The magic bullet: the effective administrator's roles during the implementation of technology in K-12 education

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The magic bullet: The effective administrator's roles during the implementation of technology in K-12 education

by

Dennis Wayne McElroy

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Education (Curriculum and Instructional Technology)

Program of Study Committee:
Ann Thompson, Major Professor
Don Rieck
Jackie Blount
Douglas Yarger
Denise Schmidt

Iowa State University
Ames, Iowa
2004

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This is to certify that the doctoral dissertation of

Dennis Wayne McElroy

has met the dissertation requirements of Iowa State University

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For the Major Program
DEDICATION

This work is dedicated to the memory of my grandparents, Vaughn and Marjorie McElroy and Kay and Myrtle White, and to my parents, William and Doris McElroy for always believing in me and for lighting a path I could follow.
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ACKNOWLEDGMENTS

This work is the result of the influence of many people over a long period of time. Knowing it is impossible to thank everyone here I hope each of you know how thankful I am and will forgive any omissions.

This might have never happened if it weren’t for my major professor, Dr. Ann Thompson. She has been my guide and mentor. Thanks for making the call and telling me it was time to come back and begin my PhD studies. You provided the support and encouragement at the most opportune times. You set an incredible example I hope to follow in my career

I would like to thank my committee for making this experience so positive and reminding me that learning is indeed life-long. I greatly appreciate the support and guidance provided by Dr. Don Rieck, Dr. Denise Schmidt, Dr. Douglas Yarger, Dr. Jackie Blount, and Dr. Jerry Willis. This was an incredible committee.

Thanks to my editor Billie Evans. She was my high school English teacher and now can finally experience the success of her student. I greatly appreciated the skills of Trina Garman. You quickly and expertly turned my tapes into the documents I used for analysis.

I can’t say enough thanks to the people (who will remain anonymous!) of Cardinal Elementary School – your vision and drive to excellence, your willingness to open your doors and share your thoughts made this all possible. You are what being an educator is all about.

Two people continually provided support during this process. Thanks go to my Dean, Dr. Bill Armstrong, for providing me the encouragement and the freedom to complete this important project. You knew how important it was and never failed to keep that in front of
me. Thanks go to my good friend and colleague, Dr. Jack Gerlovich for just being you. Your career has been dedicated to being a compassionate and caring educator. The work we do together and the friendship we share helps make sense of all of this.

Thanks must go to two of my best friends, Mike Webb and Dr. Tom Walsh. You always knew the right times to call, offer support and encouragement. You guys are what buddies are all about. Mike you've always been and always will be my brother.

This wouldn't be complete without recognizing Kelly, Clyde, and Bailey for the simple love and compassion only a dog can provide. When I was ready to pull my hair out each of you were always there with your head on my leg and a wagging tail.

Finally, I give thanks to God that he blessed me with the family I have. I am so thankful to my mom and dad for believing in me. Jeff and Steve, you were always there to talk to and provide the reality checks. I am so thankful for the closeness our family provides. The support is something special and unique. When one of us does something we are all in it together. Jacklyn and Heather are the two best daughters anyone could ask for. Just your presence in my life reminds me of what is really important. You two always make me smile. This wouldn't have been possible if it weren't for the support and love I received from my wife, Julie. You were the rock and supporter I needed to get this done. Thanks for picking up the slack and being so thoughtful at all the right times.
The importance of the school administrator to the success of educational technology initiatives is well documented in the literature. During the last twenty years numerous recommendations have been released concerning the roles a school administrator should fill to increase the success rate of a technology initiative. These culminated with the publication of the National Educational Technology Standards for Administrators (NETS-A) by the International Society for Technology in Education in 2001. This case study describes the actual roles and actions taken by an exemplary school administrator during the technology implementation process, provides a comparison to literature and the NETS-A, and discusses implications for practice and future research.

The subject was a principal who has been recognized for his leadership in the area of educational technology. Interviews were conducted with the principal, teacher focus groups, and an Area Education Agency technology consultant to gather information about the actions of the principal and how they impacted the school and technology program. Other data sources included newspaper articles, technology conference programs, and technology team documentation collected from school, community, and county resources.

These data were analyzed and six themes emerged: encouraging and fostering collaboration, providing leadership from all levels, having and sharing a joint vision related to these efforts, recognizing and understanding the impact of change on the educational system, learning about and understanding the impact of technology on the educational system, and identifying and managing teacher issues. This case study presents the story of the educators of Cardinal Elementary during the introduction and implementation of their technology program.
CHAPTER ONE

BACKGROUND

Here’s to the crazy ones.
The misfits. The rebels. The troublemakers.
The round pegs in the square holes.
The ones who see things differently.

They’re not fond of rules.
And they have no respect for the status quo.
You can praise them, disagree with them, quote them,
disbelieve them, glorify or vilify them.
About the only thing you can’t do is ignore them.
Because they change things.

They invent. They imagine. They heal.
They explore. They create. They inspire.
They push the human race forward.

Maybe they have to be crazy.

How else can you stare at an empty canvas and see a work of art?
Or sit in silence and hear a song that’s never been written?
Or gaze at a red planet and see a laboratory on wheels?

We make tools for these kinds of people.

While some see them as the crazy ones, we see genius.

Because the people who are crazy enough to think
they can change the world, are the ones who do.

“Think Different” advertisement created by TBWA Chiat/Day for Apple Computer, Inc.,
(Apple Computer, Inc., 1997).

1997: Chiat-Day released the award winning “Think Different” advertising campaign
designed for Apple Computer, Inc. The campaign focused on people famous for their actions,
talents, and thoughts; people who changed the world, as we know it. People like Albert
Einstein, Martha Graham, Pablo Picasso, Jim Henson, and John Lennon were included in this list. Each person challenged the world as it existed, thumbed their noses at the opposition, and proceeded forward in changing the way we view physics, dance, art, communication, and music.

Education is a field full of people who fit the mold of the "Think Different" mind set. People like Papert, Piaget, Dede, and Eisner have provided fresh ideas influencing and changing education. All have broken away from traditional paradigms to help promote and create effective learning environments that are different and powerful in their nature. "You can't ignore them because they change things." The same can be said about select schoolteachers and administrators who constantly strive to create effective learning environments, fostering innovation among their students, and changing the world forever.

Leadership Defined

Leadership is an oft-used term describing the actions of an individual in relationship to other individuals. John Gardner (1990) describes leadership as "the process of persuasion or example by which an individual (or leadership team) induces a group to pursue objectives held by the leader or shared by the leader and his or her followers." We have many examples of this in society ranging from seemingly simple leadership to the incredibly difficult.

My youngest daughter was only six years old when she exhibited what I feel was extraordinary, yet simple leadership. As with many first grade classes, there were cliques and clubs in abundance. One club in particular was very selective about its "membership" and eventually asked Jacklyn to join while rejecting one of Jacklyn's friends. In short order, Jacklyn was elected the president of the club and made her first executive, leadership
decision. She abolished the club because of their selective membership practices. She made such a case that the other girls were brought into agreement and the club ceased to exist.

During times of conflict difficult decisions have to be made. Not only do decisions have to be made by leadership, but those around them also have to be convinced to buy-in to the decision even though they know doing so may cost them their lives. During the great battles of history – D-day, Gettysburg, Lexington and Concorde, and others – leaders emerged who were so passionate and believing in their purpose that they convinced those around them to fight and sometimes die to accomplish the end goals.

Leadership is at the very core of the success and survival of any entity (Ogawa & Bossert, 1995). In the case of the school system the individual responsible for the success and survival of a school is the principal. The school leader is someone who understands the purpose of the school; is a strong educator; and is vested in teaching, learning, and school improvement. Additionally they serve as the moral guide and advocate for the children and the school’s extended community. Perhaps most importantly, the school leader is responsible for making connections with people, “valuing and caring for others as individuals and as members of the educational community” (Council of Chief State School Officers, 1996, p.7). The most effective leaders are those “who have a realistic view of what is happening in their organization and respond appropriately to that situation” (Hagberg, 2003).

The Southwest Educational Laboratory (2003) identified six personal factors associated with leadership: capacity, achievement, responsibility, participation, status, and
situation. What was perhaps the most interesting aspect of their research were the following conclusions:

• No single characteristic can distinguish leaders from non-leaders.
• Theories could not predict which leadership skills would be more effective in certain situations.
• Effective leaders are able to address both the tasks and human aspects of their organizations.

While these factors are clearly associated with leadership, the exact mix and application seems to be an unknown or perhaps to be simply as unique as the individual him/herself. These conclusions lend themselves directly to the need for leadership research. It is the description of leadership within a particular context and the detailed descriptions that are important to inform the educational field.

The Need for Technology Leadership

Computer-related technologies are a fairly recent addition to the classroom teachers' toolkits. During the twenty plus years since the first mainstream computer (the Apple II) became available, educators have struggled to find effective uses for these tools. The focus of our professional development evolved from teaching about the machine to teaching about applications of it. Like the farmer who finds multiple uses for wire and pliers, educators have been increasingly innovative in their use of technology. As a result of the expansion and impact of this new resource, technology inherently became a concern and responsibility of the school administrator. The administrator had to budget for technology and its maintenance, understand the implications of using technology, provide appropriate
professional development concerning technology, and model effective applications of technology. Complicating this is the ever-changing nature of technology itself – the advances in hardware and the exploding software industry that provide solutions to fill areas of perceived need and where no need previously existed. Stephen Talbott describes this in his writing,

I sit at my keyboard and produce all letters of the alphabet with the same, undifferentiated, unexpressive, purely percussive strokes. Words, phrases, endless streams of thought flow effortlessly from me in all directions, with so little inner participation that I have reached the opposite extreme of the ancient word – self unity. I spew out my words easily, unthinkingly, at no psychic cost to myself, and launch them into a world already drowning in its own babble (Talbott, 1995, p. 182).

In the late 1980’s and throughout the 1990’s educators were literally drowning in the babble of technology as they twisted and turned to the beat of every new product. The need for an involved and informed leadership was more important than ever if we were to get the runaway freight train called technology under control. The result of this need for an informed and involved leadership has led to a variety of recommendations made concerning the role of the administrator during planning and implementation of technology (Ritchie, 1996; U. S. Congress, 1995; Davidson & Mauer, 1995; U. S. Congress, 1988). They include the following:

- Creating and sharing a vision
- Involving staff in the decision-making process
- Coordinating the technology program
• Facilitating curriculum development

• Expanding the amount and capability of technology in schools to increase student access

• Providing training and support for teachers

• Encouraging innovation and improvement in educational software

• Supporting research, development, demonstration, and evaluation, with emphasis on ties between research and classroom

• Supporting and encouraging teachers to use technology throughout the curriculum

• Restructuring to overcome the historical inefficiencies of the central office in relation to planning and implementation

Additionally, the Technology Standards for School Administrators Collaborative (TSSA, 2001) has proposed the following focal areas for administrators concerning technology in schools:

• Leadership and Vision

• Learning and Teaching

• Productivity and Professional Practice

• Support, Management, and Operations

• Assessment and Evaluation

• Social, Legal, and Ethical Issues
The Problem

Although the literature has shown the role of the administrator during the planning and implementation of a technology program is crucial (Brennan, 1997; Ritchie, 1996; Apple Computer, Inc., 1995; Davidson & Mauer, 1995; Bozeman & Spuck, 1991; Rees, 1987; Jorde, 1985), there appears to be a lack of research and information about the actual roles and actions of administrators during the development and implementation of effective technology programs. With the advent of the National Technology Standards for Administrators (ISTE, 2004), it is more important than ever to provide examples or cases of school administrators who have led the implementation of effective and exemplary technology programs.

The Purpose

The purpose of this study is to investigate and describe the role, actions, and practices of a school principal who has been recognized for providing exemplary leadership during the implementation of effective technology programs in his/her school. The study will be informed from the perspective of the administrator, teachers, Area Education Agency technology consultants, and supporting documentation. This information will be compared and contrasted to the research literature and the national standards recommended by the International Society for Technology in Education (ISTE, 2004).

School leadership has been described as not occurring in a vacuum, but at a particular time and place and under a specific set of circumstances (Thomas & Ogletree, 1986). There is a real need to investigate and tell the stories of school administrators while describing their actions, the environment they work in, and the impact of their efforts.
The use of qualitative methodologies is particularly fitting for this study as leadership actions, specific circumstances, and setting of a developing technology program will be addressed, resulting in a thick, rich description of each case (Geertz, 1973) in a language people understand (Connelly & Clandinin, 1988). As previously stated, technology has been actively used in education for a relatively short period of time. As such, qualitative research has been recognized as an important first step in exploring the topic and identifying further research questions (Thompson, 2003). Thompson goes on to state, "Researchers should identify questions that need to be answered, focusing on those that can now be researched because of efforts and progress to date in technology...." (p.3).

This study of an administrator and his/her influence on technology implementation coincides with two – diffusion of innovation and program innovation – of the six major research directions suggested by Willis, Thompson, and Sadera (1999). They further stress the need for case studies of diffusion efforts and more information on innovations answering such questions as "what steps are taken to encourage participation and use?" and "how will they be disseminated?" (Willis, Thompson, & Sadera, 1999, p. 41).

Conducting a case study will "provide a picture to help inform our practice or to see unexplored details of the case" (Creswell, 1998, p. 95). A case study describing the roles of an administrator who has provided exemplary technology leadership will help provide information about effective practices and potential pitfalls for other administrators. Interviews with the administrator and teacher focus groups at each site will be used to gain perspective about the administrator and administrative practices in relation to technology implementation. Interviews with the Area Education Agency technology consultant will help provide information from an external viewpoint. Finally, available documentation relating to
administrative practices, pertinent events, and the technology program will be collected and analyzed to provide additional insight about this case.

The following questions will be used to help guide this research study:

1. What do you value about the use of technology in education?
2. What did you originally perceive as your role in the technology implementation process?
3. How did this differ from what your role actually became?
4. What initial actions did you take to communicate your vision concerning technology in the school district? What purpose did this serve for you? What was the goal(s) of the communication?
5. What pre-assessment of teacher skills was/is done?
6. Levels of regional/state coordination?
7. How did you deal with teacher issues such as access, professional development?
8. How did you identify the potential impact of technology in your school? How did you focus on developing the knowledge base in preparation for integration? In other words, why did you begin buying computers?
CHAPTER TWO

REVIEW OF THE LITERATURE

Historical Background: Technology in Education

School administrators have been faced with various technology integration issues throughout history. The decision-making process has been no less daunting whether the technology being considered was a slate board or laptop. In either case, a new device was being considered for use in an educational environment. Decisions had to be made concerning how the device would be purchased, how it would be used in the classroom, and how it would be maintained.

Beginning in the 1970s, school administrators first began looking at computer-related technology as a viable resource for administrative and educational usage. The complex financial and informational processes could be managed more quickly and efficiently using computers. The advent of the Apple IIe in the late 1970s brought computers into the mainstream as a viable educational tool.

Initially, computers were purchased for specific applications or to solve specific problems. Moursund (1983) suggested four things must occur for a computer to solve problems:

- A program must be written.
- Data must be made available.
- The computer's storage capacity must be large enough to handle a program and data.
- The CPU speed must be adequate to solve the problem in a timely fashion.
Based upon these four criteria, the applications available for schools were extremely limited. Administrative needs were supported as tools designed for the business world quickly migrated to the education environment. These included the word processor, database, and spreadsheet (Bozeman & Spuck, 1991; U.S. Congress, 1988). A limited number of instructional programs were available with most being tutorials, games, skill practice, and drill and practice (U.S. Congress, 1988). Additionally, the limited processing and storage capabilities of available computers put further restrictions on software development for education.

In the 1980s, computers were used as administrative tools to handle applications, such as follows:

- Library information storage and retrieval
- Word-processing in business offices
- Solving mathematics problems
- Payroll, inventory, and billing
- Management information systems for processing student schedules
- Teaching, learning, and research aids (Rees, 1987; Moursund, 1983)

In 1987, the Association of School Business Officials surveyed its 4,129 members regarding their school district's degree of automation (Touchton, 1987). The survey results indicated 94.8% used a computer to perform some type of administrative function. Administrative usage of computers far exceeded instructional use as school districts in the United States spent one percent or less of their budgets for instructional use of computers (Moursund, 1983). A major impediment to the effective integration of instructional technology into the classroom was the absence of instructional leadership at the building
level (Bozeman & Spuck, 1991). This echoes the results of a 1985 survey of twenty-six principals and thirty-three senior administrators that found:

1. Neither group was certain if computer technologies would increase teaching effectiveness.

2. Only thirty-five percent of the principals compared to sixty-seven percent of the senior administrators believed computer technologies would increase administrator effectiveness.

3. Both groups believed teachers and administrators who were new technology users experienced difficulties communicating needs and expectations to technology specialists.

4. Both groups believed automation increased the number of administrative employees required to carry out the work of schools and school boards.

Principals and administrators were unsure about what new skills they would need to acquire as technology had a greater impact on their jobs (Marche, 1987).

Computer-related technology made significant inroads into educational systems in the 1990s. In a 1997 survey, Sharp and Walter asked administrators in Texas, Illinois, and Massachusetts to rank a list of educational issues on the basis of importance. With an overall response rate of seventy percent, Sharp and Walter found that eighteen of twenty-five issues were considered to be as important in 1997 as in 1990. The issues are as follows:

- Community involvement in schools
- Volunteer programs
- Community relations
- Teacher empowerment
- School choice
- School reform efforts
- Block scheduling
- Site based management
They found four issues were considered to be more important in 1997 than in 1990. The issues and response level are found in Table 2.1.

Table 2.1. Administrator survey response level concerning technology issues with rising importance.

<table>
<thead>
<tr>
<th>Issue</th>
<th>Response Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology/computers</td>
<td>63.9%</td>
</tr>
<tr>
<td>School finance in general</td>
<td>61.3%</td>
</tr>
<tr>
<td>State testing programs</td>
<td>54.8%</td>
</tr>
<tr>
<td>School finance equity</td>
<td>50.9%</td>
</tr>
</tbody>
</table>

As evidenced by the response levels, the emphasis and concern about technology/computers had risen dramatically.

Further support of this increased emphasis on technology is illustrated by the increased expenditures on technology by K-12 school systems. For example, Iowa school technology expenditures increased from approximately twenty million dollars in 1992-93 to more than forty-four million dollars in 1999-2000 (Iowa Department of Education, 2000). One theme first identified in the late 80s was reiterated in the 90s. It was suggested that school administrators needed to become more effective users of technology and that they...
must also be trained to be effective managers of technology within schools (Davidson & Mauer, 1995; Bozeman & Spuck, 1991; Jorde, 1985).

Recognizing the important roles administrators play concerning the use of technology in education has led to the development of the first technology standards for school administrators. The Technology Standards for School Administrators Collaborative (TSSA) along with many other organizations were key in the development of the standards. In 2001, TSSA released the technology standards for school administrators. These standards (ISTE, 2004; TSSA, 2001) focus on the following:

- Leadership and Vision
- Learning and Teaching
- Productivity and Professional Practice
- Support, Management, and Operations
- Assessment and Evaluation
- Social, Legal, and Ethical Issues

Detailed information about these standards can be found in Appendix E, F, and G.

The Administrator’s Role

The standards produced by TSSA and adopted by ISTE are suggestions concerning specific areas of concentration, professional development, and practice for administrators. These types of suggestions and many others can be found throughout the literature of the past two decades. This section focuses on the issues presented prior to the release of the TSSA standards.
Administrative support may be the most critical role contributing to the success or failure of a technology program. Hoffman (1996) identified seven variables contributing to the failed implementation of educational technologies:

- Lack of administrative support
- Inadequate staff development and technical support
- Low quantity, quality, and access of technologies in the classroom
- Nonexistent or cursory plans for adopting and implementing technology into a school
- Failure to allocate a technology coordinator to help train teachers and coordinate the technologies
- Lack of funds and personnel to maintain equipment
- Continual assessment of content acquisition through traditional methods
- Establishment of a broad participatory clientele to establish a technology culture

The first, and most important variable was administrative support. Without the support and commitment of the school administrator, one or more of the remaining seven variables will cast a negative influence on the technology implementation process (Ritchie, 1996).

The Goals 2000 report also indicates the essential role of the school administrator for the successful implementation of technology in that “...technology planning efforts need the full support of local school administrators...” (Apple Computer, Inc., 1995, p. 2).
Providing Administrative Support

In order to provide effective support for implementation of effective technology or other initiatives, an administrator should take on several roles. These consist of the following:

• Creating a vision
• Sharing the vision
• Communicate clearly and effectively
• Involving staff in collaborative efforts
• Coordination
• Establish accountabilities
• Curriculum development
• Provide equitable access to current technologies
• Create an innovative environment
• Provide professional development opportunities
• Acquiring a knowledge base
• Understand and oversee legal and ethical issues


Interestingly, many of these can be related to several of the eight causes for program failure suggested by Hoffman (see Figure 2.1).
Creating a Vision

One of the most difficult, yet important, roles of the effective administrator is that of creating a vision (Snelling Center, 2004; McGuire, 2001; Ritchie, 1996; U. S. Congress, 1995; Davidson & Mauer, 1995; U. S. Congress, 1988). As Bozeman and Spuck (1991) stated, "It is indeed rare to find a principal who can articulate a vision for the use of technology for achieving educational goals." The vision cannot be created by a single person,
but must be the product of group-think. The administrator must pull together those who have a stake in the local educational system. These include teachers, parents, students, and community members. Townsend (1997) suggests, "One of the main tasks of the system in the next decade will be to provide principals with the skills and commitment to build a leadership team." Empowering these individuals (the team members) to create a vision of how technology will impact the future of their schools will develop "a strong acceptance, commitment, and potential for lasting change" (Rhodes, 1988).

The role of the administrator should not be under-appreciated during this process. The administrator brings to the table key elements of expertise and understanding of the educational system. Therefore the administrator should serve as a leader and facilitator during the visioning process. As Brennan (1997) states, "Even if the principal does not understand the technical aspects of the project, he or she must have a vision of what it can do for students."

Communicating the Vision

Just as the teachers, parents, students, and community members are involved in the visioning process, the product of this process must be communicated to those individuals not directly involved. The administrator must communicate this to the school's constituents in a clear and understandable manner during the process. The administrator must also make sure credit is given to those who are involved in creating the vision, especially if they are non-educators (Brennan, 1997).
Successful transitions occur when leaders articulate and share a vision, exemplify the change through example, educate, support, empower, and share decision-making and leadership with faculty and staff (Ritchie, 1996).

Involving Staff and Coordination

As described in the visioning process, the effective administrator should not make decisions and evaluations as an individual. Technology in the classroom improves students' motivation and attitudes, increases family involvement in their children's education, and serves as a tool to help teachers improve their classroom practice (U. S. Department of Education, 1996). Therefore, each of these groups has a vested interest in the application of technology in the school system. The administrator should involve these groups in the planning and decision-making (U. S. Department of Education, 1996; Koll, Roberts, Lampe, & Hegedus, 1996; Jorde, 1985; Moursund, 1983).

Curriculum Development and Technology Integration

Educational technologies should not be treated as "extras" or be seen as being external to the curriculum. Administrators must provide opportunities for teachers and themselves to learn how technologies can be used to support learning and assist with administrative tasks (Rees, 1987).

Union City, New Jersey is located near Manhattan with a population of 60,000. In 1992 the Center for Children and Technology began working with their school system in the area of networked technology and educational reform. During the first six years the Center
worked with Union City schools, eight key reform strategies critical to the success of the reforms were identified. These included the following:

- Instructional leadership at the building level
- Effective school improvement teams
- Extensive professional development
- A strong emphasis on student creativity and the expression of ideas in multiple formats
- Multi-text approach to learning that includes the integration of technology into instruction (Honey, McMillan, & Carrigg, 1999)

It is important to note the emphasis on instructional leadership, teams, professional development, and technology integration in relation to the success of any reform movement. Each of these strategies is critical in understanding curriculum development/reform and the role of technology in supporting and implementing the curriculum.

Training Staff

The lack of teacher training is one of the greatest roadblocks to integrating technology into the curriculum (U. S. Congress, 1988). The administrator's role in staff development includes the responsibility for both instructional and administrative technology training. Our educational system plays a critical role in the professional development of our nation's teachers. The system must insure "that teachers receive adequate training in how to use technology to improve learning and that they receive the ongoing support they need to use technology well in the classroom" (U. S. Department of Education, 1996). If a school system hopes to enhance the learning experience of the student by providing access to a
variety of educational technologies, we must also provide access, training, and experience for teachers (Rockman, 1998).

Administrative technology training is also afflicted by similar problems. Training often focuses on how to use the technology with little emphasis on the conceptual or strategic skills required of effective leaders (Kearsley & Lynch, 1994).

Robert Wortman (1995) developed a model to support professional growth based upon a language-learning model designed by Brian Cambourne (as cited in Wortman, 1995). Cambourne identified eight conditions for learning:

- Immersion
- Demonstration
- Engagement
- Expectation
- Responsibility
- Use
- Approximation
- Response

As an administrator, Wortman frames his decisions and interactions based upon these conditions. By doing this, he provides effective professional growth experiences for his faculty and staff. Wortman exemplifies the administrative ability to identify, procure, and apply effective models for professional growth.

Developing a Knowledge Base

Administrators must build a knowledge base and gain user experience concerning administrative applications (i.e., student scheduling, payroll, planning and projection, and finance) and instructional applications of technology (Rockman, 1998; Costello, 1997;
Bennett, 1996; Rees, 1987; Jorde, 1985; Moursund, 1983). Administrators who desire to become educational technology leaders must attain and maintain basic technology skills (Bozeman, Raucher, & Spuck, 1991). Principals who learn about both administrative and educational applications of technology feel more confident in dealing with staff requests, purchase decisions and their personal use of technology (Rockman & Sloan, 1993). Administrative leadership is a key factor if teachers and students are to attain the needed levels of proficiency (Ritchie, 1996).

**Issues of Importance**

The integration of technology into our educational systems brings with it a variety of issues for administrators to address. Only by staying abreast of technology trends and issues will administrators remain effective decision-makers. Current technology trends that need considerable evaluation include the Internet, finance, and staff development (Rockman, 1998). A last issue of importance is balancing the new responsibilities and workload required by the administrator's role in implementing a successful technology program.

The number of people accessing the Internet continues to grow at an astounding rate. In 1994, thirty-five percent of schools had access to the Internet. By the following year this number had increased to fifty percent. From January 1995 to June 1996 the number of World Wide Web sites in United States schools had grown from less than 300 to nearly 3,000. Of the schools that did not have Internet access 74% had plans to secure access (U. S. Department of Education, 1996).
Administrators will need to gain an understanding of the implications Internet access has for our schools. This understanding should include user skills, legal issues, finance, and policy (Richie, 1996). A final telecommunications issue is that of electronic data interchange (EDI). Using EDI, administrators are able to file reports with their State's Department of Education, transfer student transcripts, and provide information to higher education institutions concerning incoming students. In states such as Iowa, EDI will become the standard for these processes. Administrators will need to receive appropriate training, purchase needed equipment and software, and develop the necessary student databases (Iowa Department of Education, 1999).

Finance continues to be one of the major issues plaguing technology integration. Financial issues related to the integration of technology far exceed the simple purchase of computers. Administrators are faced with having to build computer networks, update electrical wiring and power supplies, add phone lines, invest more heavily in teacher training and support, and hire technology coordinators (Sharp & Walter, 1997; Townsend, 1997; Hoffman, 1996; U. S. Department of Education, 1996). Addressing where to allocate scarce and valuable funds will be an important and difficult task.

For the administrator, a key concern is how to "juggle these new responsibilities and still be the educational leader of the school simultaneously" (Townsend, 1997). Townsend points out that during a restructuring process (of which the integration of technology is an example) the workload for administrators and teachers rises greatly. Of even greater concern is the fact these levels of involvement do not drop back once the program is in place.
The Change Process

Initiating system-wide reform (such as shifting to technology supported operations or learning) requires policies and practices quite different from small-scale projects. System-wide reform touches every aspect of the educational process. When used in ways that are compatible with student learning, technology supports the kinds of changes at the heart of systematic reform (Institute for Learning Technologies, 1994; U. S. Department of Education, 1993). Change strategies used to generate system-wide reform must be made usable for typical educators while retaining their effectiveness (Dede, 1998). In order to accomplish the creation and implementation of a usable change strategy, the administrator must understand both the innovation being introduced and the change process itself.

