991). It is used when variables have ordinal interpretations, such as teachers’ perceptions in research question two. “It can also be used to make inferences about the degree of relation between variables without making assumptions about the distribution underlying the samples that are observed” (Cliff & Charlin, 1991, p. 694).

The Kendall Tau correlation coefficient assesses the strength of association of the cross tabulations of a relationship. It was important to the study to determine if the teachers’ perceptions of produced benefits in their classrooms and their perceptions of academic improvement were, in fact, accurate or inaccurate.

Research questions three and four used descriptive statistics. Research question three looked at possible factors for the BiE IN training not resulting in sustained use of quality tools. Research question four sought to determine which tools are currently used by the teachers who were trained in the initial BiE IN training.

Research question five sought to determine if there was a difference between teachers in grades three through six who use quality tools and those who were non-users, and improvement in the percentage of their students who passed the reading Ohio Achievement Tests while research question six examined differences of the math OAT scores between the users and non-users of quality tools. Paired t-tests were used to determine differences in both questions. Trend data from the Ohio Department of Education web site was used for questions two, five, and six to examine the districts’
reading and math Ohio Achievement Test scores (Ohio Department of Education [ODE], 2009).

The participants in the study included classroom teachers in Ohio who teach grades three through six and who also were part of the original BiE IN pilot school districts or in other early innovator districts in Ohio. Following the initial training of teachers within these districts, many teachers in other non-pilot districts in Ohio were also trained during subsequent training programs. Professional development was the most important part of the BiE IN Initiative because teachers were trained to use quality tools during this early phase. Motwani (1995) recognizes the importance of districts providing ongoing staff development and training in the initial phase of implementation. This study attempted to disaggregate the results based on the level or type of training provided by the professional development. Besides the initial training, follow-up training is an important component to professional development that lasts (Joyce & Showers, 2002; Wycoff et al., 2003).

Many change initiatives are met with resistance to change. This resistance often times results in barriers being formed by those who are reluctant to change. Terry (1996) finds that educators may not use the quality tools because of barriers that may be present. Some of these barriers include lack of training, failure to offer empowerment, and lack of communication, according to Terry (1996). Mauriel, Bauerly, and Jenni (1995), in a study on Total Quality Management’s effect on teaching and learning, recognize that the results of using quality tools should lead to improved practice and continuous improvement.
Hypotheses

The goal of the research is to provide answers to the following research questions and test the following hypotheses:

RQ1-Is there a relationship between grade three through six teachers’ professional development training and their continued use of quality tools?

RH1. There is a relationship between grades three through six teachers’ professional development training and their continued use of quality tools.

NH1-There is no relationship between grades three through six teachers’ professional development training and their continued use of quality tools.

RQ2-Is there a relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools?

RH2- There is a relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools.

NH2- There is no relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools.

RQ3-What factors, if any, were responsible for the BiE IN training not resulting in sustained use of quality tools?

RQ4-What tools are currently used by the teachers who were included in the initial BiE IN training?
RQ5-Is there a difference between teachers in grades three through six who use quality tools and improvement in the percentage of their students who passed the reading Ohio Achievement Tests when compared to the non-users of quality tools?

RH$_{5a}$-There is a difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2004-2005 reading OAT.

NH$_{5a}$-There is no difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2004-2005 reading OAT.

RH$_{5b}$-There is a difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2005-2006 reading OAT.

NH$_{5b}$-There is no difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2005-2006 reading OAT.

RQ$_{6}$-Is there a difference between teachers in grades three through six who use quality tools and improvement in the percentage of their students who passed the math Ohio Achievement Tests when compared to the non-users of quality tools?
There is a difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 math Ohio Achievement Tests when compared to the 2004-2005 math OAT.

There is no difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 math Ohio Achievement Tests when compared to the 2004-2005 math OAT.

There is a difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 math Ohio Achievement Tests when compared to the 2005-2006 math OAT.

There is no difference between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 math Ohio Achievement Tests when compared to the 2005-2006 math OAT.

Identification of Variables

RQ₁-Is there a relationship between grade three through six teachers’ professional development training and their continued use of quality tools?

In research question one, the dependent variable is the continued use of quality tools, and the independent is professional development training.
RQ₂ Is there a relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement, as a result of using quality tools?

In research question two, the dependent variable is teachers’ perceptions and the independent variable is the use of quality tools.

RQ₃ What factors, if any, were responsible for the BiE IN training not resulting in sustained use of quality tools?

This research question utilized descriptive statistics where the data is classified, summarized or described (Hinkle et al., 2003).

RQ₄ What tools are currently used by the teachers who were included in the initial BiE IN training?

Like research question three, research question four used descriptive statistics where the specific quality tools the teachers currently use are summarized in the survey.

RQ₅a Is there a difference between teachers in grades three through six who use quality tools and improvement in the percentage of their students who passed the reading Ohio Achievement Tests when compared to the non-users of quality tools?

In research question fivea, the independent variable is quality tools, and the dependent variable is improvement in the percentage of students who passed the reading OAT with users of quality tools. In research question fiveb, the independent variable is quality tools, and the dependent variable is improvement in the percentage of students who passed the reading OAT with the non-users of quality tools.
RQ6. Is there a difference between teachers in grades three through six who use quality tools and improvement in the percentage of their students who passed the math Ohio Achievement Tests when compared to the non-users of quality tools?

In research question sixa, the independent variable is quality tools, and the dependent variable is improvement in the percentage of students who passed the math OAT with users of quality tools. In research question sixb, the independent variable is quality tools, and the dependent variable is improvement in the percentage of students who passed the math OAT with the non-users of quality tools.

Type of Research

The type of research that was used is descriptive research. Information regarding training and the use of quality tools was gathered from teachers in grades three through six in two of the original pilot districts and other early innovator districts via an online survey. The statistical measures used in the study included Spearman rho, Kendall Tau, descriptive statistics and paired t-tests.

Data Collection Procedures

Teachers in grades three through six in two of the pilot schools and other early innovators in Ohio were surveyed regarding the quality tools training they received and whether they have continued using quality tools. Upon obtaining approval from the dissertation committee to proceed with the data collection, the researcher sought permission from district administration in the four original pilot schools to survey the teachers (Appendix B). Once permission was granted, the district administrators were asked to forward the Survey Monkey™ link to the teachers in grades three through six in
their districts. Upon receiving the e-mail with the Survey Monkey™ link, the teachers took the survey.

A cover letter preceded the survey, explained its purpose, and provided directions for answering the survey questions and submitting the completed survey. The survey consisted of twenty-four questions, including multiple choice, open-ended response, and Likert scale responses. These procedures were selected because they were determined to be the most beneficial way to gather the desired data for this quantitative study. The use of the online survey was determined to be beneficial by the researcher because it was user-friendly, survey questions could be customized and teachers’ responses could be sent faster and more efficiently by using e-mail.

*Population and Sample*

The target population included classroom teachers in grades three through six in the school districts (known for the purposes of this study as District A, District B, District C, District D, and District E) that were among the original Baldrige pilot sites or early innovator sites in Ohio.

Many of the teachers from the target population have undergone the Baldrige training while some may have been hired after the initial training took place. These teachers may have received training after being employed or may not have ever been trained depending on the district’s commitment to professional development after the initial involvement in the pilot program. All teachers of grades three through six in the four districts surveyed were provided an opportunity to answer the survey, whether they were included in the original training group or subsequent training groups.
The sample was a purposive sample because many of the teachers that were surveyed are from the original group of BiE IN school districts in Ohio or other early innovator districts that have received the Baldrige training. The research was conducted to obtain responses from those willing to complete and return the survey. Those responses constituted the sample. The inclusion criteria for participants in the study included classroom teachers of grades three through six in schools within the original pilot districts and districts that were also early innovators in Ohio who have had some type of training in the use of quality tools.

Limitations of the study included locating teachers who were trained in the use of quality tools to participate in answering a survey. Another limitation is the many extraneous variables in the study. Data was necessary to determine if the tools continue to be used. A further limitation was the willingness of district administrative personnel to permit the researcher to survey the teachers in grades three through six. Probably one of the key limitations included the willingness of classroom teachers to participate in the survey, respond in a timely manner and remain confident that confidentiality will be maintained.

