HIGH SCHOOL PRINCIPAL COMMUNICATION AND ORGANZIATIONAL KNWOLEDGE CREATION

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by

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High School Principal Communication and Organizational Knowledge Creation

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ABSTRACT

The purpose of this study was to determine what impact, if any, does effective communication by high school principals have on the knowledge creation capacity of the school. A mixed research design was utilized. Quantitative data were gathered using researcher-created surveys, and qualitative data were retrieved through interviews.

A Pearson *r* correlation coefficient was utilized to determine if any statistical relationship existed between the factors of principal communication (care, change) and the factors of knowledge creation (combination, socialization, externalization, internalization). According to combined responses from teachers and principals moderately strong correlations existed between care and externalization ($r=.659$) and change and combination ($r=.695$).

An independent samples *t* – test was conducted in order to analyze the means of the principal communication factors and the organizational knowledge creation factors as reported by teachers and principals. No significant differences existed between the principal communication factors or the knowledge creation factors. Data from the study revealed teachers and principals responded to these survey questions similarly.

Descriptive statistics were utilized to determine which factors of knowledge creation principals used most in communication with their staff members. An aggregate analysis of the mean showed that each group perceived principals using the socialization factor of knowledge creation most frequently in communication.

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CHAPTER ONE

INTRODUCTION TO THE STUDY

Background

The role of the high school principal has become increasingly complex as schools have experienced increased accountability for student learning as well as improved teaching. New challenges brought forth from President George Bush's *No Child Left Behind* (hereafter referred to as NCLB) act of 2001 have forced principals to critically examine core school processes; such as teaching, and learning from every possible angle. As a result of NCLB there is an increased focus on teaching and student accountability. Consequently, schools and school leaders have focused on processes that offer continuous improvement for teaching and learning (Becerra–Fernandez & Stevenson, 2001; Chen & Edgington, 2005; Contino, 2004; Mulford & Silins, 2003; Wenger & Snyder, 2000). Accordingly, principals find themselves with an immense amount of responsibility for student and teacher success, which places a very real emphasis upon the principal's instructional leadership capabilities. Subsequently, those instructional leadership skills are ultimately measured by national, state, and local standards, as well as by constituents. These are considered to be at the core of responsibilities for all educational leaders. Becerra-Fernandez and Stevenson (2001) accurately summed up the current educational environment when they stated that:

   "Schools are challenged more than ever to raise achievement levels and test

   scores. They argue for a new model in which the principal focuses on the learning

   organization and creating knowledge by examining current systems and processes

   within the school. Included are coaches, leadership development activities, and

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conducting studies on processes" (p. 2).

A palpable question then, is how do principals communicate the importance of instructional initiatives, shared learning, knowledge creation, and organizational improvement to their organization?

Countless studies and authors have examined the role of communication as part of the secondary school principalship (Fisher, 2000; Hudson & Rea, 1996; Reyes & Hoyle, 1992; Yukl, 2006). Authors noted that principals spent much of their time in some sort of communication, and that principals who were more adept at communicating were perceived to be more effective than those principals who struggled with communication (Reyes & Hoyle, 1992; Yukl, 2006). Several authors went so far as to conclude that communication could determine the effectiveness of a specific principal (Iheanacho, 1992; Osterman, 1994; Reyes & Hoyle, 1992; Shumaker & Sommers, 2001). However, principal communication has not been extensively researched in conjunction with organizational knowledge creation. Consequently, the researcher of this study seeks to understand specifically, the role of the high school principal communication which helps create the knowledge sharing and knowledge creation environment.

Recent research and authors have suggested that team learning centered on the core processes of teaching and learning may be the best way for principals to improve schools (DuFour & Eaker, 1998; Nonaka & Takeuchi, 1995). Rather than allowing outside specialists to come in and present the most modern and innovative ideas, many principals are asking their staffs to collaborate with one another in a manner that promotes trust and helps to not only share, but create new knowledge as well. Knowledge creation is a key component for school and educational improvement and signifies that

the school organization's personnel are identifying the most important processes and pathways to improved teaching and learning.

Knowledge creation was identified in the business world as a manner in which to gain a competitive advantage over others within the market (Murtha, Lenway, & Hart, 2001; Nonaka & Takeuchi, 1995; Von Krogh, Ichijo, & Nonaka, 2000). Authors such as Sanchez (2001) and Wenger and Snyder (2000) found knowledge to be equally as important as land, labor, and capital, the traditional factors of production involved in making a product. Sharing and creating new knowledge came to be viewed by many (Nonaka & Takeuchi, 1995; Stacey, 2001; Von Krogh et al., 2000) as a key process that could give a company a competitive advantage in the knowledge economy. Stacey (2001) articulated this by stating, "the past few decades have witnessed a dramatic increase in the popularity of notions of learning and the creation and management of knowledge/intellectual capital in organizations" (p. 13). Leaders who championed the causes of knowledge creation led their companies to value the process and use the end product of new knowledge to gain a competitive advantage in the marketplace. Some of the more successful companies during the last 25 years such as Honda, Matsushita Electric Company, and Cannon were led by those who understood the importance of sharing and creating knowledge. Nonaka and Takeuchi (1995) espoused this belief when they stated, "The organization that wishes to cope dynamically with the changing environment needs to be one that creates information and knowledge, not merely process them efficiently" (p. 50). Moreover, the leaders of these companies understood that people can share knowledge with one another in much greater detail and specificity than one person could understand by reading information from operating manuals. The key

component advocated by the leaders and throughout successful organizations was that of sharing tacit knowledge. The concept of tacit knowledge was an important dimension to Polyani (1958) in the development of individual knowledge. Tacit knowledge can be defined as the personal, job specific knowledge that a person possesses, but has difficulty documenting in a written manual (Nonaka & Takeuchi, 1995).

In order to have an organization that creates new knowledge, employees must be given time and processes by which to share tacit knowledge. Nonaka and Takeuchi (1995) have denoted this process as the four modes of knowledge conversion. "Our dynamic model of knowledge creation is anchored to a critical assumption that human knowledge is created and expanded through social interaction between tacit and explicit knowledge" (Nonaka & Takeuchi, 1995, p. 61). This process can be extremely complex and iterative. As Hisnanick (2003) stated:

> By its very nature it cannot be represented by a neat formula or a patented process. Rather, knowledge creation is an extension of the social process in that it involves relationships among individuals, teams, and organizations: Knowledge creation plays in all aspects of our everyday existence and cannot be denied. (p. 3)

Thus, important leadership questions reside in the knowledge creation construct, and in the link to high schools. Becerra-Fernandez and Stevenson (2001) concluded that there was a clear link between business executives and effective principals. Moreover, the authors went on to state, "proficient principals know how to project ideas and promote communication through technology, as well as the ability to understand the dynamics of change and application of group processes" (Becerra-Fernandez & Stevenson, 2001, p. 2). These sentiments were echoed by Cardno (2002) who referred to the principal as the

leader of the leadership team and gatekeeper who has the capability to influence learning.
How do principals in high schools use the research and information to help improve their
organizations? More specifically, how do principals allocate time for teachers to get
together and share and create knowledge? How do principals communicate the
importance of the knowledge creation process throughout the organization? Each of these
questions must be understood by leaders as they communicate with their staff members.
Very little research exists to link knowledge creation from the business community to
leadership practices in the school setting. Chen and Edgington (2005) articulated this
point when they stated, "while knowledge creation is fundamental to the survival of a
business it has not been extensively researched beyond organizational theory" (p. 1).

Conceptual Underpinnings of the Study

Each year high school principals are faced with countless difficult decisions in the
face of seemingly shrinking resources and increased accountability (Becerra – Fernandez
& Stevenson, 2001; Contino, 2004). The theoretical foundation for this study was
constructed from the themes of leader communication and organizational knowledge
creation. These two themes surface among many current trends in leadership, policy
analysis, organizational analysis, and the role of standardized testing within the current
educational system. Perhaps the most important aspect of making decisions for the school
lies in the ability of the building principal to communicate effectively with all
organizational members (Iheanacho, 1992; Osterman, 1994; Reyes & Hoyle, 1992;
Shumaker & Sommers, 2001). It is widely agreed that principals spend over two-thirds of
their time in some sort of communication (Reyes & Hoyle, 1992; Von Krogh et al.,
2000). In fact, many authors have studied communication of those in leadership positions

(Becerra – Fernandez & Stevenson, 2001; Contino, 2004; Mulford & Silins, 2003; Rhea & Hudson, 1996; Von Krogh, Ichijo & Nonaka, 2000; Yukl, 2006). Moreover, authors and theorists have researched communication patterns of elementary, middle, and high school principals (Domenech, 2002; Ilg, 2002; Laud, 1998; Sanchez, 2001; Stacey, 2002; Villani & Lyman, 2000; Wenger & Snyder, 2000). Research in the communication of principals has investigated: general communication, daily communication, effective communication, communication and humor, and how communication can affect the dynamic change process (Blasé & Nelson, 1997; Cardno, 2002; Fisher, 2000; Harris, 2000; Osterman, 1994; Reyes & Hoyle, 1992; Rhea & Hudson, 1996; Schumaker & Sommers, 2001; Snow & Whittaker, 1996). Authors have clearly articulated the importance of communication skills to the effectiveness of building leaders (Rhea & Hudson, 1996).

One aspect of communication that clearly has not been extensively researched is how principals communicate with their staffs to encourage organizational knowledge creation. Conversely, organizational knowledge creation theorists have noted the importance of the leader and communication within the business world and the effectiveness of major multi-national corporations (Nonaka & Takeuchi, 1995; Von Krogh et al., 2000).

Organizational knowledge creation gained prominence in the business world in the mid 1990's with the work of Nonaka and Takeuchi (1995), which built largely on the work of Senge (1990). During this time frame, authors as well as companies realized that knowledge was quickly becoming one of the traditional factors of production (Murtha, Lenway, & Hart, 2001; Stacey, 2001). Authors and theorists debated how to best create

new knowledge in order for companies to succeed in the knowledge economy. Several authors presented research concerning the importance of sharing knowledge (Nonaka & Takeuchi, 1995; Stacey, 2001; Wenger & Snyder, 2000).

Nonaka and Takeuchi (1995) developed key processes involved in the creation of new knowledge. The entire process is based upon a belief that job embedded knowledge can be best transferred in a collaborative environment. Nonaka and Takeuchi (1995) stressed concepts like knowledge conversion, middle-up-down management, and hypertext organizations. Knowledge creation is a theoretical concept which stresses the social interaction among people, as well as the tacit and explicit knowledge they possess (Nonaka and Takeuchi, 1995, p. 61). The concept of middle-up-down management highlighted the role of middle managers within the knowledge creation process. Middle managers were charged with operationalizing organizational goals and initiatives with those employees he/she supervised. A hypertext organization, according to Nonaka and Takeuchi (1995), was an organizational structure built specifically for creating knowledge and sharing that knowledge through all layers of the organization. In combination these organizational concepts enhance the ability of the organization to create and share knowledge.

Since Nonaka and Takeuchi's (1995) work, authors such as Choo (1998), Wenger and Snyder (2000), and Von Krogh et al. (2000) have intertwined new concepts to enhance the knowledge creation process. Whether termed knowledge creation, communities of practice, professional learning communities, knowledge enabling, or complex responsive processes, the result is an increased opportunity for sharing knowledge in an open, honest, and collaborative format, which encourages organizational

knowledge creation (Brufee, 1999; DuFour & Eaker, 1998; Lencioni, 2002; Nonaka & Takeuchi, 1995).

Knowledge creation, as outlined by Nonaka and Takeuchi (1995), certainly has parallels to public education. It is important to note that there has been very little specific research conjoining the business application to that of school leaders. The advent of NCLB in 2001 with its broad policy goals certainly appears to be helping influence the knowledge creation paradigm more predominantly into the realm of public education. Schools and school leaders are searching for methods to bring faculty members together to share and create new knowledge that would allow the school to develop new ways of teaching their specific students. Becerra-Fernandez and Stevenson (2001) acknowledged this point and stated that:

> The school as a learning organization should access knowledge at all levels, and align people with information through technology. People, information, and technology frame the learning in the school. Knowledge capital integrates the structural, staff, and student contributions to the learning organization. (p. 2)

This study was framed through the lenses of communication and organizational knowledge creation. Research and information gained from Nonaka and Takeuchi (1995), Von Krogh et al. (2000), Stacey (2001), and Becerra-Fernandez and Stevenson (2001) helped formulate research questions and guide this study. Data collection and analysis allowed the researcher to investigate the link between communication and organizational knowledge creation. Furthermore, qualitative data gathered through follow up interviews buttressed the findings gathered from the quantitative data.

Statement of the Problem

Research has indicated that high school principals have an extraordinary amount of responsibility within the scope of their position (Million, 2004; Schumaker & Sommers, 2001). Principals are expected to manage the daily operation of the school, while also striving to be an exceptional instructional leader who works with staff members to improve student learning. Within these two seemingly dichotomous ends lies the principal's ability to communicate necessary information (Domenech, 2002; Ilg, 2002; Laud, 1998; Villani & Lyman, 2000). Communication is an important aspect of managing a school organization, but also integral to the leader in moving the school toward a learning organization that creates knowledge. In what intentional and systematic way are principals communicating with their staff in order to create new knowledge to effectively meet the demands of NCLB, adequate yearly progress (AYP), state standards, and local constituents? The author of this investigation intentionally examined how principals communicate with their staffs in order to create knowledge through the framework of Nonaka and Takeuchi's (1995) knowledge conversion process.

Purpose of the Study

The purpose of this study was to determine what impact, if any, does effective communication by high school principals have on the knowledge creation capacity of the school? This study focused on leadership communication which helped to improve the knowledge creation process. The researcher specifically sought self reporting input from principals, as well as teachers concerning principal communication which encourages organizational knowledge creation. Organizational knowledge creation was measured through the concepts and frameworks articulated by Nonaka and Takeuchi (1995).

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Teachers were asked to identify aspects of Nonaka and Takeuchi's (1995) knowledge conversion process questions on surveys, while principals were asked about how they communicated the knowledge creation process to staff members.

Research Questions

Within the present study the researcher attempted to find answers to the following research questions:

1. Is there a relationship between factors of principal communication (care, change) and factors of knowledge creation (internalization, externalization, socialization, combination)?

2. Is there a difference in the perception of principal communication factors (care, change) between principals and teachers?

3. Is there a difference between how teachers and principals perceive knowledge being created through communication in high schools?

4. Which of the knowledge creation factors (internalization, externalization, socialization, combination) are being used the most and which are being used the least by principals when communicating with teachers?

5. What methods of communication are perceived most effective by teachers and principals when communicating for organizational knowledge creation?

Statement of Hypotheses

The following null hypotheses were explored in this study in order to answer the previously stated research questions:

Hypothesis 1. There is no statistically significant relationship between factors of principal communication (care, change) and factors of knowledge creation (internalization, externalization, socialization, combination).

Hypothesis 2. There is no statistically significant difference between the perception of principal communication factors (care, change) between principals and teachers.

Hypothesis 3. There is no statistically significant difference between how teachers and principals perceive knowledge being created through communication in high schools.

Hypothesis 4. There is no statistical significant difference in the utilization of the four factors of knowledge creation (internalization, externalization, socialization, combination) by principals in communication.

Limitations and Assumptions

This study was limited by the geographical area studied and the design used by the researcher. Specific limitations are listed as follows:

1. This study was limited to high schools in one Midwest state during the 2006-2007 school year.

2. This study was limited in design through the use of self reporting data from teachers about communication from their principal.

3. This study was limited in design through the use of self reporting data from high school principals concerning their methods of communication to teachers which encourages organizational knowledge creation.

4. It was assumed that participants were honest in their responses and correctly interpreted the survey instrument.

5. The study was limited by the degree of reliability and validity of the survey instrument.

6. The study was limited relative to the qualitative research skills and experience of the researcher.

Design Controls

The design of this study involved a method of descriptive research. When conducting descriptive research it is common to use surveys to assess viewpoints of individuals (Gay & Airasian, 2000). Surveys allow researchers to draw generalizations concerning gathered data from the sample population (Fraenkel & Wallen, 2003). One major obstacle to the survey method of inquiry was lack of response from subjects who received the surveys (Fraenkel & Wallen, 2003). In an attempt to overcome this problem the researcher personally contacted principals and superintendents to seek their approval for participation in this study. Each principal participating in this study was contacted at the minimum of two times. Once at the beginning of the study to seek approval for participation, and a second time by email to ensure they were still interested in participating in the study. One principal from each geographic quadrant of the state was contacted again for person-to-person phone interviews. This allowed for the researcher to answer any questions brought forth by the research participant, and ensure that all participating principals were comfortable with the study along with the process.

Two educational experts reviewed the teacher survey concerning principal communication to ensure content validity within the instrument. Each expert was familiar

with Nonaka and Takeuchi's (1995) theory of knowledge conversion, which served as the foundation for questions on the survey. The same educational experts, along with two former high school principals reviewed the principal survey to ensure content validity of the instrument. Each reviewer was sent a copy of the cover letter and actual surveys. Each reviewer was asked to critique individual questions as well as the survey as a whole, and offer suggestions for improvement to help with the validity of the survey. The suggestions offered by the experts were then used to produce the final version of the survey instrument. Field testing of the instrument using the test – retest format helped control for the reliability and assess the survey questionnaire.

Data gathered from the survey were triangulated by follow up interviews from principals and their teachers from each quadrant of the state. All participants were interviewed person to person using a semi structured approach. Meriam (1998) asserted that semi structured interviews use more flexible wording, or have a mix of structured and unstructured questions (p. 74). The rich information gathered from the interviews provided insight into the quantitative results.

Definition of Key Terms

The following terms were noted as important to this study. Definitions were provided to give readers a deeper understanding of key concepts and components.

Combination. During this phase of knowledge creation "different bodies of explicit knowledge are combined" when individuals communicate through meetings, email, or on the phone (Nonaka & Takeuchi, 1995, p. 67). In schools this might look like principals and teachers operationalizing district goals to fit the needs of their students.

The subscale of Combination was measured by six questions on the *Communication and Knowledge Creation Survey.*

  Communication and Knowledge Creation Survey. The instrument developed for this study originated from the researcher to measure principal communication which encouraged organizational knowledge creation. The subscales of care and change developed as the researcher analyzed the review of related literature, while the subscales of externalization, internalization, combination, and socialization were the building blocks of Nonaka and Takeuchi's (1995) knowledge conversion process. The survey was distributed to teachers and principals and included six questions for the subscale of combination, six questions for the subscale of socialization, four questions for the subscale of internalization, four questions for the subscale of externalization, four questions for the subscale of change, and four questions for the subscale of care.

  Communication of Care. The relationships established by the leader throughout the organization which lets organizational members know that the leader genuinely has their best interests in mind and is concerned about them as a person. Care is a critically important factor of leader communication that must be present in order for knowledge creation to begin. Care was measured in the survey instruments by seeking responses from participants about the principal asking about interests outside of school, family issues, and displaying a general interest or concern for the well being of teachers and their families. The subscale of care was measured by four questions on the *Communication and Knowledge Creation Survey.*

  Communication of Change. Communication from the leader at the onset of the change process, during the change process, and after change has been internalized by the

organization. Communication of change is a critically important factor of leader communication and must be effective to complete the change process (DuFour & Eaker, 1998; Osterman, 1994; Pierson & Bredson, 1993). In schools, principals need to communicate the need for change, how the change process is progressing, and how the change process can be made part of everyday practice within the school. The subscale of communication of change was measured by four questions on the *Communication and Knowledge Creation Survey.*

Communication methods. How principals communicate with staff members in order to encourage organizational knowledge creation. Common types of communication might be: face-to-face, telephone, email, faculty meetings, small group/team meetings, etc.