The introduction of any innovation within a social system produces changes leading to adoption decisions. An adoption decision is simply a decision made by the impacted social group or an individual concerning the continued use of an innovation. A positive reaction to the innovation and/or the incurred changes creates an opportunity for diffusion of the innovation to occur throughout the system.

It is critical for school administrators to realize it is the application of technology and not technology in and of itself that is the innovation.

Technology is a catalyst for change in classroom processes because it provides a distinct departure, a change in context that suggests alternative ways of operating. It can drive a shift from the traditional and structural approach towards a more eclectic set of learning activities... (Sandholtz, Ringstaff, & Dwyer, 1997, p. 47-48).
It has also been suggested by others (Cradler & Bridgforth, 1996; Glennan & Melmed, 1996; U. S. Department of Education/Office of Research, 1994; Grimes, 1994; Carnegie Forum, 1986) that technology could be used as a catalyst for school reform. The Goals 2000 legislation (1994) actually mandated that states and schools develop technology plans describing how technology could be used to support reform initiatives. Several reform initiatives have used technology as a catalyst and many have illustrated its value (OECD/CERI, 2001; NCATE, 2001). As a catalyst, technology not only impacts the sustainability of reform, but also impacts the renewal of teachers, increased student learning, and motivation (Valdez, 1998). In an article in T.H.E. Journal, Insernhagen (1999) stated, “Schools in search of a catalyst for change may want to consider the infusion of technology into the classroom.” For the catalyst to have sustainability it is important to use the technology effectively and appropriately.

The transition from the traditional to the eclectic can be described as a change process. The change process has been described in both the Concerns-Based Adoption Model (CBAM) (Hall & Rutherford, 1983) and the Apple Classrooms of Tomorrow (ACOT) research (Sandholtz, Ringstaff, & Dwyer, 1997). Within the change process, the innovation is the application(s) of the various technologies in the classroom, offices, hallways, and libraries of the school system.

The importance of understanding the change process becomes apparent when faced with the multi-faceted innovation of technology application. If the various applications of technologies are to be implemented effectively and appropriately the administrator must understand what those impacted by the technologies are experiencing. Those experiences, including the emotions, understanding, and growth, are a part of the change process. To
identify and provide the necessary support resources at a group or individual level, the administrator must understand the process of change. As a result, the administrator gains understanding about what the individuals involved are experiencing and can foster positive growth and implementation of the innovation(s).

The Apple Classrooms of Tomorrow (ACOT) Change Model

The ACOT research was conducted in five schools across the United States over a ten-year period. The ACOT researchers "Believe that a threshold level of classroom technology--far less than a computer for each child--can slowly, over time, transform traditional classrooms into student-centered places" (Sandholtz, Ringstaff, & Dwyer, 1997, p. xiii). During the change process once-traditional teachers became coaches and worked to help students use the technology in imaginative ways. It should be stressed that the ACOT research indicated that the technology integration process "Involves gradual shifts in both beliefs and practices" (Sandholtz, Ringstaff, & Dwyer, 1997, p. 182). The administrators in ACOT schools dealt with funding issues, workload reduction, providing encouragement, schedule changes, and moving to project based, interdisciplinary construction.

The change process model developed from the ACOT research consists of five stages: entry, adoption, adaptation, appropriation, and invention. The ACOT model takes teachers from where they are (usually text-based delivery) and gradually moves them to more dynamic learning practices. Participants in this change process evolve from asking questions such as "What is this?" and "How do I integrate this into my curriculum?" to "What caused these changes in my students?" and "Why did I teach that way before?" At the core of this change process ACOT researchers indicate, "Teachers' beliefs can only be modified while
teachers are in the thick of change—taking risks and facing uncertainty" (Sandholtz, Ringstaff, & Dwyer, 1997, p. 54).

The Concerns-Based Adoption Model (CBAM)

The CBAM is based upon the concept proposed by Hall and Loucks (1978) called the Stages of Concern about the Innovation. These seven stages describe "The feelings, perspectives, and attitudes of individuals as they consider, approach, and implement use of an innovation" (Hall, 1979, p. 204). Recognizing that change is a process that requires time, individualization of the process is the focal point of the CBAM. How individuals respond to change is influenced by their ability to use the innovation and their concerns about it (Hall & Rutherford, 1983; Hall, 1977).

The seven stages of concern consist of the following:

• Stage 0-Awareness Concerns
• Stage 1-Information Concerns
• Stage 2-Personal Concerns
• Stage 3-Management Concerns
• Stage 4-Consequence Concerns
• Stage 5-Collaboration Concerns
• Stage 6-Refocusing Concerns

In proceeding through the Stages of Concern, individuals progress from early self-oriented concerns, to task-oriented concerns, and ultimately, impact-oriented concerns (Hall, 1979). The Stages of Concern about the Innovation are compared and contrasted to the ACOT stages in Figure 2.2.
<table>
<thead>
<tr>
<th>ACOT Developmental Stages</th>
<th>Description</th>
<th>Stages of Concern about the Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entry</strong></td>
<td>Individual is not concerned or involved with technology.</td>
<td>Awareness</td>
</tr>
<tr>
<td></td>
<td>Individual is interested in learning more about technology (specifically the requirements for usage).</td>
<td>Information</td>
</tr>
<tr>
<td></td>
<td>What is the impact on the individual personally? Individual is unable to anticipate problems within the technology environment such as student behaviors, attitudes, technical, and environmental issues.</td>
<td>Personal</td>
</tr>
<tr>
<td><strong>Adoption</strong></td>
<td>Individuals begin to anticipate problems and develop strategies for solving them. Increase in teacher's knowledge impacts student engagement. Instructional goals change.</td>
<td>Management</td>
</tr>
<tr>
<td><strong>Adaptation</strong></td>
<td>Technology is used to manage the classroom (grading, assessment, material development). Focus on how technology can be integrated into daily lessons/activities.</td>
<td>Consequence</td>
</tr>
<tr>
<td>** Appropriation**</td>
<td>Mastery of technology is being achieved. Technology is used effortlessly as a tool. Dramatic change in attitudes and beliefs about the usefulness of technology. Focus on effect of technology on the students and student outcomes.</td>
<td>Collaboration</td>
</tr>
<tr>
<td><strong>Invention</strong></td>
<td>Individuals experiment with new instructional patterns and ways of relating to students or peers. Interdisciplinary project-based instruction, team teaching, and individually based instruction are common. Individuals look at alternatives to existing forms of technology.</td>
<td>Refocusing</td>
</tr>
</tbody>
</table>

Figure 2.2. A comparison of the Apple Classroom of Tomorrow development stages to the Stages of Concern about the Innovation.

Administrators who understand the change process prior to implementing system-wide reforms will be better equipped to provide positive leadership in the resolution of issues that arise. The administrator's approach will provide the users with opportunities to dive into
the thick of the process, take risks, explore, accept, reject, or modify – in other words they are active participants in the change process. Maybe most importantly, understanding of the change process will provide the administrator with some of the tools needed to effectively promote and achieve the desired change in the system.

Participatory Management and Education Reform

A popular change process during the 1980's and 1990's that impacted numerous organizations and educational institutions was the shift towards participatory management (Holcombe, 1995; NCREL, 1993). Kanter (1981) proposes thirteen demands on the school administrator of the 1980's that established the context for participatory management's emergence as an educational initiative. Many of these demands are supported in the literature (Harman, 2001; Chambers, 1995; Holcombe, 1995; NCREL, 1993). The demands are:

- The need for a more flexible image of a leader
- The need to search for leadership in new and even unexpected places
- Managing decline and managing expectations in slower growth institutions
- Managing in the face of a less controllable environment
- Holding together fragmented constituencies
- Satisfying multiple stakeholders
- Giving followers greater voice
- Designing flatter, more responsive systems
- Sharing leadership
- Weighing more data, seeking information from more sources
• Changing the role of leaders from ordering to inspiring
• Handling greater risks
• Restoring faith in the legitimacy and efficacy of large institutions

Kanter goes on to say that “behind many of these issues is the question of power: knowing what it is and how it can be generated for more people” (1981, p. 221).

A strong perspective on the value of participatory management is provided by Scroggins (1998) when he states, “Participatory management is not a theory. It is a survival skill. Decisions are best made by considering the contributions of those most affected by those decisions--those whose jobs it is to carry out those decisions.”

As with any initiative, participatory management can suffer from poor implementation. According to the Office of Research in the U. S. Department of Education (1994), “when required to adopt an innovation, districts and schools have a tendency to take on its superficial features without really incorporating its substance.” The participatory management initiative of the Detroit Public Schools (NCREL, 1993) illustrates these potential difficulties of implementing such a program. Administration and faculty alike lacked trust and the commitment to real participatory management. The initiative stalled and eventually failed. Geisert (1988) described other potential problems stating, “Increasing the number of decision makers in schools would create a need for additional procedures and policies thus increasing the bureaucratic obstacles to school improvement.”

A participatory management initiative that is effectively implemented should end up spreading horizontally through the faculty and include efforts from administration and teachers together (Chambers, 1995; Kanter, 1981). The efforts must include a focus on the humanistic values of trust, honesty, cooperation, caring, and personal responsibility (Harman,
2001). By changing the focus from “this is a mandate” to “we are in this together” administration can create a learning community in which bonds with and between faculty are created, support is provided for those in favor of the initiative, and those who are not in favor can still provide valuable feedback to the team who listens and learns (Scroggins, 1995; Weiss & Cambone, 1994).

Participatory management efforts can lead to higher productivity than any other organizational form (Sheehan, 2004). An environment where participatory management occurs yields a minimum of thirty-five percent higher productivity than traditional organizations (Wheatley, 1999). This is contrary to Weiss and Cambone (1994) who suggest it is difficult if not impossible to produce change when combining efforts to create self-management environments and a school reform (such as technology integration).

Preparation of Effective Leaders

Effective administrators must have the skills and knowledge base concerning both administrative and instructional applications of technology. However, technology preparation during administrator preparatory programs offered by colleges and universities is often lacking (Koll, Robertson, Lampe, & Hegedus, 1996; Davidson & Mauer, 1995). Technology-using administrators have consistently acquired their skills and knowledge either on the job or as a result of self-directed studies (Spuck & Bozeman, 1988).

Administrators often lack the needed preparation to effectively manage technology programs in schools (Kearsley & Lynch, 1994; Beaver, 1991). During interviews with graduates of educational administration programs, Davidson and Mauer (1995) found that
principals desired more preparation in the area of instructional technologies. Training experiences that are direct and applicable are particularly important to the success of the administrator. Since experience (skills) and knowledge coexist, administrators with rich and positive experiences have more information and therefore are able to make more informed decisions regarding the technologies in their school (Jorde, 1985).

A 1988 national survey of more than eighty educational administration graduate programs across the United States found the following conditions:

1. Faculty who teach computer or technology applications generally are self-trained.
2. Faculty were unfamiliar with professional organizations, publications, or leaders in the field of administrative technology.
3. A lack of consistency exists across the higher education curriculum.
4. Technology is not integrated into traditional courses.
5. The number of technology courses, usually one, and difficulty level were questionable. (Spuck & Bozeman, 1988)

Technological, political, social, and economic trends of the 1980's have led to a movement to reform preparation programs in educational administration (House, 1989). In a 1991 survey, Bozeman and Spuck asked school officials who work daily with information processing what topics should be included in administrator preparation courses. This group indicated the areas of general tools (word-processing, data base, and spreadsheets), instructional applications, student scheduling, attendance, and grade reporting as priority areas. Davidson and Mauer (1995) suggested three knowledge bases should be covered in administrator preparation programs. These include instructional models and strategies, hardware and software applications, and leadership theory. According to Davidson and
Mauer (1995) administrators should be offered hands-on experiences that demonstrate effective and appropriate instructional applications of technology and desensitization to the mystique of technology.

The U. S. Department of Education suggests institutions of higher education "...could support professional development, develop instructional materials, collaborate with elementary and secondary schools, and conduct or sponsor research on the use of technology in education" (U. S. Department of Education, 1996, p. 48). School administrators must be prepared to participate in these initiatives. Participation of pre-service administrators in these initiatives could effectively raise awareness or increase the likelihood of participation upon entering practice.

Collaboration appears to be the key to achieving the greatest results in today's schools. Today's administrators need to be aware of the potential partners such as Federal and State government, higher education institutions, and private organizations. By creating these partnerships, effective professional development can help provide current and future administrators with the knowledge and skills needed to manage technology programs in their schools (U. S. Department of Education, 1996).

Summary

The importance of the school administrator during technology implementation is well documented (Bennett, 1996; Koll, Robertson, & Lampe, 1996; U. S. Department of Education, 1996; Davidson & Mauer, 1995; Rockman & Sloan, 1993; Jorde, 1985; Moursund, 1983). The primary role of the administrator in providing leadership during this
change process is critical. The administrator who understands the issues involved and has firsthand experience using technology in an educational setting will be able to create a positive learning environment for teachers, students, and community. Additionally, these administrators will be in a position to empower those around them to accomplish the following: a) redefine their roles, b) find new ways to increase student engagement, c) become more innovative, and d) create alternative contexts for learning. It is imperative that opportunities are provided for administrators to gain this knowledge and experience. Higher education institutions must be active participants in providing leadership guidance and experiences, especially in the area of technology application. Administrators must become knowledgeable innovators, leading by example, as their schools undergo physical and instructional change.
CHAPTER THREE
RESEARCH DESIGN AND METHODOLOGY

While serving as an administrative technology consultant in state government in the mid 1990's, my initial interest concerning school administrators' influence on successful technology implementation in schools was born. On many occasions I visited schools only to find administrators who had little interest and/or background concerning the use of technology in their schools. Finding this quite disturbing I began to investigate ways to change this trend.

The national technology standards for teachers had been developed and released in 1993 (ISTE, 2004). Technology standards for students were added in 1998 (ISTE, 2004). The lack of administrative standards intrigued me. After all, were not administrators critical to the success of education – or in this case the success of technology in schools (Hoffman, 1996; Ritchie, 1996; Apple Computer, Inc., 1995)?

While I continued to explore the subject, the national technology standards for administrators were released for public feedback in 2001 (TSSA, 2001). As the literature review of this study illustrates, the standards echoed many of the recommendations made in publications of the past two decades. Yet, the rationale for administrators undertaking and implementing the standards was missing. I felt the standards should be challenged or tested. Questions had to be asked. How does the administrator create an environment conducive to the successful implementation of technology? What were the critical issues that impact this success? What role(s) does the administrator take? How were relationships created and fostered among those involved? Rather than undertake a survey process, philosophically I
felt it was necessary to conduct a case study that would provide more depth and detail about the how’s and why’s of the practices of an effective school administrator.

This case study provides a detailed look at the actual role of a school administrator who has been recognized by his peers as exemplary in the area of technology in education. The purpose of this study was to gain insights into the roles, relationships, and related issues concerning the administrator’s influence on technology in education. The guiding question of this study was as follows:

How does a school principal effectively influence the success of a technology program in a K-12 school and why do those practices work?

Why Conduct a Qualitative Study?

In determining what kind of research project to undertake, the researcher needs to consider both an analytical assessment and their level of comfort or fit in conducting various types of studies. There is a need to ask the following questions (Merriam, 1998): What do you believe about the nature of reality? Of knowledge? Of the production of knowledge? How much structure are you comfortable with? Do you like working with people or things? Does writing come easy to you? By understanding the very personal answers to these questions a researcher gains much insight to the type of research they will be comfortable with. Yin (2003) recommends three conditions to be addressed in determining the type of research strategy to be applied to a study. These are as follows:

1. The type of research question posed,
2. The extent of control the researcher has over actual behavioral events, and
3. The degree of focus on contemporary versus historical events.
A case study strategy should be applied when the form of research question is "how" or "why" and when the researcher wants to examine bounded, contemporary events while lacking the ability to manipulate the events (Yin, 2003, Merriam, 1998, Stake, 1998). The emphasis is on process and flexibility while allowing theories and the story to unfold naturally. Case studies can be applied to a variety of situations "to contribute to our knowledge of individual, group, organizational, social, political, and related phenomena" (Yin, 2003, p. 1). Case studies are defined in numerous ways including Yin’s focus on the phenomenon, Stake’s (1998) focus on the unit of study, and Merriam’s (1988) focus on the end product. Each of these provides insight into case studies. A blending of these definitions provides the following: a case study is the study and heuristic description of a phenomenon, a defined unit, or a particular instance. A case study has boundaries, and the people involved and the data collected are limited by those boundaries. It is heuristic because the description provides such detail of the case that it "illuminates the readers’ understanding" of the case (Merriam, 1998).

According to Merriam (p.6, 1998), “The key philosophical assumption...of qualitative research...is the view that reality is constructed by individuals interacting with their social worlds.” This ties directly to the formation of this study – its central purpose and rationale. With the release of the national technology standards for administrators, an organization or group was attempting to indicate to all administrators – principals, superintendents, and technology directors – what they should be doing in their schools concerning the use of technology. Much has been said about this administrative role (TSSA, 2001; Rockman, 1998; Costello, 1997; Bennett, 1996; Ritchie, 1996; Davidson & Mauer, 1995; U. S. Congress, 1995; U. S. Congress, 1988; Rees, 1987; Jorde, 1985; Moursund,
1983); but as a review of the literature has shown, few illustrative cases exist showcasing and describing model scenarios. Additionally, rationales are rarely provided for the recommendations leaving the recipient with a to-do list and little understanding of why they should follow it. Conducting case studies to gain insight to the reality and interactions of real-life participants in exemplary schools are needed. This research is such a study.

In qualitative research the primary goal is understanding (Creswell, 1998; Merriam, 1998; Janesick, 1998). Qualitative research involves the collection and inductive analysis (i.e. the themes, categories, and patterns come from the data and are not pre-conceived [Janesick, p. 47]) of multiple types of data such as interviews, journals, personal experiences, and historical archives. It is “a process that is expressive and persuasive in language” (Creswell, 1998). The gathered information is used to examine the meaning given to events or constructs on an individual basis. These understandings or interpretations are based on the insights of individuals who are close to or a part of the phenomena.

While applying the qualitative approach, as described by Guba and Lincoln (1998), Creswell (1998), Yin (2003), and Merriam (1998), the critical issues of internal validity, external validity, consistency, and ethics were addressed.

**INTERNAL VALIDITY** focuses on how the reported findings match reality. Did I “get it right?” Since I am the main data collection instrument (and am therefore very close to the “reality”), the internal validity of a qualitative study is necessarily higher than if a data collection instrument were used. As suggested by Merriam (1998) and Creswell (1998)
several practices were employed to increase internal validity. These included the following:

**Triangulation**

Interviews, focus groups, documents provided by participants, news articles, etc. were used to inform the findings.

**Member Checks**

Interpretation and translation of the interviews and focus groups were shared with the participants for confirmation and clarification.

**Peer Examination**

A colleague was used to review process and findings and provide feedback.

**Clarification of Researcher Bias**

I spent considerable time reviewing and analyzing my worldview, background, and philosophy to gain better understanding of each prior to this study.

**EXTERNAL VALIDITY** focuses on generalizability of the results and therefore is very difficult to address in a qualitative study. In a case study, the purpose is to zero in on the subject of the study and to thoroughly understand it — not to generalize the findings to a broader community. Instead it is the reader of the study who can make the determination of appropriate generalizability and applicability. Firestone (1993) describes this as case-to-case transfer. Much like the medical or legal fields, the case study fit to other specific contexts is the responsibility of the practitioner (Merriam, 1998). It is the responsibility of the researcher to provide a detailed context so the reader can make the determination about applicability. To do so, I have provided a rich, thick description — one that provides enough contextual information that a reader can compare his/her situation with the case study (Merriam, 1998).
CONSISTENCY is to qualitative research as reliability is to quantitative research. It is the effort made to allow researchers to come to the same conclusions based on the compiled data. This was accomplished using triangulation to confirm the findings and providing an audit trail others could follow to determine how I made my conclusions. All data sources gathered for this study were compiled in a FileMaker Pro database. Each was labeled with a unique identifier and cataloged with the identifier, type of artifact, date of artifact, brief description, and relevant theme categories.

In any type of study, ETHICS can be a serious and sometimes difficult issue to address. The university provides some initial oversight through the Institutional Review Board (IRB). This study was approved by the IRB simply meaning the proposal addressed any ethical issues to their satisfaction. What is potentially more important is what happens after the study begins. As Merriam (1998, p. 218) states, “...actual ethical practice comes down to the individual researcher’s own ethics and values.” As a researcher, I must apply both the rules and regulations provided by the university, but I must also use my conscience to steer my decisions in an ethical and morally correct manner.

Subject Selection and Gaining Access

It is important that reputational standards for the selection of subjects are met in qualitative research (Merriam, 1988). Using the Iowa Technology Education Connection (ITEC) and Iowa Educational Media Association (IEMA) Administrator of the Year award to identify the subject pool meets these standards. A single subject was chosen using a selective procedure. School administrators who had received recognition as “Administrator of the Year” from the above educational organizations were submitted to a panel of educational
technology experts. I created a rubric (Appendix D) based on the national administrator technology standards that the panel used to rate and select the subject, “Don,” from the field.

After approval for the study (Appendix E, F) was received from the Institutional Review Board, I contacted Don by telephone to request his participation and determine the appropriate procedures for gaining access to the district. Permission to gain entry to the district was then obtained from the district superintendent. A confirmation email and consent form (Appendix G) were sent to Don and were returned promptly.

A letter was sent to all faculty members in Don’s building describing the project and asking for volunteers to participate in a focus group. According to Krueger and Casey (2000), the ideal size of a non-commercial focus group is six to eight participants. Six teachers responded showing interest in participating in the study, and they were placed into a single focus group. Letters of confirmation and consent were sent to each focus group participant. As the district does not have a technology coordinator/director, no interviews could be scheduled with a person in this position. The Area Education Agency consultant was chosen to participate in this study based upon the level of involvement with the building’s technology implementation. The consultant had recently retired, but was still available to participate in this study.

The Educational Setting

Cardinal Elementary is a small midwestern educational institution like many others. Located in a rural setting, the city of Cardinal is very typical. It has a main street full of old buildings, many re-built in efforts to bring the town new life. The local newspaper is published weekly bringing the town and school news to the community. At a local restaurant
one can catch up on the events of the day or, in some cases, whatever story happens to be the "talk-of-the-town."

The building principal and most of the teachers who participated in this study are long-term educators and community members. Several are nearing retirement, having spent nearly their entire career educating Cardinal's children. A teacher has taught a long time in one place when he/she get the chance to teach their students' children, and several of the teachers have experienced this phenomenon.

The building itself is standard 1960's construction with a long hall lined with lockers from one end to the other. The only breaks in the long lines are those of doorways to the classrooms and offices. Always there are the sounds of children involved in some activity or another, faces aglow as they learn about wagon trains, simple machines, and the events of the world. As one walks the hallway, rarely does he/she see a closed door. Openness seems to be the way here.

Principal Don Anderson is a career educator having started out as a schoolteacher before moving into administration. Don spent six years teaching at the elementary and junior high level. Don moved to the Cardinal school district in 1982 and has spent twenty years as a principal in the elementary school.

The teachers participating in the focus group were Doris – a third grade teacher, Linda – a fourth grade teacher, Karen – a fifth and sixth grade teacher, Joan – a Kindergarten teacher, Lori – a fourth grade teacher and Denise – a 2nd grade teacher. The focus group provided a broad range of experience and ties to the technology program. Three teachers (Lori, Karen, and Doris) – were original members of the school's technology team started in 1986. In 1990, Joan joined the technology team, replacing an original member who had left
the district. Denise joined the school system in 1998. Denise and Linda are not members of
the technology team. Table 3.1 illustrates the basic demographics of the focus group.

Table 3.1. Focus group participant demographic information.

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Grade Taught</th>
<th>Years of Experience</th>
<th>Years of Experience at Cardinal Elementary</th>
<th>Member of Technology Team</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doris</td>
<td>52</td>
<td>3rd</td>
<td>30</td>
<td>30</td>
<td>Yes</td>
</tr>
<tr>
<td>Linda</td>
<td>47</td>
<td>4th</td>
<td>25</td>
<td>25</td>
<td>No</td>
</tr>
<tr>
<td>Karen</td>
<td>48</td>
<td>5th-6th</td>
<td>24</td>
<td>24</td>
<td>Yes</td>
</tr>
<tr>
<td>Joan</td>
<td>38</td>
<td>K</td>
<td>16</td>
<td>16</td>
<td>Yes</td>
</tr>
<tr>
<td>Denise</td>
<td>37</td>
<td>2nd</td>
<td>10</td>
<td>5</td>
<td>No</td>
</tr>
<tr>
<td>Lori</td>
<td>47</td>
<td>4th</td>
<td>18</td>
<td>18</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Role of the Researcher

I bring a possibly unique perspective to this study. Having served as a classroom
teacher, technology director, state department of education administrative technology
consultant, university educational technology instructor, and university administrator I have
developed personal biases/perspectives concerning educational technology and the roles of
those involved with its implementation and application. I have had the opportunity to visit
many schools and talk with educators about their educational technology programs – the
results partially leading me to undertake this study. Additionally, I have participated in the
writing of local and state level technology plans and recommendations for practice. These
experiences contributed towards my ability to identify actual practices, reformat and refocus
questions, understand content, and raise my awareness to various issues during this research
program.
Data Sources, Collection, Management, and Analysis

Data Sources

Interviews with the participants were the primary source of information for this study. A total of four interviews were held with Don, the principal. Four interviews were also held with the focus group. One interview was done with Dana, the Area Education Agency education technology consultant. Additional sources of data from the participants included email correspondence and a variety of documentation provided by various participants.

During the interview and focus group sessions I took notes (i.e. field notes) and afterwards digitally recorded auditory reflective notes. The interview and focus group tapes and reflective notes were then transcribed.

Dana’s health limited her availability so email was used to gather additional information and communicate with her. She was able to attend the one interview session, but otherwise all information provided by her was via email.

Other data sources included newspaper articles, programs from the district’s technology conference, minutes from technology team meetings, the district technology plan, and other information provided by the participants. These resources were used to provide a background of the culture from a perspective of history, policy, professional activities, and community interest.

Newspaper articles were collected from two locations – the newspaper office itself and the county museum. The newspaper office had news articles thoroughly indexed and had an extensive archive of newspapers. The county museum had a microfilm archive of the county’s newspapers. Between the two, the reported history of the area is wonderfully documented and maintained. The study participants provided other documents. This uniquely
provided access to documentation they deemed important to share. It included such items as meeting agendas and minutes and technology conference programs (ones they were involved in via either organization or presentation). Table 3.2 illustrates the various data sources used in this study.

Table 3.2. Study data sources.

<table>
<thead>
<tr>
<th>Data Types</th>
<th>Sources of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview</td>
<td>Principal</td>
</tr>
<tr>
<td>Focus Group</td>
<td>Elementary School Teachers</td>
</tr>
<tr>
<td>Interview</td>
<td>Area Education Agency Technology Consultant</td>
</tr>
<tr>
<td>Technology Plan</td>
<td>Principal</td>
</tr>
<tr>
<td>Newspaper Stories</td>
<td>City Newspaper Office and County Museum</td>
</tr>
<tr>
<td>Technology Conference Programs</td>
<td>Teachers</td>
</tr>
<tr>
<td>Technology Team Agendas and Minutes</td>
<td>Teachers</td>
</tr>
<tr>
<td>Electronic Mail</td>
<td>Principal, Teachers and Technology Consultant</td>
</tr>
<tr>
<td>Reflective Journals</td>
<td>Researcher</td>
</tr>
<tr>
<td>Field Notes</td>
<td>Researcher</td>
</tr>
</tbody>
</table>

Data Collection

Once the participants were identified, the next step was to set up the initial interview and focus group meetings. I intentionally scheduled the first interview with Don prior to the first focus group meeting to gather background information and to let it help inform the questioning of the focus group.