_Sampling Procedures_

Prior to the survey, a cover letter explained the background, reason for the survey, and survey procedures _Appendix C_. The cover letter assured survey participants that their responses would be kept strictly confidential. They were also told they could skip any questions they chose not to answer, and they could also stop at any point during the survey.
Surveys were sent via an online survey program to 124 classroom teachers in grades three through six in two of the original BiE IN districts and other early innovator districts in Ohio to determine the type and level of training in Baldrige quality tools they received. The surveys were also sent to determine whether the teachers have continued to use those tools during the years following the training. The survey contained questions regarding the training, use and types of quality tools still being used, and the reasons why or why not teachers are still using them (*Appendix D*).

The Survey Monkey™ web survey program was used to send the survey to the teachers. Prior to surveying the classroom teachers, district administrators were called and asked to approve of the district’s teachers being surveyed. Once the approval was given, the researcher e-mailed the link to the Survey Monkey™ program for the district personnel to e-mail to the teachers taking the survey. Once the teachers took the survey, the responses were automatically uploaded to the program’s website. The researcher then opened the web program and accessed the survey results.

The Survey Monkey™ online program was selected because it had several key components for designing and submitting surveys. First, a cover letter explained the purpose for the survey and provided background information. The Survey Monkey™ program had survey design features that allowed the researcher to utilize a variety of questions. There were many samples to look at when designing the actual survey. Once the survey was submitted, the researcher viewed the responses as they came in. One collection feature of Survey Monkey™ allowed the researcher to track the responses. Finally, there was a feature that allowed the results to be analyzed. The results were downloaded into a summary format.
Much of the survey’s response data was then exported into Microsoft Excel spreadsheets for analysis. Alreck and Settle (2004) recognize that spreadsheet tables are the most widely used formats for data entry and that Microsoft Excel is the most commonly used name brand spreadsheet. All responses were kept in a confidential manner so that only the researcher was able to view the survey information.

Summary of Key Points

In this chapter, a discussion of the methods related to answering the stated research questions was provided. This discussion included a description of the sample involved (schools and teachers), a description of the criteria for inclusion in the study, a description of the instruments used, and an explanation of sampling methods. There was also a description of data collection procedures and an explanation of the methods that were used for analyzing of the results.

Organization of Remaining Chapters

This study was organized into seven parts: five chapters, a references section, and appendices. Chapter 4 contains a reporting of the data and discusses the findings of data analysis. Chapter 5 summarizes the outcomes of the research, provides conclusions, and offers recommendations for further research about the use quality tools in schools. A reference list of sources and supporting appendices conclude this study.
Chapter Four
Data Analysis and Results

Introduction

The Baldrige in Education Initiative (BiE IN) in Ohio was introduced in the late 1990s as a systematic process for school districts to use for continuous improvement. State officials selected five pilot districts, formed planning committees, and began the training on the Baldrige process. Other early innovator districts that were not part of the originally selected pilot districts also joined in this initial training. The training began with the main emphasis on the Baldrige quality process, including process components and theory. As the training continued, however, it evolved to one particular area that of using quality tools in the classroom for data gathering and problem solving.

Purpose of the Study

There were four purposes to this study. First, the study sought to determine whether there was a relationship between the professional development training and teachers’ of grades three through six continued use of quality tools. Second, the study sought to identify teachers’ perceptions of the benefits of using quality tools in their classrooms, including academic achievement. Third, the study identified factors that were responsible for the BiE IN training not resulting in sustained use of quality tools. Finally, the study examined the difference between the use of quality tools and the impact they may have had on student achievement in the reading and math Ohio Achievement Tests.
One of the most important purposes of this study was to examine the results of the training that occurred during the BiE IN Initiative implementation. There has been no known research conducted since the initial trainings began over a decade ago.

Data Collection

The data collection was completed using an online survey program, Survey Monkey. Districts were contacted approximately one month prior to the survey to obtain permission to survey the teachers. The researcher spoke with superintendents or their designees and then faxed letters explaining the surveys. The researcher also requested that the letters granting permission be signed and returned.

The Survey Monkey™ program allows for surveys to be designed and generated based on need. Surveys can be created, responses collected and response data presented in a user friendly format. The program also utilizes a cover letter option where the researcher can provide background for the study, instructions for the survey and general information for the respondents. The data collected from the Survey Monkey™ responses was used in this study.

In order to utilize electronic surveying, the online survey address link was e-mailed to the superintendent’s office in each district. The e-mail was then forwarded by the superintendent or designee to the teachers of third, fourth, fifth and sixth grade in each of the district’s elementary buildings. The school district survey was sent out two times, three weeks apart. There were a total of 124 possible survey participants who composed the sample population. A total of 41 respondents answered the online survey, resulting in a 33% response rate. Eighty-three respondents failed to answer the survey. The response rate of 33% was low considering the number of respondents (124)
requested to participate in the survey. There could be several reasons for this low number: the time of year (Spring) the survey was sent out is an exceptionally busy time for classroom teachers, the teachers who were surveyed may not have had a background or training in Baldrige or quality tools, and it is a busy time for administrators who were asked to forward the online survey link to the teachers.

**School District Research**

Five of the pilot districts were contacted, and two of those districts (Districts A and E) gave the researcher permission to survey its teachers. District B gave no reasons for not allowing the survey. This district dropped out of the pilot program shortly after the initiation of BiE IN. The second district (District D) disallowed the survey to be administered for the following written reason: “We have not utilized Baldrige or the quality tools since 2002, sorry.” Following the written refusal, the researcher re-contacted District D by telephone to ask for reconsideration to survey the teachers. During the phone call, the Assistant Superintendent stated that Baldrige had become an unpopular political issue in District D. He stated that many teachers and administrators intensely disliked Baldrige and referred to it as the “B” word. He maintained that it was better to “let sleeping dogs lie” than to reignite the antagonistic attitudes that prevailed at the time District D was a pilot district.

On the day the surveys were e-mailed to the district leaders to be sent to the teachers, the researcher was notified by the third pilot district (District C) that the superintendent had decided he didn’t want the researcher to survey the teachers in his district. The survey had previously been approved by his designee, a building principal. When the researcher contacted the district by telephone to inquire whether or not there
was a problem with the survey, the superintendent said there was no problem with the survey. He stated that he is no longer allowing teachers to complete surveys in the district because they get numerous survey requests, and the teachers use class time to respond to them. The valuable information that could have been gathered from this former pilot district was lost due to the non-trusting attitude of the administrator. Scholtes (1998) states, “Managers intervene with their employees’ behavior in ways they would deem unnecessary for themselves” (p. 42). He maintains many managers assume a parental role with employees. If expectations are communicated, an understanding of trust will follow.

Following the third refusal, the researcher contacted administrators in other early innovator districts. The teachers in these districts had been trained in the use of quality tools during the approximate time period as the original pilot districts although they weren’t actual pilot sites themselves.

During a telephone call to a superintendent of an early innovator district, he refused to allow the survey because he stated that even though the district had adopted the Baldrige criteria and uses the process as its framework for continuous improvement, he felt that many teachers may not even know what quality tools are. It is interesting to note that in the past, teachers and administrators in this district had presented successful quality tools strategies at the training conclaves.

If all of the original pilot district administrators had given permission for their teachers to be surveyed, 190 teachers, instead of 124 teachers, would have been the sample pool. There would have been more data from originally trained teachers and the larger sample would have given more authenticity to the study.
Demographics

The sample used for this survey was teachers of grades three through six in BiE IN pilot or other early innovator districts in Ohio. The teachers who responded to the survey were located in 11 elementary buildings in four school districts. Teachers who responded included 13 teachers from grade three, 11 teachers from grade four, 9 teachers from grade five, and 8 teachers from grade six for a total of 41 respondents. The Survey Monkey™ online survey program sorts information by district, building, grade level and response. It is a user-friendly program in terms of sorting and identifying responses by individual teacher response. Demographic information can readily be identified, sorted, analyzed and interpreted.

Figure 1. Number of Teachers of Grades Three through Six Who Participated in the Survey

Typology of Ohio School Districts

The purpose of developing a typology of districts was to provide a rational basis for making data-driven comparisons of groups of districts. This typology was updated in
July, 2007. All of the data have been updated, including 2000 Census data. A total of nine different group types were identified. Seven of these groups characterize the K-12 public school districts (ODE, 2009). The four districts featured a diverse demographic sample. The following list provides a brief description of each district’s typology group (ODE, 2009).