Competitive Advantage. The idea that one company could gain the upper hand on another company by capturing the tacit knowledge among employees and using it to improve company performance.

Explicit Knowledge. Information which can be "articulated in formal language including grammatical statements, mathematical expressions, specifications, manuals, and so forth" (Nonaka & Takeuchi, 1995, p. viii).

Externalization. During this phase of Nonaka and Takeuchi's (1995) knowledge conversion process, tacit knowledge becomes explicit through the use of metaphors, analogies, concepts, and models (Nonaka & Takeuchi, 1995, p. 64) and helps drive the creative knowledge creation process. In schools this might look like asking teachers to help solve school issues with an emphasis on creativity. The subscale of externalization was measured by four questions on the *Communication and Knowledge Creation Survey*.

Factors of Production. In manufacturing land, labor, capital, and entrepreneurship are the fundamental resources needed to produce items. Many theorists and economists now consider knowledge to be a category itself, or fit into the entrepreneurship category.

Internalization. During this phase of the knowledge creation process explicit knowledge is made tacit by individuals practicing and activating what they have learned. Combination, externalization, and socialization become a part of the knowledge base of the individual during this process and quite often, a new tacit knowledge spiral begins. In a school this might look like a new teacher implementing practices modeled by a veteran teacher, which the two teachers had talked about and previously planned. The subscale of Internalization was measured by four questions on the *Communication and Knowledge Creation Survey.*

Knowledge Conversion. The interaction between tacit and explicit knowledge which goes through the four modes of knowledge conversion (socialization, internalization, externalization, combination) (Nonaka & Takeuchi, 1995, p. 62).

Knowledge Creation. The social process among individuals which have a shared meaning and are able to use the interaction between explicit and tacit knowledge to develop new concepts and ideas which improve the organization. For the purposes of this study and the *Communication and Knowledge Creation Survey*, terms like sharing ideas and information were substituted for knowledge creation so that participants were not confused about the wording.

Knowledge Economy. Business leaders and theorists have articulated that the U.S. economy is now based more on knowledge than on manufacturing and that knowledge is worth more than other resources.

Middle-up-Down Management. A management model which places the "middle manager at the very center of knowledge management and redefines the role of top management as well as of front line employees" (Nonaka & Takeuchi, 1995, p. 124).

Organizational Knowledge. Knowledge captured and developed by the social interaction of employees as they seek to improve organizational effectiveness, and help the organization to better serve its customers.

Socialization. Part of Nonaka and Takeuchi's (1995) knowledge conversion process. During the socialization stage people share tacit knowledge with one another. One of the keys to success during this part of the process is a shared mental model or common experience to aid the sharing of tacit knowledge. In a school this might look like a team or department of teachers meeting and sharing knowledge about one specific subject, strategy, or method of teaching. The subscale of socialization was measured by six questions on the *Communication and Knowledge Creation Survey*.

Tacit Knowledge. "something that is not easily visible and expressible…highly personal and hard to formalize. Rooted in an individual's action and experience. (Nonaka & Takeuchi, 1995, p. 8)

Summary

Within this introductory chapter the researcher detailed increased accountability standards which guide principals and schools, organizational knowledge creation, and communication from principals which encouraged knowledge creation. Independently, each of these constructs represents a challenge for many leaders, but when combined, represents the foundation of leadership struggles and areas where many schools, as well as non-school leaders spend much of their influence within the organization.

Since the advent of NCLB, schools and school leaders have faced increased accountability for learning and teaching. This focus on results has caused school leaders to analyze every aspect of teaching and learning. Because of this seemingly laser guided focus, a few school leaders have turned their attention to a business concept aimed at creating organizational knowledge.

Knowledge creation, as a theoretical concept, gained popularity in the mid 1990's when Nonaka and Takeuchi (1995) published *The Knowledge Creating Company.* The authors articulated that in a work setting which fosters collaboration, openness, honesty, and trust, new knowledge could be created from the interaction between tacit and explicit knowledge. This knowledge could provide competitive advantages over other companies not seeking this type of solution to problems. Furthermore, it was noted that leaders played an important role in establishing an environment where knowledge creation could thrive.

The leadership and organizational knowledge creation construct connection between business and school was examined. Communication from organizational leaders was an important aspect. Research from the business community revealed that leaders could help establish an environment that nurtured knowledge creation with their words and actions. Thus, the focus of this study was to examine principal communication and determine if it influenced organizational knowledge creation.

Provided in the following chapter is a detailed review of related literature regarding general communication from principals and organizational knowledge creation, but also how the two constructs relate in conjunction with one another. Delineated in chapter three are the methods and research design of the study. A rationale for a mixed

design study is provided. Contained in chapter four is an analysis of the data described in

chapter three, while presented in chapter five are the findings, conclusions, implications,

and recommendation for future research to be conducted.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Introduction

Today's high school principals have an extraordinary amount of responsibility within the scope of their position. Perhaps no greater responsibility for the secondary school principal lies in effective communication concerning the key processes within the school (Becerra-Fernandez & Stevenson, 2001). Minimally, principals must be good communicators, leaders, managers, and instructional leaders, and in doing so, principals must also be mindful of navigating the school community through a myriad of processes to "raise test scores, benchmark performance, and determine more significant ways to measure success" (Becerra-Fernandez & Stevenson, 2001).

It is widely accepted within the realm of education and the study of educational leadership that it is essential for leaders to possess positive communication skills (Fisher, 2000; Reyes & Hoyle, 1994). In today's knowledge driven world, where organizations rely on knowledge creation as a competitive advantage, leaders must communicate the importance of knowledge creation and champion its causes if the organization is to improve. Moreover, the same can be said for public schools. If schools are going to meet the expectations and demands of *No Child Left Behind* (NCLB), state standards, local boards of education, and local constituents, school leaders must tap into the knowledge resources among their teachers to share and create knowledge. Multiple studies (Becerra & Fernandez, 2001; Nonaka & Takeuchi, 1995; Stacey, 2001) identified knowledge as a new resource within the factors of production. Therefore, within public schools, the obvious question becomes how do school organizations and their leaders create

knowledge throughout the school in a manner that improves the entire organization? This thought becomes more problematic considering the isolative nature of teaching. Nonaka and Takeuchi (1995) stated that, "Much of our knowledge is the fruit of our own purposeful endeavors in dealing with the world" (p. 60). Thus, without creating and sharing knowledge in some manner, teachers will continue to function as a group of individuals who shut their doors and teach at the beginning of the period without consideration for what is happening in the rest of the building.

During the last ten years researchers have suggested that knowledge creation may be an effective way to improve an organization and capture a competitive advantage (Becerra-Fernandez & Stevenson, 2001; Choo, 1998; Nonaka & Takeuchi, 1995). While knowledge creation has been discussed and researched quite extensively in the business community, organizational knowledge creation has only partially infiltrated the halls of American public schools. Very few authors have made the conceptual leap from organized professional development to explicitly examining how school leaders can create knowledge to improve the effectiveness of the organization. With this in mind, this investigation sought to examine communication from the principal or leader to the other stakeholders, combined with the importance of organizational knowledge creation. The purpose of this study was to determine what impact, if any, does effective communication by high school principals have on the knowledge creation capacity of the school? The following literature review was analyzed through the lens of school leader communication and organizational knowledge creation primarily through the construct of Nonaka and Takeuchi's (1995) theory of knowledge creation.

The attempt was made through the literature review to purposefully examine general communication of school leaders, the foundation of organizational knowledge creation, and specifically how leaders communicate to help their organization work through the knowledge creation process. Throughout the review of related literature these themes were closely examined. First, the general importance of the communication from the school principal was examined. Several sub-themes within this construct emerged, such as the importance of communication, daily communication, effective communication, and communication within the change process. The second major construct examined was that of knowledge creation. Here, the process of knowledge creation is described and noted as important to organizational survival in the era of the knowledge economy. It should be noted that the purpose of this review was not to debate knowledge creation, but to acquiesce that it does exist and to determine if effective communication by the leader has an affect upon the knowledge creation capacity of the organization. This section synthesizes multiple authors and compares them to Nonaka and Takeuchi's (1995) theory of knowledge creation. Again, the purpose of this section of the paper was to provide the reader with a brief background on knowledge creation so that the individual may address the relationship between principal communication and knowledge creation within the school. Building upon the background of knowledge creation, the third major aspect of the literature review examined the role of the leader and communication within the knowledge creation process. In other words, how and what does the leader communicate in order to jump start the knowledge creation process among school staff members?

Communication

On a daily basis building principals communicate with teachers, students, staff, superiors and community members. Previous studies have noted that principals spend nearly 70% of their time in some sort of communication (Reyes & Hoyle, 1992; Yukl, 2006). The review of literature from previous studies concerning communication of school leaders has focused on its importance, daily communication, effective communication, and communication within the change process.

Importance of Communication

The importance of communication cannot be overstated in leadership roles, and especially in the building level principalship. Osterman (1994) and Reyes and Hoyle (1992) indicated that communication skills were widely accepted for all educators as vitally important. Reyes and Hoyle (1992) went on to state that "for more than three decades, researchers in such fields as organizational communication, organizational behavior, and sociology have inquired into the importance of interpersonal communication relationships within organizational structures" (p.163). Furthermore, teachers and those who work in school buildings emphasize the importance of leader communication. Hudson and Rea (1996) surveyed 1047 teachers in the Kansas City metropolitan area and found that the number one quality desired in a building principal, whether male or female, was for that person to be a good verbal communicator.

Daily Communication

On any given day, communication within the hectic school day poses a challenge for any public education leader. Fisher (2000) postulated that "communication skills have been recognized as a critical element of school leadership. Daily the leader must deal

with people by interacting with parents, students, and faculty" (p. 30). Domenech (2002) and Snow and Whittaker (1996) furthered this sentiment by noting the importance of day-to-day communication skills. Snow and Whittaker (1996) stated that:

Communication skills are the most important tools principals have available to them as they interact with children, parents, and teachers. A principal's ability to influence and manage people hinges on his or her ability to communicate in a variety of ways with different people throughout any given day. (p. 90)

Perhaps Domenech (2002) summed up daily communication best when he articulated, "as a principal, you have many means of communication. In fact, just about everything you do in and for your school involves some form of communication" (p. 36). The aforementioned authors discussed daily communication, but perhaps of greater importance to principals is the effectiveness of daily communication in order to improve teaching and learning within the school.

Effective Communication

Principals who communicate effectively set themselves apart from those who do not. Additionally, principals skilled in communication are perceived by others as more effective in their jobs (Iheanacho, 1992; Reyes & Hoyle, 1992). Research shows that effective communication is vital for leaders and that non -verbal communication such as listening, as well as the perceptions of those being spoken to, are important aspects for principal communication.

Principals who are truly effective communicators understand the basis of communication and meaning. Osterman (1994) defined communication by stating that, "communication involves an exchange of information or ideas: one person sends a

message and, if communication is effective, the other person interprets the message as it was intended" (p. 386). A common understanding between sender and receiver is essential to effective communication from principals. Shumaker and Sommers (2001) discussed the importance of effective communication when stating, "it all starts with communication-administrators cannot expect to be effective if they cannot communicate what they want and how they want it done in a way that encourages others to listen and act" (p. 1). Furthermore, Schumaker and Sommers (2001) articulated that communication was a foundational skill for successful principals, while Pierson and Bredson (1993) concluded that "communication activities and responsibilities have greater importance in organizations and have become synonymous with effective leadership" (p. 522). Cardno (2002) echoed this sentiment by stating that, "the particular set of skills associated with effective communication that leads to organizational learning are those associated with the elimination of defensive dialogue and the use of productive dialogue in teams" (p. 221). Finally, several authors described effective communication and interpersonal skills as necessary traits for success (Harris, 2000; Yukl, 2006). Nelson (1997) discussed the importance of interpersonal communication skills such as listening, as well as teacher perceptions of principals when he insistently stated that:

> Administrators who wish to be successful in employing the human elements in management must be able to communicate their beliefs to subordinates by actions as well as words. They must assume certain characteristics and adopt certain methods of operation to demonstrate their concern for good human relations. (p. 21-22)

Listening is another important aspect of effective communication by the school leader. Harris (2000), Nelson (1997), Osterman (1994), and Schumaker and Sommers (2001) concluded that listening is an important aspect of communication that creates an open, friendly, collaborative, and warm environment. According to the *Met-Life Survey* (2003) principals saw themselves as better listeners than did teachers or parents. "More than half of principals (53%) describe themselves as excelling in being a good listener, compared to only three in ten teachers (30%) and parents (27%) who feel this way" (Met-Life Survey, 2003, p. 5). The listening process was summarized by Schumaker and Sommers (2001) when they concluded that, "it is a two way process: administrators not only need to convey their message: they also need to listen to what is going on in and around their school" (p. 22).

Included within effective communication are the perceptions of the listeners. Snow and Whitaker (1996) emphasized that understanding how one is perceived by others is an essential tool for effective communication. Furthermore, principals who are skilled communicators understand how they are being perceived by others. Rowan and Taylor (2003) argued:

> In these days of constantly changing requirements and demands of a school's constituents, it is vital to manage communications and perceptions effectively. Leaders with insight not only consider the management of outgoing communications but also the way in which the communications are received and perceived by those communicated with. (p. 21)

Nelson (1997) further discussed perceptions by including tone of voice, words, and body language within message communication between people when he stated:

It is critical to understand that people do not always hear what we think we are saying. In most studies, for example, we usually think people remember only our words, but in reality that represents only 10% of what they perceive. It is generally accepted in sociological literature that our tone of voice represents nearly 22% while 70% relies on body language…we often try to overcome our actions by repeating our words, not realizing that our tone of voice and body language are conveying a message. (p. 22)

Research also indicated that humor within communication was an important non-verbal tool and helped to enhance interpersonal communication. Peter and Dana (1982) and Pierson and Bredeson (1993) alluded to humor as an interpersonal communications tool to break down the rigidity of the bureaucratic school structure and offer a more personal connection that built relationships within school life. More importantly however, Pierson and Bredson (1993) found that:

There was a positive relationship between the amount of time principals spent in communications with teachers and the teachers' acceptance and appreciation of humor in these exchanges. Interpersonal communications networks which were open, supportive, and appropriately seasoned with humor created a climate of connectedness between principals and teachers. (p. 530)

Communication and Change

According to research, principals who are skilled in communication have an improved chance of facilitating change within the school building. DuFour and Eaker (1998) reported that effective communication from the leader was essential during the

change process. Osterman (1994) offered further insight into communication and change by denoting that:

> School leaders who are effective in achieving change communicate frequently and effectively with individuals and with groups, and they facilitate communication among group members of their organizations. Transformational leaders create a culture of change and communication plays an important role in that process.
> (p. 385)

Pierson and Bredson (1993) have noted that communication was an important aspect of effective leadership that dealt with all types of change. Osterman (1994) furthered the idea of change to a more collaborative and collegial approach by stating, "in these effective and change-oriented organizations, there was a great deal of communication taking place between administrators and staff, and that communication was linked to improvement" (p. 386). Communication skills are important for organizational change, and a school environment modeled by the principal that contains trust, fosters collaboration, and moves toward a learning organization (Osterman & Kottkamp, 1993). Perhaps the previously mentioned concepts were summarized best by DuFour and Eaker (1998) when they stated, "Mission, vision, values, and goals will become irrelevant, and the change process will stall unless the significance of these building blocks is communicated on a daily basis throughout the school" (p. 106).

Knowledge Creation

Knowledge creation has been labeled as the ability of the organizations leader's to tap into the knowledge of its most valuable resource, its people. Nonaka and Takeuchi (1995) and Choo (1998) concluded that putting workers together and allowing knowledge to be shared in different ways was the key to creating knowledge within the organization.

"Organizational knowledge creation is a continuous and dynamic interaction between tacit and explicit knowledge" (Nonaka & Takeuchi, 1995, p. 70). Baumard (1999) called the knowledge creation process "visible and invisible, tangible and intangible, stable and unstable" (p. 2). Much of the research on organizational knowledge creation as well as organizational learning has revolved around Nonaka and Takeuchi's (1995) *The Knowledge Creating Company* and Peter Senge's (1990) work *The Fifth Discipline*. Since Nonaka and Takeuchi's (1995) work, related knowledge creation theories explored concepts like managing knowledge, communities of practice, complex responsiveness, and knowledge enabling. These works have similarities in that they each address the challenges of organizations addressing complex problems, but the more recent works like Nonaka and Takeuchi (1995), Stacey (2001), and Von Krogh et al. (2000) move beyond Senge's (1990) work to a knowledge creation paradigm based largely on the Eastern culture of business practices. The foundation of these knowledge creation theories rests on the sharing of tacit or personal knowledge that can be converted into explicit knowledge and operationalized by all within the organization. Nonaka and Takeuchi (1995) stated in a simplified overview that:

> When organizations innovate, they do not simply process information from outside in, in order to solve existing problems and adapt to a changing environment. They actually create new knowledge and information from the inside out, in order to redefine both problems and solutions and, in the process, to re-create their environment. (p. 56)

Hansen, Nohrio, and Tierney (1999) articulated the importance of sharing and creating knowledge versus trying to encapsulate knowledge in a written manual. Conversely, the same authors shared the difficulties encountered by teams and personnel while trying to

decipher the meaning of processes within written manuals. According to Hansen et. al (1999) the technical knowledge contained in a manual becomes problematic in that, "The document could not convey the richness of the knowledge or the logic that had been applied to reach solutions that understanding had to be communicated from one-person to another" (p. 7). Furthermore, Nonaka and Takeuchi (1995) presented organizational knowledge creation as an iterative process that focuses on sharing tacit knowledge and converting it into organizational knowledge.

Much of the relevant literature concerning the role of the leader in knowledge creation and organizational learning emanated from the work of Senge (1990). He advocated that leaders strive for systems thinking to permeate mental models, personal mastery, shared vision, and team learning. Specifically, mental models and systems thinking became a popular method for examining the learning capabilities of the organization. Changing and developing new mental models were the focus of organizational improvement and competitive advantage during the beginning of the knowledge creation literature emphasis in the early to mid 1990's.

According to Senge (1990) mental models are the assumptions by which people operate and view the world, and that they often miss the mark. Stacey (2001) furthered Senge's (1990) mental models by acknowledging the complex social process within human interactions, and stated that, "all human interaction is history dependant…actions are patterned by both previous history and current context" (p. 101). A common theme throughout the literature review was that leaders, as well as, organizational members must learn to "reflect on their current mental models-until prevailing assumptions are brought into the open, there is no reason to expect mental models to change, and there is

30

little purpose in systems thinking" (Senge, 1990, p. 203). Hisnanick (2000) expounded on this point by stating that, "It is hard to conceptualize the idea of knowledge creation into conventional neoclassical paradigm or even standard management practices" (p. 3). Thus, without challenging mental models in combination with systems thinking, leaders will not be able to have their organization reach Morgan's (1997) double loop learning. Organizations are able to achieve double loop learning when they "review and challenge basic paradigms and operating norms" (Morgan, 1997, p. 88). This process has been referred to as metacognition and involves the unique ability to introspectively examine how an organization learns along with developing a deeper self awareness (Yukl, 2006). Senge (1990) determined that the foundation of organizational learning rested upon examining these deep unconscious variables that can prevent an organization from moving forward and improving as a whole.