The data collection process was held between November 2002 and May 2003. All interviews with Don were conducted at his office. Each interview was scheduled to last between one and one and one-half hours. I used an open question guide during each of the interviews while following a semi-structured interview process (Merton, Fiske, & Kendall,
The initial questions were developed from the issues outlined in chapter two and are detailed in Appendix H. These questions were asked of all participants with “minor” rewording to provide clarity for the focus group and the Area Education Agency consultant (Appendices I and J). Other questions were developed based upon analysis and review of each interview or focus group session. These questions either explored topics that emerged or clarified previous question threads. The interviews were audio and video tape-recorded. Probing questions were used, as needed, during the sessions to further explore comments. I purposely kept this limited in order to prevent interference with the free flow of the responses. During the interviews and focus groups, field notes were maintained and a reflective journal was kept. I used a digital audio recorder to create the reflective journal after each session at the school. The video recording proved invaluable to reinforce comments made in my field notes about body language, facial expressions, and other information otherwise invisible after-the-fact. During one interview the audiotape failed (unknown to me) and having the video tape and field notes was a “life saver.”

A similar procedure was followed for the focus group with the exception of duration and location. The focus group met in the computer lab and each session was limited to one hour. In all cases the participants were genuinely excited about being a part of this research study and were very relaxed and open throughout the process.

As recommended by Yin (2003), multiple sources of data were used – interviews, documents, field notes, and journals – to address a broader range of issues, develop converging lines of inquiry, and increase the accuracy and strength of the conclusions.
Data Management

Data management is the process by which the various information sources are handled. The process consists of preparation, collection, organizing and manipulating the data (Devers & Frankel, 1994). I followed these steps, but as Merriam (1998) points out, they can and should be occurring simultaneously.

After completing each of the interviews and focus groups the tapes were transcribed. I hired an experienced transcriptionist after realizing the limitations of my own transcription abilities. After getting the tapes and word-processed transcription file from the transcriptionist, I reviewed each for accuracy by playing back the videotape while reading a printed copy. This provided the additional benefit of my doing a detailed review of the interviews and focus groups. Additionally, I coded each transcript according to who was speaking by placing initials next to the appropriate statements. The revised and coded transcripts were shared with the participants for their review, editorial comments, and additions. During this time I also began to place notes in the margins of the transcripts concerning content topics, questions to raise during the next interviews, and the little “ah-ha’s” that popped into my mind as I read the documents (Merriam, 1998).

To ensure the safety of the transcripts, I used multiple methods to store them. First, the original audio and videotapes were stored in a secure location in my home. Each time the transcriptionist sent files to me, she used email and the postal service. The diskettes were stored at work in a secure file cabinet. The emails (with the attached transcripts) were maintained on my work system. This system is also backed up daily. Finally, the files were stored on my laptop computer, and I burned copies on to multiple CD’s that were stored at work and at home. I maintained a “dissertation” folder on my laptop containing all of my
writing, transcripts, databases, and other documents. This folder was periodically burned to CD and stored.

After receiving feedback from the participants, I differentiated each transcript by printing each one on a different colored paper. I also added a designation in the header as to what the transcript was and the origination date. Line numbers were inserted to assist with finding the original context of quotes after coding was completed (Bogdan & Biklen, 1992). I spent considerable time re-reading each of the transcripts. This not only re-immersed me into the events of the interviews, but also allowed me to begin the coding process and make modifications to my interview guides (LeCompte, 2000). I focused on key words and phrases, making notations in the margins of the transcript while creating a summary list of these topics in order of their appearance (Table 3.3). I used these terms and added others as I reviewed each of the ensuing transcripts.

Table 3.3. Keywords, phrases, and topics from initial data analysis of principal and focus group transcripts.

<table>
<thead>
<tr>
<th>1. Technology Preparation</th>
<th>16. Battles, Fighting for something</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Implementation Role (then/now)</td>
<td>17. Driving Factors</td>
</tr>
<tr>
<td>5. Teacher Issues</td>
<td>20. Leadership Style</td>
</tr>
<tr>
<td>7. Impact on educational system/Change process</td>
<td>22. Develop Trust/Trust</td>
</tr>
<tr>
<td>9. Communication</td>
<td>24. Empowering Teachers</td>
</tr>
<tr>
<td>10. Collaboration/Partnering/Team</td>
<td>25. Process</td>
</tr>
<tr>
<td>11. Cheerleader/Promoter/Sponsor</td>
<td>26. Exterior Influences (time, money, resources)</td>
</tr>
<tr>
<td>12. Experience, Professional Development</td>
<td>27. Barriers, Resistance</td>
</tr>
<tr>
<td>13. General Personality</td>
<td>28. Future and Influencing factors</td>
</tr>
<tr>
<td>15. Surprises</td>
<td></td>
</tr>
</tbody>
</table>
After each of the transcripts was coded I transferred each phrase or statement to another word-processed document to sort them by their topic. If multiple topics applied to a statement (i.e. a single statement could refer to professional development and technology integration), the statement was placed under each.

In order to effectively manage the data I created a FileMaker Pro database for a storage and analysis medium. The database included the following fields:

- A unique document number
- Origination date (of the document itself – such as a newspaper publication date)
- Descriptor (newspaper, email, transcript, etc.)
- Thread (emergent topics)
- Storage location (where the item is located for safe keeping)
- Short description (brief about content of item)

I transferred all of the information from the word-processed document (the one containing all of the phrases and statements sorted by topic) to the database. As other items were collected, they were entered into the database. Each item had the unique document number affixed to it for easy identification.

Using the database, I was able to easily tabulate how many separate statements, documents, or other data focused on specific topics. I was also able to develop insight into relationships between topics by determining which items appeared under more than one heading and which of those occurred under multiple headings together (Bogdan & Biklen, 1992). For example, three different statements may appear under risk taking and teacher
empowerment. By making this observation I was able to begin seeing the documented relationship between the two topics.

During the review of documents, transcripts and other data, new topics would appear. As the collection and analysis of data were closely aligned with the interview or focus group dates, I would analyze everything in “dated” chunks. After completing this analysis I would review previous documents to determine if any of the new topics applied to them. As additions were made, the database was updated to accurately reflect the analysis.

This process gave me several opportunities to review and rethink the collected data. As Bogdan and Biklen (1992) suggest, reviewing the data multiple times and doing so during undisturbed time periods provided me the opportunity to gain insight into the emerging story. It was through this process of continually returning to the original data sources that the “ah-ha” materialized, and new questions for exploration were developed. Of particular importance in this study was the availability of videotapes of the interviews and focus group sessions. In addition to seeing the words (transcripts), I could quite literally review the actual context from which they came. In some cases, I had field notes about an expression, surprise, or interaction that I could actually revisit during the data analysis process.

Data Analysis Strategies

LeCompte, Preissle, and Tesch (1993) refer to qualitative data analysis as taking apart a puzzle and reassembling it. Like a puzzle, the data pieces must be complete and unbroken. Unlike the puzzle, the researcher does not have a box cover or other type of image providing a view of the end result. It is the purpose of the research to not only create the picture, but also descriptively tell its story. I see this much like visiting a cemetery and finding various
family plots. I may be able to find all of the pieces (tombstones) associated with my family, but those alone do not provide much of a story. I must rely on data sources such as parents and grandparents to pass on the stories of the people they knew or the stories their ancestors told them. Additionally, we rely upon written histories and other sources to put our family story together. By using a variety of reliable and rich resources we are able to create the colorful and interesting story of our family. We can directly or indirectly confirm the validity of the stories by checking them with various family members.

Thematic or content analysis is an inductive process that focuses on identifying themes representative of behaviors, events, or patterns (Creswell, 1998; Aronson, 1994; Bogdan & Biklen, 1992; Taylor & Bogdan, 1984). The first step of the analysis is identifying units of data found within the research documents. Merriam (1998, p. 179) describes a unit of data as, “any meaningful segment of data.” The unit must be relevant or informative to the study and push the researcher to think beyond the data. It must also be able to stand-alone – it must be interpretable in the absence of the actual context (Lincoln & Guba, 1985, p.365).

The transcripts and other artifacts were analyzed with an open-minded effort to let the units emerge in a natural fashion. During the ongoing process of data collection, reviews of the transcripts and documents led to the formative development of a list of these units which informed the ongoing study, giving me opportunity to further explore areas of interest. As each new piece of the data became available, analysis of each would yield new units that were added to the list. The complete list of units or codes is found in Appendix K. When new units were uncovered, previous transcripts were reread in an effort to determine if the new units existed in the transcripts.
Both multiple reviews of the complete transcripts (Yin, 2003; Bogdan & Biklen, 1998) and the sorting and review of the data within the FileMaker database allowed me to begin seeing broader categories develop (Merriam, 1998). The list was refined to a set of categories based on topic commonalities and frequency of occurrence. This process produced categories inherently greater and more meaningful than the individual topics that created them. This list of categories was then further refined to produce the initial themes that were the essential threads of this story. These included trust, shared decision-making, teacher empowerment, and external influences. These themes were provided to and discussed with the participants of the study for feedback and verification. Based on the feedback received from the participants the themes evolved into a final form as follows:

- Encouraging and fostering collaboration
- Providing leadership from all levels
- Having and sharing a joint vision related to these efforts
- Recognizing and understanding the impact of change on the educational system
- Understanding the impact of technology on the educational system
- Identifying and managing teacher issues

What is of interest in looking at the development of the units, categories, and themes is how the themes are not completely independent of each other – they do not stand in isolation. They exist much like a Venn diagram with small areas of overlap. This is important in this study as it shows how the absence of one could impact the rest and possibly skew the outcome in another direction.
During this entire process of analysis I continued to return to and review the literature related to the emerging themes (Bogdan & Biklen, 1992). A comparison to the national standards and other topics illustrated in Chapter Two were used for comparison against the emergent themes.
CHAPTER FOUR

FINDINGS

Contextualization

One of the most difficult things to do in qualitative research is to relate to the reader what was observed and heard while keeping it contextualized. We go through a process in which the researcher observes and listens to, what we hope are fascinating and informing “things” and then is forced to translate them multiple times. This starts with the coding process, which decontextualizes the reality to an interpretation by the researcher. This is then reconstructed into a story (the paper you are reading), which is the attempt of the researcher to recontextualize the information. Finally, the reader has to interpret this writing and create his or her own understanding of what is now a distant reality. Bowers (1988, p. 81) states, “This reordering of our psychic space, where the abstraction of the printed word becomes more real than the experience that it signifies, is further strengthened by how literacy alters human relationships.” Bowers fears that the written word becomes “more real than the experience itself.”

Understanding that what I write here cannot fully represent the reality of the experiences I had in Cardinal Elementary School is critical to the reader. It was even more critical to me as I have attempted to provide an appropriate context within the limitations of the printed word. This writing is the residue of my experience, the only truly lasting aspect of this research project. As such I have endeavored to tell a story that represents, as best possible, the story of the people at Cardinal Elementary.
Leadership

In *The Prince*, Nicolo Machiavelli writes,

And it ought to be remembered that there is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, then to take the lead in the introduction of a new order of things. Because the innovator has for enemies all those who have done well under the old conditions, and lukewarm defenders in those who may do well under the new. This coolness arises partly from fear of the opponents, who have the laws on their side, and partly from the incredulity of men, who do not readily believe in new things until they have had a long experience of them. Thus it happens that whenever those who are hostile have the opportunity to attack they do it like partisans, whilst the others defend lukewarmly...(Machiavelli, N., 1952)

So it is with school leaders as they strive to bring about change in their schools. The “new order of things” is innovation in its purest form. Fresh ideas emerging from excited minds in which hope springs eternal – at least until they are dashed from the repeated attacks by those hostile to change. Even the strongest and most charismatic leaders fall prey to the knife in the back from those afraid of change and bent on keeping the status quo. Yet, leaders persevere and succeed in changing the landscape of schools across the country. How? What is it that happens during a successful change process? This dissertation is my attempt to provide some insight into this question.
Explanation

A semi-structured question guide was used in this study to help explore the various aspects of the principal’s role during technology integration at Cardinal Elementary. Those questions and the ensuing answers provided much insight into the happenings of the past twenty years. Details of the methodology used are outlined in Chapter Three. The sum of the materials gathered were examined and coded. The codes can be found in Appendix K. These thirty-nine codes were refined into six themes that permeated the Cardinal story. In this chapter, these themes are used to tell the story of the people who work here, the events that occurred, and to unravel the mystery of how a principal effectively facilitates the introduction and implementation of technology in a school setting.

During the code analysis, all of the coded material was placed in a FileMaker Pro database. Once the database was completed, an analysis was done to determine what codes occurred most frequently and what quotes shared coding. In many cases, a particular piece of data could be coded in multiple ways. For example, a quote could be associated with the codes collaboration, leadership, and resistance. These relationships provided insight into and helped yield the themes discussed in this chapter.

Background

This particular story seemingly begins twenty-one years ago. It was 1982 and a new administrator had joined the staff of Cardinal Elementary. Don was a first time principal having spent the previous six years as a teacher in another district. It was not easy at first. He began as the junior high principal and after one year was given the responsibility for the
elementary as well. This was a difficult time as his focus was divided between the two levels. It was not an ideal situation and the elementary teachers noticed it. As Karen stated, “He had troubles with that” (FG4: 201) and Lori added, “I don’t know if he’d say he even did well at it” (FG4: 204). His split in focus between the two levels was difficult to manage and fortunately it was solved by his full-time move to the elementary in 1987.

The state of technology in Cardinal Elementary in the mid-1980s was limited at best. Don stated, “...we had some overhead projectors, slide projectors, film projectors-16 mm film projectors, pretty much what at that time would have been a standard, normal setup of non-computer equipment for a school district. Phone system was very limited ... one in the central office, one for the Secretary, and that was it (PI: 23-27).” The needed support structures to make existing computer technology use effective were missing or dysfunctional. The level of use and understanding was minimal as illustrated by Karen – “We didn’t use the computer when we started this” (FG2: 366) and Lori – “…none of us were technology people” (FG2: 363). Lori went on to say, “…but we wanted to” (FG2: 368). The time was ripe for change.

Participatory Management and Technology

The introduction of a participatory management initiative was the impetus behind the major influx of technology into Cardinal Elementary. Participatory management was introduced to Cardinal Elementary by using technology as the catalyst. In chemistry, a catalyst increases the rate of a reaction without being consumed. The technology catalyst was intended to jump-start and maintain the initial participatory movement. As such it was also perceived as something that would not go away (be used up) during the process. In this
particular case, technology integration was the catalyst used in the change process. Bartle (2003) applies the following characteristics to participatory management:

- Participatory management means that staff, not only the designated managers, have input and influence over the decisions that affect the organization.
- It is not the same as communal or co-operative management, where every staff member has the same weight in the decision making process.
- A voted majority, or a consensus, is not the final arbitrator for a contentious decision.
- In participatory management, the designated managers (or manager) still have (or has) the final responsibility for making decisions and answering for them, but members of the staff who are affected by those decisions are actively sought to provide observations, analysis, suggestions and recommendations in the executive decision making process.

Several factors influenced the move toward a participatory management organization in Cardinal Elementary: the need to change the departmentalized structure of the upper elementary, a push by the Iowa State Education Association, Iowa Association of School Boards and the State Department of Education towards more collaborative school management, the need to develop stronger working relationships among staff, and the support of the principal and superintendent. The district was already gaining a reputation for putting technology into place, but it was “without a whole lot of coaching on how to do it.” (P1: 27). Don saw this as an opportunity and technology was going to be the key to a successful move to participatory

"We involved the people that needed to be involved, we took the time that needed to be taken, and made decisions based on what we thought was best for us. And they went ahead and implemented them. And did it as a group."  
- Don (P3: 563-566)
management. The result of this innovative decision was unparalleled growth of involvement, trust, and reputation.

Departmentalized Structure

In the early 1980’s, Cardinal Elementary used a departmentalized structure in the upper (4-6) grades. Students moved from class to class every forty-five minutes. This was an “easy” environment for the teachers to work in, but the principal felt it was “developmentally inappropriate” for the children (P2: 146). The teachers resisted changing to a structure similar to the lower elementary. Don described this resistance to change as, “the teachers didn’t want to change it, because it was easier for them to teach in that environment. They liked the schedule they had, and they were just resistant, as many adults are, to change in that kind of environment” (P2: 146-149). Additionally, the division of upper and lower elementary grades created “silos.” Doris reiterated this very real division, “Well there were some of those silos in the past” (FG2: 524) and “We didn’t ever communicate” (FG2: 517). Linda also illustrated the effects of the upper/lower division stating, “We used to have upper meetings and lower meetings” (FG2: 532). Doris added, “The system allowed that to happen” (FG2: 535). Staff members knew change needed to take place if they were to co-exist. Perhaps most importantly, Lori stated, “You also have to have a leader who wants to break down these walls” (FG2: 418).

State Push Towards Participatory Management

In the late 1980’s quality assurance was sweeping the business world. Companies such as Ford Motor Company pronounced that “Quality was Job 1” as efforts to increase the
output of quality products and consumer confidence exploded on the scene. In Iowa, this did not slip by unnoticed. Three major educational organizations – the Iowa State Education Association, Iowa School Boards Association, and Iowa Department of Education – jointly believed it was necessary to increase collaboration and in turn create better educational environments through participatory management. This, it was hoped, would have the cascading effect of improving the quality of the educational system. Twenty-four schools were selected to be a part of a pilot effort to introduce and integrate the concepts of participatory management into their daily practices. Cardinal Elementary was selected as one of the pilot schools.

Developing Better Working Relationships

Many variables existed simultaneously which contributed to Cardinal Elementary being a prime candidate for the participatory management initiative. When Don became elementary principal in 1987, the staff in the building was fractured. Silos existed, encapsulating the upper and lower elementary staff, creating an environment similar to having two separate buildings. The new principal was perceived as the decision-maker of the building. The level of trust was low.

Support from the Superintendent and Principal

The move to a participatory management organization was endorsed and wholly supported by the superintendent and the principal. Both attended meetings and site visitations with teachers as this practice was explored. The superintendent initiated a change in the
relationship between the teachers and the school board. An example of this was a change in
the seating arrangement at meetings. Rather than sitting with the board behind tables and all
others in grouped chairs (the audience), the superintendent arranged it so that teachers and
board members were sitting together, working collaboratively during board meetings.

Another key area of administrative support was how the participatory management
initiative was started. What made this program particularly unique
was the decision to use technology as the catalyst AND suggesting
the technology program should start at the elementary and not the
high school. As noted by Karen (FG3-579), “...it’s not the norm for
the elementary to have stuff that the high school doesn’t.” Further support was exhibited
during the budget process, negotiations, and in accepting new ideas.

The Common Threads

I discovered during my visits to Cardinal Elementary that a number of structures have
been developed and nurtured that have contributed to the success of the participatory
management and technology integration efforts. Each of these is directly related to a change
in the traditional role of the administrator. These changes are encouraging and fostering
collaboration, providing leadership from all levels, having and sharing a joint vision related
to these efforts, recognizing and understanding the impact of change on the educational
system, the impact of technology on the educational system, and identifying and managing
teacher issues. The story of Cardinal Elementary begins to form as these themes are
discussed in the following sections. Each section begins with a description of the theme, the

“So, what we did then...we did an experiment in participatory management aimed at technology.”
- Don (Pl: 4)
prevalence of the theme in the data sources, and a discussion about the theme based on the data sources.

Collaboration

Collaboration is “to work jointly with others or together especially in an intellectual endeavor” (Merriam-Webster Online Dictionary, 2003). It is an integral part of the participatory management process. Collaboration is one of the dominant themes of this study occurring one hundred and seventeen times throughout the interviews, emails, and other documents.

When Don first arrived at Cardinal Elementary, the level of collaboration was very low. As he described it, “…when I came here, teachers taught in … their classroom. They went in, shut the door, and talked. And there was very much less collaboration and school-wide efforts at doing things than there is now. And to me, that’s one of the major outcomes of these last 15 years that technology helped us to accomplish” (P2: 85-88). Through the efforts of the fore-mentioned state organizations, the administration, and the faculty, collaborative efforts focusing on technology were undertaken almost immediately. Don describes this process:

I went out and recruited teachers who expressed an interest in…tech…trying to do something cool with technology and who were willing to get into it and make these the people who are making the decisions and…suffering the slings and arrows that come along with that sometimes. And so, we made an elementary committee, or [name omitted] team, and…went through a decision-making process which involved making some trips to…Blue Earth,
Minnesota, at that time an Apple School, and then we tried to find other schools in Iowa that were doing anything with technology at that time...at the elementary level” (P1: 102-106).

Visits were made to other schools that had already implemented and were innovative in the use of educational technologies. Participants combed the research, talked with peers, and read trade magazines.

One of the critical factors in the success of the collaborative efforts was a change in the perception of the principal’s role in the building. Don made concerted efforts to foster an environment where each person had equal voice and vote. This included Don himself. Several of the teachers made comments reinforcing this change, “He was a member of the team,” “He definitely didn’t play an administrator role. His vote was equal to ours,” and “He was a player” (FG1: 45-53). Don also showed a definite and clear interest in knowing and understanding the concerns of the teachers. He was able to create an environment where teachers knew they could voice their concerns and ideas while being respected, considered, and understood. Don may have had different ideas, but he was open to new ideas. Those around him knew he could be convinced to go in another direction if their arguments were compelling enough.

The collaborative process had other implications for the elementary school beyond creating an environment of openness and cooperation. Don became a vested member of the elementary education community. As Doris describes it, “…he has much invested in this whole process, so when it went to the next level for budgetary reasons, he was vested in the
whole process. It meant something to him. It wasn’t just those teachers wanted something, it was, ‘hey this is what I want, too. This is what I want for my school.’ So... he just wasn’t one person” (FG1: 59-62). The level of confidence and trust that evolved from this grew to the point where it was considered the norm. Don was no longer looked at as the leader/decision-maker, but rather he was considered a valued peer, someone who was a team member and an active participant. Karen felt rather strongly about this, stating, “…I can’t stress that enough. I mean, that’s not just a little bit of how it was. That is exactly how it was” (FG1: 177). Doris provided further support: “…if things didn’t go our way or something didn’t happen the way we planned, he was just as shocked and upset about it as we were” (FG1: 180-184).

The collaboration was not immediately widespread throughout the building. The initial group of teachers chosen to spearhead this project was hand picked by the administration. They were chosen for their interest in technology and the drive and innovation each exhibited in their teaching. This team, in spite of resistance from other faculty, drove early efforts forward. As Karen described it, “...we used to be steam rollers in the beginning” (FG2: 274). From the beginning something unique was applied to how the elementary teachers approached the technology initiative. Doris described it as, “We have a philosophy difference” (FG2: 253) and Nancy further described it as “The elementary way of doing things” (FG2: 360). In a nutshell this unique approach was a philosophy of “Let’s learn together” (FG2: 385) and then “you show me” (FG2: 636). They firmly believed that “you learn better that way anyway; because that’s our experience with kids. When we show them what to do, not just have them read it...” (FG2: 618-619).
Fullan (1996, p. 496) describes change as, "...a planned journey into uncharged waters in a leaky boat with a mutinous crew." As such, change must surely include people who believe in the journey and are willing to go, those who are along for the ride and are not sure who to believe, and the resisting mutineers. More definitively, the typical groups involved in a change process can generally be called early adopters, fence sitters, and resisters (Feist, L., 2003; Johnson, Schwab, & Foa, 1999; Schlechty, 1993; Rogers, 1983; Hall, 1979). Early adopters are those people who are innovators and risk-takers. Schlechty would describe them as trailblazers or pioneers. Fence-sitters are those that are along for the ride simply because they can not make up their minds, do not want to take the risk involved with immediate buy-in, and could go either towards buy-in or resistance, depending on information they glean during their wait. Schlechty describes the fence sitter as the stay-at-homer or someone who is comfortable where he/she is and takes a wait and see attitude. Resisters are those people who are against the innovation usually because it goes against their tried and true experiences and beliefs. Schlechty’s term for the resister is “saboteur.”

Cardinal Elementary was no different in that the people chosen to lead the project were innovators. They were the ones willing to try something new if it meant making a difference in their school. There were also fence sitters and resisters. Over time these people were convinced to join in and be a part of what was happening. It was not easy and it did not happen overnight. Some teachers initially wondered why decisions would come from teachers. Linda perhaps expressed it best in describing how she perceived the role of the principal, “I thought he was going to be the leader of the group. I was wrong” (FG1: 168). The teachers felt that it was Don’s willingness to “give up that power” (FG1: 154-155) that allowed the teachers to accept their new roles and succeed.
One of the major turning points of the technology program was the initiation of the Cardinal technology conference in 1988. The conference was held annually until it was cancelled in 1999 due to lack of interest. The primary purposes of the conference were to provide professional development for the faculty and to lend legitimacy to the technology program. Don describes stating, "[the conference] started because we realized that we needed to provide training to our staff. (There wasn't any around at that time.) In order to afford to bring people in to present, we opened it up to others. In effect, the Symposium allowed us to provide free, high quality staff development to our faculty. Also, at the beginning when we were fighting for some legitimacy, it provided positive publicity" (email, 12/5/03). It was through this initiative that teachers were able to both share their knowledge and learn from others. The importance of this cannot be overlooked. Not only were teachers from Cardinal sharing with one another, teachers from around the state were bringing their ideas directly to Cardinal Elementary. The teachers became very involved due to their work in organizing the conference. The contacts made were of particular importance and extended the level of collaboration beyond the walls of the school. They gained contacts and used the newfound resources to their benefit. These included other teachers, people from various Area Education Agencies, Iowa State University, the University of Northern Iowa, businesses, and more. The teachers of Cardinal Elementary even worked collaboratively when they attended other conferences. Doris described their process as, "...we would divide up, and we would say you cover this one, we'll cover this one. And, we would do that, so we had a variety of things to bring back" (FG2: 737-738). Always the purpose of their activities...
was to share and build each other up. An email message from Karen best summarizes the teacher efforts:

We did a lot to integrate technology and share our knowledge: We had Upper Iowa education majors down every semester and discussed technology applications with them, we taught tech summer school for elementary kids, we published a tech newsletter for our staff with helpful tips, strategies, etc....we spoke at conferences, began our own Tech [conference], we taught TONS of in-services for our teachers...software...hardware... (email, 2/6/2003)

The teachers were involved and were models of effective leadership whether the efforts focused on technology or something else.

Providing Leadership From All Levels

Leadership is obviously a common thread with this study's focus being on a school principal. References to leadership predominate the interviews and other data sources, occurring over three hundred times. The literature stresses the importance of leadership in a change process (Bennett, 1996; Koll, Robertson, & Lampe, 1996; U. S. Department of Education, 1996; Davidson & Mauer, 1995; Rockman & Sloan, 1993; Bozeman & Spuck, 1991; Jorde, 1985; Moursund, 1983); therefore, it is important to refer back to Lori’s comment shared earlier in this paper – “You also have to have a leader who wants to break down these walls” (FG2: 418). Leadership in the context of Cardinal Elementary was not limited to the principal. It was found in

"But I think, more than anything else, what that was, was an opportunity for us to change the style of leadership in the school district from top down dictatorial to more of a participatory setup.”
- Don (PI: 93-95)
practically every corner and in this sense it is important to discuss the various levels of leadership that were found: principal, teacher, group, and community.

The Principal as Leader

The principal is generally seen as the de facto leader and decision-maker of a school building. Evans describes, using a tongue-in-cheek job description format, the typical principal:

Wanted: A miracle worker who can do more with less, pacify rival groups, endure chronic second-guessing, tolerate low levels of support, process large volumes of paper and work double shifts (75 nights a year out). He or she will have carte blanche to innovate, but cannot spend much money, replace any personnel, or upset any constituency. (Evans, R., 1995, p.30)

We used to have silos here, but we’ve really broken down the walls.

You also have to have a leader who wants to break down those walls.

That’s right.

And,…

We did.”

- Teachers (FG2: 416-424)

When Don became principal of Cardinal Elementary this image of principal as leader/decision-maker was well entrenched. Teachers expected the principal to hand-down his decisions for them to implement. Teachers did not expect to be involved in any of the decision-making processes that would lead the school into the future. Several teachers commented on this perception, “I originally thought that the principal would be a leader in the tech implementation process” (email, 1/15/2003), “I thought he was going to be the leader of the group” (FG1: 152), and “they [the principal] are in that power position and it’s
hard for them to give up that power” (FG1: 54-55). This perception and practice changed remarkably over the next fifteen years.