Table 1

Typology Classification of Ohio School Districts

<table>
<thead>
<tr>
<th>Number of School Districts</th>
<th>Typology Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Kelly’s Island LSD, North Bass Island LSD, Middle Bass Island LSD, Put-in-Bay Island LSD, College Corner LSD</td>
</tr>
<tr>
<td>1</td>
<td>Rural/agricultural – high poverty, low median income</td>
</tr>
<tr>
<td>0</td>
<td>Rural/agricultural – small student population, low poverty, low to moderate median income</td>
</tr>
<tr>
<td>2</td>
<td>Rural/Small Town – moderate to high median income</td>
</tr>
<tr>
<td>0</td>
<td>Urban – low median income, high poverty</td>
</tr>
<tr>
<td>1</td>
<td>Major Urban – very high poverty</td>
</tr>
<tr>
<td>0</td>
<td>Urban/Suburban – very high median income, very low poverty</td>
</tr>
<tr>
<td>0</td>
<td>Joint Vocational School Districts</td>
</tr>
</tbody>
</table>

Analysis of Research Questions

Inferential statistical analysis using SPSS and Microsoft Excel were the primary methods for answering four of the six research questions. Research question one used a
Spearman rho statistical analysis, research question two used a Kendall Tau statistical analysis and both research questions five and six used two sample t-tests to analyze the collected data. Research questions three and four utilized descriptive statistics to present the information.

In order to determine significance, an alpha level of $\leq .05$ was set to reasonably avoid Type I error while tolerating a small Type II risk. It seeks to avoid Type I error because if the null hypothesis is true, there is a desire to keep the chance low of falsely rejecting it. The results of this study were of sufficient importance that it was judged that reasonable confidence must be provided that any results are real, and that nothing was missed. Descriptive data are displayed in tables and charts, using percentages obtained from the survey for research questions three and four.

**Research question one.** RQ$_1$-Is there a relationship between grade three through six teachers’ professional development training and the continued use of quality tools?

RH$_1$-There is a relationship between grade three through six teachers’ professional development training and their continued use of quality tools.

NH$_1$-There is no relationship between grade three through six teachers’ professional development training and their continued use of quality tools.

Research question one examines the correlation between professional development training (independent variable) and the continued use of quality tools (dependent variable). An analysis of the correlation between the responses to survey question seven (professional development training) and survey question fourteen (continued use of quality tools) was conducted using a Spearman rho ($\rho$) statistical
analysis. This type of statistical measure is used when data consists of ranks. Both questions asked for yes/no responses, which were converted to ranks.

In comparing the relationship between professional development training and the continued use of quality tools, it was determined that there was a relationship between professional development training and the continued use of quality tools ($r = 0.66$). As a result, the null hypothesis was rejected and the research hypothesis was accepted. Therefore, a relationship between professional development training and the continued use of quality tools for the responding teachers in grades three through six was found.

Research question two. RQ2 Is there a relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools? RH2- There is a relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools. NH2- There is no relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools.

When comparing the responses to question nineteen (perception of benefits) to academic improvement on the reading OAT, the correlation was not significant, $r = 0.15$. There are undoubtedly many other extraneous variables that could account for this lack of significance, such as length of time between the original training and the survey, the number of limited responses, etc.). Therefore, the null hypothesis is accepted. There is no relationship between teachers’ perceptions of produced benefits in their grades three
through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools.

When comparing the responses to question nineteen (perception of benefits) to academic improvement on the math OAT, the correlation was also not significant, $r = 0.44$. However, this indicates that a slight relationship could exist; though it is not strong enough to claim it is related to quality tools, it is just higher than the relationship with reading. Therefore, the null hypothesis is accepted. There is no relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools.

In addition to comparing teachers’ perceptions of academic benefits from using quality tools, the teachers’ perceptions to other indicators were also considered. Although this was not part of the question, it was part of the answer. When comparing the responses to question nineteen (perception of benefits) to the responses relative to improved behavior, the researcher saw no correlational relationship. Likewise, when comparing the responses to question nineteen (perception of benefits) to improved student enthusiasm, there was no correlation. The third indicator which was compared to the responses in question nineteen (perception of benefits) was student empowerment. There was also no correlation shown with this indicator.

Research question two first compared teachers’ perceptions to actual reading and math scores. The question also compared perceptions to perceptions, i.e. perceptions of benefits to perceptions of improvements in student behavior, enthusiasm, and empowerment. Thus, the second set of responses is based on classroom teachers’
perceived ideas, using the following information: feedback from students, observation, behavior chart data and test data.

Like the lack of significance found with the academic factors, there are many other reasons that could explain this, including length of time between the original training and the survey, the number of limited responses, etc. The teacher responses are presented in figure 2.

![Figure 2](image_url)

Y = Number of responses out of 100; teachers were instructed to mark all of the responses that applied.

*Figure 2. Teachers’ Perceptions of Produced Benefits by QT in the Classroom.*

When asked what type of evidence they based their responses on, they responded with the information in Figure 3 below:

![Figure 3](image_url)

X = Number of responses out of 100; teachers were instructed to mark all of the responses that applied.

*Figure 3. Evidence Cited for Teachers’ Perceptions of Produced Benefits by QT in the Classroom.*
Research question three. What factors, if any, were responsible for the BiE IN training not resulting in sustained use of quality tools?

Teachers who discontinued using quality tools in their classrooms cited a variety of reasons for the discontinuation. Lack of training opportunities was the overall factor that teachers cited for discontinuing to use quality tools, followed by lack of support from their districts or administration. Some reported that they lost interest in using the tools. Figure 4 is a depiction of the responses.

![Figure 4. Factors for Discontinuing the Use of Quality Tools](image)

X = Number of responses out of 100; teachers were instructed to mark all of the responses that applied.

One teacher who said she was discouraged by the lack of training said that her district’s faded focus on using quality tools was her main reason for not currently using the tools. Another teacher mentioned that time constraints were what hindered her continued usage. A third teacher commented that she may consider not using the tools next year, also due to the time it takes. One of the teachers who cited lack of support from district and administration commented,

“When I look back on the positive impact quality tools had on student achievement, I am convinced they are the best strategies I have used in education, but they will not last without administrative support and a real understanding of what quality tools are. You have to know the correct way to use them and not be
afraid of the data, then make the necessary changes within the buildings and
districts in order to improve.”

Another teacher with three to five years of teaching experience was trained when she was first hired. Her comment was that she used quality tools for the first two years she taught but discontinued using them when it became “too much,” due to many assessments and other methodologies they were expected to use. One response indicated that the teacher, even though discouraged by the lack of training and support, indicated that she still uses some, but not to the full extent she used to, because it is a lot of work.

Teachers were asked to comment on specific barriers to using quality tools. Their responses are provided in Table 2.

<table>
<thead>
<tr>
<th>Table 2</th>
<th>*ST.D</th>
<th>D</th>
<th>SL.D</th>
<th>SL.A</th>
<th>A</th>
<th>ST.A</th>
<th>Rating Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current and Past Barriers to Continued Use of Quality Tools</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Difficult to implement</td>
<td>10.5%</td>
<td>15.8%</td>
<td>21.1%</td>
<td>26.3%</td>
<td>18.4%</td>
<td>2.6%</td>
<td>3.55</td>
</tr>
<tr>
<td>Ongoing professional development not available</td>
<td>0.0%</td>
<td>10.5%</td>
<td>2.6%</td>
<td>26.3%</td>
<td>21.1%</td>
<td>36.8%</td>
<td>4.79</td>
</tr>
<tr>
<td>Follow-up professional development not available</td>
<td>0.0%</td>
<td>7.9%</td>
<td>5.3%</td>
<td>21.1%</td>
<td>26.3%</td>
<td>34.2%</td>
<td>4.89</td>
</tr>
<tr>
<td>Lack of support from colleagues</td>
<td>7.9%</td>
<td>15.8%</td>
<td>10.5%</td>
<td>26.3%</td>
<td>26.3%</td>
<td>7.9%</td>
<td>3.92</td>
</tr>
<tr>
<td>Lack of administrative support</td>
<td>7.9%</td>
<td>13.2%</td>
<td>7.9%</td>
<td>23.7%</td>
<td>28.9%</td>
<td>13.2%</td>
<td>4.13</td>
</tr>
</tbody>
</table>

*ST.D=Strongly Disagree                                               SL.A=Slightly Agree
D=Disagree                                                            A=Agree
SL.D=Slightly Disagree                                                ST.A=Strongly Agree

The two biggest barriers to teachers’ continued use of quality tools are lack of available ongoing and follow-up professional development opportunities. Other barriers
that teachers recognized included lack of time. One teacher mentioned it takes time to plan to use quality tools and collaborate with grade-level teachers. The teacher also stated that release time was needed and incentives for putting in additional work time outside of the contractual work day.