The construct of knowledge creation and the notion of competitive advantage within the knowledge economy reached the critical mass in the mid 1990's. Nonaka and Takeuchi's (1995) *The Knowledge Creating Company* created awareness to struggling organizations worldwide that the transition into knowledge as a prominent factor of production had begun. Competitive advantage, organizational learning, and organizational knowledge creation became focal points to business leaders, as well as, the academic community during the last ten years. Thus, for the purposes of this review of knowledge creation, Nonaka and Takeuchi's (1995) work provided the conceptual underpinning from which to judge different viewpoints. The work from more recent authors and studies will be compared and contrasted with the Nonaka and Takeuchi (1995) model.

Nonaka and Takeuchi (1995) focused their theory of knowledge creation around the key concept of knowledge conversion, which is the "interaction between tacit and explicit knowledge" (p. 61). Baumard (1999) and Choo (1998) supported Nonaka and Takeuchi's (1995) conceptualization that shared tacit knowledge must be converted into useable information for the organization through the conversion of knowledge. Moreover, Choo (1998) went on to state that during knowledge conversion "members share their personal knowledge through dialogue and discourse, and articulate what they intuitively know through analogies, metaphors, as well as more formal channels" (p. 3). Kerfoot (2003) added that this type of knowledge is invaluable and embedded throughout organizations. Finally, building on Senge's (1990) model, Nonaka and Takeuchi (1995) stated that, "When tacit knowledge is converted into new mental models then it becomes a valuable asset" (p. 69).

The Nonaka and Takeuchi (1995) model of knowledge creation focused on the "Four modes of knowledge conversion" (p. 62). These modes include socialization, externalization, internalization, and combination. In effect, the modes represent a process that begins with shared mental models and spirals through different conversions to become knowledge that is explicitly stated and used in everyday operations. Similarly, Stacey (2001) and Von Krogh et al. (2000) referred to knowledge conversion as an active process, but Stacey (2001) and Nonaka and Takeuchi (1995) disagreed on the beginning point of the process. Stacey (2001) more closely examined the foundation of tacit knowledge, whereas Nonaka and Takeuchi (1995) began their explanation with tacit knowledge already existing in the minds of individuals.

During the conversion process Nonaka and Takeuchi (1995) articulated the

importance of the middle manager in creating knowledge. Middle managers use different

forms of communication to link the grand schemes of top management into a workable

document that is symbolic of the practical knowledge of front line employees.

Communication from middle managers occurs in the combination stage where,

"Individuals exchange and combine knowledge through such media as documents,

meetings, telephone conversations, or computerized communication networks.

Reconfiguration of existing information occurs through sorting, adding, combining, and

categorizing of explicit knowledge" (p. 67). Middle up-down management as it is called,

has distinct parallels to public school principals. Principals are required to take broad

based school board and superintendent goals and operationalize them with their staff so

that they can guide the business of the school each and every day (Becerra-Fernandez &

Stevenson, 2001).

Nonaka and Takeuchi (1995) further articulated that the leader and organization

as a whole could enable the knowledge spiral through conditions such as organizational

intention, autonomy, fluctuation and creative chaos, redundancy, and requisite variety. In

a similar fashion Von Krogh et al. (2000) stated that leaders could enable knowledge

creation by instilling a knowledge vision, managing conversations, mobilizing knowledge

activists, creating the right context, and globalizing local knowledge. It should be noted

that several authors, including Stacey (2001) were particularly troubled by the thought

that knowledge could be managed, and that the role of the company was to try to capture

a competitive advantage by taking tacit knowledge from individuals and converting it

into explicit knowledge used for company advancement. However, Stacey's (2001)

position seems more applicable to business organizations than public schools.

Additionally, Nonaka and Takeuchi (1995) created a model of knowledge

creation which revolved around sharing tacit knowledge, creating concepts, justifying

concepts, building an archetype, and cross-leveling of knowledge. Through this model

the vertical and horizontal knowledge spirals interact to create organizational knowledge.

Other theorists have referred to this as double loop learning, new mental models, and

complex responsiveness in organizations. Apart from the labels, each of the

aforementioned models of knowledge creation requires strong leadership. The leader's

communicative abilities are an important aspect of successful knowledge creation within

an organization.

The Role of the Leader

Whether principals understand it or not, they are communicating beliefs about the

organization's ability to create knowledge and influence organizational learning (Mulford

& Silins, 2003). Espoused theories are communicated verbally or in writing through a

vision or mission, while theories in use or mental models (Senge, 1990) are the actions of

the principal. Principals whose communications and actions link their espoused theories

and theories in use can help schools create and share knowledge among staff members

(Argyris & Schon, 1996).

According to research, the role of the leader within the knowledge creation

process was critical. Hisnanick (2000) argued, "that knowledge creation and transfers are

delicate and intricate processes involved in any organization, which needs the support,

understanding, and nurturing by those who manage these processes – irrespective of the

nature and structure of the organization" (p. 1). The leader had pivotal roles in establishing the process and aligning the resources, managing the process, and perhaps most importantly to this study, communication with workers and between workers.

Chen and Edgington (2005), Sanchez (2001), and Wenger and Snyder (2000) identified that leaders who espoused and advocated the knowledge creation process had the upper hand in today's global knowledge economy. Additionally, Sanchez (2001) and Wenger and Snyder (2000) emphasized that it was critical for leaders within organizations to realize that knowledge creation is essential and that, "competitiveness in today's business world doesn't leave room for blind adherence to the same old ideas" (Sanchez, 2001, p. 3), while Wenger and Snyder (2000) affirmed that, "Today's economy runs on knowledge, and most companies work assiduously to capitalize on that fact" (p. 139). Thus, organizational leaders must communicate through espoused values and theories in use the importance of knowledge creation to the sustainability of the organization. Chen and Edgington (2005) continued by advocating for leaders to understand the trade-offs of the knowledge creation process. "A substantial knowledge creation challenge lies in the investment trade-off between future benefits and current tasks. Balancing essential near term goals with out compromising long term competitiveness" (Chen & Edgington, 2005, p. 2). Murtha, Lenway, and Hart (2001) noted the importance of knowledge creation when they stated, "Access to knowledge creation process matters more than ownership of physical assets" (p. 1). Thus, the aforementioned authors were explicitly clear in the importance of a leader who advocates for knowledge creation and organizational learning.

While espoused values from leaders proclaiming the importance of the knowledge creation process were important, so too was the organization of resources to begin the process (Becerra-Fernandez & Stevenson, 2001; Chen & Edgington, 2005; Contino, 2004; Wenger & Snyder, 2000). Chen and Edgington (2005) along with Wenger and Snyder (2000) specifically supported the importance of the leader including the right mix of people in the knowledge creation process, while Becerra – Fernandez and Stevenson (2001) and Sanchez (2001) acknowledged that leaders were responsible for organizing all resources to support knowledge creation within the organization. Sanchez (2001) went on to state that, "it is through the management of people and resources that one enables knowledge creation" (p. 2). Chen and Edgington (2005) even articulated that, "The organization can assume some responsibility to align learning in such a way that knowledge creation for the organization is optimally achieved…taking into account both current and long term organizational tasks" (p. 3). Wenger and Snyder (2000) further alluded that leaders should adopt communities of practice to promote organizational knowledge creation and that:

> Successful managers bring the right people together, provide an infrastructure in which communities can thrive, and measure the community's value in non-traditional ways. These tasks of cultivation aren't easy, but the harvest they yield makes them well worth the effort. (p. 140)

Wenger and Snyder (2000) concluded that communities of practice were so important to the knowledge creation process that leaders "must invest time and money in helping communities reach their full potential" (p. 144). It should be noted that Becerra-Fernandez and Stevenson (2001) as well as Wenger and Snyder (2000) discussed the

difficulty of aligning all resources together for the development of a successful

knowledge creation program. Wenger and Snyder (2000) continued by exploring the role

of the leader in communicating and working with people within the organization. The

authors metaphorically related the role of the leader to that of a gardener who must work

with the plants, soil, and elements:

> You can, however, till the soil, pull out weeds, add water during dry spells, and
>
> ensure that your plants have the proper nutrients. And while you may welcome
>
> the wild flower that blooms without any cultivation, you may get even more
>
> satisfaction from those vegetables and flowers you started from seed. (p. 143)

Aligning resources and bringing people together are undoubtedly important leadership

behaviors for creating organizational knowledge (Becerra-Fernandez & Stevenson, 2001;

Chen & Edgington, 2005; Mulford & Silins, 2003; Sanchez, 2001; Wenger & Snyder,

2000.) Becerra-Fernandez and Stevenson (2001) along with Mulford and Silins (2003)

directly translated this information into how school principals not only encourage, but

manage the knowledge creation process. Becerra-Fernandez and Stevenson (2001)

specifically stated that:

> The competencies and challenges of the central knowledge officer (CKO) or the
>
> central learning officer (CLO) are not unlike those that are characteristic of
>
> effective and efficient principals. They both must have strong interpersonal skills,
>
> management skills, and an entrepreneurial spirit toward leadership. They both
>
> foster a shared vision and shared decision making style to succeed within the
>
> organization. (p. 2)

Wenger and Snyder (2000) noted that the ideas encompassed within the knowledge creation process were "particularly effective arenas for fostering professional development" (p. 141). Regardless of which theory or brand of knowledge creation a school leader adopts, communication plays a key role in the success or failure of the administrator's efforts. Becerra-Fernandez and Stevenson (2001) along with Mulford and Silins (2003) correctly identified the principal as the essential person in taking the lead among all stakeholders within the knowledge creation process of the school community, in addition to ensuring the priorities of the process are communicated to all.

Communication

Two prevailing themes were consistently present throughout the research concerning the importance of communication established by the leader as it is related to creating organizational knowledge. First, the leader must clearly advocate the importance of knowledge creation throughout the organization, and secondly, communication from the leader can occur in a variety of ways (Contino, 2004; Hisnanick, 2002). Thus, effective leader communication previously reviewed in this paper was similar to effective leader communication while promoting organizational knowledge creation (Contino, 2004; Fisher, 2000; Hisnanick, 2002; Reyes & Hoyle, 1992).

Communication from the leader was seen as an extremely important facet of knowledge creation (Contino, 2004; Hansen, Nohria, & Tierney, 1999; Hisnanick, 2002; Sanchez, 2001; Stacey, 2002; Wenger & Snyder, 2000). Villani and Lyman (2000) noted this when they stated, "communication skills have become even more critical as school leadership roles change, moving from being controlling in closed system with a vertical hierarchy to decision facilitation roles in more collaboratively structured schools and

districts" (p. 2). Authors such as, Becerra-Fernandez and Stevenson (2001), Mulford and Silins (2003), Von Krogh, Ichijo, and Nonaka (2000) clearly advocated for strong leaders who could communicate with all levels of the organization through a variety of mechanisms. Contino (2004) declared that, "workers want good communicators who are receptive to others and who are motivational, fair, approachable and empowering" (p. 53). Becerra-Fernandez and Stevenson (2001) summarized these thoughts by stating that, "effective principals must have strong interpersonal skills, management skills, knowledge savvy, strategy skills, and an entrepreneurial spirit toward leadership" (p. 2). Additionally, Bruffee (1999), Nonaka and Takeuchi (1995), Stacey (2001), and Von Krogh et al. (2000) concluded that communication from the leader through conversation was an extremely important variable in organizational knowledge creation. Von Krogh et al. articulated that:

> Executives and knowledge officers persist in focusing on expensive information technology systems, quantifiable databases, and measurement tools, one of the best means for sharing and creating knowledge already exists within these companies. We cannot overemphasize enough the important part conversations play. (p. 125)

Contino (2004) affirmed that leaders who possessed these characteristics were more apt to communicate effectively and inspire a shared vision and mission. Accordingly, Wenger and Snyder (2000) concluded that knowledge creation was spurred by leader communication concerning regular meetings and common priorities and goals to all members of the knowledge creation community.

Stacey (2002), along with Von Krogh et al. (2000), found that communication may have a variety of meanings to people within the organization. Furthermore, Stacey (2001) stated that, "a communicative act is highly unlikely to call forth a single simple response. Such acts will almost always call forth many responses at the same time and they are quite likely to be contraindicated and conflicting" (p. 111). With this information in mind the importance of a common language was necessarily noted to establish and maintain dialogue that kept all people equally informed and able to contribute. Von Krogh et al. called for leaders to promote a common language to improve the conversion of tacit knowledge to explicit knowledge. These authors also suggested that leaders who understand the importance of communication should be flexible in their styles of communications to accomplish their intended goals. Finally, Von Krogh et al. referred to leaders as *conversation managers* and compared them to movie directors as they often have to communicate and manage many different interactions at once.

Organizational leaders, secondary school principals included, manage countless conversations throughout the day. It is during these conversations that leaders have the chance to verbally and non-verbally communicate an open, honest and caring organizational environment, which increases the chance of building knowledge creation within the organization (Becerra-Fernandez & Stevenson, 2001; Stacey, 2001; Von Krogh et al., 2000). Research has suggested that leaders who communicate and model a caring organization improve the knowledge creation process through this open, honest and collaborative environment. Stacey (2001) stated that, "It is widely held that effective learning and knowledge creation requires widespread sharing of values to do with openness, trust, affirmation, dialogue and empowerment" (p. 21). Stacey's (2001)

concepts and thoughts point toward a model II transformational leader who can establish trust among the members of the organization. Cardno (2002) along with Senge (1990) described this leader's role as one who models collaboration and empowers others so that new patterns of thinking are always encouraged. Sanchez (2001) called this *high involvement management*, and stated that, "identification, trust, and healthy communication are part of the organizational credo" (p. 1). Grogan (2003) referred to these concepts as an "ethic of care" which allows leaders to develop "positive working relationships" (p. 25). Von Krogh et al. echoed this sentiment by commenting that managers need to focus on care in organizational relationships when they stated:

> Regardless of the phase of knowledge creation, good relationships purge the process of distrust and fear, and break down personnel and organizational barriers. Effective conversations allow for higher creativity; stimulate the sharing of tacit knowledge, concept creation, and satisfaction, are essential for developing a powerful prototype; and lubricate the flow of knowledge across various organizational levels. (p. 9)

Hisnanick (2002) referred to communication as a cooperative process that "binds participants to each other and with the actions they are performing" (p. 2). DuFour and Eaker (1998) reflected on the importance of sharing knowledge in a cooperative and collaborative professional learning community and commented that, "Empowered teachers and strong principals are not mutually exclusive goals" (p. 188). Lastly, Von Krogh et al. (2000) concluded that leaders can communicate care through actions and words by advocating mutual trust, being actively empathetic, being accessible to help, offering lenience in judgment, and by showing courage.

Communication from the leader was noted as a vital aspect of organizational knowledge creation (Contino, 2004; Hisnanick, 2002). Researchers such as Contino (2004), Hansen et al. (1999), and Wenger and Snyder (2000) highlighted the importance of different communication techniques centered on organizational knowledge creation. Hansen et al. (1999) commented that, "Knowledge is not only shared face-to-face, but also over the telephone, by email, and via video conferences" (p. 3), while Contino (2004) conclude that, "Communication through speech, non-verbal signals, and written documentation" (p. 58) were important. Murphy and Lick (2005) advocated for principals to provide written feedback to study groups who document their learning and knowledge creation on specific forms. "Principals use study group logs to give support, guidance, encouragement, and suggestions and to communicate expectations to study groups" (Murphy & Lick, 2005, p. 187). Furthermore, Wenger and Snyder (2000) suggested the importance of listening to those involved in the knowledge creation process. "Member stories can clarify the complex relationships among activities, knowledge and performance" (Wenger & Snyder, 2000, p. 145).

Hansen et al. (1999) along with Stacey (2002) concluded that the leader should establish small groups where face-to-face communication with other members who share the same conceptual understanding. However, Stacey (2002) and Bruffee (1999) articulated that groups made up of people who come from different backgrounds or departments within an organization needed to reacculturate themselves, and that in some situations this lead to the creation of new meaning (knowledge creation).

Summary

The review of literature concerning communication of high school principals which encourages organizational knowledge creation focused on three important themes. The general importance of the school leaders ability to communicate on a daily basis, knowledge creation and the role of the leader, and communication within the knowledge creation process served as the framework for the review.

The review of literature showed that one of the greatest qualities a principal can possess is that of an effective communicator. Multiple authors and studies concluded that effective communication was an extremely important leadership quality, but also that communication needs to be effective, ongoing, and often involves non-traditional qualities such as humor. Moreover, it was noted that principal communication was an important facet of the change process.

Information gained from the literature review also revealed that the theoretical construct of knowledge creation has gained popularity since the mid 1990's. Furthermore, within the literature review the importance of knowledge conversion as a key component of the knowledge creation process was noted. Also of importance were the ideas and concepts of mental models, middle-up-down management, the knowledge creation spirals, and finally, Nonaka and Takeuchi's (1995) knowledge creation model.

Regardless of the knowledge creation model chosen, the role of the leader was seen as critical to the knowledge creation process. Information gained from the literature review revealed that the leader should be an advocate for the process, align resources and people, and perhaps most importantly to the intentions of this paper, communicate in a variety of ways to the stakeholders about the knowledge creation process.

The three previously mentioned themes found in the literature review served as the foundation for the research. Delineated in chapter three are the methods and research design of the study. A rationale for a mixed design study is also provided. Contained in Chapter four is an analysis of the data described in chapter three, while presented in chapter five are the findings, conclusions, implications, and recommendation for future research to be conducted.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

Introduction

The challenges faced by high school principals have soared in recent years. Mandates from federal legislation such as NCLB, state government requirements concerning standardized testing and AYP, and increased pressures from local constituents concerning safe and secure environments for student learning are just a few of the many responsibilities and challenges that consistently fill the principal's time demands. The various aspects of the high school principalship point to the need for school districts to hire a leader who has the knowledge and capability to guide the local school community through a myriad of key processes, thus leading to school and student success.

Undoubtedly, one such key process, involved how the principal communicates with stakeholders within the school community. Many authors (Fisher, 2000; Hudson & Rea, 1996; Reyes & Hoyle, 1992; Yukl, 2006) have detailed the importance of good communication skills for leaders. Likewise, the current educational environment heavily focuses upon accountability and mandates, thus school wide learning has been identified as an essential element to be addressed by school leaders (Becerra – Fernandez & Stevenson, 2001; Chen & Edgington, 2005; Contino, 2004; Mulford & Silins, 2003; Wenger & Snyder, 2000). Becerra-Fernandez and Stevenson (2001) may have best summarized the current educational climate combined with the leader's responsibilities by stating:

The CLO or CKO moves the learning organization toward knowledge driven decision making, understanding that the learning organization is comprised of

both inputs and outputs, encourages intra-entrapaneurship within the organization, recognizes that knowledge and ideas have a significant impact on the organizations intellectual capital, and emphasizes synergy, linkages and overlaps between people, technology, and information. (p. 2)

The combination of principal communication and organizational knowledge creation served as the framework and guidance of this current study. These two vitally important constructs have been labeled and discussed in terms of systems thinking and knowledge creation within the business world. However, communication and organizational knowledge creation have not been extensively researched in the educational community as a combined process. In fact, only within the last five to eight years has the educational community begun to address the knowledge creation construct. In Chapter two of the current study, the literature concerning communication and organizational knowledge creation was examined. The gap between the business community and the educational community in the application of these two concepts certainly proved research worthy. However, the link between principal communication and organizational knowledge creation within the school drove the study. Furthermore, the descriptive research within this study explored the perspective of principals and teachers concerning the two constructs. Presented in Chapter three are the problem and purpose overview, the research questions, statement of hypotheses, population and sample, data collection and instrumentation, study design, data analysis, researcher biases and assumptions, and a summary of the chapter.