With the implementation of the participatory management initiative, efforts were made almost immediately to change the culture and perspective of the teachers at Cardinal Elementary. A critical issue Don focused on was the establishment of trust between him and the teachers and between the teachers themselves.

This was something carefully cultivated and grown as a part of the participatory management initiative. Don felt the level of trust within the building was inversely related to the need for committee work and directly related to the level of involvement by individuals in the building. Initially, it was necessary to establish or continue committees to address the myriad of issues present in an elementary school. For example, a principal advisory committee was created to focus on school safety, curriculum development, and other issues that might normally have been handled in a top-down decision-making environment. Getting the teachers involved in the decision-making process through committees laid the groundwork for building trust. Don describes the trust building process, “We needed to be participatory. And the more participation we gave, the more trust was developed. Not just, from me to the faculty, but between faculty members. And so, that trust got higher…” (P2: 212-215). This gave everyone the means to be heard and to have direct influence on the daily happenings of the school. At the same time, Don had to maintain his role as principal as he describes, “There needs to be somebody in this role. Because there is certain things that I have to do, every once in awhile, you can’t reach consensus. And Don’s gotta decide” (P4: 199-201).
Denise described the long term benefits of the trust building that occurred at Cardinal Elementary – “Well as a newbie coming in and this stuff was mostly here when I first came in, what I really noticed about everybody else was you’re so willing to listen and you just, I mean, I could go up to anybody and feel like I could to talk to them and seriously know that you were really, really listening” (FG4: 262-265).

Empowering teachers with the ability to take risks and be innovative without fear of repercussion relied heavily on the presence of trust. Don supported this saying, “...we allowed a high risk environment for people. They can take it. They can take high risks, without a whole lot of consequences, if they fail. They got a net under them” (P2: 616-618). Teachers quickly learned that it was necessary to undertake research and thoroughly investigate their ideas. Several times teachers mentioned research in their comments, such as, “we researched it for about a year” (FG1: 90), “we spent a ton of research, outside of school” (FG1: 339), “We use it a lot for research” (FG2: 1197), and “we participated in research” (FG3: 983). The ideas were then expressed as informed proposals that could be supported by their fellow educators. Many of these proposals focused on the catalyst – technology. The development and expression of this trust was critical to the success of the participatory management and technology initiatives.

Finally, the participatory management initiative had the benefit of making Don’s job as principal and decision-maker easier. Don describes what it is like now for him to make non-participatory decisions, “Being participatory allows that, allows those times when you have to be my way or because I’m the principal and I said so, allows those to happen a lot easier. Because people say, they realize, you know, most of the time he doesn’t make
decisions that way most of the time, and I usually try and explain to them why I think I have
to make the decision in this case, rather than be participatory” (P3: 698-703).

The Teacher as Leader

As previously stated, many of the teachers had the perception of the principal as being the building leader. One of the primary benefits of the participatory management initiative was the development of teachers as leaders. Through the efforts made by Don and the teachers themselves, the teachers as a whole gained understanding of and accepted their new role, some more quickly than others. There are numerous examples throughout this paper of both the technology team and other teachers using their newfound freedom to explore and extend their teaching and to participate in decision-making.

Through their independent research and experiences teachers would adopt specific roles. Teachers were affectionately called “queens” (for example the “cord queen” (FG2: 600) and the “Making the Grade queen” (FG1: 251)) by their peers in recognition of their developed expertise and willingness to share knowledge. Participation in decision-making was uncomfortable at first, but the teachers on the technology team jumped right into the deep end of the pool. Dana, the Area Education Agency Technology Consultant, best described their struggles, “You were trying to swim, and there weren’t a lot of life rafts. So you were making decisions very quickly to stay afloat. And then probably, once you started, you could throw out those other things to people - the choice” (FG4: 489-492). She goes on to describe the evolutionary process the teachers experienced, “...sometimes you just make decisions and they were good decisions. But they were decisions that you just made because
that was the only choice you had to do at that point. But your confidence grew” (FG4: 504-506).

Eventually all would come to realize the need for their participation was very real. Those teachers that were originally tasked with leading the technology initiative learned from experience the best way to build was together. A major difference in the secondary and elementary buildings was the level of technology expertise. The following dialog describes the differences in philosophy that led to a team approach in the elementary.

Lori - I think also what happened was our team down here, none of us were technology people, I mean, we used a computer, but don’t ask me how it worked.

Karen - But you know what, Lori? We didn’t use a computer when we started this.

Lori - Well, no but we wanted to and everything. The people, the people...

Karen - But there were people in high school who did.

Lori - The people who started the team up there, were the two very techie people, and I mean, there were others besides those two, but there were two very strong individuals, and they knew how a computer ran and they could write you a computer program and they could do all those kinds of things.

Karen - And they can tell you what you wanted.

Lori - And so they went that direction, as we know all about this and...

Doris – …and this is what you need to do.

Lori – Yeah. We were like no, …

Doris - Let’s learn together. (FG2: 362-385)
After initially “steamrolling” (FG2: 274) their peers they evolved into building each other up and sharing the empowerment given to them by Don. Even in the program’s infancy, the teachers exhibited leadership as Nancy states, “it was the blind leading the blind” (FG2: 852).

When teachers attended conferences they were expected to provide a presentation on what they learned upon their return. If a teacher had a proposal funded, they shared what they learned with others and willingly became the “go to” person when questions arose. Each teacher could develop his/her own strengths and create a niche in which he/she was recognized as the building expert. What is perhaps the most important result of this process is how the teachers perceive themselves as leaders – “We were all equal leaders” (FG2: 1502).

Group Leadership

Of particular interest was the development of group dynamics. In some organizations there are meetings in which one or more people dominate the conversation while others sit stoically, not voicing any opinions. A set of rules was introduced to serve as guidelines for committee meetings (Appendix L). Two rules in particular focused on everyone having voice; and if one didn’t voice opposition he/she was considered to be in approval. The combination of those rules created meetings where whole group decisions were made. If the

“We have had some workshops during in-service time to help us with these issues. Many teachers have taken extra courses on their own. Many of our teachers teach each other what they know when needs arise or when some technology treasure is discovered. Our principal is very knowledgeable about technology and he is willing to help us learn new techniques.
- Joan (email 1/15/2003)
teachers could not break a tie, the principal acted as the tie-breaking vote much like the way the Vice-President serves as the tie-breaker in the United States Senate.

Throughout the entire process many committees ceased to exist as their purpose disappeared with the ongoing development of trust. If a decision was made outside of committee or faculty meeting, it was done knowing that others had been asked and their opinions were “trusted and honored” (FG4: 909). One committee that continues to do its work today is the original technology team. These people have the unique task of gathering information and educational technology and sharing it with their peers. They are the staff developers, the lead innovators, and the evangelists behind technology initiatives. More than any others they are the people that are on the cutting edge, experimenting, getting training, and then most importantly, sharing it with their peers.

The teachers play one other important role as leaders. They serve as leaders outside of their own building. Initially these efforts began with the technology conference hosted by Cardinal Elementary. Teachers quickly gained confidence in knowing they were doing things that others wanted to know about. Cardinal teachers became regular presenters at the Iowa technology conference known first as the Iowa Computer-Using Educators (ICUE) and currently as the Iowa Technology in Education Connection (ITEC). Cardinal Elementary teachers established a strong reputation across the state as leaders in instructional technology. Many have gone on to gain degrees in instructional technology, to participate on state committees, and to lead state organizations such as ITEC.
Community as Leader

The work in selling the technology program by the people of Cardinal Elementary cannot be over-emphasized. The community was a group that quickly bought into the success and experiences their children were having through the technology initiatives. This was accomplished in part by the efforts of the school to make the program visible. Lori describes some of these efforts stating, "We had community night...this was when we really first had the lab and stuff that we invited board members, community members, to come in, we had parents night...so that we got the community on board" (FG2: 1017-1020). Additionally, the school offered "adult ed classes" (FG2: 1022, 1026) to help community members learn about using technology in the home.

One of the biggest supporters of the program was the local newspaper. Members of the technology team described the editor as someone "who came from an educational background" (FG2: 1095) and "wanted education and the school...to be on the front page" (FG2: 1097-98). Through the newspaper's continued coverage, the story of Cardinal Elementary became very public. The vast majority (38 of 46) of the articles I found concerning the technology program were page one stories accompanied by photographs. The technology conference, receiving of grants, and donations of equipment all were well-publicized news items.

Parental involvement to promote the technology program increased quickly and has stayed strong throughout the past fifteen years. Children introduced parents to the use of instructional technologies during parent conferences and school open houses. Parents were soon asking the school for advice on providing home technologies. A recent survey of the community indicated that nearly "86%" of homes "had a computer in them" (FG2: 1047).
With the increased level of home technologies, “a lot of parents...ask us for web sites. ‘What’s a good web site for this?’ or ‘What could I do to help my kid with this?’” (FG2: 1069-1070). Faculty believe the application of the computers at home fell behind what was happening at school (see insert), but the parents were showing they could provide leadership in providing technology access and help to their children. Parents and community members also served a significant role as school board members. There were many decisions made by the board to fund technology initiatives that would change the landscape of the school. One early decision by the school board established the perceived importance of technology and is described by Don, “…the school board was willing to delay the purchase of a school bus from one fiscal year to the next and then allow us to take that money and build a computer lab with it” (P1: 126-128).

Students played an increasing role as leaders in the technology initiatives. They participated in community fundraisers each year, raising thousands of dollars to support the technology program. Don describes the fundraiser as, “…one of those door-to-door deals when the kids go and sell. And they have a cover letter that they take with them, that says it’ll be used for technology in the school. And we’ve been doing it so long now that the only parents that don’t know about it, is a parent that’s a first time kindergartner, who are new to the district” (P3: 457-461) and “we get about 10 grand every year” (P3: 394) that is “ready to be used when we come after what we think are valid uses for it” (P3: 395-396).

Students who use technology to complete projects often learn skills or find information that is then shared with their teachers and peers at school. In one example, a class doing an investigation about leaves led to the discovery of a resource in Maryland who
not only provided information about leaves to the kids, but eventually led to the kids providing information that was posted on the resource’s business web site (FG3: 365-377). The world became a little bigger for the students involved in this project.

Jamie Vollmer (2001) summarizes the impact of community on school initiatives very well: “Community permission provides administrators with the support they must have to create the schools our children need.” Gaining the involvement, approval, and support of the community was an important step in the change process Cardinal Elementary experienced.

Breaking the Mold

In The Education Digest (2000, p. 68), Allan S. Vann describes his experience with implementing shared decision-making in his school. He states, “it is impossible to shed my principal's hat, and committee members often turn to me for advice above and beyond my own turn at providing input into decisions. Yet, if I speak up too much or too vocally for or against a proposal, I risk being perceived as trying to unduly influence committee members' decisions. If I hold back, I risk being perceived as showing a lack of leadership.”

Contrary to this example, the experience illustrated at Cardinal Elementary was very different. Both Don and the teachers developed a relationship in which he was perceived as a “member of the team,” a “player,” and an “equal” (FG1: 45-53). His opinion was valued at the same level as was a teacher’s although he did retain the ultimate authority of the principalship. He indicated there were times he had to make decisions overriding the teachers, but this was the exception rather than the rule. Don described this decision-making relationship as, “I think if I do a good enough job of accepting their ideas whenever I can,
then they are much more able to accept mine, when I have to...say, [I] just can't accept these reading groups. I just can't do reading ability groups, you know. I don’t think the literature supports that. Whatever else I might want to say for my reasoning, but I have to put my foot down, they are more willing to accept it without a great loss of trust” (P2: 278-284).

The teachers were not afraid to express their ideas and felt empowered to take their cases to Don in an effort to sell him on a particular idea. As Doris described it, “You could convince him. If we had a stronger point of view, and he didn’t, we’d talk to him about it and we convinced him our way was right” (FG1: 55-56).

Having and Sharing a Joint Vision

To have vision can be perceived by some as having a gift. The ability to see what the future is or should be is not a quality all of us have. To compound the matter, being able to communicate or articulate the vision is even more rare (Bozeman & Spuck, 1991). In this study, the theme of vision or communicating vision was found sixty-three times. Of special interest was getting a glimpse into the origins, development, and communication of the vision at Cardinal Elementary

Vision Origins and Influences

Don’s involvement and interest in technology really began when he was a young man in junior high school. He participated in a student group that provided AV services to the
teachers and their classrooms. These students needed to know how to operate equipment such as a movie projector and how to fix it if something went wrong. The highlight of this experience was when Don was pulled out of a class by the principal to fix another teacher’s AV problem. He was being recognized as one of the best in his group and this was an obvious boost to a young man’s confidence. Don described the impact of this event, stating, “So that made me feel pretty cool, you know, and gave a junior high kid at an awkward age...something to feel good about” (P1: 472-473).

Don’s experiences with technology as an educator blended his love of and interest in mechanical things. The timing of his teaching career happened to coincide with the introduction of computers to K-12 education in the early 1980’s. First working with Radio Shack and then Apple computers, Don learned BASIC programming and became involved in helping students with computer-related projects. He was quite simply a product of his environment – one quickly evolving with the influx of technology.

Everything came together in an almost mystical fashion in the late 1980’s as technology became more widespread in schools, the pilot project on participatory management was emerging, and two fairly new administrators – Don and the school superintendent – started brainstorming and fused the two together. It was apparent that the technology being used in the schools did not have any particular focus or direction. The district was limited to a few early Commodore and Apple II computers mainly used for “just whatever you came up with that you wrote yourself” (P1: 32). Secretaries were the most effective users of technology using it to produce professional documents and store policies and other school materials. Don presented his technology vision to the superintendent, wanting to “get to kids the kinds of
things we see happening for our secretaries, in terms of productivity with writing and
document handling, and all those kinds of issues” (P1: 84-86). Don and the superintendent
made the decision to use technology as the mechanism, the catalyst, to implement
participatory management.

The vision for the technology program was a jointly created one. Don described the
first step stating, “We talked for a while about how you would organize that [using
technology as a catalyst for the participatory management initiative] to happen. And then
went out to try and do it” (P1: 89-90). Simply put, the vision was using technology as a
mechanism to bring the teachers together, provide them something to make decisions about,
allow the teachers the freedom to explore the new device, and place expectations on them to
infuse it throughout the elementary school. The superintendent and Don made several key
decisions the first of which was critical: create a technology team. The team was handpicked
by Don as he describes: “I went out and recruited teachers who expressed an interest
in…tech, trying to do something cool with technology, and who were willing to get into it –
and make these the people who are making the decisions” (P1: 102-105).

Communicating and Maintaining the Vision

Communication of a vision can be a rather difficult undertaking. Trying to take the
images and thoughts in one’s mind and turning them into words and actions is a translation
process that is daunting, if not impossible, for some people to do. Yet, it is a characteristic of
good leaders. Michael Fullan (2001, p. 1) writes of a professor who is convinced that
“…schools would be alright if only superintendents and principals had more ‘vision’ as
educational leaders, and teachers were more motivated to learn new approaches to improving the curriculum.”

In the case of Cardinal Elementary the vision allowed for a sense of freedom and empowerment in the newly formed technology team. They were allowed to interpret the direction given them through their own personal windows and the experiences provided to them in the coming months and years. Don was able to further communicate his vision about technology and participatory management through his actions more than his words. He supported the team in spirit, through budget, and via direct participation in their activities. As team members stated, “He definitely didn’t play an administrator role” and “He was a member of the team” (FG1: 47-49).

Don played several roles as a member of the technology team. Beyond those already mentioned, he became the problem solver. Karen stated, “[Don] is more the expert for us” (FG3: 508). He was the person who had an interest in debugging technical problems and the teachers were happy to let him do it. Several of the teachers shared their viewpoint on being the school techies.

Doris - He’s definitely gained more of an expertise in hardware than what we had. We never...

Karen - In the beginning we were kind of all the same.

Doris - We never pretend to be computer tech-o’s, or people who know hardware.

Karen - We are not computer nerds in this school. (FG1: 210-217)

Faculty took on new personas, such as the “cord queen” (FG2: 600) or the “framework queen” (FG4: 549), depending on their personal area of interest in technology or
its application. Faculty received recognition from their peers for their abilities and further opened the lines of communication, involvement, and empowerment.

After achieving the initial goal of creating a team of equal players, a tough obstacle loomed ahead. Communicating the vision and gaining acceptance from the fence sitters and resisters was in the least, challenging. Don initiated a series of professional development activities to involve the other faculty members. These included sharing of information via the technology team, providing training on various software solutions, and extending the newfound participatory experiences to everyone. Each of these activities was important in its own right.

The technology team was expected to share their experiences with the rest of the faculty. The sharing of information alone was valuable, but the sharing of the excitement and enthusiasm was invaluable. Nothing could have compensated for the impact of the very real emotions shared by the technology team about what they were seeing, hearing about, and reading.

An outside viewer must have seen the initial training as a strange form of chaos. In several cases, teachers sat at their computers in their classrooms while Don used the intercom from his office to convey instructions on how to use software such as AppleWorks. The technology team acted as the intermediaries running from room-to-room answering questions, fixing problems, or even giving Don a “slow down!” (FG2: 665). As Nancy stated, “[Don] used the intercom and we were the runners in the hall and they [teachers] had to yell, they’d go ‘Nancy!’ … and…you’d be like ‘who is it?’ … It’s [teacher name]’s room, and so then you run to [that] room” (FG2: 652-654). Karen described it as, “it was crazy, we’d be like running down the hall. Burning rubber down the hallways” (FG2: 670-671). The greatest
benefit was that teachers felt as if someone cared about them personally. Someone was there
to help; and in this case there were several people there to help. As Linda stated, "It was
really effective because you felt like somebody really cared about what you were doing"
(FG2: 671-673).

The school established a reputation as one of the technology integration pioneers of
the late 1980's and early 1990's. This was clearly illuminated by recognition visits to the
school by the Governor (doc 87a, 87b, 1987; FG3: 906; P1: 139; P1: 402) and lieutenant
governor (doc 98a, 98b, 1998), the school being awarded equipment from Apple Computer,
Inc. in recognition of "the school's leadership in the area of technology in education" (doc
89e, 1989), being awarded a regional FINE "First in the Nation in Education" award (doc
89g, 1989) for its technology program, and being chosen as a test site by two technology
companies – Claris and National Geographic (doc 89a, 1989, Karen email, 2/6/2003). The
freedom to innovate and try things allowed for acceleration in the technology skills of the
teachers and students. "Don was very open at the beginning about people being able to fail at
what they did with [computers]" (FG2: 53-54). There was an obvious concern about risk-
taking and failure among the teachers. "Because you have to think a principal evaluates
teachers for tenure and for everything else, their job, their livelihood, so a lot of people at my
end of the hallway were afraid if they made a mistake that would reflect on their teaching"
(FG2: 55-57).

The teachers were made aware that Don wanted them to try new things and there
would not be repercussions if it did not work. According to Don, "...I'm just trying to lend
my positive air, you know, getting people the permission to take risks and fail without me as
the principal, coming down on them, as 'oh, you blew it' or whatever" (P2: 38-40). Not
everything did work. Doris described one teacher’s early experience with the Internet, “The first time one of our teachers got on the Internet…she went [to] what she thought was a very nice search engine…she thought was Dr. Seuss or something…it turned up to be pornography, she about died” (FG2: 60-63). The end result of this trusting, empowering relationship was the creation of a feeling that “we took the risks together” (FG4: 155).

The next logical step was to create the means to have an information exchange with people across and outside the school district. The first Cardinal technology conference was held in 1988. The local teachers were encouraged to participate and reap the benefits of this experience. Lori describes some of these benefits that impacted the long term aspect of the program – “…even though they [the teachers] had to work hard to get that going here, they got to go to a lot of the sessions, and that got them excited” (FG4: 442-443). Of real importance was the level of involvement by the staff at Cardinal Elementary. As Nancy stated, “Everybody had a stake in it” (FG4: 812).

The technology conference provided a means of sharing, learning, communicating, discovering, and finally, realization that technology was a tool that could be applied and used effectively in numerous ways. A dialog during the second focus group illustrates the importance of the conference.

Lori - …I think the [conference] was one of the, school-wide or K-6 wide, because it started out as a K-6 [conference] to begin with, …that they would go and see what other teachers were doing. That was the one thing that was that…

Doris - ‘Wow I didn’t know we could do that! Just show me.’
Lori – ‘Okay, that’s what I want, that’s what I want to do.’ And, that was the whole thing about when we looked at presenters; it was what are you using it for? What are you…

Nancy - [doing] in the classroom.

Lori - And, how can I walk out of this room and take it back to my school and do something? (FG2: 715-728)

Don described two non-technology using senior teachers who benefited from this experience.

We had two ladies. They were fifth and sixth grade reading/language arts folks and those two ladies are what, sixty years old apiece, and never did technology. [They] embraced it with both hands because they could see what it was doing for their kids. [They] developed some really cool, innovative, educationally effective uses of technology…for the writing process. UNI came and did some research on them and we had Iowa...Test of Basic Skills data saying, ‘look at this’ now we’re getting two or three years growth in one year in the usage sub-test which was aimed at writing more than anything else (P1: 310-321).

It was important to constantly review and revise the technology vision of the school. Initially, technology was seen as the focal point – something to teach about. Technology skills, such as how to use AppleWorks, were taught to teachers and students. Technology was an island unto itself in the educational curriculum. It is easy to imagine teachers in that early environment saying something like, “It’s time to do technology now.” The technology centeredness was directly reflected in the visioning activity during the first ten years of the
program. Most of the vision changes were driven by changes in the technology itself. The introduction of multimedia capabilities such as sound, video, and animation, CD-ROMs, and the Internet were all vision changing mechanisms.

During the late 1980’s and early 1990’s the focus of American education was on its golden child – technology (U. S. Congress, 1988; Rees, 1987; Touchton, 1987). National reports such as “Power On!” (U.S. Congress, 1988) detailed the influx of these education-saving devices. As this shifted in the late 1990’s Don realized, “Unless you find ways that technology itself can be useful in meeting those things [new initiatives], people don’t have the time, attention or money to just sit around and do technology for technology’s sake” (PI: 261-264). The North Central Regional Education Laboratory report, “Plugging In: Choosing and Using Educational Technology” (NCREL, 1995) referred to how technology had been viewed up to that point stating, “Most evaluations of the effectiveness of technology focus on the technology itself - its costs, its complexity, and its feasibility in particular circumstances. They don't examine the effectiveness of technology as a tool for learning.” The focus at Cardinal Elementary concerning technology shifted from technology education to educational technology. This was not a subtle change by any means. Rather it was a fundamental change from the perception of technology as a “holy grail” to technology as a tool for supporting the educational process and empowering learning itself. Don describes this change of emphasis:

“…its not Tech Ed anymore. It doesn’t have its own category… its own curriculum and all this other stuff. Its, its now Ed Tech and so the education’s more important than the technology on its face. However what I think has happened in our school district more than most that I know of, is that…we’ve
got a lot of folks that do a lot of Ed Tech, whereas in a lot of districts they
don’t. I mean their applications are fairly limited. I think one of the reasons
why we have so much Ed Tech going on has been the leadership process that
was used to get things going in the first place” (P1: 171-178).

The change in the understanding of technology’s role in the educational system led to
changes in the acquisition of technologies. Instead of purchasing computers and software on
a large scale to meet the needs of the entire school, technology purchases were made to meet
the needs of the individual teacher. When money became available, the teachers would voice
their individual needs. Due to the high level of communication in the building, these needs
were often voiced in unison. For example, several teachers would voice the need for
additional digital cameras or a color printer. The faculty would discuss the entire list of
proposed needs, and “everybody got to vote four times, for their top four priorities. And then
we looked at what had the most support, and what we could afford, and went as far down the
list as we could in buying stuff” (P3: 137-139). Through this process the teachers felt their
voice was being heard and their needs were being met.

Understanding the Impact of Change on the Educational System

Change is a powerful thread throughout the data sources of this study. For this study,
change is defined from the perspective of the influence of technology on the educational
system. Technology can be a powerful change agent or catalyst as suggested by Sandholtz, et
al (1997). The introduction of technology, the research undertaken to better understand
technology, and the activities that took place related to technology were all contributors to
change. The theme of change, as defined here, occurred throughout the data sources one
hundred and eighty-four times. Change topics discussed in this section are introducing change, resistance to change, and overcoming resistance.

Introducing Change

Change in an educational system is similar to any cultural change. It can be perceived as a difficult undertaking and resisted even though the need is apparent. Any change effort is up against the history, practices and polices of the existing culture (Hagberg, 2003). During the initial change process a major obstacle is overcoming the resistance of those hesitant to buy-in to the new paradigm.

Resistance to Change

Resistance to the proposed changes at Cardinal Elementary appeared in various forms. This included resistance from secondary personnel over placement of technology in the elementary versus the secondary schools, the need for playground equipment, desks, and chairs versus computers, use of elementary space for a kindergarten classroom versus computer lab space, fear and lack of understanding the technology, and keeping up with the technology.

Don and the Superintendent’s decision to place technology in the elementary school instead of the secondary schools were nearly unprecedented. The teachers described the idea as “pretty radical” (FG1: 683). Throughout my personal experiences, a traditional implementation pattern had been to place technology in the secondary schools and let it eventually filter down to the elementary. In essence, this meant that the elementary would continually receive old, outdated equipment. Karen voiced awareness of what this decision
meant stating, "it was a hard ideology to break as high schools were used to always getting more than elementary...it was definitely a new paradigm (email, 12/16/2002). The elementary staff “…never thought about the politics of elementary versus the high school” (FG1: 363), but the politics became readily apparent early on. This difference of opinion by secondary staff was voiced in planning meetings, school board meetings (FG1: 343, P4: 406-417), during the budgeting process (FG1: 418-420, FG2: 239-241), and in personal interactions (FG1: 376) with elementary personnel.

The perceived causes of this friction perhaps originated with the decision to place technology in the elementary first, but it is of interest that there were at least three other differences that may have contributed to the divide – philosophy about technology, the structure of the educational systems and funding. The elementary faculty described their philosophy in terms of technology expertise and its impact on decision-making. The elementary personnel did not regard themselves as “…technology people, I mean, we used a computer, but don’t ask me how it worked” (FG2: 363-364). As a result they worked as a team and resolved to “learn together” (FG2: 385). The high school had resident technology experts who made decisions and provided direction for the high school program. Linda describes this stating, “They don’t go to their staff and ask their staff their opinions” (FG2: 267). In the early stages of the technology program, the high school did not “…get together much like we get together all the time, and work together all the time and share ideas” (FG2: 400-401).
The traditional division of the high school into departments created inherent silos. Initially, the elementary was divided into upper and lower grade levels. As the teachers described, “we’ve really broken down the walls” and the prerequisite for this was having “…a leader who wants to break down those walls” (FG2: 416-418). Finally, funding has created a definite disparity between the elementary and secondary schools. The elementary school held fundraisers each year with the sole focus on technology (docs D6, D7, D8, D9, D11, D12, and D13, Karen email (2/6/2003), FG2: 242-243, FG2: 860-871, FG2: 233-243, FG3: 775-779). The ability of the secondary school to hold fundraisers with such singular focus is limited by their departmental division and thus, potentially different vision or needs. Lori reiterates this saying, “…they do have a lot of other fund raisers that they have to do, whether it’s for band or whatever, or sports” (FG2: 242-243). Joan describes the difference in how the schools approach funding philosophically stating, “…we have a plan and find the money. Where they find the money and then have a plan. I think it’s a little different. And they use their money; they have their money first and then decide what to do with it. Where we have our vision first and then we try to get the money to make it” (FG2: 249-250).

Elementary personnel resisted the early changes primarily due to differing priorities. The need for other school materials easily out-weighted the addition of a relative unknown such as technology. Both faculty and administration voiced an awareness of these concerns as indicated by the following excerpts:

Karen - We needed other stuff.

Lori - We needed desks and we needed chairs and we needed play ground equipment (FG3: 659-662)
Doris – it [the computer lab space] was going to be an all day kindergarten space because the other kindergarten was across the hall. So there was some opposition from a couple of people. (FG3: 681-683)

Lori – So there was some unrest. There was, but...