Under the comment section, a teacher wrote that some administrators supported their new changes, but new administrators dropped support when they came to the district and building. Similarly, another teacher noted that a lack of central office support has affected her continued use because the district administrators tend to treat changes as “flavors of the month.” She had previously used student data folders and stated that now funds have been cut for the data folders. If teachers in her district want to continue to use data folders, they have to purchase all of the supplies themselves.

In summary, the two main factors that were responsible for the BiE IN training not resulting in sustained use of quality tools were lack of professional development training and lack of support by administration. Teachers indicated that follow-up training was not readily available. They also cited lack of administrative support which encompassed responses such as frequent administrative turnover or changes in style and philosophy.

*Research question four.* What tools are currently used by the teachers who were included in the initial BiE IN training?

The teachers were instructed to mark all the quality tools they currently use. A majority of the teachers surveyed (76.7%) reported that they currently use the consensogram. The issue bin was the second most widely used quality tool with 63.3% usage while the affinity diagram was third with 53.6%. To a lesser degree, teachers
reported that they continue to use histograms (40%), and run charts (33.3%). The least favored quality tools that are currently being used include fishbone diagrams (30.0%) and scatter diagrams (26.7%). In “other” comments, teachers also reported that they used student data folders, goals, and a mission and vision statement. Figure 5 below is a depiction of the responses.

![Figure 5. Quality Tools Currently Used by Teachers.](image)

Y = Number of responses out of 100; teachers were instructed to mark all of the responses that applied.

In summary, the tools that are currently used by the teachers who were trained in the initial BiE IN training were primarily consensograms, issue bins and affinity diagrams. Reasons for using these top three quality tools were not given. This may be due to their ease in use or to the teachers having more training in these particular tools. It is also conceivable that these specific tools have more relevance in the teachers’ classrooms.

*Research Questions Five and Six.* In research questions five and six, the researcher sought to determine if there is a difference between teachers who use quality
tools and improvement in the percentage of their students who passed the reading and math Ohio Achievement Tests. Paired T-Tests compared the quality tools users with the non-users of quality tools on the differences between beginning and ending OAT passing rates by year.

The scores used initially were from the 2004-05 school year because that was the first school year grades three through six were tested in reading achievement in Ohio. Math achievement, however, was not tested for fifth grade students in Ohio that year. The 2003-04 school year was not used because the third grade was tested for reading only and fifth grade did not test for either reading or math. Therefore, the researcher did not consider that school year to be an appropriate starting point for examining scores. For the sake of consistency, the 2004-05 school year was the earliest year starting point where reading and math achievement scores across the grade levels could be used (with the exception of fifth grade math). The school year 2004-05 was first compared to 2007-08 because those achievement scores were the earliest scores that could be compared to current years’ scores (the 2008-09 scores were not available for use at the time). The 2005-06 scores were also compared to 2007-08 for two reasons. The 2005-06 scores are the first school year where each grade level tested both reading and math, and they are the most current scores that could be compared.

Teachers who responded to the survey who were intervention specialists or who could not be determined to be the teacher of record were not used in the statistics for research question five and six, because they were not solely responsible for the instruction or OAT assessment results. Also, the scores were not tied to individual teachers, only to the building and grade level they teach. In both research questions five
and six, scores of 95% or higher passage were reported as > 95 on the Ohio Department of Education website. If scores exceeded 95% passage, they were not specifically indicated as higher by number percentage, only as > 95.

*Research question five.* Is there a difference between teachers of grades three through six who use quality tools and improvement in the percentage of their students who passed the reading Ohio Achievement Tests when compared to the non-users of quality tools?

**RH5a** - There is a difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2004-2005 reading OAT.

**NH5a** - There is no difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2004-2005 reading OAT.

**RH5b** - There is a difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2005-2006 reading OAT.

**NH3b** - There is no difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2005-2006 reading OAT.
The reading difference for 2004-05 to 2007-08 was first calculated. The group statistics indicated a mean of 86.37 for the quality tools users and 72.98 for those who indicated they did not use quality tools. There was significance (2-tailed) of .002, with a 95% confidence interval. The Independent Samples Test for the reading difference from 2005-06 to 2007-08 showed a significance (2-tailed) of .011, with a 95% confidence interval. Therefore, both hypotheses RH$_{5a}$ and RH$_{5b}$ are accepted. There is a difference in the percentage of improvement in passing rates of the reading OAT between teachers in grades three through six who use quality tools and the teachers who are non-users of quality tools. The teachers who are non-users may use other strategies that account for the significance factor as compared to the quality tools users. The non-users may also be newly hired teachers who have been trained in and utilize new or “best practice” techniques and resources.

*Research question six.* Is there a difference between teachers of grades three through six who use quality tools and improvement in the percentage of their students who passed the math Ohio Achievement Tests when compared to the non-users of quality tools?

RH$_{6a}$-There is a difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 math Ohio Achievement Tests when compared to the 2004-2005 math OAT.

NH$_{6a}$-There is no difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the
percentage of their students who passed the 2007-2008 math Ohio Achievement Tests when compared to the 2004-2005 math OAT.

RH_{6b}-There is a difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 math Ohio Achievement Tests when compared to the 2005-2006 math OAT.

NH_{6b}. There is no difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 math Ohio Achievement Tests when compared to the 2005-2006 math OAT.

Like reading, the math difference for 2004-05 to 2007-08 was first calculated. The group statistics indicated a mean of 81.81 for the quality tools users and 61.56 for those who indicated they did not use quality tools. There was significance (2-tailed) of .010, with a 95% confidence interval. As a result, the research hypothesis NH_{6a} was accepted indicating that teachers of grades three through six who use quality tools have a greater improvement in passing rate on the 2007-2008 math Ohio Achievement Tests when compared with the passing rate of 2004-2005 than teachers who were non-users of quality tools.

Next, the math difference for 2005-06 to 2007-08 was calculated. The group statistics indicated a mean of 81.81 for the quality tools users and 74.11 for those who indicated they did not use quality tools. The Independent Samples Test for the math difference from 2005-06 to 2007-08 showed a value (2-tailed) of .185, with a 95% confidence interval. As a result, the data did not indicate that teachers in grades three
through six who use quality tools have a greater improvement in passing rate on the
2007-2008 math Ohio Achievement Tests when compared with the passing rate of 2004-
2005 than teachers who were non-users of quality tools.

There are undoubtedly other factors that influence the improvement of passing
rates on the OAT. As with any research dealing with the social sciences, various
extraneous variables could have intervened to impact the results. For example, many
quality tools have numbers or numeric concepts. Therefore, that factor may contribute to
and account for the significance and overall improvement in the math scores. Other
factors that may have attributed to these improvements include the teacher, teaching
styles, class makeup, use of instructional materials, and other related reasons.

As the years pass and teachers in the original training programs retire, the use of
quality tools will undoubtedly diminish as new teachers are hired and new methods
adopted. Approximately 48% of the teachers who responded to the quality tools survey
were from original pilot districts, 9% were not from the original districts, and 43% were
unsure whether their district was an original pilot district. This suggests that the teachers
who were unsure of the pilot district status may have been hired since the initial training.