Problem and Purpose Overview

This study emanated out of the need for secondary school principals to be excellent communicators, but also for those same leaders to have a clear focus on

instructional improvement throughout the school by way of knowledge creation. These two constructs are central to effective leadership and successful schools. Reyes and Hoyle (1992) and Yukl (2006) noted that principals spend nearly 70% of their day in some type of communication, while Nonaka and Takeuchi (1995) and Stacey (2001) and Von Krogh et al. (2000) denoted the importance of knowledge creation for organizational improvement. Elaboration on the importance of these two constructs leads to the identification of questions concerning the research topic. Within the present educational environment of accountability, how do principals communicate the importance of organizational knowledge creation? What do principals say and do and to what degree, if any, do these words and actions impact the ability of those within the organization to create new knowledge? Furthermore, does this new knowledge improve teaching and learning activities within the school organization?

Research Questions

The combination of the communication construct along with the organizational knowledge creation construct proved useful in developing initial research questions. Important factors of communication such as principals communicating care within the organization and the importance of communication for change were noted. Additionally, important factors of organizational knowledge creation were considered. These factors were part of Nonaka and Takeuchi's (1995) process of knowledge conversion, which included socialization, internalization, combination, and externalization (p. 62). However, as the review of related literature unfolded, so too did more questions about the direction of the study. When the review of related literature was exhausted, one main question served as the focus of the study. What impact, if any, does leader communication have on the knowledge creation capability of teachers within the school? As mentioned, several

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questions developed as the author delved deeper into the literature review. Those research questions included the following:

1. Is there a relationship between factors of principal communication (care, change) and factors of knowledge creation (internalization, externalization, socialization, combination)?

2. Is there a difference in the perception of principal communication factors (care, change) between principals and teachers?

3. Is there a difference between how teachers and principals perceive knowledge being created through communication in high schools?

4. Which of the knowledge creation factors (internalization, externalization, socialization, combination) are being used the most and which are being used the least by principals when communicating with teachers?

5. What methods of communication are perceived most effective by teachers and principals when communicating for organizational knowledge creation?

Statement of Hypotheses

The following null hypotheses were explored in this study in order to answer the previously stated research questions:

Hypothesis 1. There is no statistically significant relationship between factors of principal communication (care, change) and factors of knowledge creation (internalization, externalization, socialization, combination).

Hypothesis 2. There is no statistically significant difference between the perception of principal communication factors (care, change) between principals and teachers.

Hypothesis 3. There is no statistically significant difference between how teachers and principals perceive knowledge being created through communication in high schools.

Hypothesis 4. There is no statistical significant difference in the utilization of the four factors of knowledge creation (internalization, externalization, socialization, combination) by principals in communication.

Population and Sample

The population for this mixed design study consisted of all secondary school principals and teachers within one Midwestern state. Principals and teachers sampled within the study were selected for participation in this study based upon three distinct steps. Fraenkel and Wallen (2003) articulated the importance of sampling the population for the purpose of research and generalizability. First, the state was divided into four quadrants and participants were purposefully selected based on their position as a high school principal in a school district. Secondly, in order to obtain a representative sample in each quadrant, the pool of participants were examined based upon the location of the high school. The locations of the high schools were compared to United States census data from the year 2000. High schools in each quadrant were labeled as urban, suburban, or rural based upon their location which was cross referenced to match census data taken from the area in the 2000 census report. This step allowed the researcher to sample schools based upon the population patterns of each quadrant. Thirdly, upon completion of identifying and labeling all high school principals, a random sampling of the districts was achieved by using a random number generator to select the schools. Each of these steps

allowed the researcher to further define the sample, which allowed for improved

generalizability of the results of the study.

Upon development of the sample for the current study, the researcher cross

referenced the sample schools with information from the state education agency to ensure

accuracy. The steps of selecting the sample improved stratification and allowed the

researcher to survey a sample of schools (urban, suburban, rural) that was representative

of the population of the quadrant in which the school was located. For example, if the

population of one quadrant was 50% rural, 25% urban, and 25% suburban, the

researcher's representative sample of high schools from that quadrant would be 50%

rural, 25% urban, and 25% suburban. Any school located in an area classified by the

United State's Census Bureau as Urban was labeled an urban school in the study. High

schools located within 15 miles of an urban designated area were then placed in the

suburban category within the study, and all other schools were then labeled as rural. This

narrowed the sample to 20 principals in each quadrant who represented urban, suburban,

and rural school settings. Table 1 below shows the relationship between the population

and sample by comparing the percentage and number of schools in each of the three

categories.

Table 1

Population and Sample of Schools by Percentage and Number

Type of School	Population		Sample	
	Number	Percent	Number	Percent
Urban	80	57	39	51
Suburban	28	20	17	22
Rural	30	22	21	27

Once each district superintendent gave permission for the researcher to contact the high school principal(s), each principal was contacted by phone and email to discuss participation in the current study. Sixty - six principal surveys were electronically distributed throughout the state. Included within this information were specific instructions asking the building secretary to reply to the researcher with three teacher names to be considered as possible participants. The researcher then contacted teachers via email to determine their interest in participating in the current study. Therefore, approximately forty teachers from each quadrant were asked to participate in the study. Participants were informed that by completing the survey, they were implying their consent. All participant surveys were completed through the internet using the survey builder website Survey Monkey. Participants completed 27 questions concerning principal communication and knowledge creation along with three demographic questions.

Merging the constructs of communication and organizational knowledge creation was essential for useful data collection. While developing the review of related literature the researcher was able to identify several important constructs that aided in the process of developing survey items, interview protocols, and document analysis templates.

Communication and Knowledge Creation Survey (CKCS)

Information gathered for this study was collected during the 2006-2007 school year. After identifying the sample schools and receiving approval from superintendents (appendix A, B) to contact high school principals, principals were then contacted to determine their participation (appendix C). The principal of each school was sent an informational letter via email explaining the purpose of the study, how long the study would take, what to expect during the study, and that any and all information gained would be non-identifiable. Upon final agreement from each superintendent and principal, schools participating in the survey were contacted electronically with a participant informational (appendix D) letter explaining the implied consent and the protections they were afforded as a participant and a link to the survey. Participants were informed that if they voluntarily agreed to take the survey that there consent was implied and that they should keep the informed consent email for any questions they may have. This step helped to ensure participant anonymity, as responses were individually sent to the survey monkey website and gathered for data analysis purposes.

According to Fraenkel and Wallen (2003) validity is important and allows the researcher to draw solid conclusions from the instrument that can then be used to make

inferences about the topic. Several important constructs linked the survey instrument to the review of related literature.

The important constructs from the literature review were used to develop subscales in the *Communication and Knowledge Creation Survey* (appendix E) used in this study. Questions concerning the ability of the principal to communicate care and change within the organization were noted as important in the literature review and were developed and measured as subscales in the survey. More specifically, the subscale of care was measured by three survey questions which asked teachers and principals if principals exhibited trust in teachers and worked to develop meaningful relationships with staff members. Additionally, the Audit of Administrator Communication (1978) served as a reference point for developing survey questions regarding care within communication. The subscale of change was measured by four survey questions which aimed at asking teachers and principals about the communication from the principal before, during and after the change process.

The subscales of knowledge conversion (socialization, externalization, internalization, combination) were measured by transforming Nonaka and Takeuchi's (1995) concepts into terms and ideas more easily understood by those in public education. The subscale of socialization was measured by six survey questions asking teachers and principals if the principal communicated the importance of sharing classroom experiences with one another. Externalization was measured by four survey questions asking teachers and principals about the principal's use of creativity in the communication process. Metaphors were a key component in the communication of creativity from principals to teachers. Internalization was measured by four survey

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questions asking if principals communicated the importance of using newly learned information in the classroom. Finally, the subscale of combination was measured by six survey questions asking if the principal communicated the importance of using different methods of communication in the knowledge creation process. Giving information through meetings, handouts, telephone, and email were important aspects of this subscale in the survey.

As previously mentioned each of the subscales contained multiple questions which improved the strength of the statistical analysis. The subscale of care was made up of three questions, change, internalization, and externalization each had four questions, while the subscales of socialization and combination each contained six questions within the Communication and Knowledge Creation Survey. Because of the uneven items in various subscales an average response per subscale was calculated for statistical purposes.

Additionally, validity was addressed by the researcher allowing two former high school principals and two educational leadership professors to review the survey and offer feedback to improve the survey. Upon completion of this activity the survey was changed to reflect the observations of the principals and professors. These suggestions were important for improving the wording and ensuring that public education professionals could answer the survey instrument questions.

Next the *Communication and Knowledge Creation Survey* (CKCS) was field tested by a group of teachers to improve reliability. According to Fraenkel and Wallen (2003) reliability "refers to the consistency of the scores obtained—how consistent they are for each individual from one administration of an instrument to another and from one

set of items to another" (p. 165). The test-retest format was used, with the group having

two weeks between the time it was first taken and then retested. Participants in the field

test were asked to take the survey, but also to examine the content and point out any

problematic wording that they identified. The results of the field testing yielded a

reliability coefficient of $r = .7961$ across all subscales. Field testing of the instrument not

only monitored reliability, but also helped improve validity. Upon completion of field

testing, the researcher began contacting districts for approval to participate in the study.

Communication and Knowledge Creation Interview Protocol

Data collection continued with qualitative follow up interviews of at least one

principal and two teachers from each quadrant. Two principals from an urban area were

interviewed along with one from a suburban area, and one from a rural area. The sample

of teachers for follow up interviews included five teachers from urban and suburban areas

along with three teachers from rural schools. This purposeful sample of principals and

teachers for follow up interviews ensured that representative data was gathered as part of

the study. All interviews were semi-structured and utilized an open-ended interview

protocol (see appendix H). The rich descriptions provided by the qualitative interview

process (Merriam, 1998) offered new insights and helped with data triangulation gained

through qualitative measures. These new insights developed as the researcher coded the

data and analyzed it for common themes. Frankel and Wallen (2003) referred to this

analysis as the "continual reworking of data with emphasis on patterns" (p. 542), while

Merriam (1998) stressed coding as a manner in which to "keep track of your thoughts,

musings, speculations, and hunches as you engage in analysis" (p. 165). Interviews and

qualitative data analysis helped the researcher draw important conclusions about how principal communication effected organizational knowledge creation.

Document Analysis

In addition to interviews, principals were also asked to send the researcher any school documents such as handbooks for teachers, handbooks for students, school folders, school improvement plans, or brochures about the school. Additional information was gathered from individual school websites to aid in the document analysis. Meriam (1998) concluded that documents were, "a ready-made source of data easily accessible to the imaginative and resourceful investigator" (p. 112). Analyzing school documents allowed the researcher to further investigate principal communication and buttress findings from these documents with findings from surveys along with principal and teacher interviews. According to Merriam (1998) document analysis is important and offers insightful information about the topic since the documents were not produced solely for the purpose of this study.

Data Analysis

The data obtained from the surveys were analyzed using descriptive statistics, correlation coefficients, and standard *t*-tests. The dependent variable in the study was principal communication and the independent variable was organizational knowledge creation. This data was analyzed using the Statistical Package for the Social Sciences version 11.0 (SPSS) software. The following statistical methods were used in analyzing the four quantitative research questions for this study.

Research Question 1. In order to determine if there was a relationship between factors of principal communication (care, change) and factors of knowledge creation

(internalization, externalization, socialization, combination), the Pearson product-moment coefficient of correlation was employed. Fraenkel and Wallen (2003) articulated the importance of using correlational data to find or verify relationships among different variables. Eight correlations were run to determine if any relationship existed between principal communication and organizational knowledge creation.

Research Question 2. In order to determine if there was a difference between the perception of principal communication factors (care, change) among principals and teachers, two *t*-tests for independent means were run. This allowed the researcher to determine "whether the means of the two samples were significant' (Fraenkel & Wallen, 2003, p. 241). A .05 level of significance was used in order to reject or accept the null hypothesis for this research question.

Research Question 3. In order to determine if there was a difference in how teachers and principals perceive knowledge being created through communication in high schools, four *t*-tests for independent means were used. The four t-tests corresponded to the four modes of knowledge conversion reflected in the subscales contained within the survey. This allowed the researcher to determine "whether the means of the two samples were significant' (Fraenkel & Wallen, 2003, p. 241). A .05 level of significance was used in order to reject or accept the null hypothesis for this research question.

Research Question 4. In order to determine which organizational knowledge creation factor was being used most predominantly by principals in communication, a descriptive analysis of the mean, median, and mode was conducted for each subscale. This information was gathered from teachers and principals and statistically compared. At least four survey questions aimed to achieve this data for each subscale. The data for

each factor from principals and teachers were compared and then analyzed to see which factor was used the most by principals when they communicated with teachers.

Research Question 5. In order to determine which methods of communication for organizational knowledge creation were perceived most effective by teachers and principals, the researcher gathered qualitative data from teachers and principals through interviews. The Communication and Knowledge Creation Interview Protocol was developed to acquire quality in depth information from the different subscales within the survey. All interviews were semi-structured and utilized an open-ended interview protocol. Information gathered from interviews was analyzed and coded for common reoccurring themes.

Triangulation

Quantitative data was triangulated with interviews from four building principals and eight teachers. A representative sample of principals and teachers achieved relevant representation. Five teachers from urban and suburban areas were interviewed along with three teachers from rural areas. A similar ratio of principals were interviewed which included two principals from urban areas, one from a suburban area, and one principal from a rural area. According to Meriam (1998) and Gay and Airasian (1996) multiple data sources provide a more complete understanding of the data within a study. Principals and teachers were interviewed using a semi-structured approach which used eight open ended questions. Questions from the interviews were taken from the literature and sought to answer some of the factors associated with principal communication (care, change) and factors associated with organizational knowledge creation (internalization, externalization, socialization, combination). Interviews were conducted upon completion

and return of all survey instruments. The data provided by the interviews allowed the

researcher to analyze participant responses and scrutinize the data for common themes or

insights. Merriam (1998) referred to this as coding and categorizing the data in order to

help with analysis. All interviews were conducted by the researcher, and every attempt

was made to exclude any possible researcher bias in conversation. Interviews were tape

recorded only with the permission of each participant, and transcribed verbatim after the

interview was completed. Participants were allowed to review the script and make

modifications accordingly. The transcribed interviews provided the qualitative data for

further analysis within the study.

Upon completion of the transcription of interview responses, the researcher coded

the data looking for the factors of principal communication (care, change) and the factors

of organizational knowledge creation (internalization, externalization, socialization,

combination) which were prevalent in the literature review. This process helped

triangulate quantitative research findings, while also providing insight into emerging

themes and subcategories (Merriam, 1998). Rich descriptions offered by principals and

teachers helped the researcher develop an in-depth understanding of the intricacies of

communication and organizational knowledge creation. Finally, the researcher sought

data triangulation with document analysis. Principals and teachers were asked to provide

the researcher with documents such as school brochures, improvement plans, handbooks,

or other documents that would aide the researcher in the analysis of all data gathered.

Researcher Biases and Assumptions

It should be noted that the researcher believes that high school principals can and

do influence the knowledge creation capacities of the building and its teachers.

Furthermore, the researcher believes that specific knowledge created at the school level improves the capabilities of individual teachers and of the school as a whole to meet the increasing demands of federal, state, and local mandates. Because of these assumptions, the researcher tried to eliminate any biased wording to ensure that research participants were not guided to answer in a specific manner. Moreover, data triangulation was achieved with quantitative and qualitative data analysis combined with document analysis. This process allowed for multiple sources to provide information and eliminate any bias in one particular area of the study.

Summary

Upon completion and analysis of the literature review it was clear that little research had been completed linking organizational knowledge creation to principal communication. However, the review of related literature did highlight important factors of principal communication such as care in communication and communication during change. Likewise, the concepts of Nonaka and Takeuchi's (1995) knowledge conversion process (combination, socialization, externalization, internalization) were articulated as essential components to the knowledge creation process. Furthermore, these two constructs working together can provide today's educational leaders the tools to be successful leaders in the high stakes accountability climate of education in the world.

The focus of this research was to determine what impact, if any, principal communication had upon the organizational knowledge creation capacities of the school. The population for this study was taken from teachers and principals in one Midwest state. The sample was selected based upon census data, as well as upon whether schools

were urban, suburban, or rural. The final sample was then chosen in order to match the census demographics.

Data was gathered using a researcher created communication and organizational knowledge creation survey (see appendix G). The survey instrument was field tested with a test/re-test format and examined by educational leaders in order to ensure reliability and validity. Further data were gathered from semi-structured interviews with four principals and 12 teachers throughout the state.

Quantitative data from the surveys were analyzed for relationships, differences, and descriptive statistical indicators using the SPSS statistical package software. Qualitative data were analyzed for themes while transcripting taped interviews. Qualitative data such as the transcripted interviews and artifacts helped the researcher triangulate the data, as well as gather vivid descriptions of the perceptions held by principals and teachers concerning communication and organizational knowledge creation.

Included within Chapter Four is an analysis of the quantitative and qualitative data included for each research question and hypothesis within the study. Presented in Chapter Five are the findings, conclusions, and implications of the research, and address recommendations for future research on the topic.

CHAPTER FOUR

PRESENTATION AND ANALYSIS OF DATA

Introduction

The intent of this study was to examine what relationship, if any, exists between high school principal communication and organizational knowledge creation among staff within high schools in one Midwestern state. Authors, who studied and researched principal communication, noted that principals spend over 70% of their time in some sort of communication (Domenech, 2002; Fisher 2000; Hudson & Rea 1996; Reyes & Hoyle, 1992; Yukl, 2006). Conversely, very few studies had been conducted to ascertain the role of knowledge creation within high schools (Becerra – Fernandez & Stevenson, 2001; Cardno, 2002). The aforementioned researchers have clearly documented the need for principals to be effective communicators. However, authors and researchers are just beginning to understand the educational impact of knowledge creation within American public schools. The lack of a clear nexus between communication and organizational knowledge creation in high schools among educational studies provided a purposeful need for research to be conducted. Furthermore, the lack of a documented connection between principal words and actions and knowledge creation was perplexing considering today's educational environment of high stakes accountability.