Don – One of my kindergarten teachers at that time was teaching title I. Was just furious that we would take an empty room in our school and make a computer lab out of it back in 1986. And there was no way this stuff was worth taking a room for. We ought to do full day Kindergarten, we ought to, you know, something else we ought to with this money (P1: 394-398).

It was apparent that technology was not something that could simply be added on top of everything else. The cost alone meant that sacrifices – decisions – had to be made.

A lack of understanding of the technology itself, the potential of the technology, and the vision for technology kept some elementary teachers in the role of fence sitter or resister. The introduction of technology and the shift from traditional spending (as previously described) was something new, and the school was entering uncharted territory. “We had a few people who didn't want to jump on the technology bandwagon,” stated Karen in an email (12/16/2002). Doris added, “...we did have some teachers at my end of the hallway, the lower teachers who just froze up around technology” (FG2: 48-49). While these individuals were “few and far between” (Karen email, 12/16/2002), their existence influenced the implementation plans of the school. The lack of understanding is not something that goes away even after the myriad of experiences the faculty have had. In a recent example, the technology team proposed upgrading the lab with new technology that would allow any
computer’s screen to be projected for the whole class to see. For the team, the vision and realization of what this device could do was clear. For other faculty members it was not. This is described in the following dialog:

Karen - Some people didn’t really have that vision [about the value of the new device]. That was lower on their priorities.

Joan - A lot of people had it really low on their priority list and now they are finding that, I kept saying, you’re going to like this, you’re going to like this, because we had it as one of our top priorities. I thought it was really interesting how since we knew what we were talking about, we had…other people didn’t have a clue. And now they are in here using it… (FG3: 822-829)

The ability for teachers to understand and keep up with changing technologies is limited by the time they have to focus on it, by the priority they place upon it, and by the funding available to support their professional development. Other issues that are often forced upon educators by outside entities heavily influence time and priority. Don voiced this concern, stating, “There is a lot more other things going on that claim our time. We didn’t have all the No Child Left Behind and state initiatives that we have to deal with now” (P4: 327-329). The level of professional development has been scaled back with the cessation of the technology conference and lack of funding to pay for professional development opportunities. As Don said, “The kind of things we used to be able to do and places we used to be able to go, we just don’t have the money” (P4: 319-321).
Overcoming Resistance: The Path to Change

Overcoming the resistance required innovative methods and time. As previously described, some teachers were brought into the fold through their exposure to the benefits of technology. Sharing these experiences was important as others could see how “non-techies” had conquered and benefited from the challenge. The technology team visited several innovative sites, including the Apple Classroom of Tomorrow in Blue Earth, Minnesota. The information they gleaned was shared with other faculty. Of particular importance was the attitude and relationships of the technology team. The team simply exudes excitement and a passion for what they are doing. Additionally, the team has developed a camaraderie that is readily apparent to those around them. This did not happen overnight. It was something that evolved from the many long hours the group worked together in their efforts to make the technology dream come true.

Karen described their after-school activities, “We met weekly, plus we met nights. Like we might leave school … go to Marshalltown and work until…9 or 9:30” (FG1: 562-563). Closeness developed among the group providing a sense of comfort in knowing they were all in this together. Several comments from the teachers exemplified the team dynamics such as, “We learned together” (FG1: 242), “we teach each other” (FG1: 244), “we did it together” (FG1: 317-318), and “And when things got tough, we had each other. To, ah, you know, we would come together and we would be upset. We might cry.” (FG3: 630-631). One faculty member illustrated this collaboration saying, “I’ve had experience with digital cameras this week. [name omitted] taught me a little bit of stuff, [name omitted] showed me some stuff and Don showed me some stuff. And I’ve experimented on my own, so I think you just pick up stuff that you’re interested in” (FG3: 29-43).
Of great benefit was having the superintendent as a buffer for the elementary program. The superintendent and elementary principal shared the same vision, and having the chief school administrator on board provided a layer of insulation for the fledgling program. This feeling of protection and security provided the elementary teachers with a sense of confidence and support and nourished their level of innovativeness. Additionally, the positive press coverage and community feedback swayed many of the resisters. Don describes this change, stating,

...so the people on the faculty that were naysayers were blown out of the water with all this positive public publicity coming through the door. And so they just shut up and came along for the ride and in most cases became enthusiastic participants (P1: 391-394).

Don was previously quoted referring to a Kindergarten teacher who initially resisted the use of the classroom space as a computer lab. Don describes the change in this particular individual stating, “...five years later she came up and apologized to me” (P1: 399).

Students provide great influence on programs in schools, and the technology program at Cardinal Elementary was no exception. Some of the teachers’ resistance to using technology in the classroom was overcome by students. Doris stated, “The kids put the pressure on the teachers” (FG2: 454). Students asked the question, “[Mrs. X] gets to do that, why can’t we?” (FG2: 449). The pressured teachers turned to the technology team, asking them to “teach me this...because the kids want to go into the lab” (FG2: 456). The technology team teachers considered this influence to be “a big, big thing” (FG2: 458), and it resulted in resisting teachers being “wore down, they couldn’t stand off anymore” (FG2: 460-461).
Don's role and actions played an important part in facilitating the change process. He was described as being "very patient with the ones who did not want to go in [to the lab]" (FG2: 473). He was determined to make the change happen and "...he encouraged them" asking them, "...have you thought about, or have you done, or so and so is doing this, that would really work nice with your class" (FG2: 474-475). Don would suggest teachers make observations of their peers telling them, "[teacher's name] is doing this really cool thing, why don't you find some minutes to go talk to her, or go down and observe what she is doing, or talk to somebody who is using this software, so there was a lot of suggestions about where you could learn" (FG2: 481-483). While Don wanted the changes to take place and encouraged the teachers in their technology explorations, the change "wasn't demanded" (FG2: 487).

The participatory nature of the technology initiative led to a greater understanding of funding and budgeting. Lori describes this transformation:

I think people started to realize that different budgets in schools had to be used for different things. You couldn't necessarily use money from this PPEL fund or whatever, whatever, in salaries. And you couldn't [use] salary money in here and that kind of brought all of that out, that okay, we've got this money, it can't be used for playground equipment, it can't be used for...because it's been for whatever kind of fund it was. Or if it was state money or block grants or whatever, it had to be used for certain things (FG3: 685-690).

The increase in understanding and realization about technology-related issues lowered resistance and defensiveness of teachers. Lori further describes the benefits of this breakthrough:
In some ways it really opened up a lot of doors as to how a school was run. But that wasn’t the intention. Because up to that point, the superintendent did his job and ran the school and nobody really knew where the money came from and where and that kind of thing. [It was] kind of magical and that there was these different pools. And it was like okay, whatever. But now suddenly it made a difference (FG3: 694-701).

Impact of Technology on the Educational System

Technology served as the catalyst of the participatory management initiative. To follow the scientific definition of a catalyst, a catalyst is something that is not used up during a reaction. Technology was not used up during the participatory management process either. It continues to impact Cardinal Elementary in a myriad of ways to this day. This theme appeared throughout the data sources one hundred eighty-four times. This section describes the impact of technology on the people of Cardinal Elementary.

Many wondrous things occurred over the years as the faculty gained experience using the technology, shared their experiences with one another, and tested their “risk-taking” wings by trying innovative applications of technology. The combination of these things led to a metamorphosis of sorts. Doris provided a simple example. “The first…couple of years, we did a lot of things that we would probably laugh at now, like making sure the cords were in the right place, making sure the buttons were turned on. Remember those kinds of things where the teachers were like, ‘it’s not working’ and ‘I just don’t know what’, and they didn’t have it plugged in right, or they didn’t have the buttons turned on. We don’t do that anymore. That’s pretty cool” (FG2: 144-149).
The technology team itself modeled the practices that would become the norm throughout the building. They worked hard together to learn about technology, gather information from anyone who offered it, synthesize the information, and then share it with their peers. While it cannot be said that the entire faculty expresses this level of camaraderie, the evolution of the technology program depended upon sharing and innovation. The teachers began as many do, learning the basic skills, figuring out how technology could supplant existing practices, and gaining confidence in their abilities (Sandholtz, Ringstaff, & Dwyer, 1997; Hall, 1979). The faculty progressed through a change process like that described by Hall (1979) and the ACOT (Sandholtz, et al, 1997) research, the teachers gained an awareness of the real purpose of technology in education.

It is impossible to write what that purpose is in this study as it is something different for each person involved. To call technology a tool does not do justice to what the teachers are doing. There are a myriad of examples of innovative practices that evolved from the personal interests and passions of each teacher. What is important is that each teacher took risks, tried new things, and then shared what he/she learned with his/her peers. The faculty describes this diversity in the following dialog:

Doris - And there are lots of places to explore. It wasn’t just, everybody had to do the same thing. It was, if you like this, you could go off in this way. It gave everybody something to try.

Denise - Very diverse.

Doris - And in that way, we all helped each other, too. (FG4: 631-637)

This extended beyond the walls of Cardinal Elementary. The technology conference gave teachers an ongoing means of communicating and sharing with their peers outside of
their building. Their hard work was repeatedly held up and recognized through the receipt of grants, awards (one teacher was named as the “Teacher of the Year” and Don was named “Administrator of the Year” by the state technology organization), interviews, television coverage, news stories in regional papers and magazines, a visit by the Iowa governor, and more. Yet, this recognition has failed to swell their heads as illustrated during this segment from the third focus group session:

Lori – Well, when the governor came to open our lab that was a big thing. We were in some publication, our school was.

Doris – Some brochure too.

Karen – We have some plaque for something

Doris – That’s how important it was to us. We weren’t power hungry about that stuff.” (FG3: 911-920)

What is very important is that the people of Cardinal Elementary did evolve due to their experiences. Technology took on a different meaning and role as its usage diversified. The teachers became more comfortable using and experimenting with it. Technology no longer was the focal point, but rather it became what other tools of the trade become – transparent. It was turned into one of many “tools of the trade” used in the educational process. The following segment from the second focus group describes how teachers approach the use of technology in their classrooms:

Doris – Also individually we just explored. What we wanted to do in our classroom. I think, as we knew about our curriculum we just started thinking, how can I do this with technology, and where might that take me.

Lori – How could this enhance what we are doing?
Doris – Yeah. How can I make this more interesting for kids? (FG: 1241-1247)

Teacher evolution took place in their personal growth and desire to learn. Several of the teachers took graduate level classes to enhance their understanding of technology. Two faculty members received master’s degrees in instructional technology programs. Others took specific courses of interest knowing an advanced degree in a technology field was not of particular importance or value to them.

Impact on Student Learning

As the application of technology evolved along with the development of the teachers, so to did the impact on learning. Students were given opportunities to use technology as a learning tool – a device for exploring the world around them. Three examples are provided here to exemplify the empowerment of the learner through technology.

One of the first “ah-ha’s” that came to Don was the use of technology to provide students with the same benefits as those received by the secretarial or support staff at Cardinal Elementary (P1: 84-87). Namely, these included word processing, easy production of quality documents, and editing capabilities. This was an early driving factor for using technology as a catalyst for the participatory management program. The real benefits were observed in the 1990’s as the use of technology as a writing tool was correlated to test scores on the Iowa Test of Basic Skills. Personnel from the University of Northern Iowa coordinated the research project which indicated students were gaining two and three years benefit in the ITBS usage segment due to the innovative technology usage applied by the fifth and sixth grade language arts teachers (P1: 317-320).
The students have had many experiences via the Internet, which have made a very large and unknown world smaller and more familiar. Previously I wrote about the leaf project and how students learned from a landscaping professional in Maryland (FG3: 365-377). In another class, the teacher and class communicated with some individuals in New York City, learning about what it was like to live there. It came as quite a surprise to the students to learn that some New Yorkers lived in apartments built incredibly close to one another. These apartments are so close that sunlight could not enter the windows; therefore, plants could not survive there (FG3: 383-390). Cardinal Elementary partnered with a school in Florida for another project. One of the activities involved the exchange of items that symbolized their states. The children received a package containing several items, one being “surf board wax chewing gum” (FG3: 395). The teacher and students quickly tore it open and began to chew before realizing it was really surfboard wax that smelled like bubble gum. Without the technology students would not be afforded such communicative, cultural, and expansive learning opportunities.

The recognition Cardinal Elementary received provided other student benefits not afforded many schools. In 1989, Claris Corporation and National Geographic selected the school as a beta test site. Karen was a lead person with the National Geographic project. Not only did the school gain access to “KidsNet,” but Karen “…was a consultant for National Geographic Society and trained teachers around the US…” (Karen email, 2/6/2003). This program focused on science and provided students with extraordinary experiences. Don described one particular event:

…that was when the Soviet Union fell apart, and…we were doing a National Geographic KidsNet unit with a school in St. Petersburg, and…they cut off all
the communication out of the Soviet Union at that time, except they didn’t get that [KidsNet]. And we’re getting e-mail and messages through KidsNet about what’s happening in the Soviet Union that CNN didn’t know about. Because it was so current and you know, and that’s never happened, that totally new ability to be that current and to not to have to go through a middle person to get the information. You know, in the past all of, the media was the filter. CNN or ABC, or whatever, that’s how you got your news...was through the newspaper, through the media and it was all filtered by them. But...for us, [this] was the very first time that technology had enabled direct first person impact across the world to me, that involved me, anyway... You were witnessing history with out a filter (P3: 345-357).

Identifying and Managing Teacher Issues

Teacher issues, as they relate to this study are those things that directly impact the teacher’s day-to-day experience. They are the experiences teachers had and the events that changed or impacted them during the introduction and integration of technology. In many ways it is a theme that touches all other themes in some form or fashion. It might be said that the other themes or codes all touch on teacher issues in some way. Throughout the data sources collected for this study, teacher issues were identified eighty-five times. Many of these issues, such as resistance, barriers, finances, and decision-making, have been discussed throughout this chapter as the interrelationships between themes continue to reveal themselves. One additional topic I feel is important to discuss is personnel turnover.
Personnel Turnover

As I continued to meet with the principal and teachers of Cardinal Elementary, I realized one element of dynamic environments had not yet impacted them greatly – personnel turnover. Teacher and administrative turnover can lead to dramatic changes in direction and priorities. During the past twenty years, Cardinal Elementary has had the same principal and limited change in teaching staff (only three teacher changes were referenced in any way during the interviews). I felt it important to discuss the topic and gain insight into their perspectives about turnover and how they felt it would/could be handled.

Teacher change in the building was caused by retirement. The majority of the staff was relatively young when the participatory management program was initiated. Today, the range of teaching experience for the focus group is ten to thirty years. Four of these people have been involved with the technology team since its inception. How would the loss of this group impact the school?

The commonly proposed solution was involvement in the replacement process. Teachers had already participated in the interview process of the superintendent and hope this would be carried on as their peers retire. The notion of teachers leaving the schools appears to be moot as the level of satisfaction and commitment is very high. The high level of trust again appears to be a contributing factor in the teachers’ comfort level in helping to select their new peers. They firmly believe they can provide honest feedback to Don, and it will be listened to and considered in the decision-making process. As to the impact of new teachers on the established system, Don describes this as being positive and healthy for the school. "It has weakened us for a temporary amount
of time, but then it’s become better, and those people have come on board and kind of adapted to the culture” (P4: 339-340).

A solution influencing the impact of turnover is the teachers’ level of trust and faith in the established system. The teachers “hope… the younger staff would just continue on the tradition…” (FG4: 1019). Denise is one of the newer teachers at Cardinal Elementary. She describes her early experiences saying:

...when I first came aboard, the colleague, the other second grade partner kind of mentored me along, showed me, shared with me, lots of her stuff. (FG4: 1093-1095).

...you are coming in and trying to learn the building, the curriculum and what’s supposed to happen and what you are supposed to do and everything. But I think the colleague helped along in that, and just sort of helped me figure out, not so much as doing everything the same, and that was a big stumbling block for me, personally, because you know, I thought I had to do or needed to do everything she did. And that was hard for me. So I kind of checked with others, and sort of see what was acceptable and stuff and as the years kept kind of going I kind of found...my own little niche (FG4: 1100-1111).

The veteran teachers showed an awareness and compassion for what new teachers dealt with in joining their school. “No one tells you when you come in that these are the golden rules,” (FG4: 1131) stated Karen. Lori said, “I think that we’re real, we’re aware of when they’re new… we just took ‘em under our wings, it’s just one of those things that this
school...it goes along with the trust, the team building, with all of that...you just pull them along with you until they have their feet on the ground” (FG4: 1142-1146).

Another activity designed to create friendships and build community are FAC’s or Friday Afternoon Clubs. These informal gatherings allow the teachers to relax away from the pressures of work and share common ground. Since the faculty is completely female, activities include going “to the salon, they lock the doors, we have hors d'oeuvres, and drinks” and “do our hair and our makeup” (FG4: 1156-1158) to “having an ice cream social after school” (FG4: 1180-1181) which allowed them to interact with peers from the middle and high schools.

Of greater concern to the teachers is the impending retirement of Don. The principal “is a proved key part in maintaining the culture of the building” (P4: 350). The importance is underscored by one teacher’s response to my question about Don’s retirement – “Oh, he’s not retiring” (FG4: 1004). This hope obviously is unrealistic, and again the teachers turned to participation and faith in the teaching staff as the answers. Doris stated, “Somebody has to follow our dream. Act on our dream. And we have to impart that dream to them so they know what it’s about” (FG3: 1046-1047). Don has concerns as well and hopes the incoming administrator would “try to assess the culture of the building before they try to make wholesale changes” (P4: 346).

Summary

In the twenty-one years since Don became principal at Cardinal elementary evolutionary, even possibly revolutionary, changes have taken place. These changes have sometimes been slow – evolving over many years as relationships were created, skills were
learned, and experiences gained. Some changes seemingly happened overnight as people experienced epiphanies of insight into the relationship of technology, curriculum, and participation in their profession. Perhaps the greatest complement to these efforts is to say the changes have become a part of the culture at Cardinal Elementary. Today, technology and participatory management are no longer initiatives, they are simply part of how the school goes about its daily activities.

The participant’s level of communication is high as is his/her trust in one another. The need for committees has dropped dramatically so that only a few exist today, one being the original technology committee. The technology committee continues to work to provide innovative ideas, research, and support to the faculty and staff. The interactions during and after school have increased so faculty and staff have become better acquainted personally as well as professionally. Decisions are made without having to go through channels or administrative red tape. Teaching methods and innovations are shared, and there is a freedom to choose what works best in each classroom.

Perhaps, the shining days when Cardinal Elementary was recognized and lauded as a place of technology innovation and leadership are behind it as budgets have grown tight and other schools have caught up. Yet it was never the recognition that drove this group to innovate and excel. It was their desire to be the best and do the best they could for their students.

Today, technology is no longer the stand-alone buzzword that drew such attention during the late 1980’s and 1990’s. When one enters Cardinal Elementary he/still still sees technology being used. What is different is it has become a regular part of teaching, exploring, and learning. What used to be unique and exciting is now passé’ compared to the
latest multimedia tools available to the teachers and students. In the beginning Don’s first thoughts were focused on providing students with tools and experiences similar to those of the office staff. Today, the push is to provide the tools and experiences of the world.

Technology was the focal point, or as previously suggested – the catalyst, for the participatory management initiative. While technology is what earned Cardinal Elementary recognition, it was participatory management that brought it success. The educators are much more participatory, and their level of involvement in decision-making and other everyday activities is high. With each passing year their skills continue to evolve. The teachers have had to deal with sharing their knowledge and ideas with new faculty and, in return, growing with the influx of new ideas from the new faculty. The teachers have seen their students move on and succeed. These students have pushed the establishment to provide them with the same environment in the secondary schools as they had at the elementary. The people of Cardinal Elementary have become comfortable with change and are ready for whatever comes down the road of educational initiatives.

Timeline of Critical Technology-Related Events

1982 Don joins Cardinal Schools as a first time principal responsible for the junior high school
1983 Don adds the elementary school to his responsibilities
1986 Participatory Management Initiative begins
   Elementary Technology Team formed
   School delays bus purchase to finance elementary computer lab
1987 Don becomes full-time elementary principal
Visitations to technology exemplar schools begin

Governor visits to celebrate opening of new Apple lab

1988 Cardinal Elementary is chosen as a beta site by two software companies – Claris Corporation and National Geographic

First Technology Conference held.

1989 Cardinal Elementary, using KidsNet, learns about the fall of the Soviet Union prior to International news sources

Iowa Test of Basic Skills reading score increase attributed to innovative use of technology

Cardinal receives laser printer from Apple Computer

Cardinal Elementary receives one of 16 FINE foundation awards from the state for the technology program.

1990 Second technology conference draws 110 attendees

Cardinal teacher recognized as “Teacher of the Year” by state technology organization

1991 Iowa Congressman visits elementary computer lab

1992 Community donates $1500.00 to elementary technology program

1993 Community donates $1300.00 to elementary technology program

Technology conference draws over 240 attendees

First member of the technology team retires.

1994 Community donates $1000.00 to elementary technology program

1995 Technology conference attracts over 400 attendees
1996  School recognized by Iowa Dept of Education and NCREL (North Central Regional Education Lab)
      School district gets Iowa Communications Network classroom
      School enters into first lease for lab computers

1997

1998  Lt. Governor speaks at technology conference
      Community donates $1000.00 for network equipment

1999  Technology conference cancelled due to lack of interest and competition
      Fourth graders use technology to produce original music

2000  Community donates $1800.00 to elementary technology program
      Community donates $500.00 to elementary technology program
CHAPTER FIVE

CONCLUSIONS

Cardinal Elementary is a place where change is an ongoing process. The administration and faculty members have worked together to explore the possibilities of how technology can help create a rich learning environment by implementing a participatory management program. Together they have succeeded. Fifteen years ago the school was a very different place where divisions existed, communication and trust was low, and innovation was not highly valued. With the support of the principal and the enthusiasm of a small group of teachers, Cardinal Elementary began an evolutionary, sometimes revolutionary, process of change. Technology played a critical role serving as the catalyst in maintaining the energy of the change process.

During the tenure of Don Anderson as the principal of Cardinal Elementary, many changes have taken place. The administration, staff, faculty members, and students have been exposed to new concepts, changes in hierarchy, levels of involvement, and new roles. The synthesis of these experiences combined to produce a school in which technology has become successfully and exemplarily integrated. Perhaps most importantly, Don’s practices evolved and grew as he developed into a principal who was recognized by the Iowa Computer-Using Educators organization as one of the best in Iowa. Six significant themes related to Don’s role as principal emerged during this study:

- Encouraging and fostering collaboration
- Providing leadership from all levels
- Having and sharing a joint vision related to these efforts
• Recognizing and understanding the impact of change on the educational system
• Learning about and understanding the impact of technology on the educational system
• Identifying and managing teacher issues

These themes illustrate effective practices and modes of thought employed by a principal during the creation of an exemplary technology program. They are not guarantors of success, but do provide insight into successful actions and reinforce several aspects of the National Education Technology Standards for Administrators (NETS-A). These themes did not occur independent of one another and therefore did not occur in any sequential fashion.

A primary purpose of this study was to gather information about the real life actions of an administrator as recommended by Fullan (2001) and to compare that to the recommendations found in the NETS-A. In the following sections the emergent themes from this research will be discussed and used to provide insight and comparison to the related components of the NETS-A. References to specific standards are included in this discussion. These can be found in parenthesis such as (IIa) referring to substandard A of standard II. The discussion will focus on the NETS-A rather than the principal profile as the recommendations for principals are subsumed within NETS-A. A brief discussion will follow to discuss the segments of NETS-A that are not directly addressed within the six themes. Additionally, an important comparison of what ISTE refers to as the essential environmental conditions for success and the environment found at Cardinal Elementary is provided. As reference, the NETS-A standards, principal profile, and essential conditions can be found in Appendices A, B, and C. Following this discussion a description of the inter-relationships of the NETS-A is presented. It is imperative for the reader to understand these relationships and
how they impact the administrator and technology program. This chapter will conclude with my recommendations for action and future research. Throughout this discussion references to pertinent literature are made. These references are provided to help inform the reader as to the significance of these findings as they reinforce, disagree, or extend the profession’s knowledge base.

Encouraging and Fostering Collaboration

The original change element that led to the establishment of a technology program was instituting a participatory management program. Many conditions, such as siloing of the upper and lower elementary, low levels of trust, and a hierarchical organization, made Cardinal Elementary a prime candidate for the participatory management program. These conditions inversely parallel many of those outlined by Kanter (1981) such as holding together fragmented constituencies, designing flatter more responsive systems, and restoring faith in the institution. The Iowa State Education Association, Iowa School Boards Association, Iowa Department of Education, the district superintendent, and the Cardinal Elementary principal provided support for the implementation of the management program.

Collaboration was of critical importance to the success of both the participatory management and technology programs. A key first step Don undertook was the establishment and empowerment of the technology team. As recommended by Barth (1999), Don was exhibiting trust in the capabilities of the teachers. This group of teachers understood the opportunity presented to them and grew as individuals, professionals, and leaders. Collaboration levels grew in three areas. First, the teachers collaborated in their efforts to create a successful technology program. This meant spending time during and after school as
they first explored what already existed, dreamt about the possibilities, and then found ways to make it happen. Second, the teachers collaborated with other teachers outside of the technology team. They shared information with them, offered integration ideas, supported first efforts, and, in general, acted as the evangelists for the technology program. This approach to personnel development was similar to recommendations by Joachim and Klotz (2000) and Blase and Blase (2001) that schools should establish collaborative communities of learners. The peer-to-peer collaborations extended beyond Cardinal Elementary to include teachers from around Iowa and eventually the United States. Finally, the team members collaborated with Don. Two key ingredients of the participatory management program focused on empowering teachers to make decisions and Don’s changing role to that of collaborator. Don quickly became perceived as one of the team and a trusted peer.

The collaborative efforts made by each person led to an increase in the level of trust among teachers and between teachers and principal. The complex web of sharing information, empowering to make decisions, experiencing the results of the decisions, correcting mistakes, and constant communicating contributed to an understanding by faculty members that their well-being, and the well-being of the students and school, were at the heart of each decision made by teacher or administrator. Barth (1999) describes this web as the means for developing a culture of leadership. The triumvirate of trust, decision-making, and collaboration contributed heavily to the success of the technology program. These parallel issues outlined by Sharp and Walter’s (1997) survey that described critical issues identified by administrators.

NETS-A specifically addresses collaborative efforts in standards I, II, III, and V. Each of these standards makes direct reference to collaboration or to collaborative-type terms
such as inclusion, community, group awareness, and communication. The standards suggest that technology be used as a collaborative tool to increase communication, create learning opportunities, increase awareness about technology, and to create communities in which each person is intimately involved. This is comparable to the recommendations of the United States Department of Education (1996) suggesting the creation of communities of learners that extend beyond the school. Technology was the very impetus leading to a variety of learning opportunities (IIe) such as site visits, offering and attending conference presentations, and the communal sharing of knowledge (IIIc). The technology program was created as a joint venture of teachers, administrators, parents, students, and area education agency consultants (Ib, IIb, and IIIc). The community created around the Cardinal Elementary technology program (IIb, and IIIc) effectively worked together to promote and advance the technology program and facilitate the growth of the learning environment. Together, the educators of Cardinal Elementary created a learning environment based on sharing, support, trust, and cooperation. These are characteristics of collaboration (Huguet, 2004; Ward, 2003).

Providing Leadership From All Levels

In a letter to Bishop Mandell Creighton in 1887, Lord Acton stated, “Power tends to corrupt, and absolute power corrupts absolutely…” (The Phrase Finder, 2004). The empowerment of teachers to make decisions and participate in the “management” of Cardinal Elementary did not guarantee the success of the technology program. There was a distinct risk that providing teachers with the power to make decisions could lead to a corruption of that empowerment. Leadership and the development of leadership, rather than of
management, at multiple levels helped to provide the means to avoid such a pitfall. Barnes and Kriger (1986, p. 16) described leadership as an organization where "leader roles overlapped, complemented each other, and shifted from time to time and from person to person."