A clear majority (74%) reported that they had received their training from Jim
Shipley & Associates. This group of trainers was the group that conducted most of the
early Baldrige in Education training (Figure 6). The training that Jim Shipley &
Associates provided gave an overview of the Baldrige process, the theory behind the
process, and how the Baldrige framework could be used as a continuous improvement
process. Ryan Delaney has been a major trainer in Ohio since the early BiE IN initiative.
Delaney’s training focused solely on the use of quality tools and was popular with
teachers because the tools translated into relevant uses for the classroom. It was perplexing to the researcher that none of the survey respondents indicated that Jerry Marshall had provided their training as Marshall was one of the widely sought-after trainers who conducted much of the early quality tools training following the original training. Figure 6 is a depiction of the teachers’ responses of the training providers they had received quality tools training from.

![Figure 6](image_url)

X = Number of responses out of 100; teachers were instructed to mark all of the responses that applied.

*Figure 6. Initial Baldrige and QT Training Providers*

*Follow-up Training*

The teachers in the original pilot districts (82% of the teachers who responded to the survey) reported that they had received follow-up training. The majority (68%) said they had received this training at a workshop while the rest said they had attended a Marshall/Delaney Conclave. The teachers who were not in the initial group said they had received their training during follow-up training for the initially trained teachers. Other newly hired teachers reported that they received their quality tools training when they were first hired, either by attending a workshop or by receiving training from a colleague.
Conclusion

Many school reforms and changes have been explored and implemented in an effort to improve instruction and student achievement. One of these changes was the Baldrige in Education initiative that was introduced in Ohio in the late 1990s. Many teachers in Ohio were trained in the Baldrige process and the use of quality tools. The purpose of the study was to determine if teachers continue to use the quality tools they were trained to use. The largest obstacle encountered during the study was the reluctance of district administrators to grant permission to the researcher to survey the teachers as there was valuable information that could have been used in the study to give a more accurate picture of the state of quality tools in the original pilot districts.

Using the survey data, Chapter 5 will provide a discussion of findings, implications and conclusions regarding the study and recommendations for future research.
Chapter Five

Discussion

Introduction

Chapter 5 is composed of seven sections. The first one summarizes the professional research and literature related to change and the implementation of the Baldrige in Education Initiative in Ohio. The second section reviews the purpose of the study. The third part discusses the results and examines the statistical analysis of each research question. The fourth section looks at the relationship between the independent and dependent variables for each research question. The fifth section looks at the limitations of the study. The sixth section provides research recommendations for change initiatives. The seventh section provides recommendations for future studies.

Summary

Literature Review. The Baldrige in Education initiative in Ohio was first implemented in five pilot districts in the state in the late 1990s. The training began with the various components of the Baldrige process that are necessary for systemic change as well as the theory that supports the framework. After a few years, the original districts utilized different components of the training. One discontinued as a pilot district early on, and one district primarily adopted and used the Baldrige framework as a continuous improvement process. Two of the districts focused less on Baldrige theory and process and instead adopted quality tools to assist them in their quest for academic improvement. The fifth district used the Baldrige framework for several years until new leadership discontinued
using the process. The literature review looked at various components of successful change, including professional development training, continuous improvement, monitoring systems and other factors that support sustained change.

**Purpose of the Study**

There were multiple purposes to the study. The first was to see if teachers of grades three through six in the pilot districts and other early innovator districts were continuing to use quality tools following their training. The second was to determine if the surveyed teachers’ perceptions of students’ use of quality tools produced academic and other benefits in the classroom. The third purpose was to examine what factors, if any, were responsible for the BiE IN training not resulting in sustained change. The study also considered barriers for implementing quality tools. Another purpose was to find out which quality tools teachers are currently using. Finally, the study examined the relationships between the use of quality tools and improvements in reading and math Ohio Achievement Tests.

**Discussion of the Results**

Based on the experience of the researcher with the Baldrige in Education initiative in Ohio and the literature review, six research questions were posed. The first question examined whether there was a relationship between teachers’ in grades three through six grade professional development training and their continued use of quality tools. The second question examined whether there was a relationship between teachers’ perceptions of produced benefits in their classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools. The third question examined if there were factors responsible for the BiE IN training not resulting in the
sustained use of quality tools. The fourth question sought to determine what tools are currently being used by the teachers who were trained in the initial BiE IN training. The final two questions examined whether there was a relationship between teachers in grades three through six who use quality tools and improvement in the percentage of their students who passed the reading and math Ohio Achievement Tests.

To answer these questions, a survey was developed that was sent via the Survey Monkey online program to teachers of grades three through six in original pilot districts and other early innovator districts. The survey incorporated demographic questions as well as other information that was essential in being able to analyze the research questions. Trend data from the Ohio Department of Education web site (ODE, 2009) was also used for questions five and six to look at the districts’ achievement scores. Of the 124 surveys that were sent via the online program, only 41 were returned for a 33% return rate.

Relationship between independent and dependent variables

Research question one examined the relationship between grade three through six teachers’ professional development training (independent variable) and their continued use of quality tools (dependent variable). Survey questions seven and fourteen were used to look for a correlation. An analysis of the correlation between the responses to survey question seven (professional development training) and survey question fourteen (continued use of quality tools) was conducted using a Spearman rho (ρ) statistical analysis.

In comparing the relationship between professional development training and the continued use of quality tools, it was determined that there was a relationship between
professional development training and the continued use of quality tools \( (r = 0.66) \). As a result, the null hypothesis was rejected and the research hypothesis was accepted. Therefore, there was found to be a relationship between professional development training and the continued use of quality tools for the responding teachers of grades three through six.

Research question two sought to determine if there was a relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools. When comparing the responses to question nineteen (perception of benefits) to academic improvement on the reading OAT, the correlation was not significant, \( r = 0.15 \). There are undoubtedly other extraneous variables that could account for this lack of significance, such as length of time between the original training and the survey or the number of limited responses. Therefore, the null hypothesis is accepted. There is no relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement as a result of using quality tools.

When comparing the responses to question nineteen (perception of benefits) to academic improvement on the math OAT, the correlation was also not significant, \( r = 0.44 \). This does indicate that a slight relationship could exist, though it is not strong enough to support the claim that it is related to quality tools. Therefore, the null hypothesis is accepted. There is no relationship between teachers’ perceptions of produced benefits in their grades three through six classrooms and the teachers’ perceptions of their students’ academic improvement in either reading or math.
In addition to comparing teachers’ perception of academic benefits from using quality tools, the teachers’ perceptions of other indicators were also considered. Although this was not part of the question, it was important to look at and consider the responses. When comparing the responses to question nineteen (perception of benefits) to the responses relative to improved behavior there was no correlational relationship. Likewise, when comparing the responses to question nineteen (perception of benefits) to improved student enthusiasm, there was no correlation. The third indicator that was compared to the responses in question nineteen (perception of benefits) was student empowerment. There was also no relationship shown for student empowerment.

Research question two first compared teachers’ perceptions to actual reading and math scores. The question also compared perceptions to perceptions, i.e. perceptions of benefits to improvements in student behavior, enthusiasm, and empowerment. Thus, the second set of responses is based on classroom teachers’ perceived ideas and not on fact. Like the lack of significance found with the academic factors, there are other reasons that could explain this, including length of time between the original training and the survey or the number of limited responses.

The purpose of research question three was to determine whether there were factors that were responsible for the BiE IN training not resulting in sustained use of quality tools. In examining the descriptive data, it was determined there were indeed factors that limited the use of the tools. The most frequently mentioned factor (72.7%) was the lack of training opportunities available. The second factor that limited the sustained use of quality tools was the lack of support by the district and administrators (36.4%).
Research question four also used descriptive statistics to determine which quality tools are currently used by the teachers who were included in the initial BiE IN training.

A majority of the teachers surveyed (76.7%) reported that they currently use the consensogram. The issue bin was the second most widely used quality tool with 63.3% usage while the affinity diagram was third with 53.6%. The least favored quality tools that are currently being used include fishbone diagrams (30.0%) and scatter diagrams (26.7%).

Research question five examined whether there is a difference between teachers of grades three through six who use quality tools and improvement in the percentage of their students passing rate for the Ohio Achievement Reading Tests when compared to the non-users of quality tools. Two hypotheses were written for this question. The first one looked at the difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2004-2005 reading OAT. The second hypothesis examined the difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 reading Ohio Achievement Tests when compared to the 2005-2006 reading OAT.