Some of the most innovative organizations within the business community have used the concept of organizational knowledge creation to gain a competitive advantage within their specific marketplace (Murtha, Lenway, & Hart, 2001; Nonaka & Takeuchi, 1995; Stacey, 2001). Perhaps the most important aspect of knowledge creation comes from utilizing the knowledge of those who work in the system. In public education, this

would mean emphasizing the tacit knowledge of teachers and those who work within the school, not only to improve student learning outcomes, but the overall organization as well. These companies have the ability to develop knowledge within their organization and use this new knowledge to their advantage. Nonaka and Takeuchi (1995) perhaps have best encapsulated this idea when they stated:

> When organizations innovate, they do not simply process information from outside in, in order to solve existing problems and adapt to a changing environment. They actually create new knowledge and information from the inside out, in order to redefine both problems and solutions and, in the process, to re-create their environment. (p. 56)

Organizational knowledge creation has just recently surfaced as a method of improvement in the educational community. The general concept of using teacher knowledge to improve school and student outcomes is beginning to receive attention as a better way for schools to operate. Authors such as DuFour and Eaker (1998) and Wenger and Snyder (2000) offered professional learning templates that require teachers to share tacit knowledge in small groups. With the increase in accountability from No Child Left Behind (NCLB), state governments, and local school boards, principals and teachers are attempting to build organizational knowledge capacity in order to improve student learning outcomes and meet the demands of Adequate Yearly Progress (AYP) (Becerra – Fernandez & Stevenson, 2001; DuFour & Eaker, 1998; Wenger & Snyder, 2000). In fact, the concepts of care, change, and communication of a knowledge creation strategy were noted as essential for successful communication as well as knowledge creation (Becerra – Fernandez & Stevenson, 2001; Contino, 2004; Fisher, 2000; Hisnanick, 2002; Nonaka &

Takeuchi, 1995; Sanchez, 2004; Stacey, 2000; Vilanni & Lyman, 2000). Therefore, the question posed to high school principals and the foundation of this study considers, how principals communicate care, change, and a knowledge creation strategy within their schools.

The purpose of this study was to determine what relationship, if any, existed between principal communication and organizational knowledge creation within the school. Data to determine the nature of the relationship between principal communication and organizational knowledge creation were gathered through the researcher created *Communication and Knowledge Creation Survey* (CKCS). The CKCS measured two important subscales of communication (care, change) and four subscales in organizational knowledge creation (socialization, combination, externalization, and internalization) between high school principals and high school teachers.

The subscale of care was measured by three survey questions, while the subscale of change was measured by four survey questions. Questions evolved from the research and attempted to decipher the level of care within the teacher and principal relationship. Additionally, these questions were developed to ascertain whether meaningful relationships existed between the principal and teachers. The subscale of change was measured by four questions which focused on asking teachers and principals about the communication from the principal before, during, and after the change process.

The knowledge conversion subscales (socialization, combination, externalization, and internalization) were developed by combining Nonaka and Takeuchi's (1995) knowledge conversion process along with educational constructs and frameworks. This allowed for principals and teachers to better understand the vocabulary of the knowledge

conversion process. The subscales of socialization and combination were measured by six

survey questions each. Questions related to socialization were intended at deciphering

whether the principal communicated the importance of sharing classroom experience

with one another, while the combination subscale measured how principals

communicated the importance of different means of communication within the

knowledge creation process. Externalization was measured by four survey questions

which helped determine how the principals used creativity (metaphors, analogies) while

communicating. Finally, internalization was measured by four survey questions. These

questions asked whether the principal communicated the importance of transferring

newly developed knowledge into everyday classroom practice, and encouraged teachers

to try out new concepts, methods, and strategies in the classroom.

A representative sample of high school principals and teachers from one

Midwestern state were asked to participate in the study. More specifically, the principal

and three teachers were asked to participate from each school which was randomly

selected within one of four quadrants within the state. Principals and teachers responded

to the same questions which were worded to reflect their respective position within the

school.

The researcher contacted superintendents and district level leaders from across the

state in order to gain gatekeeper approval to contact high school principals and determine

their willingness to participate in the study. After gatekeeper approval was obtained, the

researcher secured Institutional Review Board (IRB) (appendix G) permission to conduct

the study, and begin contacting principals. High school principals were contacted via

phone and asked if they would consider participation in the study. Principals who agreed

to participate were sent information concerning the study and a survey link via email. Additionally, the researcher also asked for the secretary to provide three random teachers' names for participation in the study. All teachers were contacted via email and asked to participate in the study (appendix H). Information about the study, participant information, and a survey link were provided in the email to teacher participants.

The data obtained from the surveys were analyzed using descriptive statistics, correlation coefficients, and independent samples *t*-tests. The dependent variable in the study was principal communication and the independent variable was organizational knowledge creation. These data were analyzed using the Statistical Package for the Social Sciences version 11.0 (SPSS) software.

The Pearson product – moment correlation coefficient was used to determine if there was a relationship between the factors of principal communication (care, change) and the factors of organizational knowledge creation (combination, externalization, internalization, socialization). Independent samples *t*-tests were utilized to determine the differences between the perceptions of teachers and principals in conjunction with the six subscales of the CKCS survey. Additionally, a descriptive analysis of the mean, median, and mode were conducted for each subscale to ascertain which subscale of knowledge creation was most commonly used by principals when communicating to staff members. Throughout the quantitative analysis a critical value of .05 was utilized to indicate statistical significance.

Follow up interviews with eight teachers and four principals who completed the survey triangulated quantitative findings. Teachers and principals who agreed to take the survey were again contacted to determine their participants in the qualitative interview

process (appendix I). The interviews were transcribed and coded in a manner which paralleled the six subscales noted within the CKCS survey instrument. However, the coding of the teacher and principal qualitative data also revealed themes not developed within the six subscales. Patterns which emerged from the qualitative data were noted by the researcher and helped further develop the study by moving beyond the quantitative findings.

Collected data were used to answer the following research questions:

1. Is there a relationship between factors of principal communication (care, change) and factors of knowledge creation (internalization, externalization, socialization, combination)?

2. Is there a difference in the perception of principal communication factors (care, change) between principals and teachers?

3. Is there a difference between how teachers and principals perceive knowledge being created through communication in high schools?

4. Which of the knowledge creation factors (internalization, externalization, socialization, combination) are being used the most and which are being used the least by principals when communicating with teachers?

5. What methods of communication are perceived most effective by teachers and principals when communicating for organizational knowledge creation?

Presented in this chapter are the analyses of the sample population, a description of the data collection instruments, analysis of the research questions and hypothesis, and a summary of the findings.

Data Analysis

Population

The population for the study consisted of 77 high schools from 51 districts throughout one Midwestern state. More specifically, 77 high school principals were asked to participate in the study. Each principal was contacted via telephone by the researcher to determine his/her interest in participating in the study. Eleven principals indicated to the researcher that they did not want to participate. The remaining 66 principals agreed to participate in the study and were sent an email with informed consent (appendix D) information and a survey link in order to access the survey via survey monkey on the internet. Forty – one of the 66 principals contacted completed the survey for a return rate of 62%. One hundred and forty – nine teachers from high schools whose principal agreed to participate were sent emails asking for their participation. Eighty teachers responded and completed the survey for a return rate of 54%. One point of interest included seven teachers' reluctance to complete the survey due to having new principals this year. Correspondence from these teachers indicated that they felt they did not have enough information or interaction with their principal to make an informed decision for a survey on the topic of communication. Delineated in Table 2 are the gender and the number of years in education of the sample. Fifty – eight females and 63 males comprised the sample population of the study. Over one – half of the sample population was within their first 10 years as an educator according to Table 2.

Table 2

Demographic Data – Gender and Number of Years in Education

	Gender				
Role	Female	% Female	Male	% Male	Total
Teacher	45	56.25	35	43.75	80
Principal	13	31.70	28	68.30	41
Total	58	47.94	63	52.06	121

	Number of Years in Education			
Role	0-10	11-20	21+	Total
Teacher	37	25	18	80
Principal	24	11	6	41
Total	61	36	24	121

Data Collection Instruments

Communication and Knowledge Creation Survey (CKCS)

Each participant completed the teacher or principal version of the CKCS. The likert type survey instrument was developed by the researcher after completing an exhaustive review of related literature (Becerra – Fernandez & Stevenson, 2001; Blasé & Nelson, 1997; Cardno, 2002; Contino, 2004; Fisher, 2000; Harris, 2000; Iheanacho, 1992; Mulford & Silins, 2003; Osterman, 1994; Reyes & Hoyle, 1992; Rhea & Hudson, 1996; Schumaker & Sommers, 2001; Snow & Whittaker, 1996; Von Krogh, Ichijo &

Nonaka, 2000; Yukl, 2006). Twenty – seven questions from the survey were developed

from six subscales found in the review of related literature. Two of the subscales, change

and care, were derived from communication research, while four of the subscales,

socialization, combination, internalization, and externalization, were derived from

Nonaka and Takeuchi's (1995) knowledge conversion framework.

A group of high school teachers field tested the survey on two separate occasions

to help ensure that the survey instrument was reliable and valid. Two weeks passed

between the field test and the retest. Additionally, two retired high school principals,

along with two college professors, reviewed the CKCS to offer suggestions for

improvement and clarity of the overall instrument.

Reliability of the survey instrument was derived from comparing the responses of

the first field test with that of the second field test. Totals from each subscale were

calculated and averaged since each of the subscales consisted of a different number of

questions. The pre-test and post-test responses were analyzed using SPSS version 11.0.

The subscales were correlated with the Pearson product-moment correlation coefficient

using the test re-test data.

The correlations derived from the test re-test data of the six subscales ranged from

a low of $r = .670$ for the internalization subscale, to $r = .859$ for the combination

subscale. Each of the correlations from the test re-test was statistically significant. Four

of the subscales (combination, change, care, externalization) were significant at the .01

level, while the remaining two subscales (socialization, internalization) were significant

at the .05 level of confidence. Additionally, internal consistency of the CKCS was

calculated using Cronbach's alpha for each subscale. The final survey yielded Cronbach's

alpha numbers for each subscale consisting of care (.8571), change (.8528), internalization (.8141), externalization (.7818), combination (.6727), and socialization (.6707).

Interview Protocol

The six subscales of the quantitative survey served as the foundation for the interview protocol. At least one question from each subscale was asked during qualitative interviews. The interview protocol (appendix F) was analyzed by two college professors and by the group of teachers who field tested the instrument. Suggestions for changes in wording helped clarify questions used in the follow up interview. Data obtained during qualitative interviews helped triangulate findings gathered from the *Communication and Knowledge Creation Survey.*

Research Questions

Participant responses to the *Communication and Knowledge Creation Survey* were collected and imported into SPSS 11.0. Data were analyzed using Pearson Product – Moment correlation coefficients, independent samples *t*-tests, and descriptive statistical analysis of the mean, median, and mode. The critical value of .05 was used to determine significant statistical significance. The previously mentioned statistical procedures were used to answer the following research questions.

Research Question 1. Is there a relationship between factors of principal communication (care, change) and factors of knowledge creation (internalization, externalization, socialization, combination)?

The factors of principal communication (care, change) and the factors of knowledge creation (socialization, combination, externalization, internalization) were

statistically analyzed using the Pearson *r* correlation coefficient. Shown in Table 3 are the statistically significant relationships, which were revealed between each of the subscales when teacher and principal results were analyzed simultaneously. Each of the eight correlations were positive and statistically significant at the .01 level of confidence. The strongest correlations existed between Care and Externalization ($r = .659$, $p <.01$) and Change and Combination ($r = .695$, $p <.01$), while the weakest correlations existed between Care and Socialization ($r = .278$, $p <.01$) and Change and Socialization ($r = .273$, $p <.01$).

Table 3

Correlations Between Communication and Knowledge Creation Subscale

Knowledge Creation	Communication Subscales	
Subscales	Care	Change
Externalization	$r = .659**$	$r = .538**$
Internalization	$r = .609**$	$r = .641**$
Combination	$r = .455**$	$r = .695**$
Socialization	$r = .278**$	$r = .273**$

Note. **Correlation is significant at the .01 level (2 – tailed). N = 121

Illustrated in Table 4 are the relationships between the factors of principal communication and the factors of knowledge creation. Statistical analysis revealed in Table 4 was conducted using teacher data for analysis with the Pearson r correlation coefficient. While each of the correlations was positive, extracting the teacher responses

for analysis revealed slightly different correlations. Care and socialization ($r = .703$, $p < .01$) and change and combination ($r = .717$, $p < .01$) were moderately strong, while care and combination ($r = .521$, $p < .01$) and change and externalization ($r = .599$, $p < .01$) revealed weaker correlations.

Table 4

Correlations Between Communication and Knowledge Creation Subscale - Teacher

Knowledge Creation Subscales	Communication Subscales	
	Care	Change
Externalization	$r = .696$**	$r = .599$**
Internalization	$r = .660$**	$r = .709$**
Combination	$r = .521$**	$r = .717$**
Socialization	$r = .703$**	$r = .608$**

Note. **Correlation is significant at the .01 level (2 – tailed). N = 80

The relationship between the factors of principal communication and the factors of knowledge creation are shown in Table 5. It should be noted that all correlations were positive, but by disaggregating principal responses only, data analysis revealed different results. The subscale of socialization was not statistically significantly correlated to the principal communication subscale of change ($r = .159$, $p < .01$) or care ($r = .041$, $p < .01$). Care and externalization ($r = .497$, $p < .01$) along with change and combination ($r = .613$, $p < .01$) revealed moderately strong correlations.

Table 5

Correlations Between Communication and Knowledge Creation Subscale - Principal

| | Communication Subscales | |
| Knowledge Creation | | |
Subscales	Care	Change
Externalization	$r = .497^{**}$	$r = .385^*$
Internalization	$r = .466^{**}$	$r = .419^{**}$
Combination	$r = .328^*$	$r = .613^{**}$
Socialization	$r = .041$	$r = .159$

Note. **Correlation is significant at the .01 level (2 – tailed). *Correlation is significant at the .05 level (2 – tailed). N = 41

Research Question 2. Is there a difference in the perception of principal communication factors (care, change) between principals and teachers?

In order to evaluate the research hypotheses that there is no statistical difference between teacher and principal perception of the principal communication factors of care and change, an independent samples *t*–test was conducted. The *t*–test revealed a difference between the means $t(105) = -1.69$, $p = .092$. The subscale of change revealed a mean answer of 4.39 from teachers and 4.28 from principals, while the subscale of care revealed a mean of 4.32 from teachers and 4.53 from principals. Statistical analysis revealed no significant differences between means of care and change. Further information on differences within the subscales of principal communication is provided in Table 6.

Table 6

Differences in Principal Communication Factors

Principal Communication Subscales		Teacher	Principal	Mean Difference	Significance
Change	Mean	4.39	4.28	.11	*p* = .251
	N	80	40		
	SD	.502	.414		
Care	Mean	4.32	4.53	-.21	*p* = .092
	N	79	40		
	SD	.680	.476		

Note. Comparisons of teachers and principals revealed no significant differences using independent samples *t*-tests at the .05 level of confidence. Means based on a five point Likert scale average for each subscale with 1 = strongly disagree and 5 = strongly agree.

Research Question 3. Is there a difference between how teachers and principals perceive knowledge being created through communication in high schools?

A *t*-test for independent means was utilized to determine whether significant differences of means existed between teachers and principals concerning the four subscales that make up the knowledge conversion process (combination, socialization, internalization, externalization). Analysis from Table 7 shows that there were no statistical differences between teachers and principals in how they perceived knowledge being created through principal communication. In fact, the means between teachers and principals for each subscale were nearly identical and never varied by more than .16. Moreover, combination *t*=(115) = 1.19, *p* = .24 was the only subscale with a positive

mean difference of .1026. Delineated in Table 7 are the differences in perceptions between teachers and principals viewpoints on how knowledge is created through principal communication.

Table 7

Differences in Knowledge Creation Factors

Principal Communication Subscales		Teacher	Principal	Mean Difference	Significance
Socialization	Mean	4.52	4.67	-.15	$p = .34$
	N	75	41		
	SD	.434	1.32		
Externalization	Mean	4.26	4.35	-.08	$p = .39$
	N	79	40		
	SD	.581	.399		
Combination	Mean	4.43	4.33	.10	$p = .23$
	N	78	39		
	SD	.470	.366		
Internalization	Mean	4.37	4.38	-.01	$p = .91$
	N	80	39		
	SD	.506	.420		

Note. Comparisons of teachers and principals revealed no significant differences using independent samples *t*-tests at the .05 level of confidence. Means based on a five point Likert scale average for each subscale with 1 = strongly disagree and 5 = strongly agree.

Research Question 4. Which of the knowledge creation factors (internalization, externalization, socialization, combination) are being used the most and which are being used the least by principals when communicating with teachers?

The means of the knowledge creation factor subscales were analyzed to determine which subscale principals used most. Delineated in Table 8 are how teachers responded to this question with data on the mean, median, and mode. The respective means of the knowledge creation factors for principal communication were socialization (4.52), combination (4.43), internalization (4.37), and externalization (4.26). The mode for teachers responding to the socialization subscale was 5.00.

Table 8

Knowledge Creation Factors Used Most – Teachers

Knowledge		Description		
Creation Subscale	N	Mean	Median	Mode
Socialization	75	4.52	4.66	5.00
Externalization	79	4.26	4.25	4.75
Combination	78	4.43	4.50	4.67
Internalization	80	4.37	4.50	4.50

Note. No comparisons of teachers and principals revealed significant differences using independent samples *t*-tests. Means based on a five point Likert scale average for each subscale with 1 = strongly disagree and 5 = strongly agree.

The means of the knowledge creation factor subscales were analyzed to determine which subscale principals used most. Illustrated in Table 9 are how principals responded to this question with data on the mean, median, and mode. The respective means of the

knowledge creation factors for principal communication were socialization (4.67),

internalization (4.38), externalization (4.35), and combination (4.33).

Table 9

Knowledge Creation Factors Used Most – Principals

Knowledge		Description		
Creation Subscale	N	Mean	Median	Mode
Socialization	41	4.67	4.50	4.67
Externalization	40	4.35	4.50	4.50
Combination	39	4.33	4.33	4.17
Internalization	39	4.38	4.50	4.25

Note. Means based on a five point Likert scale average for each subscale with 1 = strongly disagree and 5 = strongly agree.

Research Question 5. What methods of communication are perceived most effective by teachers and principals when communicating for organizational knowledge creation?

Qualitative interviews were conducted in order to answer research question five. Interview data was coded and analyzed for themes consistent from the *Communication and Knowledge Creation Survey* (CKCS). Themes from the interview protocol included communication, change, care, and knowledge conversion. Additionally, two new themes emerged across the data. The first of the new themes the researcher labeled as, "old school." This theme emerged as teachers discussed the desire and need for old fashioned personal conversation with the principal, while the second new theme which developed

was that of empowerment. Teachers and principals alike mentioned the importance of empowerment within the knowledge creation process.

Throughout the interviews, teachers mentioned face – to – face communication as important to the organizational knowledge creation process. Many of the teachers referred to this as old fashioned one – on – one personal communication, or what the researcher coded as "old school." One teacher emphasized the importance of personal communication by stating that, "Personal communication makes you feel like you are wanted here and it makes you feel like part of the family." Additionally, two – thirds of the teachers interviewed referenced personal communication with the principal as something that builds trust and care. Moreover, half of the teachers linked trust and care from personal communication as an important part of building knowledge. Finally, teachers as well as principals commented that the concept of empowerment through communication was important. Empowerment emerged from the data as a new theme important in the knowledge creation process as communicated by principals. One teacher commented that, "Our principal gives us the flexibility to make decisions that affect us and our classrooms. For example, together the staff chose a different mission than was suggested by district offices. This made us feel good because she stood behind us and backed us."

Principals, similar to teachers, indicated that the most effective communication occurred face – to – face. However, instead of the emphasis on personal communication, principals emphasized face – to – face communication through faculty meetings or release time for professional development when all teachers have input and can ask questions. Three of the four principals interviewed specifically discussed face – to – face

communication in terms of large group settings. One principal specifically commented that, "we have communication through structure. We start out in small groups, break out further, and then come back together as a faculty to answer questions." Additionally, each of the principals mentioned that it was important for their teachers to feel like they were part of the process and empowered when trying to build knowledge. One veteran principal commented that, "we want them to take ownership and understand the power they have over the school's direction."