Several of the teachers commented that Don experienced some difficulties when he first became principal. It was also clear that other problems existed such as the previously mentioned siloing and lack of trust. So where did the leadership at Cardinal Elementary come from? It needs to be clear there was not a void or total lack of leadership at Cardinal Elementary. Don exhibited many of the characteristics of a leader described by Stogdill (1974). He had a vision, communicated well, was responsible, and had status. Yet, leadership goes beyond possession of various traits. Leadership is a combination of environmental situations and a person's ability to focus on the tasks at hand while maintaining a concern for the individuals involved (The Southwest Educational Development Laboratory, 2003). Additionally, the teachers initially chosen to participate as members of the technology team were selected based on their interest in technology and their willingness to "do something cool with technology and who were willing to get into it" (P1: 103). In essence, Don was looking for people who were willing to blaze the trail and lead the way. He recognized the teachers had leadership potential (Barth, 1999).

What occurred at Cardinal Elementary was a transformation of individuals from managers and isolated leaders to collaborative evangelists who shouldered responsibility and provided a positive influence on those around them. Each person took on the responsibility of putting individual effort into raising others to higher levels of accomplishment and motivation (Rees, 1987). Don began this process through the participatory management
project and the initial steps of empowerment and recognition. Don and the district superintendent established the common purpose, the development of an educational technology program at Cardinal Elementary. Don encouraged research, sharing, and group work and provided opportunities for experiences outside the physical confines of the school. What is significant is the teachers felt they were creating something unlike anything created before. They were trendsetters and groundbreakers doing and trying things no one else had attempted in quite the same way. They were responsible for the success of the program. This mindset was important to the continued morale of all those involved.

An important aspect of leadership is the ability to learn from mistakes, correct them, and keep trying. Risk taking is a critical component of successful growth environments. Kathryn Deiss (2004) states, “Continued success in any organization...depends on its individuals to learn at least as fast as the rate of organizational change. This learning often involves taking risks: risks in trying new behaviors, risks in abandoning what we do well to explore what we know less well, and risks in developing new models to deliver on our mission.” Don fostered the creation of an environment that allowed the group leadership to take risks and learn from the results.

The combined influences of group leadership, the ability to take risks, experiencing success as a result of innovation, and sharing the results can lead to recognition for individuals and the group as a whole. Leadership on an individual level and of the school as a whole was recognized in numerous ways; including a teacher named the Iowa Computer Using Educators (ICUE) “Teacher of the Year,” Don honored by the same organization as “Administrator of the Year,” Apple Computer, Inc. recognizing the school for leadership in
technology education, and receiving a regional First in the Nation in Education award for the school’s technology program.

The responsibility of leadership was not confined to personnel at school. As the perception and excitement surrounding the technology program began to grow, community members became more involved in varying leadership roles. The local newspaper editor provided leadership in communicating to the surrounding area about the technology program and related events. The vast majority of articles were published on page one of the newspaper. In all, a total of forty-six articles were written about the program with thirty-eight appearing on page one. Business owners led efforts to raise funds in support of the technology program using such programs as “Computers for Kids.” Parents not only supported the school financially during fundraisers; but through the purchase of computers at home, modeling technology use, and their presence at school technology events, the parents provided important leadership examples to other community members and their own children.

Strong leadership can be defined using the qualities suggested in Chapter Two, including having an effective, shared vision, being a good communicator, and involving staff in collaborative teams leads to increasing the effectiveness of schools (Leithwood & Jantzi, 1999). Cardinal Elementary School definitely is effective, and it has strong leadership. The original initiative to develop participatory management has been successful in developing strong and diversified leadership. It has also been successful in creating an effective school.

NETS-A is about effective leadership. Each standard begins with the words “Educational leaders” in referring to recommended actions. Specifically, standards I, II, III, IV, V, and VI are reflected in the findings of this study. Don intentionally involved all
stakeholders (Ia) as he moved to create a new culture (Ic) at Cardinal Elementary. He created an environment in which teachers were encouraged to be innovators and risk-takers (Ic), model effective technology practices for their peers (IIe and IIIa), and participate in a learning community (IIIb and IIIc). Don innovatively provided the means to make available needed resources (IVc, IVe, and VIa) for technology, travel, and professional development (Ile). Don established a clear set of expectations concerning educational technology use and used them as part of his evaluation of staff (Vb and Vc). Simple and clear policies and practices were implemented to inform students of expected social and ethical behaviors (VIb, VIc, and VId). This also provided leadership the opportunity to model these behaviors (Vlc). As this study has indicated, leadership occurred at many levels. The leadership standards are applicable to and met in varying fashions at these many levels.

Having and Sharing a Joint Vision

"Soon after the completion of Disney World someone said, 'Isn't it too bad Walt Disney didn't live to see this'. I replied, 'He did see it — that's why it's here'." — Mike Vance, Creative Director, Walt Disney Studios

Literally, a person with vision is someone that has the ability to see. In the context of this research having vision is the ability to see an image or concept of a future state that is in the individual’s imagination. Many people can “envision” something in their minds. The difficult part is sharing the vision with others, making it clear and understandable so the recipients can make it their own (Snelling Center, 2004; McGuire, 2001; Ritchie, 1996). Don is an individual who not only had a vision of what Cardinal Elementary could be and how to get there, he had the more unique ability to communicate and share that vision with others.
Bozeman and Spuck (1991) found this combination of characteristics in an administrator to be a rarity.

The vision found within Cardinal Elementary was evolutionary in that it changed over time. Don's initial vision focused on how to make Cardinal Elementary a better learning environment for the children. Change was needed to enable the teachers to become more knowledgeable and effective. Change was needed to break down the well-established patterns and practices that were stifling the educational system. The state education department and other state organizations supported this change through their recommendations to begin a participatory management pilot program. The Cardinal Elementary implementation of the participatory management program involved using technology as a catalyst.

Why technology? What was the rationale for using it as the lynchpin of such an important program? Technology was a blossoming innovation that was quickly finding its way into education albeit in rather ineffective ways. Much like the Apple Classroom of Tomorrow program (Ringstaff & Dwyer, 1997), Don's vision was to use technology as the means to gain involvement from the teachers and to find ways to provide powerful learning tools to students. This vision developed from Don's early experiences with technology and his observations of productivity in the work place.

Early in Don's educational experience he had the opportunity to feel empowerment because of technology. His experiences as a part of his middle school media projector support group contributed to his sense of self-worth, accomplishment, and confidence in working with technology. As a school teacher and principal Don continued to work with technology in educational settings. He experimented with computer programming and
offered school children the opportunity to learn programming skills in off hours during lunch and after school. As a principal he observed support staff using technology to produce reports, create professional documents, and warehouse data. All of these events helped to shape his vision of the power of technology in education. His vision was the culmination of a lifetime's experiences. Simply put, the vision began with the question, "How can we provide students with the tools and experiences similar to the office staff?" He envisioned the possibilities of students creating professional papers, using technology to create understanding, and increasing their level of perceived accomplishment.

Sharing the vision can be a very difficult undertaking. The individual with the vision must understand where the organization is currently, know what the vision for the future is, and then be able to communicate it effectively and consistently to those around him/her (Briggs & Wohlstetter, 2003; Ritchie, 1996). Don was able to accomplish this by focusing on two areas of interest to the teachers; the learning environment and the students. Don's early vision included the creation of a computer lab in a central location of the building. This would provide equal and easy access to all classes. It was easy to describe the physical attributes of a computer lab with glowing monitors and children hard at work. On the emotional level, discussions included the benefits to the teachers and the children as well as the gratification teachers felt from their involvement in decision-making.

An important piece for this study is what happened after Don communicated his vision and the process of technology integration and participatory management began. There was a secondary level of visioning and sharing that took place involving the teachers. Through their participation and the experiences each teacher had, a personal understanding and re-creation of Don's vision took place. As the teachers became more aware of
technology's potential and were entrusted with the responsibility for teaching other teachers, they began the process of working with Don to communicate and share the technology vision. The communication and sharing often included showing and talking about physical examples of what technology could do and then discussing the dreams of what it might do for the individual teacher. The successes of the program served as fuel to keep the visioning alive and evolving.

The information I collected during this study clearly indicated the presence of a strong and emerging vision held and nurtured by numerous people. The original vision Don shared with the people of Cardinal Elementary not only gained acceptance and support, it changed and grew as a result of the diversity and commitment of the people who held and shared it and the rapidly changing technologies emerging in society around them. As Rhodes (1988) suggests, the commitment resulting from the shared vision led to powerful and lasting changes at Cardinal Elementary.

NETS-A directly addresses visioning in standard 1 stating that the effective leader should "inspire a shared vision for comprehensive integration of technology and foster an environment and culture conducive to the realization of that vision" (ISTE, 2004). To accomplish this, ISTE recommends the process be inclusive, have shared development, encourage risk-taking, and use research to inform practice. This accurately describes the process implemented at Cardinal Elementary. Through the participatory management program Don directly empowered teachers and staff participation in blossoming of the technology vision (1a). The community created in the participatory management/technology initiative was involved throughout the process, making decisions, providing direction, and providing needed innovation (1b and 1c).
NETS-A also addresses vision in standards II, III, and V. An effective vision is dependent upon the knowledge and understanding of those involved in its creation and evolution. Professional development (standard IIe) at Cardinal Elementary provided opportunities for teachers to learn about technology and its effective application (IIId). The understanding gained about emerging technologies (IIe) and their application to learning were shared among teachers using multiple means of communication (IIIb) including email, presentations, and group or one-on-one professional development. Assessment closed the implementation loop by providing feedback about the effectiveness and viability of the community vision (Va, Vb, Vc, and Vd).

Recognizing and Understanding the Impact of Change on the Educational System

If you always do what you’ve always done, you’ll always get what you’ve always got!” Michael Michalko (1991)

Change is vital to the ongoing growth, sustainability, and viability of any organization (Dunphy, et al, 2003). For Cardinal Elementary change meant breaking out of the existing work structures, habits, and behaviors to change the culture in an effort to create a more effective working and learning environment. The superintendent and Don were the early supporters of these changes at Cardinal Elementary, and a solution was the implementation of a participatory management program. The technology program served as the public mechanism that enabled the development of participatory management behaviors.

The participatory management/technology initiatives directly influenced numerous changes at Cardinal Elementary. The relationship between teachers and the school board, their peers, their principal, and the community changed. The roles of the teacher and
principal changed. Public awareness of the school changed. The way students learned and teachers taught changed.

It was particularly important for Don to understand the change process in light of the controversial proposals that were a part of the fledgling technology program. The plan for using a classroom for a computer lab and delaying the purchase of a much-needed school bus to purchase the technology led to a common change component, resistance. Resistance was the product of differing viewpoints or lack of understanding. Resistance is inversely linked to a leader's ability to clearly communicate his/her vision and their ability to keep the wellbeing of those impacted in mind (Bissell, 2002; Interview, 2001).

Don initiated several activities to facilitate a successful change process. First, he supported and encouraged activities that would provide the teachers with knowledge, understanding, and experience concerning technology in education. Visitations to other schools, hosting a regional technology conference, and attending and presenting at other regional conferences provided participants with valuable insights to the benefits and applications of technology. Second, Don expected everyone involved in the preceding activities to share what they learned with their peers at Cardinal Elementary. According to Barth (1999), resistant colleagues are major barriers to the development of teacher leadership. The translation of information into a shared personal perspective increased understanding, fostered creativity, and increased interest while lowering resistance. Finally, Don exuded patience in his daily interactions with the teachers. He realized some teachers would come along more slowly than others, but knew he could wait them out. In essence, Don killed them with kindness. He placed clear expectations on everyone, provided the needed support mechanisms, allowed teachers to take risks and make mistakes, and waited
patiently. Change would take time (Sandholtz, Ringstaff, & Dwyer, 1997). Ritchie (1996) provides a description of Don’s actions when saying that successful transitions occur when leaders articulate and share a vision, model the change, educate, support, empower, and share decision-making and leadership with faculty and staff.

Providing continual learning experiences overcame much of the resistance. Teachers became more informed about the budget process and allocations. All faculty members were exposed to a broad variety of technology applications. Staff development was provided in such a manner that everyone felt valued. Hosting the technology conference provided teachers the opportunity to see they were not alone in their level of understanding or expertise. Teachers were allowed to try new things and had a cushion to fall on if it did not work.

The implementation of a technology program is a change process. For an effective process it is important that an administrator understand the implications of change on the educational system. NETS-A addresses change in standards I, II, III, IV, V, and VI. Standard Iib recommends the creation of a dynamic technology plan. A dynamic plan is a plan that is capable of change. The change process at Cardinal Elementary was driven by innovation (Iib) and involved or impacted the educational community (IIIc). The goal was organizational improvement (IIIc) through participatory decision-making. A variety of support mechanisms were needed to effect change including allocating resources (IVc), making available professional development opportunities (Ile), and enabling participants to stay abreast of technological and educational advances (IIIe). Assessment of technology integration and of the impact of technology on the educational system informed the group concerning the effectiveness of the implemented changes (Va, Vb, Vc, and Vd). Standard VI
as a whole reflects the need for a school to have the ability to change quickly to address emergent societal issues. This is clearly illustrated by the need for appropriate use policies in response to available content and usage problems associated with the Internet.

The Impact of Technology on Education

The purpose of a school is to provide an effective educational environment for the students. The school is entrusted with helping to create the future. Technology can be used in a variety of ways to enhance the educational process and contribute in a positive manner to the development of the children. Technology at Cardinal Elementary was a tool that allowed students to know the realities about the fall of the Soviet Union, learn from and later contribute to a landscaping business in Maryland, learn about life in New York City, and discover that surfboard wax can smell, but not taste, like chewing gum. Technology became the empowering tool that expanded the world-view of the students of Cardinal Elementary.

Technology served as a confidence builder for the professionals at Cardinal Elementary. Each teacher, from the original technology team to the entire staff today, has learned about and with technology. They have grown and changed as each of them moved from novice non-techies to strong and confident individuals who contribute to a more powerful whole. Each person has been learning, sharing, presenting, and changing in part due to technology and the actions and expectations of Don. They have moved from learning how to use technology in a very basic sense to providing presentations at technology conferences and being recognized for the innovators that they are. Their progression closely follows the change processes outlined by Hall and Rutherford (1983) and Sandholtz, Ringstaff, and Dwyer (1997).
The technology-focused events that have occurred during Don's tenure have created a wave of change in a small, Midwestern community. Parents own computers and work with their children at a highly informed level. The community continues to provide financial support to the schools that is earmarked for technology purchases. The newspaper provides high-level support and information dissemination about the technology program. There is increased innovation in teaching practices, and gathered data shows technology is having a positive impact on student learning and productivity. This increase in support, funding, and access to technologies across the community address issues raised by Hoffman (1996) and Rockman (1998) concerning the success of a technology program and its impact on learning.

NETS-A provides a well-rounded set of recommendations for both the implementation and assessment of a technology program. The administrator following these recommendations should be vigilant throughout the process in understanding what is happening as a result of the technology influx. The findings of this study support or relate to standards I, II, III, IV, V, and VI. Don was a more effective leader and contributor because of his desire to learn about and understand the impact of technology (Ia). This understanding also led to increased clarity in his personal technology vision that contributed to better communication and sharing of that vision with others.

The learning community of Cardinal Elementary developed a clear focus on using technology to improve learning (IIa, IIb, and IIc). Don's efforts and encouragement also contributed to creating an environment in which teachers could themselves learn while exploring and implementing effective teaching methodologies (IId and IIe). Technology was used as a tool to centralized administrative functions such as attendance and grading (IVb). Don emphasized the need for everyone to model, assess, and share their teaching practices
(IIIa, IIIc, Va, and Vb). This extended to opportunities for parental and community involvement and learning contributing to the formation of a learning community that extended beyond the walls of the building (IIIc, IIId, IIIf). Involvement led to understanding the need for support, and financial commitment for the program (Rockman, 1998; Hoffman, 1996) increased dramatically (Ia, IIIc, IVc, and IVd). The extended learning community has also provided needed input concerning the need for and creation of policies to address societal issues (VIb, VIc, and VIe).

Identifying and Managing Teacher Issues

The most important aspect of the change process was how teacher issues were addressed. Teacher issues are those things that impact or influence the teacher’s day-to-day lives. Several teacher issues have been discussed already, including trust, risk taking, collaboration, communication, and the impact of change. Employee turnover and the impact of recognition are other important issues that surfaced during my time with the people of Cardinal Elementary.

Employee Turnover

Don and the focus group teachers independently discussed the topic of employee turnover with me. For Don, the concerns focused on his looming retirement and on maintaining the achieved gains during teacher turnover. Teacher concerns were similarly focused on replacing Don and the senior teachers who had started the technology program. Don was hopeful that his involvement in the selection and orientation of a new administrator would help ease the transitional pains. He was fearful a new administrator
would come in thinking a shake up was needed to establish the new administration’s vision and direction. At the same time, Don was also confident the people involved in the selection of a new principal would value the accomplishments of the school and seek to find someone who would take it to the next level.

The teachers were fearful, almost anxious, when discussing Don’s future retirement. They initially dealt with it by joking they simply would not let him retire and would mummify him and set him in the office. The concerns come from the time invested in the development of their educational system, the comfort level with the system, and the belief in the system. The teachers believe a successful transition can take place if the teachers and staff of the elementary school are involved and given voice in the selection process.

The school had already experienced teacher turnover, and the fear associated with it was soothed by the results. It is interesting to note turnover was caused by retirement and not by personnel leaving the district. Don’s actions in providing teachers with professional development, advancement opportunities, and professional communities may have contributed to a reduction in teacher turnover. This is similar to the actions recommended by the National Commission on Teaching and America's Future (NCTAF) (2003) and Norton (1999). Norton recommends individualization of retention efforts and implementation of non-traditional (i.e. non-monetary) rewards. NCTAF suggests schools should create learning communities, create and implement meaningful teacher induction programs, and provide high quality professional development opportunities. The district involved existing teachers and administration in the interview and selection process of new teachers and a new superintendent. This provided a comfort level and is an obvious extension of the collaborative, participatory nature of the school system. Having added three “new” teachers
during the past thirteen years has diversified the age of the teachers. The focus group hoped
the younger staff would simply carry on the traditions established by the senior teachers. Don
understood that changes in society could have a positive impact during times of turnover.
Technology has become commonplace in people's daily lives. Children and adults going
through our educational system have been exposed to a variety of technologies, and their
comfort levels in using technology are higher. New teachers added to the faculty arrived with
technology skills in place and fresh ideas about what technology could be used for. The
imbedded comfort level and influx of new thought contributed to speeding growth in the
technology program.

The topic of turnover brought forth uneasy feelings and thoughts of uncertainty from
the people of Cardinal Elementary. As the topic was discussed and explored, the anxious
feelings lifted and were replaced with confidence. They expressed confidence in the program
they had helped to establish and in the ability of the younger members of the staff to carry
on. There was confidence that what had been built was good and worth keeping.

Impact of Recognition

The staff of Cardinal Elementary is a dynamic group of people who are very
committed to their life's work. Over the years they have worked hard to find effective ways
to integrate technology into the process of teaching and learning. They have received
numerous awards and been recognized in many ways. The teachers and administration
maintain a humble sense of "That's nice, but let me show you what's really important." Not
once during the interviews or focus groups did anyone mention the topics of teacher-of-the-
year or administrator-of-the-year. When the topic of recognition was probed, the responses
were to minimize the events. Teachers joked that they enjoyed the food that was made available more than the recognition. There was a subtle sense of pride in their accomplishments and recognition that the visits and awards provided valuable feedback.

Don believed the recognition and feedback provided a value confirmation of the school’s work and provided the booster fuel to keep morale high and the program moving forward. Even the students quickly moved beyond the fascination of seeing visitors moving in and out of the classrooms. With literally hundreds of visitors a year moving through their classrooms, they quickly became “old pros” at showing and discussing what they did with technology to the visitors.

NETS-A provides recommendations that do not focus directly on teacher issues. Instead, the standards provide suggested actions that, if implemented, may address teacher issues. Several of the NETS-A recommendations parallel actions reported in this study that influenced the teacher’s lives. Don strategically involved (Ia) teachers in the technology initiative from the beginning. The teachers and Don reported how the environment was changed to allow teachers to take risks (Ic) and encouraged participation as a learning community (IIIc). Professional development (He) was a major component in the program as teachers were expected to research (Ie), learn, and then share (IIb) what they learned with others. The focus on student learning increased the relevancy (IIIId) of the teacher’s activities to their practice. Don’s specific actions, support, and level of involvement (Ib, IID, IIIa, IIIc, IVc, IVd, and IVe) had a direct influence on the development of trust and increased teacher productivity. Additionally, Don exemplified community expectations through his actions to implement and model legal and ethical practices concerning technology (VIIb).
The Missing Standards

Several of the NETS-A sub-standards were not identified from the data collected during this study. This is not indicative that the “missing” standards are not being implemented, but that they were not reported in the data. The following is a list of the sub-standards not identified from the data of this study:

- (Id) use data in making leadership decisions
- (If) advocate on the state and national levels for policies, programs, and funding opportunities to support implementation of district technology plan
- (IVa) develop, implement, and monitor policies and guidelines to ensure compatibility of technologies

The presence of standard (Id) could be indirectly surmised from other data collection information reported by Don and the teachers. A number of research projects are being done, but what this information is used for was not documented. It also was not clear what role Don was playing as an advocate for state or federal support for technology issues. What is clear is that Don could be a powerful advocate based upon his experiences and the exemplary technology program he helped create. There was no need for policies concerning technology compatibility. The research and decision-making process used to determine what technologies would be purchased seemed to function well. Implementation of a compatibility policy might even hinder the innovative aspect of this technology program.
Essential Conditions: A Comparison

ISTE (2004) recognizes that “specific system-wide conditions…must be in place for even accomplished leadership to realize the full potential of technology.” This section provides a comparison of these essential conditions and those observed during my visits to Cardinal Elementary. Conditions are grouped based upon commonalities and relationships found at Cardinal Elementary. The conditions are followed by the comparative discussion and, when available, examples are provided to exemplify the actions supporting these conditions.

NETS-A Condition One: Shared Vision

The school board and administrators provide proactive leadership in developing a shared vision for educational technology among school personnel, parents, and the community.

NETS-A Condition Nine: Community Support

The district maintains partnerships and communications with parents, businesses, and the community to support technology use within the district.

Cardinal School District exemplifies the cooperation and understanding needed to have a shared vision. The initial participatory management program and the technology catalyst were the product of collaborative thinking by the elementary principal and district superintendent. Both administrators worked to educate the school board concerning the importance of the participatory management and technology initiatives as well as in creating
a new working relationship between the board and teachers. Examples of this included the following:

- School board makes the decision to purchase the elementary technology lab using monies designated for the purchase of a school bus. The impact of this decision is further spotlighted considering the Cardinal district is rural and buses are critical to its operations. Joachim and Klotz (2000) state that moving away from a authoritarian management style should coincide with reduced emphasis on such things as buses, planning, and funding.

- Seating arrangement at school board meetings is changed to allow the teachers to have a more collegial working relationship with the board. Rather than sitting in the general seating area, teachers sit at the same tables as the school board.

- Parents are invited to technology open houses that have children showcasing the technology and its application. Students become active participants in and messengers of the technology vision. This corresponds with the need for community involvement outlined by Sharp & Walter (1997).

- Parents and community annually participate in raising money for the technology program through fundraisers. The understanding of the vision created by Don Anderson is critical to the success of these programs.
NETS-A Condition Two: Equitable Access

Students, teachers, staff, and administrators have equitable access to current technologies, software, and telecommunications resources.

The technology lab was established in an area that was both accessible and functional for all students and teachers. By creating a centralized computer lab environment, all users had access to the same technology and software. This provided a location for faculty professional development and provided students with a consistent learning environment as they transitioned from one grade to the next while building upon existing skills and knowledge. Learning with technology replaced learning about technology as children progressed in the program.

Teachers and administration were active participants in technology decision-making. As such, technologies were implemented that benefited a broader audience. A telecommunications system was established via the first computer network and email services. Digital cameras, digital video cameras, and color printers were available to all faculty members in the building. Faculty were involved in the decision-making concerning planning, purchase, and implementation of various technologies. As such, the concept of equitable access was extended to include equitable participation in all facets of the technology program. Examples of this include the following:

- Teachers and administrators were given opportunities to participate in the planning and implementation of the technology conference. Sharp and Walter (1997), Blase and Blase (2001), and the U. S. Department of Education (1996) all suggest this type of involvement is important in an educational system
• Students were active participants in the technology conference. They helped with presentations, technical support, and other tasks

• The computer lab was purposefully placed in a centralized location in the building for ease of access. This addresses one of the barriers identified by Hoffman (1996)

• New technologies were openly discussed, training was provided and access shared throughout the building (Hoffman, 1996). This included new (at the time) technologies such as the Internet, email, and the latest initiative – wireless networks

• Professional development was provided for all faculty by faculty

NETS-A Condition Three: Skilled Personnel

District leaders and support personnel are skilled in the use of technology appropriate for their job responsibilities.

NETS-A Condition Four: Professional Development

District leaders and support personnel have consistent access to technology-related professional development for their job assignments.

NETS-A Condition Five: Technical Assistance

Personnel have technical assistance for maintaining and using technology.

These three conditions were extensively interrelated at Cardinal Elementary. In the beginning of the technology program at Cardinal Elementary the faculty were technology
novices. The only person with what would be considered an above-novice level of technology experience was Don, the principal.

Professional development was critical to the success of the program. The importance extended beyond providing learning experiences for participants. Faculty members were expected to lead professional development activities. The leaders of the various development activities had increased levels of expertise and were called upon for later support. Empowerment of the faculty to make decisions was also important to the success of the technology program. The decision-making, involvement, and freedom to take risks afforded the faculty gave them ownership in the program and stimulated continued growth in their interest as a result. The faculty grew in their technological expertise, supported one another, and became the technical experts from an application as well as troubleshooting perspective. The importance of professional development activities such as these is stressed in the literature (Rockman, 1998; Hoffman, 1996; U. S. DOE, 1996; U. S. Congress, 1988).

Examples of activities relating to conditions three, four, and five included the following:

- Visitations to other technology rich sites to observe and gather information about effective practices
- Establishment of and participation in the annual technology conference increased confidence, awareness, understanding, and innovation among faculty members
- Teachers teaching teachers professional development opportunities increased levels of expertise, provided onsite technical support, and had a positive impact on communication, comfort levels using new technologies, and innovation
- Decision to not hire a technology coordinator for the building forced faculty to become the technical experts
• Teachers having opportunities to attend and present at regional technology
   conferences provided similar results as the local conference with increased levels
   of recognition by peers throughout the state

NETS-A Condition Six: Content Standards and Curriculum Resources

Instructional personnel and school leaders are knowledgeable about content
and technology standards, related curriculum resources, teaching
methodologies, and the use of technology to support learning.

When the participatory management/technology initiative began at Cardinal
Elementary examples of exemplary technology programs were few in number. Technology
standards for teachers, students, and administrators were still a thing of the future. Nearly
everything about technology had yet to be designed or tested. The professionals of Cardinal
Elementary were groundbreakers and idea testers. Today, the faculty and administration are
considered experts in the use of technology as a learning tool.

All of the activities and experiences over the past twenty years have culminated in
Cardinal Elementary being what it is today – an exemplary elementary school. All of the
factors discussed in this paper – professional development, collaboration, involvement, and
risk-taking – have contributed to this success.

The teachers of Cardinal Elementary could be considered forbearers of today’s
standards. By participating in professional development, having exposure to the Apple
Classroom of Tomorrow in Minnesota, having the freedom to explore other places and bring
back bits of information, and the sharing among peers led to the development and
implementation of practices similar to those outlined in the national standards prior to the standards’ existence.

While numerous factors contributed to this evolutionary growth, being empowered to take risks was critical (Short, 1998). Examples of activities related to this process include the following:

- Cardinal Elementary technology team visited the Apple Classroom of Tomorrow in Blue Earth, Minnesota providing valuable insights concerning early technology efforts and research
- Collaborative efforts among teachers to use technology as a learning tool were undertaken. An example is the previously cited project by upper elementary teachers developing methods of using technology to support and enhance student reading skills. These efforts are the result of the promotion of collaboration described by Blase and Blase (2001)
- Experimentation with various technologies by faculty led to educational applications of the early Internet, America Online, and multimedia
- Participation in conferences as lead presenters provided opportunities to get feedback from peers
NETS-A Condition Seven: Student-Centered Teaching

Teaching in all settings includes the use of technology to facilitate student-centered approaches to learning.