The reading difference for 2004-05 to 2007-08 was first calculated. The group statistics indicated a mean of 86.37 for the quality tools users and 72.98 for those who indicated they did not use quality tools. There was significance (2-tailed) of .002, with a 95% confidence interval. The Independent Samples Test for the reading difference from
2005-06 to 2007-08 showed a significance (2-tailed) of .011, with a 95% confidence interval. Therefore, both hypotheses RH5a and RH5b are accepted. There is a difference in the percentage of improvement in passing rates of the reading OAT between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools. The teachers who are non-users may use other strategies that account for the significance factor as compared to the quality tools users. The non-users may also consist of recently hired teachers who have been trained in new or “best practice” techniques and use more current, innovative resources.

Research question six examined whether there is a difference between teachers of grades three through six who use quality tools and improvement in the percentage of their students who passed the math Ohio Achievement Tests when compared to the non-users of quality tools. Two hypotheses were written for this question. The first examined the difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 math Ohio Achievement Tests when compared to the 2004-2005 math OAT. The second hypothesis examined the difference between teachers of grades three through six who use quality tools and the teachers who are non-users of quality tools and improvement in the percentage of their students who passed the 2007-2008 math Ohio Achievement Tests when compared to the 2005-2006 math OAT.

Like reading, the math difference for 2004-05 to 2007-08 was first calculated. The group statistics indicated a mean of 81.81 for the quality tools users and 61.56 for those who indicated they did not use quality tools. There was significance (2-tailed) of .010, with a 95% confidence interval. As a result, the research hypothesis NH6a was accepted,
indicating that teachers of grades three through six who use quality tools have a greater improvement in passing rate on the 2007-2008 math Ohio Achievement Tests when compared with the passing rate of 2004-2005 than teachers who were non-users of quality tools.

Next, the math difference for 2005-06 to 2007-08 was calculated. The group statistics indicated a mean of 81.81 for the quality tools users and 74.11 for those who indicated they did not use quality tools. The Independent Samples Test for the math difference from 2005-06 to 2007-08 showed a value (2-tailed) of .185, with a 95% confidence interval. As a result, the data did not indicate that teachers of grades three through six who use quality tools have a greater improvement in passing rate on the 2007-2008 math Ohio Achievement Tests when compared with the passing rate of 2004-2005 than teachers who were non-users of quality tools.

There are undoubtedly other factors that influence the improvement of passing rates on the OAT. Many quality tools have numbers or numeric concepts. Therefore, that factor may account for the significance and overall improvement in the math scores. Other factors that may have attributed to this include the teacher, teaching styles, class makeup, use of instructional materials, or other pedagogical indicators.

In considering the barriers to the use of quality tools, the surveyed teachers reported that the biggest barrier was the lack of available ongoing and follow-up professional development opportunities. Other barriers included lack of time for planning and collaboration with colleagues and lack of support from school leaders and colleagues. Teachers also mentioned that they found it difficult to implement quality tools.
Limitations

Several limitations were observed during the study. First, the sample size was small in comparison to the size of the population. This was attributed to not getting permission from the original pilot districts’ current administrators to survey the teachers. This dramatically limited the study’s available number of teachers who received the original BiE IN training. Since there has been no known research conducted on the BiE IN initiative since it began, this factor impacted the study because of the limited teacher feedback.

Another limitation was the lack of previous research conducted and written about this initiative. It was difficult to find credible information that could be used and cited as research. Some of the original information that was available was produced in brochure or pamphlet format. Other information was obtained on specific websites. Much of this original information lacked dates and authors who supplied the information.

In addition, it is not known whether the teachers who responded to the survey understood the questions and answered them correctly. This may have been especially true with the teachers in the other early innovator districts who did not receive the original training.

Finally, it is understood that there are many factors that impact academic improvements in reading and math. Teachers have the greatest impact on student achievement as well as the numerous resources and strategies they use during instruction.

Research Recommendations for Change Initiatives

Professional Development Training. There are numerous recommendations for future courses of action. First, professional development training must be improved. It
was apparent in the study that the respondents did not receive timely, effective follow-up training or on-going training. Follow-up training is imperative if the transference of newly learned skills into the classroom and implementation of those skills are to occur (Joyce & Showers, 2002; Wycoff, et al., 2003).

Practice of newly learned information is another important aspect of training (Chard, 2004; Joyce & Showers, 2002; Wycoff et al., 2003). Teachers can practice and receive feedback via peer coaching (Chard, 2004; Joyce & Showers, 2002; Taylor, Nelson & Adelman, 1999) and collaboration with colleagues (Birman et al., 2000; Joyce & Showers, 2002; Wycoff et al., 2003). Collaboration affords teachers the opportunities to discuss results, modifications and best methods to integrate their newly learned skills.

Fether (2009) developed a model for professional development training that incorporates three individual phases. The phases are identified as: initial, follow-up and on-going (Fether, 2009). Initial training begins after student data is analyzed and a needs assessment determines what type of training is needed for improved instruction. Following the initial training phase, the results of the newly learned skills are analyzed and discussed. The needs that emerge from this phase are then used to plan training for the follow-up phase. During the follow-up phase, the following events occur: peer coaching, study groups, observations, collaboration among staff, examining students’ work and reflection (Fether, 2009; Joyce & Showers, 2002). The follow-up phase provides valuable time for collaboration and learning. The on-going phase is similar to the follow-up phase where many of the same collaborative learning activities continue to evolve. The critical part of the on-going phase is that teachers continue to collect and analyze data and work together for a common goal (Fether, 2009; Senge, 2000). The
newly learned skill set is refined and evolves when the teachers use data and continue to modify and adapt to the conditions that develop. Thus, the three phase process is cyclical, on-going and long term.

Relevance. A second recommendation is that the implemented changes must have relevance or practical application in the classroom. Teachers will use tools for assessment if they are relevant and practical for classroom use (Wiliam, 2006; Chard, 2004; Wycoff et al., 2003; Cohen & Hill, 2002). Teachers will be more likely to use new tools if they can integrate them into their normal instructional practices, rather than try to add more to their already overloaded academic programs (Chard, 2004).

Theory. During the initial Baldrige in Education initiative, training was top heavy with theory on the Baldrige framework. Teachers complained that it was a waste of time and did not contain practical information or strategies they could transfer into classroom instruction. It is necessary to explain the theory behind change initiatives so that participants understand the underlying concepts behind the change (Joyce & Showers, 2002; Wycoff et al., 2003). “Programs must balance theory with knowledge and skills immediately transferable to the classroom” (Wycoff et al., 2003, p. 39). Despite the need for practicality and relevance, Joyce and Showers (2002) maintain that when teachers understand the theory behind the newly learned skill-set, they will be capable of obtaining results, like those that were reported in the actual research setting, in their own classrooms.

Support Systems. Another important aspect of training is establishing support networks (Fullan, 1996; Chard, 2004; Reeves, 2006; Benjamin, 2007). Reeves (2006) finds that many teachers are more comfortable asking a colleague for advice that an
administrator. The support system he proposes is comparable to a network composed of nodes, hubs and superhubs. Nodes are individual teachers, hubs are colleagues, and a superhub is the teacher-leader or idea person who has an enormous influence with colleagues and is a known change agent in the building and district. School district leaders need to identify these key teacher leaders whom other teachers determine to be credible, respect, trust and strive to emulate when implementing professional development training (Reeves, 2006; Chard, 2004; Taylor et al., 1999).

In looking at sustaining a change such as implementing quality tools in a school district, Benjamin (2007) finds:

The problem is that leaders have not established support systems that will ensure systematic deployment of the tools once the training has been completed. Support systems include clear expectations for deployment, ongoing coaching, a measurement tool (Classroom and School Rubrics), and recognition (p. 56).

Benjamin (2007) suggests that newly learned skills such as quality tools be “deployed in a gradual manner” and not in such a manner as to overwhelm teachers who are learning to use them. Benjamin found, “When good quality learning is combined with clear expectations, a method of tracking deployment, and appropriate recognition, real improvement can be expected. Improved organizational performance results can occur only after good approaches have been selected and fully implemented” (p. xi).

Like Benjamin (2007), Cokely et al. (2007) examined factors for gradually involving educators in using the Baldrige process without frustrating and overwhelming them. “The first key is to take small steps in the implementation process-steps that all participants have the capacity to fully understand” (Cokely et al., 2007, p. 13).
Organizational stakeholders’ involvement and ownership of the process is also a key component in order to sustain the change.