Findings

The results of this study indicated that there were significant correlational relationships, but no significant differences between the means of principal communication factors (care, change) and organizational knowledge creation factors (combination, socialization, internalization, externalization). A representative sample of 121 high school teachers and principals from one Midwestern state completed the 30 question researcher designed *Communication and Knowledge Creation Survey* (CKCS). The survey was developed around two subscales of principal communication (care, change) and four subscales of organizational knowledge creation (combination, socialization, externalization, internalization).

Analysis of the survey data revealed significant correlational relationships between the factors of principal communication and the factors of organizational knowledge creation, which rejected research hypothesis one. It should be noted, however, that when teacher and principal data was analyzed separately, not all relationships were correlated. Additional qualitative data supported this as one teacher commented that personal communication made her feel like "part of the team."

No significant differences were detected in the means between the principal communication factors of care and change as reported by teachers and principals. This finding retained the null hypothesis for research question two. Additionally, no significant differences were detected between the means of the organizational knowledge creation factors of combination, socialization, externalization, and internalization as reported by teachers and principals, which retained the null hypothesis for research question three. Also developing from the data was a similar perception by teachers and principals that the organizational knowledge construct of socialization was used most often by principals during communication with staff members. Additional qualitative data supported findings from research questions two, three, and four. Teachers and principals noted that principals communicated the need for teachers to share knowledge (socialization) through release time or at faculty meetings. One principal stated that "when we have early release it is expected that teachers will talk about teaching and learning, and not about business or administrative issues."

Statement of Research Hypotheses

Research hypothesis 1. There is no statistically significant relationship between factors of principal communication (care, change) and factors of knowledge creation (internalization, externalization, socialization, combination).

The research hypothesis of no statistically significant relationship between factors of principal communication and factors of knowledge creation is rejected with a confidence level of .01. Based upon the data revealed in Table 4 there is a statistically significant relationship between the factors of principal communication and factors of knowledge creation.

Research hypothesis 2. There is no statistically significant difference between the perception of principal communication factors (care, change) between principals and teachers.

Based upon the analysis and the data presented in Table 6 this hypothesis is retained. Statistically significant differences did not exist between teachers and principals views of the principal communication subscales of care and change. In fact the independent samples *t*-tests conducted revealed that the mean responses from teachers and principals were very similar to one another.

Research hypothesis 3. There is no statistically significant difference between how teachers and principals perceive knowledge being created through communication in high schools.

Based upon the analysis and the research data presented in Table 7, this hypothesis is retained at the .05 level of confidence. A significant difference was not found between the perceptions of teachers and principals concerning their respective views of the factors of knowledge creation. In fact, shown in Table 7 are the means for the internalization and externalization subscales, which were nearly identical for teachers and principals.

Research hypothesis 4. There is no statistical significant difference in the utilization of the four factors of knowledge creation (internalization, externalization, socialization, combination) by principals in communication.

Based upon the analysis and the research presented in Tables 8-9, this hypothesis is retained at the .05 level of confidence. A significant difference was not reported from independent samples *t*-tests performed, and further analysis of the mean, median, and

mode in Tables 8-9 revealed many similarities between how principals and teachers perceived the knowledge creation processes were being used in the surveyed high schools. Analysis of the data revealed that teachers perceived principals as using socialization most often, followed by combination, internalization, and externalization. Principals also reported using socialization most often, but differed from teachers by ranking the use of internalization second, followed by externalization and combination last.

Summary

The purpose of this investigation was to examine what relationship, if any, exists between high school principal communication and organizational knowledge creation among staff within high schools in one Midwestern state. Data from the *Communication and Knowledge Creation Survey* (CKCS) and follow up interviews were analyzed to answer the research questions within the study. From the data, it was revealed that significant correlations exist between the factors of principal communication (care, change) and the factors of knowledge creation (socialization, combination, internalization, externalization). The data also revealed that there were no significant differences in the means of principal communication subscales or the knowledge creation subscales between teachers and principals. Finally, analysis of the data revealed that socialization was perceived to be the most commonly used knowledge creation factor.

Qualitative data affirmed much of the quantitative data, but also revealed that teachers and principals see great importance in face – to – face communication from principals. Throughout the data teachers and principals alike noted that face – to – face communication was best and that it allowed principals to communicate important aspects

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of care and empowerment, but at the same time let them communicate important goals and initiatives to move teachers closer toward the desired outcomes.

In chapter five, the researcher will expand upon the findings from the CKCS and qualitative interviews. A discussion of the findings, conclusions, and implications for further research will be discussed along with the limitations of the study and an overview of the design and procedures.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The frameworks of communication and organizational knowledge creation have

been investigated in this study. Detailed in this chapter are the purpose of the study,

research questions, design and procedures, a synthesis and discussion of the findings,

conclusions, limitations of the study, a description of the implications of the findings, and

recommendations for future research.

Purpose of the Study

The purpose of this study was to examine what relationship, if any, existed

between high school principal communication and organizational knowledge creation.

The link between principal communication and organizational knowledge creation was

analyzed. The relationship between principal communication factors (care, change) and

organizational knowledge creation factors (combination, socialization, internalization,

externalization) were explored with correlation data. More specifically, the differences

between how principals and teachers perceived principal communication as an important

construct within the knowledge creation framework were examined through independent

samples *t* – tests. Lastly, descriptive statistics were utilized in order to determine which

knowledge creation construct was used most often by principals in communication with

their staff.

The review of related literature delineated the importance of effective

communication from high school principals (Iheanacho, 1992; Osterman, 1994; Reyes &

Hoyle, 1992). Additionally, the literature review revealed that while knowledge creation

was an important construct for success in the business world (Becerra – Fernandez & Stevenson, 2001; Nonaka & Takeuchi, 1995; Stacey, 2001; Von Krogh et al., 2000), the underlying assumptions accompanying this construct had not gained widespread popularity within the field of education (Becerra – Fernandez & Stevenson, 2001; Wenger & Snyder, 2000).

The research questions which guided this study were:

1. Is there a relationship between factors of principal communication (care, change) and factors of knowledge creation (internalization, externalization, socialization, combination)?

2. Is there a difference in the perception of principal communication factors (care, change) between principals and teachers?

3. Is there a difference between how teachers and principals perceive knowledge being created through communication in high schools?

4. Which of the knowledge creation factors (internalization, externalization, socialization, combination) are being used the most and which are being used the least by principals when communicating with teachers?

5. What methods of communication are perceived most effective by teachers and principals when communicating for organizational knowledge creation?

The research hypotheses accompanying the previously mentioned quantitative research questions were analyzed in order to answer the research questions.

Hypothesis 1. There is no statistically significant relationship between factors of principal communication (care, change) and factors of knowledge creation (internalization, externalization, socialization, combination).

Hypothesis 2. There is no statistically significant difference between the perception of principal communication factors (care, change) between principals and teachers.

Hypothesis 3. There is no statistically significant difference between how teachers and principals perceive knowledge being created through communication in high schools.

Hypothesis 4. There is no statistical significant difference in the utilization of the four factors of knowledge creation (internalization, externalization, socialization, combination) by principals in communication.

These research questions and related hypotheses developed from an extensive review of literature regarding principal communication and organizational knowledge creation. The review of related literature revealed that principals spent over two – thirds of their day in some form of communication (Reyes & Hoyle, 1992; Yukl, 2006), and that principals who were effective communicators were perceived as more effective than those that did not (Hudson & Rhea; 1996).

Very little research existed which addressed organizational knowledge creation and public schools. Becerra – Fernandez and Stevenson (2001) concluded that the challenges and characteristics of corporate leaders are very similar to the challenges and characteristics of effective principals (p. 2), while Wenger and Snyder (2000) noted that there seemed to be a close relationship between key processes in knowledge creation and fostering effective professional development. While many authors delved into the analysis of knowledge creation (Choo, 1998; Nonaka & Takeuchi, 1995; Von Krogh et al., 2000), no specific studies were located, which denoted the knowledge conversion process used most frequently by leaders. Consequently, no studies existed to ascertain the

difference in perceptions between principals and teachers in principal communication during the knowledge creation process.

<p style="text-align:center;">*Design and Procedures*</p>

Data for this mixed design study were collected from high school principals and teachers who completed the *Communication and Knowledge Creation Survey* (CKCS) instrument, which was developed by the researcher. A representative sample of the state population was asked to participate in the study. A total of 66 high school principals and 149 teachers agreed to take part in the study.

The *Communication and Knowledge Creation* (CKCS) survey analyzed six subscales (care, change, combination, socialization, internalization, externalization) associated with principal communication and organizational knowledge creation. The CKCS instrument used 27 likert type questions to evaluate the connections between principal communication and organizational knowledge creation within high schools. The CKCS surveys were electronically mailed to participants who accessed the survey via the internet.

Qualitative data were gathered through follow up interviews with four principals and eight teachers who had previously completed the *Communication and Knowledge Creation Survey* (CKCS). The interviews followed a semi – structured interview protocol which was related to the CKCS instrument and the sub scales contained within the survey.

Each of the subscales (care, change, combination, socialization, internalization, externalization) contained within the CKCS and the semi-structured interviews were developed from the review of related literature. The subscales of combination and

<p style="text-align:center;">88</p>

externalization each contained six survey questions, while change, internalization, and externalization were comprised of four questions, and the subscale of care was measured by three survey questions. The survey was field tested by a group of high school teachers to ensure clarity, validity, and reliability of the items. Additionally, survey questions, as well as, the interview protocol were examined by two former high school principals and two college professors.

Quantitative data gathered were analyzed using SPSS 11.0 to investigate the relationships between principal communication and organizational knowledge creation. Pearson product – moment correlations were performed to determine the strength of the relationships between the communication subscales (care, change) and the knowledge conversion subscales (combination, socialization, externalization, internalization). Multiple t-tests for independent means were used to evaluate perceptions of principals and teachers concerning principal communication and the knowledge creation process. Finally, descriptive statistics were utilized to determine which knowledge conversion subscale principals used most frequently when communicating with their staff. A critical value of $p < .05$ was used to determine the levels of significance in all statistical procedures.

Discussion of the Findings

The results of this study of principal communication and organizational knowledge creation in relation to the current literature within these constructs are examined and discussed in this section. The overriding themes from the review of related literature was that principal communication was very important for the principal to be considered effective (Harris, 2000; Iheanacho, 1992; Osterman, 1994; Reyes & Hoyle,

1992; Shumaker & Sommers, 2001; Yukl, 2006), and that organizational leaders in any

work field were responsible for putting together the right people, resources, and systems

for organizational knowledge creation to flourish (Chen & Edgington, 2005; Choo, 1998;

Hisnanick, 2000; Murtha, Lenway & Hart, 2001; Nonaka & Takeuchi, 1995; Wenger &

Snyder, 2000). The major constructs of this investigation as revealed from the review of

related literature are summarized in Table 10 and is referred to throughout the discussion

of each of the research question findings and conclusions.

Table 10

Summary of Related Research

Researcher	Communication	Knowledge Creation	Role of Leader
Fisher, (2000)	X		
Hudson & Rhea, (1996)	X		
Reyes & Hoyle, (1992)	X		
Contino (2004)	X		
Villani & Lyman, (2000)	X		
Yukl, (2006)	X		X
DuFour & Eaker, (1998)	X		X
Sanchez, (2001)	X		X
Mulford & Silins, (2003)	X		X
Nonaka & Takeuchi, (1995)		X	X
Hisnanick (2000)		X	X
Wenger & Snyder, (2000)		X	X
Chen & Edgington, (2005)		X	X
Von Krogh et al., (2000)		X	X
Becerra – Fernandez & Stevenson (2001)		X	X
Pearce, (2007)	X	X	X

Research Question 1. Is there a relationship between factors of principal communication (care, change) and factors of knowledge creation (internalization, externalization, socialization, combination).

According to the data set in this study, there was a significant statistical relationship between the principal communication factors and the organizational knowledge creation factors as reported by all participants in the study. This finding would be similar to Rhea and Hudson's (1996) study (See Table 10) which indicated that the number one quality desired in a building principal was for that person to be a good verbal communicator. However, when the data was disaggregated and separate analysis of teacher responses and principal responses occurred, a different picture emerged. While teacher data continued to show strong correlations between care and change and the socialization subscale, principal data revealed weak correlations between care and change and the socialization subscale. Thus, teachers placed an emphasis upon principal communication in relation to the sharing of tacit knowledge. This finding is reiterated in the qualitative findings when teachers discussed the importance of face – to – face communication from the principal which builds trust and helps in the knowledge creation process. Similar to the data shown in Table 5, principals who were interviewed more closely aligned communication with the faculty in meetings or professional development days instead of personal communication with one teacher. This is the most likely reason for a low correlation between care and change and socialization. The responses of teachers affirm what current research suggests regarding care and change within the organization. That is, principals should focus on communicating with staff the value of care within the organization, but also the importance of collaborating together to improve

the flow of tacit knowledge from teacher to teacher (Becerra – Fernandez & Stevenson, 2001; DuFour & Eaker, 1998; Grogan, 2003; Von Krogh et al., 2001).

Research Question 2. Is there a difference in the perception of principal communication factors (care, change) between principals and teachers?

No significant differences in the means of the principal communication factors of care and change were noted from the data. However, both teachers and principals reported that care and change were very important. Although the two subscales were not statistically different, the outcome from the findings would have strong support throughout the literature. A multitude of authors (Cardno, 2002; DuFour & Eaker, 1998; Grogan, 2003; Sanchez, 2001; Senge, 1990; Hisnanick, 2002; Von Krogh et al., 2000) expounded upon the importance of the leader communicating care (See Table 10), so that the people in the organization can work to build new knowledge in an open, caring, honest, and non – defensive work environment. Survey respondents also indicated that communication during the change process was important. This finding emphasizes the importance both teachers and principals place on the value of communication during the change process. Literature regarding the change process, as well as information contained in chapter two of this study would affirm this finding (DuFour & Eaker, 1998; Osterman, 1994; Osterman & Kottkamp, 1993; Pierson & Bredson, 1993; Yukl, 2006).

Research Question 3. Is there a difference between how teachers and principals perceive knowledge being created through communication in high schools?

No significant differences in the means of organizational knowledge creation factors of combination, socialization, externalization, and internalization were noted from the data. It is important to note that both teachers and principals ranked socialization

highest of the four knowledge creation subscales. Even though this finding was not statistically significant, it mirrored Nonaka and Takeuchi's (1995) belief that many companies in the business world fail to accomplish the full knowledge creation spiral and often neglect the concepts of externalization and internalization. More specifically, this means that organizations are not transferring tacit knowledge into explicit knowledge (externalization), nor are they able to make new explicit knowledge tacit again through shared mental models (internalization). In essence, public school organizations have difficulty turning tacit teacher knowledge into explicit knowledge, and developing new explicit knowledge back into mental models shared throughout the organization, which can be implemented in classrooms and assists in the creation of new strands of knowledge throughout the organization.

Additional qualitative interview data from this study would confirm Nonaka and Takeuchi's (1995) belief that principals and teachers are good at sharing tacit knowledge (socialization), but not as effective at developing a process or system to make sure that the shared knowledge gets transferred back into classroom practices. These findings indicate a necessity for principals to implement a form of organizational knowledge creation which emphasizes moving beyond the sharing of tacit knowledge and focuses on turning tacit teacher knowledge into explicit knowledge that can be shared throughout the building. The explicit knowledge possessed by all teachers could then be internalized as it was implemented in classrooms and then discussed as a common mental model. This process, according to Nonaka and Takeuchi (1995) would be what they refer to as a "continuous and dynamic interaction between tacit and explicit knowledge" (p. 70).

Research Question 4. Which of the knowledge creation factors (internalization, externalization, socialization, combination) are being used the most and which are being used the least by principals when communicating with teachers?

The knowledge creation factor used most by principals in communication, according to the study findings, is socialization. According to the data set, teachers and principals reported that principals communicate and give teachers time to sit down, collaborate, and share tacit knowledge with one another. Here, it is important to again note the differences in perceptions between principals and teachers as denoted in research question one data. According to the data set teachers reported that communication through personal conversations was an important way to build trust and care and advance knowledge creation. Principals, on the other hand, through qualitative interview data, purported to use socialization during meetings where many teachers were present. Thus, while each group ranked principals high on the socialization subscale, differences were denoted between how this process was implemented. This gap in communication perception had not been previously identified in the literature.

Finally, these concepts form the foundation of the socialization process, which begins Nonaka and Takeuchi's (1995) knowledge conversion process. Both principals and teachers ranked the mean of socialization higher than the other three knowledge creation subscales. Although not statistically significant teachers and principals indicated, from the data set, that principals are communicating the tenants of knowledge creation. The mean for each subscale was above 4.26 out of a possible five. Although these mean differences are diminutive the descriptive statistics findings would affirm what Nonaka and Takeuchi (1995) postulated about many organizations that complete part of the

knowledge conversion process, but neglect the aspects of the process that internalize the newly learned information, methods, and strategies which negatively affects the organization.

Research Question 5. What methods of communication are perceived most effective by teachers and principals when communicating for organizational knowledge creation?

Data gathered from the qualitative interviews clearly indicated that teachers placed an emphasis on personal communication from principals during the knowledge creation process. Conversely, data from principals indicated that their communication during the knowledge creation process was usually based on seeing all teachers face – to – face in faculty meetings, team meetings, and department chair meetings. This finding was mentioned by one teacher who commented that, "we usually communicate through faculty meetings when everyone is together." Thus, there seems to be a difference or a gap between what teachers want in communication from principals and what principals actually do. Interestingly enough, both of these findings are linked to the review of literature, which denoted the importance of communicating care, honesty, and trust (Becerra – Fernandez & Stevenson, 2000; Stacey, 2001; Von Krogh et al. 2000), and discussed principals communicating through small groups to develop knowledge throughout the building (Mulford & Silins, 2003; Von Krogh et al., 2000). Principals did mention that communication of care was important for developing relationships, but never linked relationships and knowledge creation within the qualitative data. One principal commented that, "the most important part is the one – on –one personal connection…putting concerns at the forefront of what is going on." Therefore, principals

may need to focus their knowledge creation efforts into personal conversations instead of whole faculty meetings to get the most out of their efforts.

Conclusions

Research Question 1

Is there a relationship between factors of principal communication (care, change) and factors of knowledge creation (internalization, externalization, socialization, combination)?

It can be concluded from this data analysis that all of the factors of principal communication and all of the factors of knowledge creation are related. Thus, this data set suggested principals who communicate care within relationships and who communicate effectively during the change process can have an impact upon how the organization creates knowledge.

While all of the correlations were statistically significant when responses were analyzed as a whole, the socialization factor of knowledge creation was not statistically significant when data from principals were run individually. Furthermore, the knowledge creation factor of socialization was least correlated to principal care (r=.041) and change (r=.059). Therefore, another of the conclusions suggested from this study is the perception gap between teachers and principals concerning communication. Specifically, the teachers closely associate face – to – face communication as personal conversations, whereas principals associate face – to – face communication as small and large group discussions like faculty meetings and department chair meetings. Additionally, a majority of the teachers indicated that principal personal communication during times of change was important. In fact, those teachers perceived that socialization and change should

occur together to create knowledge in the organization. One veteran teacher commented on the importance of the leader communicating with the staff during the change process. This particular school is trying to implement the tenants of a Professional Learning Community. "We are a Professional Learning Community (PLC) school and our principal has either directly or through the assistant principals made sure everyone has 45 minutes per week to share with one another and collaborate." Another teacher in a large urban high school stated, "Our principal discussed the research behind the change, took a group of teachers to another school implementing what we were proposing, and then took a solid stance on the issue with our staff."