The teachers of Cardinal Elementary do not believe technology is a panacea. Technology is used when and where it is appropriate and effective. During the focus groups sessions, teachers provided many examples of their student-centered philosophy. There are numerous examples of technology use by the teachers cited throughout this paper. Due to the nature of this study, examples of activities not applying technology were not gathered. The following examples of student-centered activities are the result of student empowerment through technology and the established learning environment (Suranna & Moss, 2000; Short, 1998):

- Establishment of student electronic communication with horticulturist in Maryland to discuss leaves and other botanical topics
- Providing students the opportunity to communicate via email with people living in other places to learn about differences such as culture, people, living arrangements, and language
- Partnering with a school in Florida to learn about each other’s state. Included an exchange of items typifying their states that led to additional cultural learning opportunities. Email was the primary communication tool.
NETS-A Condition Eight: Assessment and Accountability

The school district has a system for the continual assessment of effective technology use for improving student learning.

Technology has many purposes in an educational setting and "learning tool" is but one of them. Other examples include data collection, communication, and documentation (U.S. Department of Education, 1996; U.S. Congress, 1995; Rees, 1987). Assessment of technology at Cardinal Elementary is not continual, and the focus is on how technology contributes to improve student learning. Just as we do not assess whether pencils are effective in improving student learning, technology is also not directly assessed. One example described in chapter four of this study is the evaluation of technology's benefits in relation to improving standardized test scores in reading. The assessment indicated technology appeared to contribute to an increase in student test scores.

NETS-A Condition Ten: Support Policies

The district has policies, financial plans, and incentive structures to support the use of technology in learning and in operations of the district.

Technology has obviously been important to Cardinal Elementary and to the entire district. Funding has been made available to support purchase and implementation of technology; however, the number of written policies focusing on technology is limited.

This district and elementary building are impacted by a variety of budget issues. There has been a dependency on fundraisers to maintain and improve the technology
program. Over the past fifteen years state funds and donations from technology companies have provided additional support. More recently, state funding has been eliminated, and incentives such as attending conferences have been eliminated due to budget constraints. Examples of support policies, financial decisions, and incentives include the following:

- School board makes decision to delay the purchase of a school bus and provides funding for first computer lab (Joachim & Klotz, 2000)
- Community fundraisers annually provide thousands of dollars for technology purchases for the elementary school. Hoffman (1996) identified the lack of funding as a barrier to successful technology programs
- Local businesses contribute to the technology program through special programs such as “Computers for Kids”
- Teachers can purchase computers through a payroll deduction option
- Parent permission and student guidelines for Internet use are integrated with the district discipline and parent notification policy. Schools must be able to adapt to changing technologies and create effective policies for the safety of the students (Rockman, 1998; Ritchie, 1996)
NETS-A Condition Eleven: External Conditions

Policies, requirements, and initiatives at the national, regional, and state levels support the district in the effective implementation of technology for achieving national, state, and local curriculum and technology standards.

Changes in federal and state mandates are negatively impacting the district and its ability to meet technology standards. More time is being spent focusing on new mandates and requirements such as No Child Left Behind. Time formerly spent focused on the effective integration of technology is no longer available. Due to cuts in state finances, teachers are no longer able to attend conferences and gain experience with technology. Technology growth is now a personal responsibility via reading professional journals, communicating with peers by email, and online research. The teachers have continued to share their expertise with one another. Examples of federal and state mandates that impact Cardinal Elementary are as follows:

- Implementation of the No Child Left Behind federal legislation has a negative impact on time, finances, and even perspective. As one teacher stated, “...so much is going to be invested in that [No Child Left Behind]. That so many other things might be pushed aside” (FG3: 1066-1067).
- State of Iowa first reduced and then eliminated educational technology funding. Hoffman (1996) identified funding as one of the barriers to successful technology programs.
- State funding for regional support agencies has been reduced, leading to agency consolidations and reduced technology support to schools.
Impact of the Essential Conditions on Success

The essential conditions described in the national technology standards for administrators are ideals. It would be ideal for all of the conditions to exist and flourish. If the ideal were met, it would be easier for school administrators to follow through on the recommended standards. Will administrators fail if one or more conditions are not met? It is doubtful, although their job may be tougher and some recommended standards might not be met as proficiently.

The Art of Venn: Theme Relationships

During the analysis of the data from this study it became clear that the emergent themes could not stand alone in the realities of educational practice. Much like a house of cards, the removal of or lack of attention to one theme could cripple the change efforts. A second layer of complexity is added by the codes related to the themes. Each code (Appendix K) contributes to the fundamental nature of the emergent themes. The majority of the codes contributes to the overall makeup of multiple themes and inherently creates linkages from one theme to another. To visualize the related and overlapping nature of these themes I originally envisioned a Venn diagram. I quickly discovered a Venn diagram could not adequately illustrate the three-dimensionality of the code/theme relationships. The complexity of this concept finally led to my enlisting the aid of my brother Steve, who worked as a professional graphic designer for nearly twenty years. His visualization of these relationships was based upon my drawings and feedback and is shown in Figure 5-1. The
leadership theme is used as the example for this illustration. It captures my conceptualization as closely as is possible for a print document.

Figure 5-1. Example illustrating the interrelationships between themes and supporting codes.
Each of the primary codes (squares) contributes to the leadership theme. As indicated by the small, solid arrows, leadership also contributes to five of the six primary codes. The dotted lined arrows signify the relationships between primary codes. Two headed arrows indicated a two-way relationship. Perhaps most interestingly, the primary codes management and communication, along with the leadership theme, contribute to the empowering code. The empowering code then contributes to decision-making. This is interesting because of the importance of decision-making as a part of a participatory management initiative such as that implemented at Cardinal Elementary. It also illustrates the complexity of the inter-related codes and themes as they contribute to and support one another. The diagram could be further expanded to show codes related at a secondary level to those surrounding leadership and adding more depth to the description of leadership and the primary contributing codes.

Interrelationships Between the National Education Technology Standards for Administrators

An analysis of the NETS-A also indicates cross-relationships exist between the standards. For example, the leadership and vision standard suggests an administrator should promote effective teaching practices. Figure 5-2 illustrates the relationships of other standards to the leadership and vision standard. It is important for administrators to understand these relationships as each piece contributes to the success of a technology initiative. The barriers to successful technology integration described by Hoffman (1996) share many of the same inherent relationships.
In this example, an administrator can promote effective teaching practices that make effective and appropriate use of technology. If the administrator fails to provide professional development opportunities (Standard 2 – Learning and Teaching), provide opportunities to share their knowledge (Standard 3 – Support, Management, and Operations), implement technology growth plans for teachers (Standard 5 – Assessment and Evaluation), or secure and allocate technology resources (Standard 6 – Social, Legal, and Ethical Issues), the effort to promote effective teaching practices is weakened by each absence. In each of these examples there are further linkages, such as securing technology resources in Standard 6 and using budget to implement the technology plan in Standard 4.
The Magic Bullet: Implications for Practice

After presenting preliminary findings of this study at a national conference in the spring of 2003, I was approached by an educator who asked, “So, what is the magic bullet?” That was, perhaps, the most difficult question anyone could ask. Was there a singular thing, incident, or action that resulted in Don being the exemplary administrator he is or that contributed to the success of the technology program? While the answer is “no,” the following implications for practice are suggestions for those administrators who are committed to implementing a successful technology-based change process. The areas discussed are the successful administrator’s role, creating an environment of trust, collaborative communities, understanding technology standards, and administrator preparation.

The Successful Administrator’s Role

The administrator’s role is not a singularly defined entity. The administrator must be willing to shake the traditional definitions of the school principal and adopt a philosophy of shared leadership and high involvement (Blase & Blase, 2001; Scroggins, 1998). Don was successful because he was not afraid to empower the teachers and placed expectations of success on each of them. Many administrators may think taking risks is simply too risky. Short, Miller-Wood, and Johnson (1991) documented the positive impact of an administrator’s willingness to provide teachers the opportunity to be innovative and empowering them to make critical decisions related to the innovation. Don was successful because he helped to foster an environment where taking risks and being innovative was acceptable. He put a safety net in place to support teachers in their innovative activities just
in case something did not work the way it was hoped. This resulted in teachers feeling safe and valued in their practices. It also resulted in many innovative practices being adopted and shared throughout the building.

The successful administrator must realize that he/she too must be willing to change and adapt to innovation. Everyone involved must understand and accept that nothing is static. Everything is open to change. Most importantly is understanding that everyone is involved and going through the change together. Change can take place in fast spurts or very slowly over protracted periods of time. The effective administrator must understand the concept of change and how it impacts and influences those involved in the process.

Don made a critical decision in starting the participatory management/technology initiative with a small group of people. They were the beta testers of the plan. Using a small group is more manageable than large-scale implementation (Chambers, 1995). The effective administrator can identify and correct problems and make note of successful ideas prior to adding more participants. Rather than creating chaos on a giant scale, starting with a small group can increase the likelihood of success by decreasing the level of resistance. This is aided by creating buy-in within the small group and allowing their excitement and persuasive skills to serve an evangelistic role in spreading the word.

An effective leader is an active participant in the change process. Several of the teachers felt Don was "...a member of the team" (FG1: 45). The administrator must be as involved and willing to undertake the same or similar tasks as those around him/her. This helps create the team member mindset throughout the participants.

Overcoming the tendency to return to the traditional principal’s role can be difficult. At the first sign of difficulty it might be tempting to resort to the top-down hierarchy and
simply mandate the problem’s resolution. The effective leader should allow the participants
to resolve the problem together. The principal’s role is as one of the participants solving the
problem. As the teachers mentioned, “His vote was equal to ours” (FG1: 51).

A skilled principal has to wear multiple hats. As a necessity he/she must make
various decisions, but hopefully will use all of the information sources at his/her disposal to
inform them. A good administrator is the cheerleader, showering compliments, condolences,
and encouragements to teachers and staff. As cheerleader the principal must also serve as the
group’s voice to the school administration. The principal must be as involved and invested in
the building initiatives as everyone else. One teacher stated, “…if things didn’t go our way or
something didn’t happen the way we planned, he was just as shocked and upset about it as
we were” (FG1: 180-184). It is imperative that the administrator be a good communicator
and maintain an impeccable level of honesty with those around him. Sharing good news is
easy. Sharing bad news is difficult. If the administrator has developed a trusting relationship
with his/her colleagues sharing bad news becomes exactly that. Everyone bears the pain or
discomfort together. Harman (2001) stressed that a successful participatory management
initiative must focus on the humanistic values of trust, honesty, cooperation, caring, and
personal responsibility. These are descriptors of the values expressed by Don and the faculty
of Cardinal Elementary and are considered critical to the success of their change process.

Creating an Environment of Trust

Having trust in something means that one believes in its fairness, honesty, integrity,
and ability. These were words used by Don and the teachers in describing the trusting
environment of Cardinal Elementary. Development of trust is critical to the success of an
The presence of a trust-filled environment is life and death to a change initiative. A lack of trust is similar to describing the impact of the four horsemen of the apocalypse. The original four horsemen were pestilence, war, famine, and death. In the context of the school change process these new horsemen are named fear, uncertainty, doubt, and resistance. The first three factors contribute to decreased buy-in and hesitancy, but like pestilence, war, and famine, can be overcome, albeit slowly and with much effort. Resistance (like death) based on those three factors is a powerful and sometimes insurmountable enemy.

A skilled leader will spend the time necessary to develop trusting relationships between him/herself and others and also encourage and feed the development of trusting relationships between others in the building. Trust takes time to build, so patience is a very real virtue. It is through example that trust can be built. Those characteristics of honesty, integrity, fairness, and ability must be exhibited each and every day. Trust, like relationships, can be broken with a single misstep. The actions of the exemplary administrator must be consistent and well thought out to avoid the missteps.

Don may have described a trusting relationship best when he described having to deal with a difficult situation at school. He used the analogy of poker chips. If a balance of chips could be maintained, order was preserved. The administrator “gets” chips through support of the teachers and staff. The teachers and staff gain chips through support of the principal. This support sometimes is needed even when one party may not agree with the other. As long as the actions are balanced and one side does not build up a bigger stack of chips, trust is maintained; and the organization runs smoothly. If one side or the other establishes an imbalance of chips, problems begin to occur; and the organization becomes dysfunctional.
Trust is an essential ingredient in creating a collaborative community. It is the knowing that one can depend on or trust in the efforts of others that allows communities to form. In education these communities are groups of people desiring to work together towards a common vision.

Collaborative Communities

People who work towards a jointly developed and accepted vision are a powerful tool for change. A mix of special ingredients called trust, communication, support, and effective leadership help create these collaborative communities. As evidenced here, each is a complex entity interrelated with other tangible and intangible ingredients. Their mere presence does not guarantee the development or maintenance of collaborative communities. Their absence can contribute to the lack of or demise of collaborative communities.

The purpose of a collaborative community is to achieve some aspect or aspects of a universal vision. Each member of the group believes in and supports the vision. An effective leader must have a powerful vision, communicate it effectively, and create buy-in through passion, clarity, and determination. Vision is the bedrock upon which collaborative communities are created.

Ownership of the vision must be transferred from the administrator to the group. This group will be entrusted with its care and feeding. They must be given the responsibility and power to help the vision grow into a community vision. The ideas, thoughts, and dreams of all those involved must become integrally intertwined. The effective leader continues to provide focus and clarity to these efforts by assisting everyone in not losing sight of the
original vision while allowing it to develop and evolve. Maintaining the vision while not impeding it can sometimes be a difficult balancing act.

Ownership and enthusiasm for the vision and the ensuing change process can be maximized by community participation. A trusted leader that sets attainable and challenging expectations on participants is telling them they are trusted and it is believed they can accomplish the desired results. The group should be expected to participate in all aspects of goal setting, planning, and implementation. Suranna and Moss (2000) describe the effects of this teacher leadership as leading to effective practices and increased confidence. It should be understood that everyone, administrators and teachers alike, are making this effort together. The resulting solutions will be more highly valued since they are the product of the users themselves.

Effective leaders provide the support needed for successful initiatives. Support comes in many forms and can include verbal and nonverbal pats on the back, a simple “thanks” or “well done,” providing needed financial and informational resources, or representation. Support can only be provided if the administrator understands the initiative, and this requires his/her participation in the process. It is important to note that support is only valuable to the participants if it comes from a trusted administrator.

The collaborative community should extend beyond the walls of the school building (Joachim & Klotz, 2000). A effective administrator and those involved in a change initiative will seek out and communicate their vision and purpose to individuals in the larger population who can provide support for the initiative. The program may impact these outside individuals in numerous ways. They may have children in school, want to donate financially, or have particular levels of expertise related to the initiative. These individuals may become
involved in the planning and implementation of the initiative, but their roles may also be very
different from those of school personnel. Community members may be tasked with fund
raising, garnering support from the school board, or advising the school from a parental
perspective.

Understanding Technology Standards

It is important for an administrator to understand the technology standards for
administrators, teachers, and students. The standards should not be considered guidelines for
success, but rather recommended actions that may lead to the creation of better learning
environments. Students today need skills that will enable them not only to survive, but also
thrive in a technological society. Teachers need skills and resources to provide the learning
experiences students need. Administrators are in a unique position and have the singular
authority to positively impact the success of their school’s educational programs.

Reading and understanding each set of standards is a relatively easy undertaking. For the experienced educator many of the standards are common sense. The difficult task is
achieving a level of understanding of how the three sets of standards are interrelated. These
standards are interwoven such that student needs are met by teacher actions that are
supported by administrator actions. Understanding of the standards, the interrelationships of
the standards, and the limitations of the standards should be at the core of every
administrator’s understanding and vision of technology in education.
NETS-A: What is Missing?

NETS-A is a basic set of recommended administrative practices concerning technology in educational settings. While I believe the standards are a good starting point and provide valuable information, at least four things are missing. First, no mention is made encouraging or suggesting administrators should understand the interrelationships of the three sets of standards. This is dramatically different from simply knowing what the standards are. Second, the standards are very basic recommendations. Realistic implementation encompasses much more than simply following these guidelines. ISTE reiterates this in their standards discussion. The conditions ISTE describes as necessary for implementing the NETS-A do not address the important and critical issues of the relationship between administrator and teachers, suggested practices for implementing the standards, or methods of assessment to determine levels of success. The scope of NETS-A probably could never encompass this broad area of research, and ISTE makes attempts to provide links to other resources concerning NETS-A. I believe some mention of these important topics should be woven into the listed essential conditions. Third, no mention of reflective practices, beyond teachers sharing their knowledge, is made. The subjects of this study confirmed the value of reflection and its impact on their perception of the technology program and related activities (FG4: 1220-1223). Finally, there is a distinct need to provide case studies that indicate what effective administrators are doing. ISTE provides cases of administrators who are applying the standards. The results of this study are examples of the types of information administrators need to move beyond the inherent limitations of the NETS-A standards into an understanding of the complexities of organizational change and technology.
It is critical to understand the interrelationships of the recommended and real practices of the school administrator. Much like the function of a spider’s web, the effective practices of a school administrator are interconnected and the twinge of one strand vibrates and stimulates each of the linked strands. Strands that break weaken the entire web structure potentially leading to collapse. In the world of the administrator the broken strand equates to a poorly implemented or wholly lacking practice such as the professional development program. This damaged strand could lead to the failure of an initiative by itself or through a cascading effect that spreads to other supporting practices.

Administrator Preparation

Administrators arguably have the most important role for the success or failure of school technology initiatives (Hoffman, 1996), yet administrator preparation programs often ignore or provide surface-level coverage of technology in education (Schmeltzer, 2001; Schoeny, 2000; Koll, Robertson, Lampe, & Hegedus, 1996; Davidson & Mauer, 1995). State support agencies, grant providers, school districts, and administrators have become responsible for technology professional development (Brooks-Young, 2002; Schmeltzer, 2001). Administrator preparation programs must face and embrace their responsibility for helping school administrators understand technology and increase their level of confidence in working with it.

With the release of the NETS-A the importance of the administrator has been brought to the nation’s attention. To address the issue of technology preparation, administrator
preparation programs should incorporate the following into their programs:

- Understanding the technology standards for administrators, teachers and students
- Understanding the role of technology in educational settings
- Understanding the change process
- Providing experiential opportunities for administrators to work with exemplary technology leaders
- Development of effective administrator-teacher relationships in relation to the creation of effective learning environments. Includes creating trust, building collaborative communities, effective communication, and developing shared vision.

Implications for Research

Six areas of future research have emerged from this study: exploration of the interrelationships of technology standards, development of case studies that further explore exemplary administrators and their roles during technology initiative implementation, the origins and evolution of the technology vision, the use of technology as an initiative catalyst rather than as the initiative, and the benefit of research programs providing reflective opportunities for participants.

Exploration of the Interrelationships of Technology Standards

It became apparent to me that the standards proposed for school administrators are symbiotically linked. An analysis of the standards proposed for teachers and students indicates this linkage may extend between the standards groups. Because of the overarching
influence the administrator has on the success of school programs, it may be of importance for the administrator to understand the three sets of standards and the links within and between them. It will be important for researchers to examine the relationships within and between the standards for administrators, teachers, and students.

Development of Case Studies that Further Explore Exemplary Administrators and Their Roles During Technology Initiative Implementation

NETS-A and its supporting documentation provide examples, or cases, of administrators who implement the new standards. Taking the standards for face value and assuming they encompass everything we need to know would be naïve. This case study was an attempt to find out what experience could tell us. What can we learn from administrators who have successfully implemented technology initiatives? Six themes emerged during this study; and further exploration and development of cases about exemplar administrators is necessary to inform the profession, ascertain whether the six themes are conclusive, and explore the limitations of the standards.

The Origins and Evolution of the Technology Vision

Visionary leadership is critical for any change initiative (ISTE, 2004; McGuire, 2001; Ritchie, 1996). The technology vision of Cardinal Elementary developed in a collaborative and evolutionary manner. There were multiple influences on the emergent vision including the principal, teachers, staff, community, and changing technologies. The principal’s vision was impacted by experiences from his youth and professional practice. It would appear the Cardinal Elementary vision was therefore unique and not something that can be duplicated.
Further research should be done to better understand the origins of technology vision, to understand the influencing factors on its growth, and to understand how the vision development process might influence the profession.

The Use of Technology as an Initiative Catalyst Rather Than as the Initiative

There are several references to the use of technology as a catalyst for change in the literature (Barton & Callura, 2003; Burns, 2002; Ringstaff & Dwyer, 1997). The technology program at Cardinal Elementary was used as a catalyst for implementation of the participatory management initiative. It would appear to an outside observer that the technology program stood on its own, but to the principal it was clear that this was about something more. Technology became an exercise in participatory management and was the common ground upon which everyone walked. Other examples of technology as catalyst should be found and analyzed, providing comparisons to inform the profession and gain better insights into this supportive role of technology.

The Benefit of Research Programs Providing Reflective Opportunities for Participants

As the last focus group session was winding down, the teachers discussed how this research project had benefited them. Participation in the focus group and one-on-one interviews had provided each person the chance to reflect on nearly twenty years of activity. It validated and made their work real for them. They wished it had happened earlier in the program. Polgase (2003, p. 37) describes the value of reflection stating, “Reflection allows for the possibility of continuous improvement within an organization.” Future research is needed to address the impact of reflective activities, including research projects, on school
programs or initiatives. Should reflective research activities be considered a standard component of initiatives?

Closing Thoughts

The release of the NETS-A was an important step forward in providing information about education and technology implementation. There are obviously limitations in the standards and this study provides insight into the reality of implementing a technology program. Most importantly, this study creates a picture for administrators, administrator preparation institutions, and support agencies relating the standards and the research literature to the complexities of actual practice. Understanding that the administrator’s role as an intricate interweaving of responsibilities and characteristics that uniquely serves as the foundation of an effective learning environment is critical for the success of our schools’ leadership.

I think it is important to close with the same thoughts with which this document began. The text from Chiat/Day’s now famous “Think Different” commercial talks of a set of unique people. They are the ones who “see things differently,” and they do not like “the status quo.” These people “invent,” “imagine,” “explore,” and “inspire.” They simply think “different” and wonder at the possibilities. They think they can change things and they do. The “Think Different” text is a fitting description of the innovative principal and people of Cardinal Elementary. Other educators would do well to be so bold.
APPENDIX A

NETS FOR ADMINISTRATORS

ISTE National Educational Technology Standards for Administrators
http://cnets.iste.org/administrators/a_stands.html
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Educational Technology Standards and Performance Indicators for Administrators

I. LEADERSHIP AND VISION.
Educational leaders inspire a shared vision for comprehensive integration of technology and foster an environment and culture conducive to the realization of that vision. Educational leaders:
   A. facilitate the shared development by all stakeholders of a vision for technology use and widely communicate that vision.
   B. maintain an inclusive and cohesive process to develop, implement, and monitor a dynamic, long-range, and systemic technology plan to achieve the vision.
   C. foster and nurture a culture of responsible risk-taking and advocate policies promoting continuous innovation with technology.
   D. use data in making leadership decisions.
   E. advocate for research-based effective practices in use of technology.
   F. advocate on the state and national levels for policies, programs, and funding opportunities that support implementation of the district technology plan.

II. LEARNING AND TEACHING.
Educational leaders ensure that curricular design, instructional strategies, and learning environments integrate appropriate technologies to maximize learning and teaching. Educational leaders:
   A. identify, use, evaluate, and promote appropriate technologies to enhance and support instruction and standards-based curriculum leading to high levels of student achievement.
   B. facilitate and support collaborative technology-enriched learning environments conducive to innovation for improved learning.
   C. provide for learner-centered environments that use technology to meet the individual and diverse needs of learners.
   D. facilitate the use of technologies to support and enhance instructional methods that develop higher-level thinking, decision-making, and problem-solving skills.
   E. provide for and ensure that faculty and staff take advantage of quality professional learning opportunities for improved learning and teaching with technology.

III. PRODUCTIVITY AND PROFESSIONAL PRACTICE.
Educational leaders apply technology to enhance their professional practice and to increase their own productivity and that of others. Educational leaders:
   A. model the routine, intentional, and effective use of technology.
   B. employ technology for communication and collaboration among colleagues, staff, parents, students, and the larger community.
   C. create and participate in learning communities that stimulate, nurture, and support faculty and staff in using technology for improved productivity.
   D. engage in sustained, job-related professional learning using technology resources.
   E. maintain awareness of emerging technologies and their potential uses in education.
   F. use technology to advance organizational improvement.
IV. SUPPORT, MANAGEMENT, AND OPERATIONS.
Educational leaders ensure the integration of technology to support productive systems for learning and administration. Educational leaders:

A. develop, implement, and monitor policies and guidelines to ensure compatibility of technologies.
B. implement and use integrated technology-based management and operations systems.
C. allocate financial and human resources to ensure complete and sustained implementation of the technology plan.
D. integrate strategic plans, technology plans, and other improvement plans and policies to align efforts and leverage resources.
E. implement procedures to drive continuous improvement of technology systems and to support technology replacement cycles.

V. ASSESSMENT AND EVALUATION.
Educational leaders use technology to plan and implement comprehensive systems of effective assessment and evaluation. Educational leaders:

A. use multiple methods to assess and evaluate appropriate uses of technology resources for learning, communication, and productivity.
B. use technology to collect and analyze data, interpret results, and communicate findings to improve instructional practice and student learning.
C. assess staff knowledge, skills, and performance in using technology and use results to facilitate quality professional development and to inform personnel decisions.
D. use technology to assess, evaluate, and manage administrative and operational systems.

VI. SOCIAL, LEGAL, AND ETHICAL ISSUES.
Educational leaders understand the social, legal, and ethical issues related to technology and model responsible decision-making related to these issues. Educational leaders:

A. ensure equity of access to technology resources that enable and empower all learners and educators.
B. identify, communicate, model, and enforce social, legal, and ethical practices to promote responsible use of technology.
C. promote and enforce privacy, security, and online safety related to the use of technology.
D. promote and enforce environmentally safe and healthy practices in the use of technology.
E. participate in the development of policies that clearly enforce copyright law and assign ownership of intellectual property developed with district resources.
APPENDIX B

NETS FOR ADMINISTRATORS: PRINCIPAL PROFILE

ISTE National Educational Technology Standards for Administrators
http://cnets.iste.org/administrators/a_profiles.html
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Profiles for Technology-Literate Administrators

PRINCIPAL PROFILE

Principals who effectively lead integration of technology typically perform the following tasks. Effective principals:

I. Leadership and Vision
   1. participate in an inclusive district process through which stakeholders formulate a shared vision that clearly defines expectations for technology use.
   2. develop a collaborative, technology-rich school improvement plan, grounded in research and aligned with the district strategic plan.
   3. promote highly effective practices in technology integration among faculty and other staff.

II. Learning and Teaching
   4. assist teachers in using technology to access, analyze, and interpret student performance data, and in using results to appropriately design, assess, and modify student instruction.
   5. collaboratively design, implement, support, and participate in professional development for all instructional staff that institutionalizes effective integration of technology for improved student learning.

III. Productivity and Professional Practice
   6. use current technology-based management systems to access and maintain personnel and student records.
   7. use a variety of media and formats, including telecommunications and the school website, to communicate, interact, and collaborate with peers, experts, and other education stakeholders.

IV. Support, Management, and Operations
   8. provide campus-wide staff development for sharing work and resources across commonly used formats and platforms.
   9. allocate campus discretionary funds and other resources to advance implementation of the technology plan.
   10. advocate for adequate, timely, and high-quality technology support services.

V. Assessment and Evaluation
   11. promote and model the use of technology to access, analyze, and interpret campus data to focus efforts for improving student learning and productivity.
   12. implement evaluation procedures for teachers that assess individual growth toward established technology standards and guide professional development planning.
   13. include effectiveness of technology use in the learning and teaching process as one criteria in assessing performance of instructional staff.
VI. Social, Legal, and Ethical Issues

14. secure and allocate technology resources to enable teachers to better meet the needs of all learners on campus.
15. adhere to and enforce among staff and students the districts acceptable use policy and other policies and procedures related to security, copyright, and technology use.
16. participate in the development of facility plans that support and focus on health and environmentally safe practices related to the use of technology.