Monitoring Systems. An important part of implementing a change initiative involves developing a monitoring infrastructure within the organization that will effectively help sustain the change (Taylor et al. 1999; Adelman & Taylor, 2003; Benjamin, 2007). Often, when district leaders leave and there aren’t mechanisms in place to sustain the change, the change begins to fade (Taylor et al. 1999; Adelman & Taylor, 2003; Benjamin, 2007). When hired, new leaders without training and communication regarding the initiative often lack the ability, interest and drive to keep it going. This is especially true when school district leaders come and go. This change in leadership occurred in the pilot districts and undoubtedly accounts for some of the discontinuation of the use of quality tools. Adelman and Taylor (2003) recognize, “When key district leaders moved on, there was no steering group in place and no process to orient and bring new leadership up to speed. As a result, commitment to the change is waning” (p.22). Likewise, Senge (2000) agrees with Adelman and Taylor (2003) when he says, “Few can sustain their innovations beyond the tenure of a few innovators. Once a key principal, or superintendent, or a few key teachers leave, everything returns to the norm” (p. 33).

Fullan (1996) finds that organizations need to increase the capacity of their systems to manage change on a continuous basis. Benjamin (2007) concurs with Fullan when he recognizes that leaders often neglect developing systems that ensure that change will occur systematically and long-term, even when district leadership changes.

Periodic Evaluation. Any change initiative needs to have periodic evaluations to determine if they are effective, need modifications and are in alignment with
organizational program development (Fullan, 1996; Taylor et al., 1999; Supovitz & Taylor, 2005). “Systemic evaluations must attend to the entire system, rather than just components within a system” (Supovitz & Taylor, 2005, p. 208). Supovitz and Taylor (2005) acknowledge that school systems, in evaluating reforms, should look at the various components of the change, how the implementation worked throughout the district and what its impact was on student learning.

Recommendations for Future Research

While conducting this study, it was obvious that there had not been prior studies on the BiE IN implementation in Ohio. This was surprising due to the strong focus and time spent on this initiative during the late 1990s. It is recommended that this study be repeated due to the low numbers of teachers who responded to the surveys. Another recommendation would be to conduct a study of Ohio teachers at the secondary level to find out what effects, if any, the training had on teachers at the upper level.

The study could also serve as a catalyst for studies of implementations in the other five original BiE IN states-Illinois, Indiana, Maryland, New Mexico and Texas. Although there were articles written about some of the school districts in these states, no formal research about the status of the BiE IN implementation in any of the states was found.

Due to the lack of information following the BiE IN implementation in the late 1990s, it is also recommended that qualitative studies be conducted with teachers and school leaders. Interviews and open ended responses would yield more detailed, specific information and ideas for future organizational planning.

Future studies may also include students who have had exposure to a variety of quality tools in their classrooms. These students could be from the elementary, middle or
secondary levels. Students’ responses may provide valuable information to educators as to their perceptions of how quality tools helped them learn.

*Implications for Leadership*

There are several implications relevant for educational leadership. Leaders should provide ongoing and follow-up training for teachers, develop support systems to assist teachers during the implementation, and put monitoring systems in place to train newly hired teachers and administrators to ensure continuity. Additionally, they should also make small incremental changes over time, conduct periodic evaluations, and encourage discussion and communication among teachers and other stakeholders during all phases of implementation.

As a result of the literature review and the research, the researcher identified a potential model for introducing quality tools to classroom teachers. Table 3 is a depiction of the essential elements.

<table>
<thead>
<tr>
<th>A. Theory</th>
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<tbody>
<tr>
<td>a. Background of Quality Movement</td>
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<td>i. Total Quality Management</td>
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<td>ii. Deming/Baldrige</td>
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<td>iii. Quality in Education</td>
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<td>iv. Quality Tools</td>
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<td>B. Buy-in</td>
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<tr>
<td>a. Examples</td>
<td></td>
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<td>b. Change Theory</td>
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<td>c. Pilot Programs</td>
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<td>C. Continuous Improvement</td>
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<tr>
<td>a. Use of Data</td>
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<td>b. Understanding Change</td>
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<td>c. Involvement of Stakeholders</td>
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<td>d. Use of a Process/System</td>
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<td>D. The Tools</td>
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<tr>
<td>a. Types</td>
<td></td>
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<td>b. Purposes</td>
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</tbody>
</table>
c. User Training

Figure 7. Elements of a professional development session for introducing quality tools to classroom teachers.

Conclusion

It was apparent after contacting pilot and early innovator districts that much of the Baldrige in Education Initiative has gone the way of many previous educational reform changes. Although quality tools are still being used according to the teachers who were surveyed, the sample response was limited. Even though training is still being conducted, it is not known to what extent quality tools are being used in other districts. Things that have drawn attention from the BiE IN Initiative in Ohio include federal and state accountability measures such as No Child Left Behind (NCLB), professional learning communities, emphasis on state standards and assessment (OAT, OGT, short cycle, formative, summative), Value-Added and Response to Intervention (RtI).

Quality tools will continue to be used by those teachers who believe in their relevance to classroom instruction and value to student learning. In the meantime, classroom teachers are already being trained in many of the above mentioned accountability measures. As to whether these measures will have the sustainability that an educational reform requires only time will tell.

Due to the limited number of teachers who answered the survey questions, the educational community would benefit from repeating the study. Because quality tools are user-friendly and versatile, and the use of data is increasingly vital for demonstrating educational improvement, there will be teachers who continue to use them. They just may not require a federal and state-wide initiative to do so.
References


Tri-County ESC. Tri-County Statewide Quality Movement “Alive and Well” Tri County Educational Service Center. 2007.


Appendix A

Interview with Jerry Marshall

Due to the limited amount of available information regarding BiE IN in Ohio, Jerry Marshall, one of the key experts on the quality tools movement in Ohio, was interviewed regarding his perceptions of the initiative’s current status.

The questions and responses (in italic) were as follows:

What was the time frame for the BiE IN initiative for Ohio?

*I believe the Rossford* (the researcher’s district and one of the five original BiE IN pilot districts) *time frame is a pretty good guide for the others, except Mentor. They dropped out of this prior to Doug Arnold’s departure from Rossford.*

How did you become involved in the trainings? How long did you do the quality tools training?

*Refer to attachment “Alive and Well” sent in the first email. We are still conducting state-wide workshops.*

Can you pinpoint the time the state focus on quality tools waned?

*I can only speculate, but when we were doing the large state-wide Academies (in Akron, Ashland, Columbus, Cambridge, Youngstown, Rossford, etc) the term Quality Tools was much more popular than Baldrige.*

Do you know how much money the state earmarked for the BiE IN initiative?

*I have no knowledge of the amount of money spent on this.*

Was there an initiative that replaced it?

*The state apparently dropped the term Baldrige and utilized the term Quality Tools. I was not there when that transition occurred- I was developing and implementing*
the Quality Tools teams for workshops and Academies. We had access to 78 presenters from all across Ohio. Those were “practitioners” (teachers, Principals, Superintendents) and that remains one of the keys to our continued success.

Do you continue to do conclaves or informal presentations for school districts on the information from the BiE IN initiative? Are you aware of anyone else who does?

We have conducted workshops involving over 12,000 educators to date.

Many schools are utilizing Quality Tools in their buildings and I know one district-Martins Ferry- that has Board adopted policy stating Quality Tools is district-wide. We have had over three dozen buildings recognized as Schools of Promise and a half a dozen National Blue Ribbon Schools. Rossford had a great opportunity to become the state-wide focus of Quality Tools. There were three very strong presenters in that district, our team wanted to make that our base for northwest Ohio and a couple of our presenters-now superintendents- wanted to look into the possibility of applying for the superintendent’s position there. Sally Duncan from PQ Systems in Miamisburg, Ohio does workshops relating to “data folders”, which is a part of Quality Tools.

What do I need to know to better understand the quality tools initiative? Was the focus on teachers or for administrators to support building improvements?

Your usage of the word “was” implies that this is dead. You may be misinformed. We would not still be doing workshops if it were so. We conducted a workshop on Friday and are preparing for the London workshop tomorrow. We have also keynoted/presented at several state- sponsored conferences recently: Title One, Schools of Promise, OASSA, etc. The big difference now for us is that when we began in
2001, people brought us in on “faith” with limited data. Now we continue to have successes and that data is what drives what we do.