Research Question 2

Is there a difference in the perception of principal communication factors (care, change) between principals and teachers?

It can be concluded that there was no significant difference between the means of the principal communication factor of change and care as reported by teachers and principals. In fact further analysis of the means revealed that teachers and principals answered the questions in a very similar manner. Thus the data could suggest that both teachers and principals perceived principals as good communicators of change and care. Furthermore, the data revealed that principals see themselves better at communicating change, while teachers perceived principals better at communicating care. A majority of the teachers and two of the principals commented on issues like personal informal communication and asking for input. One teacher commented that "our principal seems to stay personally connected with all 120 to 140 people in the building," while a first year

principal commented that "I always try to make sure my people are ok…I check in with them when they come back from sick days to make sure they or their children are ok."

Research Question 3

Is there a difference between how teachers and principals perceive knowledge being created through communication in high schools?

It can be concluded that significant differences did not exist between how teachers and principals perceived knowledge being created through communication in high schools. Furthermore, it could be suggested by the data that principals need to work on the transitions within the knowledge creation framework in order to emphasize the flow of the process between tacit and explicit knowledge. Similar results were noted from teachers and principals in qualitative interviews. A majority of persons interviewed reported that principals were good at getting the staff to share information and expertise through collaboration. Two principals specifically mentioned allowing teacher's time to meet, while several teachers mentioned having the freedom to try new strategies and methods and discuss the results "without looking over our shoulder."

Research Question 4

Which of the knowledge creation factors (internalization, externalization, socialization, combination) are being used the most and which are being used the least by principals when communicating with teachers?

It is suggested that principals are good at communicating the importance of socialization and allowing teachers time to meet and share experiences, expertise, and knowledge. Although the differences are not statistically significant, this data set could suggest that principals need to focus more on communication which promotes the use of

taking shared knowledge and turning it into classroom practice (internalization).

Qualitative data supports these perceptions, as each of the principals interviewed used

some form of professional development which allowed teachers release time to share tacit

knowledge through collaboration. As one principal commented that, "we are a PLC and

have early release time. It is expected that teachers focus on teaching and learning during

their collaborative time."

Research Question 5

 What methods of communication are perceived most effective by teachers and

principals when communicating for organizational knowledge creation?

 The use of qualitative findings was two-fold in this investigation: first to buttress

the quantitative results and secondly to perhaps expand the findings from the identified

subscale themes and provide the researcher with rich accounts and details of how

principals communicate in their organizations. As previously mentioned two new themes

were abundant and prevalent across the qualitative data and served as additional

important information to buttress the discussion of the findings. The first newly

developed theme which was mentioned by each of the principals and a majority of the

teachers was called 'old school.' This theme emerged from the principal's belief and the

teacher's desire for old fashioned conversation as the preferred method of

communication. Teachers and principals indicated that this was the most effective

method of communication and that care could be best communicated in this manner. One

principal commented that "this (individual communication) is where I can make the

biggest difference with my staff," while another principal stated that, "my best

communication occurs with my teachers in a face – to – face manner...I am able to

communicate and demonstrate care in these types of conversations." Personal

communication was important for teachers as well in the knowledge creation process.

Classroom walk – throughs and drop in visits along with hallway conversations were

seen as important information relative to the school improvement plan and educational

objectives. For example, one teacher commented that "when the principal communicates

with us and we can tell that he feels strongly about the issue, then I know where he stands

and tend to work harder for him to help our school and be on board with what he wants."

However, the data suggested that principals did not link personal individual

communication to knowledge creation. In fact, principals suggested that knowledge

creation was best achieved through communication with groups of people such as

department chair meetings, team meetings, or faculty meetings. Thus, the data could

suggest that the difference between teachers and principals concerning communication

for knowledge creation may be the result of effectiveness (one –to one) as seen by

teachers and efficiency (small groups) as seen by principals.

The second theme found across a preponderance of the qualitative data was that

of empowerment. Nearly every individual interviewed mentioned the importance of

empowerment through communication from the principal. It could be suggested from this

data that teachers have to feel empowered by principals in order to collaborate and share

knowledge. The teachers that commented on empowerment also discussed aligning the

resources for teachers, and "allowing us to do our job without micro-managing or looking

over our shoulder all of the time." One principal stated that, "we must empower our

people through communication so that they know it is their school," while another

principal declared that, "if we want to share and develop knowledge we have to

communicate, empower our people, and let them get to work." Finally, one principal commented that, "I hope we empower our staff by giving them the tools they need, building trust, and letting people know that it is ok if they fail. It is important for people to have trust and feel safe when trying to build new knowledge."

Limitations and Design Controls

Several limitations were present within the current study, however, the researcher made every attempt to minimize the impact of these limitations on the study. Most importantly, the researcher received guidance and input from expert researchers during the course of this study. The following limitations were recognized by the researcher during this study:

1. This study was limited to high schools in one Midwest state during the 2006-2007 school year.

2. This study was limited in design through the use of self reporting data from teachers about communication from their principal.

3. This study was limited in design through the use of self reporting data from high school principals concerning their methods of communication to teachers which encourages organizational knowledge creation.

4. It was assumed that participants were candid in their responses and correctly interpreted the survey instrument.

5. The study was limited by the degree of reliability and validity of the survey instrument.

6. The study was limited relative to the qualitative research skills and experience of the researcher.

The design of this study involved a method of descriptive research. When conducting descriptive research it is common to use surveys to assess viewpoints of individuals (Gay & Airasian, 2000). Surveys allow researchers to draw generalizations concerning gathered data from the sample population (Fraenkel & Wallen, 2003). In order to improve the generalizations taken from the analysis of the data from the study, the researcher randomly selected schools within each quadrant of the state. Additional steps were taken to ensure that the final sample was representative of the actual population of the state. Schools were divided into urban, suburban, and rural categories to match the population characteristics of the state. These steps ensured a stratified random sample which, according to Frankel and Wallen (2003) is an important step to improving the reliability of generalized results from the sample.

One major obstacle to the survey method of inquiry was lack of response from subjects who received the surveys (Fraenkel & Wallen, 2003). In an attempt to overcome this problem the researcher personally contacted principals and superintendents to seek their approval for participation in this study. Each principal participating in this study was contacted at the minimum of two times. Once at the beginning of the study to seek approval for participation, and a second time by email to ensure they were still interested in participating in the study. One principal from each geographic quadrant of the state was contacted again for person-to-person phone interviews. This allowed for the researcher to answer any questions brought forth by the research participant, and ensure that all participating principals were comfortable with the study along with the process.

Two educational experts reviewed the teacher survey concerning principal communication to ensure content validity within the instrument. Each expert was familiar

with Nonaka and Takeuchi's (1995) theory of knowledge conversion, which served as the foundation for questions on the survey. The same educational experts, along with two former high school principals reviewed the principal survey to ensure content validity of the instrument. Each reviewer was sent a copy of the cover letter and actual surveys. Moreover, each reviewer was asked to critique individual questions as well as the survey as a whole, and offer suggestions for improvement to help with the validity of the survey. The suggestions offered by the experts were then used to produce the final version of the survey instrument. Field testing of the instrument using the test – retest format helped control for the reliability and assess the survey questionnaire. Each of the aforementioned processes helped increase the validity and reliability of the *Communication and Knowledge Creation Survey* instrument.

Data gathered from the survey were triangulated by follow up interviews from principals and their teachers from each quadrant of the state. All participants were interviewed person to person using a semi structured approach (Appendix F). Meriam (1998) asserted that semi structured interviews use more flexible wording, or have a mix of structured and unstructured questions (p. 74). The rich information gathered from the interviews provided insight into the quantitative results.

Implications for Practice

There are several major implications for practice from this study for high school principals. First, principals must always be cognizant of the role of communication within their job, and secondly, principals must be able to navigate their school buildings beyond socialization or just the sharing of tacit knowledge.

The commonalities between the literature and the results of this study concerning principal communication cannot be overlooked. The correlations between the principal communication factors of care and change and the organizational knowledge creation factors of combination, socialization, externalization, and internalization exemplify the importance of the role of communication. Evidence from this study suggested that principals must understand the importance of communicating care and change if they are to be successful in the knowledge creation process. Furthermore, principals need to be cognizant of the communication gap noted between teachers and principals concerning face – to – face communication. Additionally, qualitative respondents continually brought forth important principal communication factors such as care and listening. These findings, combined with the fact that nearly two – thirds of a principal's work day is spent managing conversations clarify that school leaders must excel within the communication framework if they are to be successful. Therefore, school districts and boards of education need to be knowledgeable about the importance of communication and how it is linked with knowledge creation when hiring potential candidates. Each of these groups must understand that principals who are excellent communicators will have the chance to excel in helping to create knowledge within their organization. Thus, there are implications also for colleges and universities to better train potential administrative candidates to meet the needs of district superintendents and boards of education. Moreover, implications reside in how principals are certified by their respective state and what impact communication has on the requirements. There are also important implications for school districts to work with building principals to continually develop their capacity to understand the tenants of leadership and how communication from the

principal may affect the ability of the organization to attain success. Finally, school district leaders should develop a mentoring program for young principals focused on specific communication and knowledge creation processes which advance the leadership capability of principals as they progress through their career.

Another implication for high school principals evolved from the understanding of the knowledge creation construct. Important implications exist here for colleges and universities who are training teachers and principals. Future teachers need to be exposed to knowledge creation activities and understand the value of not only the knowledge gained, but the processes used to attain the knowledge. Aspiring teachers need to know that teaching is no longer an occupation where there is total autonomy. Collective understanding of the total organization is warranted. Similarly, principals need to be trained in the value of knowledge creation activities, but with an emphasis on the process and evaluating the results. Moreover, if current principals are not well versed in the tenants of knowledge creation, they may need help from district leadership programs. Perhaps local colleges and universities could partner with school districts to help principals with understanding and implementing the knowledge conversion construct. This would be a mutually beneficial relationship whereby higher education institutions could help public school leaders bridge the gap between theory and everyday management of the school. As educators progress through this era of high stakes accountability it is imperative that school district leaders continue to build the capacity of their principals in order to improve the knowledge creation process to enhance teaching and learning.

Finally, if principals are truly going to create knowledge at the building level to improve teaching and learning, then they must focus on the aspects of knowledge creation that are often neglected. This means that principals must focus on developing a knowledge creation system or process which goes beyond merely sharing tacit knowledge and not only helps, but expects the entire school community to turn newly developed knowledge into everyday school wide practices. Perhaps this construct is more easily understood by Nonaka and Takeuchi's (1995) who argued that tacit knowledge must become explicit knowledge which is then operationalized by teachers, and then when used throughout the school can again become tacit knowledge for each individual teacher. If this concept or justification of creating new knowledge is true, then further implications beyond this study are abundant for high school principals. For instance, how do principals appropriate time for teachers to share tacit knowledge and what method (Whole Faculty Study Groups, Professional Learning Communities, Communities of Practice, etc…) do they use? Furthermore, and perhaps most importantly, how does the principal evaluate these knowledge creation professional development processes and outcomes within the realm of school, teacher, and most importantly student success?

Recommendations for Future Research

The results of this study have implications for principals and school districts to the extent that generalizations can be made. The relationship between principal communication and knowledge creation is evident from the findings of the study. This puts pressure on the building principal to have a plan, and to make sure that the plan is implemented in order to build the knowledge creation capacity of the entire school.

With the clear lack of educational research, as well as, authors addressing the knowledge creation construct within public schools, recommendations for future research are plentiful. The current study could be replicated with elementary and middle school principals, or replicated but researched with an emphasis in gender differences of principals. A case study approach comparing two high schools and their respective principals would delve deeper into the intricacies of the principal's communication techniques, as well as, the specifics of the knowledge creation paradigm. A question pondered by the researcher and possibly worthy of future study would be a comparison of effective schools and less effective schools, and how these principals communicate and attempt to build new knowledge within their specific schools. The researcher also believes it would be worthy to duplicate the current study, but with only qualitative methods. The interviews and the resulting data analysis provided the researcher with in depth examples to the knowledge creation questions. Additionally, observations within the qualitative survey would allow the researcher to examine principals at staff meetings and during professional development.

Summary

The purpose of this study was to determine what impact, if any, does communication by high school principals have on the knowledge creation capacity of the school. Statistically significant relationships existed between the factors of principal communication (care, change) and the factors of organizational knowledge creation (combination, socialization, externalization, internalization). Quantitative and qualitative data revealed, as did the related literature, the importance of communication to the principal's position and to the ability of the school to create new knowledge.

No statistical differences between the means of the principal communication factors of care and change were detected by an analysis of the findings reported by teachers and principals. Similarly, no statistical differences between the means of the knowledge creation factors of combination, socialization, internalization, externalization were detected by an analysis of the findings reported by teachers and principals. Although not statistically different, it is important to note that both teachers and principals ranked the knowledge creation factor of socialization as most often used by principals in their communication with their staff. This brings attention to Nonaka and Takeuchi (1995) who argued that many businesses, especially those in the western hemisphere, are not well suited for going beyond the first steps in their knowledge conversion process. Results from this study could affirm this belief, as principals and teachers agreed that the knowledge creation factors of combination, externalization, and internalization were used less by high school principals in communication. According to Nonaka and Takeuchi (1995) these factors complete the knowledge conversion process and turn the newly developed knowledge into everyday practice within the school.

Finally, principals who achieve organizational knowledge creation through communication could be able to develop and create new knowledge through the iterative exchange between tacit and explicit knowledge. Teachers, as well as principals, will have common mental models of effective teaching and learning, and be able to converse through the knowledge conversion process, which could help them use knowledge from staff members within the building to improve teaching and learning. In the end, improved teaching and learning could lead to student and school success as measured by

standardized achievement tests mandated by the federal government, state government,

local school boards, and local constituents.

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Appendix A

Superintendent Information Letter

I am a doctoral student at the University of Missouri-Columbia and am currently completing my dissertation entitled, "Communication from High School Principals Which Encourages Organizational Knowledge Creation." As part of the research study, 80 high school principals and approximately 240 high school teachers from all over the state are being surveyed regarding principal communication and organizational knowledge creation.

The survey should take approximately 10 minutes to complete. The high school principal and three teachers from the specific high school chosen will complete the survey. Upon completing the survey, each participant will have a self addressed stamped envelope in which to return the survey.

I am writing to seek your permission to conduct the surveys in your district, providing the principal and teachers voluntarily agree to participate. Would you please take a moment to sign the attached form, so that I may seek their involvement? Additionally, I am requesting that you would inform the principals of my purposes and of my intent to contact them. Very little research exists connecting principal communication and organizational knowledge creation, so your help would be greatly appreciated.

Confidentiality of the school, principal, and teachers will be protected throughout the study. No school, principal, or teacher will be identified in reporting results. While I do hope that you will allow the participation of principals and teachers within your district, participation is voluntary. Participants may withdraw at any time without penalty. Individual responses to the survey are confidential. Only aggregate data will be reported in the study results. Your signature on the attached form indicates your informed consent to participate in the study. You may fax the signed informed consent form to me at the FAX number listed below and keep the original signed copy for your records.

If you have any questions about this research project, please feel free to contact me at home (417) 882-0527, my office (417) 523-7210, or mpearce@spsmail.org. You may also contact my Faculty Advisor, Dr. Barbara N. Martin, at 660-543-8823 or bmartin@cmsu.edu. Thank you in advance for your assistance with this project.

Sincerely,

Matt Pearce
Doctoral Candidate
University of Missouri-Columbia

FAX (417) 523-7295

Appendix B

Informed Consent - Superintendent

I, (Name _____), (District _____), (Date ___/___/___) consent to participate in this research project and understand the following:

PROJECT BACKGROUND: This project involves gathering data through a survey investigating the relationship between principal communication and organizational knowledge creation. The data will be collected for analysis and may be published. You must be at least 21 years of age to participate.

PURPOSE: The purpose of this study was to determine what impact, if any, does effective communication by high school principals have on the knowledge creation capacity of the school?

VOLUNTARY: The survey is voluntary. Participants may refuse to answer any question or choose to withdraw from participation at any time without any penalty or loss of benefits to which they are otherwise entitled.

WHAT DO YOU DO? Sign this consent form and fax a copy to me at the FAX number below, thereby allowing participants in your district to be involved in completing the survey.

BENEFITS: Your participation in this research project will enrich the information base. A clearer understanding of how principal communication effects organizational knowledge creation will expand the educational knowledge base. The findings could help high school principals understand how effective communication serves to help create organizational knowledge and improve teaching and learning.

RISKS: This project does not involve any risks greater than those encountered in everyday life.

CONFIDENTIALITY: Your confidentiality will be maintained in that a participant's name will not appear on the survey or in the published study itself. A code number may be assigned so that responses may be grouped for statistical analysis. The data will only be reported in aggregate form.

INJURY: It is not the policy of the University of Missouri to compensate human subjects in the event the research results in injury. The University of Missouri does have medical, professional and general liability self-insurance coverage for any injury caused by the negligence of its faculty and staff. Within the limitations of the laws of the State of Missouri, the University of Missouri will also provide facilities and medical attention to subjects who suffer injuries while participating in the research projects of the University of Missouri. In the event you suffered injury as the result of participating in this research project, you are to immediately contact the Campus Institutional Review Board Compliance Officer at (573) 882-9585 and the Risk Management Officer at (573) 882-3735 to review the matter and provide you further information. This statement is not to be construed as an admission of liability.

Thank you for your assistance in providing current information regarding the possible relationship between principal communication and organizational knowledge creation. Your efforts are greatly appreciated. If you have any questions regarding the study, please contact me at home (417) 882-0527, work (417) 523-7210, or mpearce@spsmail.org. You may also contact my Faculty Advisor, Dr. Barbara N. Martin, at 660-543-8823 or bmartin@cmsu.edu. If you have questions regarding your rights as a participant in research, please feel free to contact the Campus Institutional Review Board at (573) 882-9585. Thank you in advance for your assistance with this project.

Sincerely,
Matt Pearce
Doctoral Candidate, University of Missouri-Columbia   **FAX** (417) 523-7295

Appendix C

Principal Information Letter

I am a doctoral student at the University of Missouri-Columbia and am currently completing my dissertation entitled, "Communication from High School Principals Which Encourages Organizational Knowledge Creation." As part of the research study, 80 high school principals and approximately 240 high school teachers from all over the state are being surveyed regarding principal communication and organizational knowledge creation.

The survey should take approximately 5-10 minutes to complete. The surveys will be mailed to you in a packet along with individual, self-addressed stamped envelopes so that you and your teachers may return their surveys directly to me. A larger postage paid envelope will be in the packet for your use in returning the teachers' signed consent forms to me. Separating the consent forms from the surveys provides further confidentiality. Surveys could also be sent electronically if you desire.

I am writing to seek your permission to send surveys to your school. Again, you and your teachers will participate on a voluntary basis. I truly appreciate your support because little research exists to link principal communication and organizational knowledge creation. The findings could help high school principals understand how effective communication serves to help create organizational knowledge and improve teaching and learning.