DISTRICT PROGRAM DIRECTOR PROFILE

District program directors who effectively lead integration of technology typically perform the following tasks. Effective program directors:

I. Leadership and Vision

1. assure that program technology initiatives are aligned with the district technology vision.
2. represent program interests in the development and systematic review of a comprehensive district technology plan.
3. advocate for program use of promising practices with technology to achieve program goals.

II. Learning and Teaching

4. participate in developing and providing electronic resources that support improved learning for program participants.
5. provide rich and effective staff development opportunities and ongoing support that promote use of technology to enhance program initiatives and activities.
6. ensure that program curricula and services embrace changes brought about by the proliferation of technology within society.

III. Productivity and Professional Practice

7. use technology and connectivity to share promising strategies, interesting case studies, and student and faculty learning opportunities that support program improvement.
8. model, for program staff, effective uses of technology for professional productivity such as in presentations, record keeping, data analysis, research, and communications.
9. use online collaboration to build and participate in collaborative learning communities with directors of similar programs in other districts.

IV. Support, Management, and Operations

10. implement technology initiatives that provide instructional and technical support as defined in the district technology plan.
11. determine financial needs of the program, develop budgets, and set timelines to realize program technology targets.

V. Assessment and Evaluation

12. continuously monitor and analyze performance data to guide the design and improvement of program initiatives and activities.
13. employ multiple measures and flexible assessment strategies to determine staff technology proficiency within the program and to guide staff development efforts.
VI. Social, Legal, and Ethical Issues

14. involve program participants, clients, and staff in dealing with issues related to equity of access and
equity of technology-rich opportunities.
15. educate program personnel about technology-related health, safety, legal, and ethical issues, and hold
them accountable for decisions and behaviors related to those.
16. inform district and campus leadership of program-specific issues related to privacy, confidentiality,
and reporting of information that might impact technology system and policy requirements.

SUPERINTENDENT PROFILE

Superintendents who effectively lead the integration of technology typically perform the following tasks.
Effective superintendents:

I. Leadership and Vision

1. assure that the vision for use of technology is congruent with the overall district vision.
2. engage representatives from all stakeholder groups in the development, implementation, and ongoing
assessment of a district technology plan consistent with the district improvement plan.
3. advocate to the school community, the media, and the community at large for effective technology use
in schools for improved student learning and efficiency of operations.

II. Learning and Teaching

4. provide equitable access for students and staff to technologies that facilitate productivity and enhance
learning.
5. communicate expectations consistently for the use of technology to increase student achievement.
6. ensure that budget priorities reflect a focus on technology and its relationships to enhanced learning
and teaching.

III. Productivity and Professional Practice

7. establish a culture that encourages responsible risk-taking with technology while requiring
accountability for results.
8. maintain an emphasis on technology fluency among staff across the district and provide staff
development opportunities to support high expectations.
9. use current information tools and systems for communication, management of schedules and resources,
performance assessment, and professional learning.

IV. Support, Management, and Operations

10. provide adequate staffing and other resources to support technology infrastructure and integration
across the district.
11. ensure, through collaboration with district and campus leadership, alignment of technology efforts with
the overall district improvement efforts in instructional management and district operations.

V. Assessment and Evaluation

12. engage administrators in using district-wide and disaggregated data to identify improvement targets at
the campus and program levels.
13. establish evaluation procedures for administrators that assess demonstrated growth toward achieving
technology standards for school administrators.

VI. Social, Legal, and Ethical Issues

14. ensure that every student in the district engages in technology-rich learning experiences.
15. recommend policies and procedures that protect the security and integrity of the district infrastructure
and the data resident on it.
16. develop policies and procedures that protect the rights and confidentiality of students and staff.
APPENDIX C

ESSENTIAL CONDITIONS

Essential Conditions for Implementing NETS for Administrators

Shared Vision – The school board and administrators provide proactive leadership in developing a shared vision for educational technology among school personnel, parents, and the community.

Equitable Access – Students, teachers, staff, and administrators have equitable access to current technologies, software, and telecommunications resources.

Skilled Personnel – District leaders and support personnel are skilled in the use of technology appropriate for their job responsibilities.

Professional Development – District leaders and support personnel have consistent access to technology-related professional development for their job assignments.

Technical Assistance – Personnel have technical assistance for maintaining and using technology.

Content Standards and Curriculum Resources – Instructional personnel and school leaders are knowledgeable about content and technology standards, related curriculum resources, teaching methodologies, and the use of technology to support learning.

Student-Centered Teaching – Teaching in all settings includes the use of technology to facilitate student-centered approaches to learning.

Assessment and Accountability – The school district has a system for the continual assessment of effective technology use for improving student learning.

Community Support – The district maintains partnerships and communications with parents, businesses, and the community to support technology use within the district.

Support Policies – The district has policies, financial plans, and incentive structures to support the use of technology in learning and in operations of the district.

External Conditions – Policies, requirements, and initiatives at the national, regional, and state levels support the district in the effective implementation of technology for achieving national, state, and local curriculum and technology standards.
APPENDIX D

ADMINISTRATOR SELECTION RUBRIC
Instructions:
Use the following rubric to evaluate the list of administrators. Each National Standard has descriptors to help identify a rating of Exemplary (4 pts), Acceptable (2 pts), or Does Not Meet Criteria (0 pts). Rate each administrator on each standard and write the resulting points in the Score column. Total the scores at the bottom of the rubric.

<table>
<thead>
<tr>
<th>National Standard</th>
<th>Exemplary</th>
<th>Acceptable</th>
<th>Does Not Meet Criteria</th>
<th>Score</th>
</tr>
</thead>
</table>
| **The administrator inspires a shared vision for comprehensive integration of technology and fosters an environment and culture conducive to the realization of that vision** | *Facilitates and effectively communicates the shared development by stakeholders throughout the district of a clearly defined technology vision*  
*Develops a collaborative, technology-rich school improvement plan, grounded in research and aligned with the district strategic plan*  
*Fosters and nurtures a culture of responsible risk-taking*  
*Promotes research-based, highly effective practices in technology integration* | *Has a clearly defined technology vision.*  
*Develops a school improvement plan which is somewhat aligned with the district strategic plan*  
*Accepts responsible risk-taking*  
*Promotes effective technology integration practices* | *Communication of the vision (if defined) is limited.*  
*Has a school improvement plan. Not directly aligned with the district strategic plan (if available)*  
*Does not promote risk-taking*  
*Promote technology integration practices.* | |
| **Educational leaders ensure that curricular design, instructional strategies, and learning environments integrate appropriate technologies to maximize learning and teaching** | *Assist teachers in using technology to access, analyze, and interpret student performance data, and in using results to appropriately design, assess, and modify student instruction.*  
*Collaboratively design, implement, support, and participate in professional development for all instructional staff that institutionalizes effective integration of technology for improved student learning.* | | |
| Educational leaders apply technology to enhance their professional practice and to increase their own productivity and that of others. | • facilitate and support collaborative technology enriched learning environments conducive to innovation for improved learning |
|• use current technology-based management systems to access and maintain personnel and student records. |
|• model the routine, intentional, and effective use of technology |
|• use a variety of media and formats, including telecommunications and the school Web site, to communicate, interact, and collaborate with peers, experts, and other education stakeholders |
|• create and participate in learning communities that stimulate, nurture, and support faculty and staff in using technology for improved productivity |
### Educational Leaders Ensure the Integration of Technology to Support Productive Systems for Learning and Administration

- Provide campus-wide staff development for sharing work and resources across commonly used formats and platforms.
- Allocate campus discretionary funds and other resources to advance implementation of the technology plan.
- Advocate for adequate, timely, and high-quality technology support services.
- Integrate strategic plans, technology plans, and other improvement plans and policies to align efforts and leverage resources.

### Educational Leaders Use Technology to Plan and Implement Comprehensive Systems of Effective Assessment and Evaluation

- Promote and model the use of technology to access, analyze, and interpret campus data to focus efforts for improving student learning and productivity.
- Implement evaluation procedures for teachers that assess individual growth toward established technology standards and guide professional development planning.
- Include effectiveness of
Educational leaders understand the social, legal, and ethical issues related to technology and model responsible decision-making related to these issues.

<table>
<thead>
<tr>
<th>Educational leaders understand the social, legal, and ethical issues related to technology and model responsible decision-making related to these issues.</th>
<th>Technology use in the learning and teaching process as one criterion in assessing performance of instructional staff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Secure and allocate technology resources (equity and access) to enable teachers to better meet the needs of all learners on campus.</td>
<td></td>
</tr>
<tr>
<td>• Adhere to and enforce among staff and students the district's acceptable use policy and other policies and procedures related to security, copyright, online safety and technology use.</td>
<td></td>
</tr>
<tr>
<td>• Participate in the development of facility plans that support and focus on health and environmentally safe practices related to the use of technology.</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX E

HUMAN SUBJECTS REVIEW FORM

Iowa State University
Human Subjects Review Form

(Please type this form & submit the original & two copies with three copies of all attachments)

Title of Project: The Effective Principal's Role During the Implementation of Technology in K-12 Education

I agree to provide the proper surveillance of this project to insure that the rights and welfare of the human subjects are protected. I will report any adverse reactions to the committee. Additions to or changes in research procedures after the project has been approved will be submitted to the committee for review. I agree that all key personnel involved in conducting human subjects research will receive training in the protection of human subjects. This also includes all PI's and Co-PI's. Access to the 45 CFR 46, Belmont Report, and ISU's Federal Wide Assurance is available to all PI's via the WWW. http://grants-svr.admin.iastate.edu/VPR/humansubjects.html. I agree to request renewal of approval for any project continuing more than one year.

Dennis McElroy
Typed name of principal investigator
Curriculum and Instruction
Department
641-784-5292 dmcelroy@graceland.edu
Phone number and email

Principal investigator
☐ Faculty  ☐ Staff  ☐ Postdoctoral  ☒ Graduate Student  ☐ Undergraduate Student

Typed name of co-principal investigator(s)
Date
Signature of co-principal investigator(s)

Co-Principal investigator(s) (check all that apply)
☐ Faculty  ☐ Staff  ☐ Postdoctoral  ☐ Graduate Student  ☐ Undergraduate Student

Typed name of major professor or supervisor (if not a co-principal investigator)
Date
Signature of major professor or supervising faculty member

Dr. Ann Thompson
09/12/2002

Typed names of other key personnel who will directly interact with human subjects. (all key personnel must have training before approval will be made)

☐ Project (check all that apply)
☒ Research  ☒ Thesis or dissertation  ☐ Class project  ☐ Independent Study (490, 590, Honors project)

Number of subjects (complete all that apply)

# adults, non-students
# ISU students
# minors under 14 (must obtain assent from minor & parental consent)
# minors 14-17 (must obtain assent from minor & parental consent)
7. Status of project submission through Office of Sponsored Programs Administration (check one)
   □ Has been submitted    □ Will be submitted    □ Will not be submitted

7a. Funding Source: self

7b. Title of grant as listed on the Proposal Data Form (GoldSheet) if it differs from title above: NA

8. Brief description of proposed research involving human subjects: (See instructions, item 8.
   (Include one copy of the complete proposal if submitting to a Federal sponsor.)
   
   A. Problem, Methods, and Data
   Problem: Although the literature has shown the role of the administrator during the planning and implementation of a technology program is crucial (Apple Computer, Inc., 1995; Bozeman & Spuck, 1991; Brennan, 1997; Davidson & Mauer, 1995; Jorde, 1985; Rees, 1987; Ritchie, 1996), there appears to be a lack of research and information about the actual roles and actions of administrators during the development and implementation of effective technology programs.

   The purpose of this study is to investigate and describe the role, actions, and practices of school administrators who have been recognized for providing exemplary leadership during the implementation of effective technology programs in their schools from the perspective of the administrator, teachers, and Area Education Agency technology consultants. These will be compared and contrasted to the national standards recommended by the Technology Standards for School Administrators Collaborative.

   Methods and Data: In order to effectively analyze the role a school principal during the technology implementation process it is necessary to conduct a qualitative study. This study will be a single case study. The structure outlined by Lincoln and Guba (1985) of problem, context, issues, and lessons learned will be followed.

   Data will be collected using personal interviews with the school administrator and Area Education Agency technology specialist (if more than one are assigned to the district and/or willing to participate more interviews will be conducted) assigned to the school. A focus group (or groups depending on the number of participating faculty) will be conducted. All interviews and focus groups will be tape and video recorded and written notes will be kept. Additional data sources, including the district technology plan, newspaper or journal articles about the administrator and/or the district technology program, ITEC administrator nomination materials submitted by the district, direct observations of school activities. This would include observing classes using technology and observing the level of technology integration in academic/administrative functions, state technology fund implementation plan and actual practice, and other anecdotal evidence as it becomes available.

9. Informed Consent:    □ Signed informed consent will be obtained. (Attach a copy of your form.)
   □ Modified informed consent will be obtained. (Attach a copy of your letter.)

10. Confidentiality of Data: Describe below the methods you will use to ensure the confidentiality of data obtained. (See instructions, item 10.)
   All data will be kept in three locations. First, the copies will be kept at the principle researcher's home. The artifacts will be stored in a locked cabinet. Second, some materials will be in the principle researcher's office at different times. The office is a secure (i.e. locked) area. The artifacts will be kept in a locked cabinet when not being used. Third, a lockbox will be rented at the bank for securing and storing original copies of artifacts. The principle researcher will be the only individual with access to these storage areas.

11. Will subjects in the research be placed at risk or incur discomfort? Describe any risks to the subjects and precautions that will be taken to minimize them. (The concept of risk goes beyond physical risk and includes risks to subjects' dignity and self-respect as well as psychological or emotional risk. See instructions, item 11.)

12. CHECK ALL of the following that apply to your research:
   □ A. Medical clearance necessary before subjects can participate  □ H. Deception of subjects
   □ B. Administration of substances (foods, drugs, etc.) to subjects  □ I. Subjects under 14 years of age and/or
   □ C. Physical exercise or conditioning for subjects  □ Subjects 14-17 years of age
   □ D. Samples (blood, tissue, etc.) from subjects  □ J. Subjects in institutions (nursing homes,
Box: E. Administration of infectious agents or recombinant DNA
Box: F. Application of external stimuli
Box: G. Application of noxious or potentially noxious stimuli
Box: K. Pregnant women
Box: L. Research must be approved by another institution or agency (attach letters of approval.

If you checked any of the items in 12, please complete the following in the space below (include any attachments):

1. Describe the procedures and note the proposed safety precautions.

2. The principal investigator should send a copy of this form to Environmental Health and Safety, 118 Agronomy review.

3. Describe how subjects will be deceived; justify the deception; indicate the debriefing procedure, including the information to be presented to subjects.

4. For subjects under the age of 14, indicate how informed consent will be obtained from parents or legally authorized representatives as well as from subjects.

5. Explain what actions would be taken to insure minimal risk.

6. Specify the agency or institution that must approve the project. If subjects in any outside agency or institution involved, approval must be obtained prior to beginning the research, and the letter of approval should be filed.
Iowa State University Human Subjects Review Form

PI Last Name: McElroy
Title of Project: The Effective Principal's Role During the Implementation of Technology in K-12 Education

Checklist for Attachments

The following are attached (please check):

13. ☒ Letter or written statement to subjects indicating clearly:
   a) the purpose of the research & a statement that the study involves research
   b) the use of any identifier codes (names, #s), how they will be used, and when they will be removed (see item 18)
   c) an estimate of time needed for participation in the research
   d) if applicable, the location of the research activity
   e) how you will ensure confidentiality
   f) in a longitudinal study, when and how you will contact subjects later
   g) that participation is voluntary; nonparticipation will not affect evaluations of the subject
   h) contact information of the P.I. and if a student project, the major professor or supervising faculty member's contact information

14. ☒ A copy of the consent form (if applicable)
15. ☐ Letter of approval for research from cooperating organizations or institutions (if applicable)
16. ☐ Data-gathering instruments
17. ☐ Recruitment fliers or any other documents the subjects will see

18. Anticipated dates for contact with subjects. If using secondary data, the start date will be when the PI has access to and starts to use the data. Allow at least two weeks for review of your proposal before your anticipated start date.

   First contact: 09/30/2002
   Last contact: 03/01/2003
   Month/Day/Year  Month/Day/Year

19. If applicable: anticipated date that identifiers will be removed from completed survey instruments and/or audio or visual tapes will be erased:

   05/01/2003
   Month/Day/Year

20. Signature of Departmental Executive Officer

   Date
   Department or Administrative Unit

   If the PI or co-PI is also the DEO, a Dean signature authority must sign here.

21. Initial action by the Institutional Review Board (IRB):

   ☐ Project approved  ☐ Pending Further Review  ☐ Project not approved
   Date  Date  Date

   ☐ No action required
   Date

22. Follow-up action by the IRB:

   Project approved  ☐ Project not approved  ☐ Project not resubmitted
   Date  Date  Date

   Rick Sharp
   IRB Chairperson
   Signature of IRB Chairperson
   Date
APPENDIX F

INSTITUTIONAL REVIEW BOARD APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Human Subjects Research Office
2810 Beardshear Hall
Ames, IA 50011-2036
515/294-4566
FAX: 515/294-7288

DATE: October 3, 2002
TO: Dennis McElroy
FROM: Janell Meldrem; IRB Administrator
RE: IRB ID # 03-123

The project, “The Effective Principals’ Role During the Implementation of Technology in K-12 Education” has been declared exempt from Federal regulations as described in 45 CFR 46.101(b)(2) (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

To be in compliance with ISU’s Federal Wide Assurance through the Office of Human Research Protections (OHRP) all projects involving human subjects, must be reviewed by the Institutional Review Board (IRB). Only the IRB may determine if the project must follow the requirements of 45 CFR 46 or is exempt from the requirements specified in this law. Therefore, all human subject projects must be submitted and reviewed by the IRB.

Because this project is exempt it does not require further IRB review and is exempt from the Department of Health and Human Service (DHHS) regulations for the protection of human subjects.

We do, however, urge you to protect the rights of your participants in the same ways that you would if IRB approval were required. This includes providing relevant information about the research to the participants.

Any modification of this research should be submitted to the IRB on a Continuation and/or Modification form to determine if the project still meets the Federal criteria for exemption. If it is determined that exemption is no longer warranted, then an IRB proposal will need to be submitted and approved before proceeding with data collection.
APPENDIX G

INFORMED CONSENT DOCUMENT

Title of Study: The Effective Principal's Role During the Implementation of Technology in K-12 Education
Investigator: Dennis W. McElroy, M.S.

This is a research study. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time.

INTRODUCTION

The purpose of this study is to investigate and describe the role, actions, and practices of a school principal who has been recognized for providing exemplary leadership during the implementation of effective technology programs in their schools. You are being invited to participate in this study with colleagues who are also involved in the effective implementation of technology in your school.

DESCRIPTION OF PROCEDURES

If you agree to participate in this study, your participation will begin November 1, 2002 and end May 1, 2003. During the study you may expect the following study procedures to be followed: You will be asked to participate in initial and follow-up personal or focus group audio/video-taped interviews and provide the primary investigator (PI) with artifacts related to the technology program in your school. Recordings of interviews and meetings will be transcribed and analyzed for themes. The results of this analysis will be given to the participants for feedback.

RISKS

While participating in this study you may experience the following risks: possible embarrassment through stray comments in recorded interviews, potential interruptions during class observations, and the risk of more time demands for yourself as a result of participation in the interviews or focus groups.

BENEFITS

If you decide to participate in this study you will have the benefit of reflection and discussion concerning the technology program and integration in your school. It is hoped that the information gained in this study will benefit educational practitioners and preparatory institutions by providing examples of effective technology implementation practices.

COSTS AND COMPENSATION

You will not have any costs from participating in this study. You will not be compensated for participating in this study.
PARTICIPANT RIGHTS

Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled. You will have the right to edit any and all raw data collected. Each of you will also be given free access to transcripts of all focus group and individual interviews you have directly participated in and artifacts. You may draw your own conclusions and may publish your own version of the study.

CONFIDENTIALITY

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, federal government regulatory agencies and the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information.

To ensure confidentiality to the extent permitted by law, the following measures will be taken: Pseudonyms will be used for each participant. These pseudonyms will be gender-free and will be used throughout the study. For information about the study contact Dennis McElroy at (641) 784-5292; dncelroy@graceland.edu or his major professor, Dr. Ann Thompson at (515) 294-5287; eat@iastate.edu. If you have any questions about the rights of research subjects or research-related injury, please contact the Human Subjects Research Office, 16 Pearson Hall, (515) 294-4566; meldrem@iastate.edu or the Research Compliance Officer, Office of Research Compliance, 2810 Beardshear Hall, (515) 294-3115; dament@iastate.edu

SUBJECT SIGNATURE

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the signed and dated written informed consent prior to your participation in the study.

Subject’s Name (printed) ____________________________________________________________

(Subject’s Signature) ___________________________ (Date) ___________________________

INVESTIGATOR STATEMENT

I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

(Signature of Person Obtaining Informed Consent) ___________________________ (Date) ___________________________
APPENDIX H

INTERVIEW GUIDE FOR PRINCIPAL

1. What preparation did you receive to help you with educational technology issues?

2. What did you originally perceive as your role in the technology implementation process? How did this differ from what your role actually became?

3. How was your vision concerning technology usage in your school(s) developed?

4. What initial actions did you take to communicate your vision concerning technology in the school district?
   a. What purpose did this serve?
   b. What was the goal(s) of the communication?
   c. What type of feedback did you receive?

5. How did you deal with teacher issues such as access, professional development (methodology, content, costs, delivery mechanism, and time)?
   a. What pre-assessment of teacher skills was done?
   b. What levels of regional/state coordination were maintained?

6. In what ways did you direct change in the physical environment to facilitate systemic change?

7. How has the integration of technology affected the educational system? (students, student learning, teacher effectiveness, attitudes, etc)
   a. How would you describe the change process undertaken by the district?
   b. Did you have to deal with resistance of any type?
   c. What positive/negative effects were results of this change process?

8. How has and how will these issues continue to effect the school community?

9. Trust
   a. How was this created? Is there a “magic” formula?
   b. Were there bumps along the way?
   c. What strategies were used to overcome these obstacles?
   d. It seems you’ve built a relationship where you are considered “one of the team” and not “one of them.” How?

10. Change
    a. Technology simply appeared to be a catalyst for change. Why was it a good one (why did it work)?
11. Teacher Empowerment  
   a. Can you provide any specific examples of how you tried (successfully or not) to empower the teachers beyond shared decision-making?

12. The themes of change, trust, shared decision-making, teacher empowerment, and being a team predominate all the interviews. I see these as a Venn diagram with each lending to the other. Would you agree and why?

13. If you were to leave or several of the senior teachers retired, what could be done to continue what has been built here? What would you say to an incoming principal to help them keep what is good going?
APPENDIX I

INTERVIEW GUIDE FOR FOCUS GROUP

1. What preparation did you receive to help you with educational technology issues?

2. What did you originally perceive as the principal's role in the technology implementation process? How did this differ from what that role actually became?

3. How was your vision concerning technology usage in your school(s) developed?

4. What initial actions did the principal take to communicate his vision concerning technology in the school district?
   a. What purpose did this serve?
   b. What did you perceive the goal(s) of the communication to be?
   c. What type of feedback was provided to him?

5. How did the principal deal with teacher issues such as access, professional development (methodology, content, costs, delivery mechanism, and time)?
   a. What pre-assessment of teacher skills was done?
   b. What levels of regional/state coordination were maintained?

6. In what ways did the principal direct change in the physical environment to facilitate systemic change?

7. How has the integration of technology affected the educational system? (students, student learning, teacher effectiveness, attitudes, etc)
   a. How would you describe the change process undertaken by the district?
   b. Did the principal have to deal with resistance of any type?
   c. What positive/negative effects were results of this change process?

8. How has and how will these issues continue to effect the school community?

9. Trust
   a. How was this created? Is there a "magic" formula?
   b. Were there bumps along the way?
   c. What strategies were used to overcome these obstacles?
   d. How did the principal build a relationship so that he was considered one of the team?

10. Change
    a. Technology simply appeared to be a catalyst for change. Why was it a good one (why did it work)?
11. Teacher Empowerment
   a. Can you provide any specific examples of how the principal tried (successfully or not) to empower the you (the teachers) beyond shared decision-making?

12. The themes of change, trust, shared decision-making, teacher empowerment, and being a team predominate all the interviews. I see these as a Venn diagram with each lending to the other. Would you agree and why?

13. If you were to leave or several of the senior teachers retired, what could be done to continue what has been built here? What would you say to an incoming principal to help them keep what is good going?
APPENDIX J

INTERVIEW GUIDE FOR AEA CONSULTANT

1. How did you assist in the technology preparation (professional development) for the principal and faculty?

2. What was the principal's role concerning professional development in the school?

3. What role did you originally perceive the principal to have during the tech implementation process?

4. How did this differ from what it really became?

5. What did you originally perceive as your role in the technology implementation process for this school?

6. How did this differ from what your role actually became?

7. How was the technology vision communicated for the school and by whom?

8. What was the original vision?

9. What was it when you left the AEA?

10. How were teacher issues such as access, professional development (methodology, content, costs, delivery mechanism), and time dealt with?
   a. What pre-assessment of teacher skills was done?
   b. What levels of regional/state coordination were maintained?
   c. How was systemic change fostered in the building?
   d. How has the integration of technology affected their educational system? (student, student learning, teacher effectiveness, attitudes, etc)
   e. How would you describe the change process undertaken by the district?
   f. Was there resistance of any type?
   g. What positive/negative effects were results of this change process?
   h. How has and how will these issues continue to effect the school community?
   i. The teachers and principal have commented on the management styles that have been applied in the elementary building as "participatory." Can you describe your observances of this?
   j. How did it manifest itself? What was done (to your knowledge) to make this happen?
APPENDIX K

DATA CODES

1. Technology Preparation
2. Implementation Role
3. Vision Development
4. Vision Communication
5. Teacher Issues
6. Physical Environment Changes
7. Impact on the Educational System
8. Continued Impact of technology
9. Communication
10. Collaboration
11. Cheerleading
12. Experience/Professional Development
13. General Personality
14. Risk Taking
15. Surprises
16. Battles
17. Driving Factors
18. Support
19. Recognition
20. Leadership
21. Management
22. Trust
23. Decision Making
24. Empowering
25. Process
26. External Influences
27. Barriers
28. Future
29. Community
30. Equality
31. Discovery
32. Mistakes
33. Judging/Evaluation
34. Children
35. Ownership
36. 4 pillars
37. Turnover
38. Research Impact
39. External Applicability
APPENDIX L

CARDINAL ELEMENTARY SCHOOL RULES FOR CONSENSUAL DECISION-MAKING

1. All group members have equal opportunity to provide input. The administrator’s position gives his/her opinion no more importance than anyone else’s.
2. Honest and open communication is required. Questions and opinions must be voiced politely and with concern for individual feelings.
3. Silence when discussing an issue is understood to be agreement with what is being said. Saving your opinion for the teacher’s lounge is not helpful to consensus building.
4. Participants need to remember the generally accepted rules of polite discussion that we try to teach our students: don’t interrupt, be a good listener, don’t monopolize the conversation, and stick to the point, among others.
5. Every effort should be made to not take comments as personal criticism. The concern is with the decision, not the person.
6. After a decision is made, all should be willing to support and implement the decision to the best of their ability.

Are all decisions going to be made by consensus?

No, the law, contract, time, and simple good sense indicate that not all decisions can or should be made consensually. Because of the scope of school decisions hard and fast rules about how all decisions will be made are not possible. The guiding principle is that whenever possible, legal, and ethical, consensus-making or at least input-gathering will be done.

What happens if consensus can not be reached?

If the decision does not need to be made at that time, it will be delayed until more discussion can occur, or the issue may be dropped all together.

If the decision is critical and consensus can not be reached, the administrator will make the final decision.
REFERENCES


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