Another difference is that the large state School Improvement Academies we developed has been replaced by in-district workshops in order to have 100% of the staff involved. The next big workshop we are scheduled to do is in August, 2008, with the total staffs of 23 schools involved at one time. It may resemble our Academies.

J. Marshall (personal communication, January 19, 2009)
Appendix B

Approval to Survey Classroom Teachers Letter

Dear Superintendent ____________________,

My name is Holly Schmidbauer. I am writing a dissertation on the current status of quality tools in school districts in the Baldrige in Education/Quality Tools Initiative in Ohio. I am doing this through the University of Toledo. I am an elementary principal in Rossford, Ohio, one of the original pilot districts.

I am interested in surveying classroom teachers in grades 3, 4, 5 & 6 regarding their current use of quality tools, if they still use them or have discontinued. To my knowledge there hasn’t been any formal research conducted. I think it is important to know the effects the training has had on classroom teachers who were trained. I am asking for your approval to survey the teachers in the ____________________ District.

Districts will not be named in the dissertation but referred to by District A, District B, District C and so on. Teachers will be able to skip any questions they chose not to answer and stop at any point.

I appreciate your time and consideration. I need approval by district administration to survey the teachers. Please check below if I have your approval. I am eager to begin the research. It will probably be a week or so before I am ready to send the surveys. I am planning to use the Survey Monkey™ web program to gather the information.

Please contact me if you have questions. I have provided contact information if you need any further information. Please sign below and fax to me at 419-661-5432.
Thank you, again, for your time and consideration.

Holly Schmidbauer
Principal-Indian Hills Elementary School
Rossford Exempted Village Schools
w-419-666-0140
h-419-878-0578
cell-419-466-4128
E-mail: hschmidbauer@rossfordschools.org

____ Mrs. Schmidbauer has approval to survey the teachers in grades 3, 4, 5 & 6.
____ Approval is not given to survey the teachers in grades 3, 4, 5 & 6.

________________________________Signature
________________________________Title
________________________________District
Dear Classroom Teachers,

My name is Holly Schmidbauer, and I am a doctoral student at the University of Toledo. I am writing a dissertation titled “The Effect of the Use of the Ohio Baldrige Initiative Training on the Sustained Use of Quality Tools by Classroom Teachers”.

This study seeks to determine if use of quality tools was sustained following the original training in the pilot districts and by other early innovators. I am interested in learning to what degree the Baldrige quality tools are still being used in the classroom and what effect you think they have had in your classroom and on student achievement. To my knowledge there has not been a study conducted in this area.

This online survey is designed to obtain your views on the current status of quality tools in your classroom. Your responses will determine future areas of study in the area of quality tools.

I would greatly appreciate it if you would complete the survey and submit it as soon as possible. As I am an elementary principal, I realize that your time is valuable and that your schedule is busy, but I hope you will consider taking the time to respond to this survey. It will help determine how using quality tools have impacted the classroom.

Your responses will be kept strictly confidential. There is no identifying information on the survey form, only a code that I will use to tabulate the survey results. Administrators will not see the results of individual surveys. You may skip any questions you chose not to answer and stop at any point.
Each survey respondent will be enrolled in a drawing for a $100 Visa gift card. The drawing will be held on May 22, and the winner will be notified immediately afterwards. The survey consists of 24 questions. Participants should take approximately 10-15 minutes to complete all questions.

In advance, I want to thank you for your time and interest in responding to this survey. If you have any questions you may e-mail me at hschmid@bex.net or call me at 419-878-0578 or 419-466-4128.

Sincerely,

Holly Schmidbauer

University of Toledo Doctoral Student
Appendix D

Quality Tools Teacher Survey

Please read each question carefully, and mark your answer.

1. What is the name of your school district? _______________________________________

2. What is the name of the building you teach in? _________________________________

3. What grade level do you teach? _______________________________________________

4. How many years have you taught in your present district?
   a. 1-2 years   b. 3-5 years   c. 6-9 years   d. 10-14 years   e. 15 years or more

5. How long have you taught in your present building?
   a. 1-2 years   b. 3-5 years   c. 6-9 years   d. 10-14 years   e. 15 years or more

6. Was your district one of the five original Baldrige in Education (BiE IN) pilot districts in Ohio?
   a. Yes   b. No   c. Do not know

7. If “Yes” above, did you receive the original pilot training in using quality tools in the classroom?
   a. Yes (Continue to #8)   b. No (Skip to #11)

8. Who conducted this original training?
   d. An Educational Service Center   e. District administrator
   f. District teacher   g. Do not remember
   h. Other (Please specify)  __________________________________________
9. If you were in an original pilot district, did you receive follow-up training after the initial training?
   a. Yes   b. No (Skip to #11)

10. If “Yes” above, what type of follow-up training did you receive?
   a. Workshop   b. Attendance at a Marshall/Delaney Conclave
   c. Other (Please specify)

11. If you were not in one of the original pilot districts, did you receive any type of training in the use of quality tools?
   a. Yes   b. No (Skip to #14)

12. If “Yes” above, when did you receive that training?
   a. When first hired   b. During follow-up training for the initially trained teachers
   c. Other (Please specify)

13. If you answered “Yes” to #11, how did you receive that training?
   a. Workshop   b. From a colleague   c. From a book   d. Other (Please specify)

14. Are you currently using quality tools in your classroom?
   a. Yes   b. No

15. If you answered “No” above to continuing to use quality tools in your classroom, why aren’t you using them?
   Please mark all that apply.
   a. Lost interest   b. Saw little value in using   c. Lack of support from district or administration   d. Lack of training opportunities offered
   e. Other (Please specify)
16. If “Yes” in #14, what types of quality tools do you currently use? Please mark all that apply.

a. Run chart  

b. Scatter diagram  

c. Histogram  

d. Fishbone diagram  

e. Affinity diagram  

f. Consensogram  

g. Issue Bin  

h. Other (Please specify)

17. What, if any, quality tools have you discontinued using? Please mark all that apply.

a. Run chart  

b. Scatter diagram  

c. Histogram  

d. Fishbone diagram  

e. Affinity diagram  

f. Consensogram  

g. Issue Bin  

h. Other (Please specify)

18. Why did you discontinue using the quality tools you responded with in #17?

19. Please indicate which of the following you think has produced benefits in your classroom. Mark those which apply.

a. Improved test scores  

b. Improved student behavior  

c. Improved enthusiasm  

d. Empowered students  

f. Other (Please specify) ______________

20. What type of evidence do you base your response in #19 on?

a. Test data  

b. Behavior chart data  

c. Observation  

d. Feedback from students  

e. Other (Please specify) ________________________

21. How would you rate the level of student enthusiasm regarding the use of quality tools?

<table>
<thead>
<tr>
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<th>Below Average</th>
<th>Average</th>
<th>Above Average</th>
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123
22. To what extent do you believe that using quality tools has resulted in academic improvement for students in your classroom?

To what extent do you believe that using quality tools has resulted in academic improvement for students in your classroom?

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
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<td>7</td>
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</tbody>
</table>

23. What do you believe are barriers to using quality tools? This can include current use or use in the past. Please indicate the degree to which you agree or disagree.

What do you believe are barriers to using quality tools? This can include current use or use in the past. Please indicate the degree to which you agree or disagree.

a. Difficult to implement

<table>
<thead>
<tr>
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<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
</tr>
</thead>
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<td>7</td>
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</table>

b. Ongoing professional development not available

<table>
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<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
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<td>5</td>
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<td>7</td>
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</table>

c. Follow-up professional development not available

<table>
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<th>Disagree</th>
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<th>Slightly Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
<th>N/A</th>
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</table>

d. Lack of support from colleagues

<table>
<thead>
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<th>Disagree</th>
<th>Slightly Disagree</th>
<th>Slightly Agree</th>
<th>Agree</th>
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</table>
e. Lack of administrative support

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<th>Slightly Agree</th>
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<td>7</td>
</tr>
</tbody>
</table>

Other (Please specify) ______________________________________________________

24. Please add any additional comments you wish to make regarding quality tools:
________________________________________________________________________

25. If you win the $100 gift card, how can I best contact you?

Thank you for your participation in this survey!!!