Confidentiality of the school, principal, and teachers will be protected throughout the study. No school, principal, or teacher will be identified in reporting results. While I do hope that you and your teachers will participate, remember participation is voluntary. Participants may withdraw at any time without penalty. Individual responses to the survey are confidential. Only aggregate data will be reported in the study results. Your signature on the attached form indicates your informed consent to participate in the study. You may fax the signed consent form and other forms to me at the FAX number listed below and keep the original for your records.

If you have any questions about this research project, please feel free to contact me at home (417) 882-0527, my office (417) 523-7210, or mpearce@spsmail.org. You may also contact my Faculty Advisor, Dr. Barbara N. Martin, at 660-543-8823, or bmartin@cmsu.edu. Thank you in advance for your assistance with this project.

Sincerely,

Matt Pearce
Doctoral Candidate
University of Missouri-Columbia
FAX (417) 523-7295

Appendix D

Participant Informed Consent

Dear Participant:

Thank you for considering participation in my study on principal communication and knowledge creation. This study is part of my dissertation research for a doctoral degree in educational leadership and policy analysis from the University of Missouri-Columbia. The information gathered should be useful in the field of leader communication and organizational knowledge creation. Your participation has been approved by your Superintendent and Principal.

For the study, schools were randomly selected from the state of Missouri. From the selected schools, each principal and three teachers will be included in the study. Your participation will take approximately five minutes to complete the 30 item Communication and Knowledge Creation Survey (CKCS) instrument. Eight teachers and four principals from across the state will be contacted for a brief follow up interview consisting of open ended questions about principal communication and knowledge creation.

Before you make a final decision about your participation, I need to explain how your rights as participants will be protected:

1. Participation in the study is completely voluntary. You may withdraw from participation at any time you wish without penalty, including in the middle of completing the CKCS or after it is completed. Your consent to participate or refusal to participate will not affect your employment in any way. You may also decline to answer any questions that you feel uncomfortable answering. Please do not hesitate to contact me with any questions or concerns about your participation. You can call me at 417-523-7210 during the day and 417-882-0527 in the evening. In addition, you are also welcome to contact the dissertation advisor for this research study, Dr. Barbara Martin, who can be reached at 660-543-8823.

The University of Missouri does not compensate human subjects if discomfort eventually results from the research. Nonetheless, the university holds medical, professional, and general liability insurance coverage, and provides its own medical attention and facilities if participants suffer as a direct result of negligence or fault from faculty or staff associated with the research. In such unlikely event, the Risk Management Officer should be contacted immediately at (573) 882-3735 to obtain a review of the matter and receive specific information. Related ethical guidelines about Protection of Human Subjects set forth in the Code of Federal Regulations "45 CFR 46" will be upheld. This statement is not to be construed as an admission of liability.

2. Your identity and your building's identity will be protected in reporting of results. I will not list any names of participants, or their corresponding institutions, in my dissertation or any future publications of this study.

● *Confidentiality*. Participants' answers will remain confidential, anonymous, and separate from any identifying information. Only the researcher and the dissertation supervisor will have access to identifiable data. Collected data will be kept locked and destroyed three years after completion of this study. Participants' identity and district or school affiliation will not be published. Data will be aggregated for statistical analysis and summarized for reporting, protecting participants' confidentiality at all times.

This research has been preauthorized by the Institutional Review Board-IRBs of the University of Missouri-Columbia. If you have further questions regarding research participants' rights, please contact the University of Missouri-Columbia Campus Institutional Review Board at (573) 882-9585, or visit http://www.research.missouri.edu/cirb/index.htm or http://ohrp.osophs.dhhs.gov/humansubjects/guidance/ 45cfr46.htm For inquiries about the survey or your participation, please contact the researcher Matt Pearce at (417) 523-7210, by fax at (417) 523-7295, or by email at mpearce@spsmail.org. You may also contact the dissertation supervisor Dr. Barbara Martin at (660) 543-8823.

If you have questions regarding your teachers' rights as a participant in research, please feel free to contact the University of Missouri-Columbia campus Institutional Review Board at 573-882-9585.

Sincerely,

Matt Pearce

By completing the attached survey entitled the Communication and Knowledge Creation Survey (CKCS) you agree to participate in the study of principal communication and knowledge creation being conducted by Matt Pearce. By completing the CKCS you understand that the following safeguards are in place to protect you:
1. Your responses will be used for dissertation research and potential future publications.
2. Your participation is voluntary, and may be withdrawn at any point in the study prior to submission of the survey.
3. Your identity will be protected in all reports of the research.
4. Your consent or refusal to participate in this study will not affect your employment in any way.

By completion of this attached survey it is implied that you agree to participate in this study and waive the requirement for a written consent.
Please keep this consent letter for your records and if you choose to participate in this study, please complete the attached survey.

Appendix E

Communication and Knowledge Creation Principal Survey

Communication has many different meanings to many different people. As a school principal think about how you communicate with your staff in order to help them create new knowledge within the school building. New knowledge could be methods or strategies of teaching and learning, or a way in which your school interacts with your stakeholders. Some items to consider may be faculty meetings, Whole Faculty Study Groups, Professional Learning Communities, professional development days within your school, team meetings, and department meetings, etc. Please keep these ideas in mind as you complete this survey.

Directions: Please answer the following questions by placing an "X" in the box that best matches your level of agreement with the statement.

	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I communicate with my staff the importance of sharing mental models.					
2	I communicate with my staff the importance of mutual trust.					
3	In order to promote the creative process among staff I use metaphors and analogies in communication.					
4	When meeting with my staff I communicate the importance of sharing knowledge through documents.					
5	When teachers have a new understanding of a product/process, I allow them to communicate with all staff to share their expertise.					
6	I communicate with staff the value of sharing knowledge to improve teaching and learning.					
7	I encourage reflection among my teachers.					
8	I encourage my teachers to share experiences with one another.					
9	I communicate district goals and initiatives to my staff.					
10	We learn new things about our school while trying to implement district goals.					
11	I guide conversations with staff in order for them to have a new understanding.					
12	I understand the value of using the experience of others to develop solutions to problems.					

	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
13	I encourage new teachers to observe, imitate, and practice with veteran teachers.					
14	I inquire about the lives of my teachers by asking about personal interests, family, accomplishments, etc.					
15	When meeting with my staff I communicate the importance of sharing knowledge through teams/departments.					
16	In communication with teachers I try to encourage creativity.					
17	I am interested in what my staff tells me.					
18	I communicate to my staff the importance of sharing the art of teaching.					
19	I facilitate communication among members of the school.					
20	I communicate with my staff the importance of collaboration.					
21	I purposefully communicate the need for change.					
22	I communicate with my staff the importance of sharing classroom expertise.					
23	When meeting with my staff I communicate the importance of sharing knowledge electronically (email/blackboard, etc).					
24	Much of my communication is linked to school improvement.					
25	I encourage my teachers to try new methods/strategies in their classroom.					
26	I communicate a strategy to share information and develop new ideas.					
27	I communicate challenging goals to my staff in order to adapt to school needs.					

Please answer the following two demographic questions by circling your gender and writing in the number of years as a principal. Thank you for your participation.

Gender: Female   Male

Number of years as a principal (including this year): _____

Thank you very much for your participation in this research study on principal communication and organizational knowledge creation. I believe the information gained from the research will be valuable.
For further information contact:

Matt Pearce
1450 West Highpoint Circle
Springfield, MO 65810
Home 417-882-0527   School 417-523-7210   Cell 417-827-5582

Communication and Knowledge Creation Teacher Survey

Communication has many different meanings to many different people. As a school teacher think about how your principal communicates with you and the staff in order to help create new knowledge within the school building. New knowledge could be methods or strategies of teaching and learning, or a way in which your school interacts with your stakeholders. Some items to consider may be faculty meetings, Whole Faculty Study Groups, Professional Learning Communities, professional development days within your school, team meetings, and department meetings, etc. Please keep these ideas in mind as you complete this survey.

Directions: Please answer the following questions by placing an "X" in the box that best matches your level of agreement with the statement.

	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	My principal communicates with the staff the importance of sharing mental models.					
2	My principal communicates the importance of mutual trust.					
3	In order to promote the creative process among staff my principal uses metaphors and analogies in communication.					
4	When meeting with my staff my principal communicates the importance of sharing knowledge through documents.					
5	When teachers have a new understanding of a product/process, my principal allows them to communicate with all staff to share their expertise.					
6	My principal communicates the value of sharing knowledge to improve teaching and learning.					
7	My principal encourages reflection among teachers.					
8	My principal encourages teachers to share experiences with one another.					
9	My principal communicates district goals and initiatives.					
10	We learn new things about our school while trying to implement district goals.					
11	My principal guides conversations with staff in order for them to have a new understanding.					
12	My principal uses the experience of others to develop solutions to problems.					

	Item	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
13	My principal encourages new teachers to observe, imitate, and practice with veteran teachers.					
14	My principal inquires about the lives of teachers by asking about personal interests, family, accomplishments, etc.					
15	When meeting with staff my principal communicates the importance of sharing knowledge through teams/departments.					
16	In communication with teachers my principal encourages creativity.					
17	My principal is interested in what I tell him/her.					
18	My principal communicates to staff the importance of sharing the art of teaching.					
19	My principal facilitates communication among members of the school.					
20	My principal communicates the importance of collaboration.					
21	My principal communicates the need for change.					
22	My principal communicates to staff the importance of sharing classroom expertise.					
23	When meeting with staff my principal communicates the importance of sharing knowledge electronically (email/blackboard, etc).					
24	Much of my principal's communication is linked to school improvement.					
25	My principal encourages teachers to try new methods/strategies in their classroom.					
26	My principal communicates a strategy to share information and develop new ideas.					
27	My principal communicates challenging goals to the staff in order to adapt to school needs.					

Please answer the following two demographic questions by circling your gender and writing in the number of years as a teacher. Thank you for your participation.

Gender: Female   Male

Number of years as a teacher (including this year): _____

Thank you very much for your participation in this research study on principal communication and organizational knowledge creation. I believe the information gained from the research will be valuable.
For further information contact:

Matt Pearce
1450 West Highpoint Circle
Springfield, MO 65810
Home 417-882-0527   School 417-523-7210   Cell 417-827-5582

Appendix F

Communication and Organizational Knowledge Creation
Interview Protocol
Principal

Communication
1. What are the different ways you communicate with your staff?

2. What methods of communication do you use to communicate with your staff in order to encourage them to share information and develop new ideas to improve teaching and learning?

Change
3. When facing change, either leader directed or mandated, how do you communicate with your staff?

4. As a leader what do you feel is important to communicate to your staff during the change process?

Care
5. In what ways do you communicate to staff members that you care? Can you give any examples? What does this lead to?

6. When sharing information and developing new ideas among staff what role does leader care play?

Knowledge Conversion
7. How do you believe your communication with the staff encourages teachers to develop new ideas within the school setting?

8. What processes are important when encouraging staff to learn, grow, and build knowledge?

Communication and Organizational Knowledge Creation
Interview Protocol
Teacher

Communication
1. What are the different ways your principal communicates with the staff?

2. What methods of communication does your principal use to communicate with staff in order to encourage them to share information and develop new ideas to improve teaching and learning?

Change
3. When facing change, either leader directed or mandated, how does your principal communicate with staff?

4. What does your principal communicate to the staff during the change process?

Care
5. In what ways does your principal communicate to staff members that he/she cares? Can you give any examples? What does this lead to?

6. When sharing information and developing new ideas among staff what role does leader care play?

Knowledge Conversion
7. How do you believe principal communication with the staff encourages teachers to develop new ideas within the school setting?

8. What processes are important when encouraging staff to learn, grow, and build knowledge?

Institutional Review Board Approval

Campus Institutional Review Board

University of Missouri-Columbia

483 McReynolds Hall
Columbia, MO 65211-1150

PHONE: (573) 882-9585
FAX: (573) 884-0663

Project Number: **1078937**

Project Title: Principal Communication and Organizational Knowledge Creation.

Approval Date: 12-27-2006

Expiration Date: 12-27-2007

Investigator(s):   Martin, Barbara Nell
Pearce, Matthew Scott

Level Granted: Expedited

**CAMPUS INSTITUTIONAL REVIEW BOARD APPROVAL FORM
UNIVERSITY OF MISSOURI-COLUMBIA**

This is to certify that your research proposal involving human subject participants has been reviewed by the Campus IRB. This approval is based upon the assurance that you will protect the rights and welfare of the research participants, employ approved methods of securing informed consent from these individuals, and not involve undue risk to the human subjects in light of potential benefits that can be derived from participation.

Approval of this research is contingent upon your agreement to:

(1) Adhere to all UMC Policies and Procedures Relating to Human Subjects, as written in accordance with the Code of Federal Regulations (45 CFR 46).

(2) Maintain copies of all pertinent information related to the study, included but not limited to, video and audio tapes, instruments, copies of written informed consent agreements, and any other supportive documents for a period of **three (3) years** from the date of completion of your research.

(3) Report potentially serious events to the Campus IRB (573-882-9585) by the most expeditious means and complete the eIRB "Campus Adverse Event Report". This may be accessed through the following website: http://irb.missouri.edu/eirb/.

(4) IRB approval is contingent upon the investigator implementing the research activities as proposed. Campus IRB policies require an investigator to report any deviations from an approved project directly to the Campus IRB by the most expeditious means. All human subject research deviations must have prior IRB approval, except to protect the welfare and safety of human subject participants. If an investigator must deviate from the previously approved research activities, the principal investigator or team members must:
a. Immediately contact the Campus IRB at 882-9585.
b. Assure that the research project has provisions in place for the adequate protection of the rights and welfare of human subjects, and are in compliance with federal laws, University of Missouri-Columbia's FWA, and Campus IRB policies/procedures.
c. Complete the "Campus IRB Deviation Report". This may be accessed through the following website: http://irb.missouri.edu/eirb/.

(5) Submit an Amendment form to the Campus IRB for any proposed changes from the previously approved project. Changes may not be initiated without prior IRB review and approval except where necessary to eliminate apparent and immediate dangers to the subjects. The investigator must complete the Amendment form for any changes at http://irb.missouri.edu/eirb/.

(6) Federal regulations and Campus IRB policies require continuing review of research projects involving human subjects. Campus IRB approval will expire one (1) year from the date of approval unless otherwise indicated. Before the one (1) year expiration date, you must submit Campus IRB Continuing Review Report to the Campus IRB. Any unexpected events are to be reported at that time. The Campus IRB reserves the right to inspect your records to ensure compliance with federal regulations at any point during your project period and three (3) years from the date of completion of your research.

Appendix H

Teacher Information Letter

Dear Colleague:

I am a doctoral student at the University of Missouri-Columbia and am currently completing my dissertation entitled, "Communication from High School Principals Which Encourages Organizational Knowledge Creation." As part of the research study, 80 high school principals and approximately 240 high school teachers from all over the state are being surveyed regarding principal communication and organizational knowledge creation.

The survey should take approximately 5-10 minutes to complete. I asked that your school randomly select three teachers to participate in the study.

I am seeking your permission to conduct the survey, providing that you voluntarily agree to participate. Would you please take a moment to sign the informed consent form? Your building secretary will collect the consent form and return it to me. You may mail your completed survey to me in the postage paid envelope provided. Thank you!

I will be conducting follow-up interviews with five percent of the teachers in the study. This would probably involve no more than one teacher from your district. I truly appreciate your participation because limited information is available regarding principal communication which encourages organizational knowledge creation.

Your confidentiality will be protected throughout the study. No participant will be identified in reporting results. While I do hope that you decide to participate, participation is voluntary. You may withdraw at any time without penalty. Individual responses to the survey are confidential. Your signature on the attached consent form indicates your informed consent to participate in the study.

If you have any questions about this research project, please feel free to contact me at home (417) 882-0527, my office (417) 523-7210, or mpearce@spsmail.org, You may also contact my Faculty Advisor, Dr. Barbara N. Martin, at 660-543-8823, or bmartin@cmsu.edu. Thank you in advance for your assistance with this project.

Sincerely,

Matt Pearce
Doctoral Candidate
University of Missouri-Columbia

FAX (417) 523-7295

Appendix I

Interview Informed Consent Form

Dear Participant:

Thank you for agreeing to be interviewed as part of my study on principal communication and knowledge creation. This study is part of my dissertation research for a doctoral degree in educational leadership and policy analysis from the University of Missouri-Columbia. The information gathered should be useful in the field of leader communication and organizational knowledge creation. Your participation has been approved by your Superintendent and Principal.

For the study, schools were randomly selected from the state of Missouri. From the selected schools, each principal and three teachers were included in the study. From the sample, eight teachers and four principals were interviewed from across the state. Your participation will take approximately thirty to forty minutes to answer eight questions related to principal communication and the development of new information within the school.

Before you make a final decision about your participation, I need to explain how your rights as participants will be protected:

3. Participation in the study is completely voluntary. You may withdraw from participation at any time you wish without penalty, including in the middle of the interview or after it is completed. You may also pass on any question you feel uncomfortable answering. Your consent to participate or refusal to participate will not affect your employment in any way. Please do not hesitate to contact me with any questions or concerns about your participation. You can call me at 417-523-7210 during the day and 417-882-0527 in the evening. In addition, you are also welcome to contact the dissertation advisor for this research study, Dr. Barbara Martin, who can be reached at 660-543-8823.

The University of Missouri does not compensate human subjects if discomfort eventually results from the research. Nonetheless, the university holds medical, professional, and general liability insurance coverage, and provides its own medical attention and facilities if participants suffer as a direct result of negligence or fault from faculty or staff associated with the research. In such unlikely event, the Risk Management Officer should be contacted immediately at (573) 882-3735 to obtain a review of the matter and receive specific information. Related ethical guidelines about Protection of Human Subjects set forth in the Code of Federal Regulations "45 CFR 46" will be upheld. This statement is not to be construed as an admission of liability.

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4. Your identity and your building's identity will be protected in reporting of results. I will not list any names of participants, or their corresponding institutions, in my dissertation or any future publications of this study.

● *Confidentiality*. Participants' answers will remain confidential, anonymous, and separate from any identifying information. Only the researcher and the dissertation supervisor will have access to identifiable data. Collected data will be kept locked and destroyed three years after completion of this study. Participants' identity and district or school affiliation will not be published.

This research has been preauthorized by the Institutional Review Board-IRBs of the University of Missouri-Columbia. If you have further questions regarding research participants' rights, please contact the University of Missouri-Columbia Campus Institutional Review Board at (573) 882-9585, or visit http://www.research.missouri.edu/cirb/index.htm or http://ohrp.osophs.dhhs.gov/humansubjects/guidance/ 45cfr46.htm For inquiries about the survey or your participation, please contact the researcher Matt Pearce at (417) 523-7210, by fax at (417) 523-7295, or by email at mpearce@spsmail.org. You may also contact the dissertation supervisor Dr. Barbara Martin at (660) 543-8823.

If you have questions regarding your teachers' rights as a participant in research, please feel free to contact the University of Missouri-Columbia campus Institutional Review Board at 573-882-9585.

By signing the informed consent form below, you approve for researcher Matt Pearce to interview you and use your confidential responses in his research. Should you sign the informed consent, you understand that the following safeguards are in place to protect you and your district:

1. Responses will be used for dissertation research and potential future publications.
2. Participation is voluntary, and may be withdrawn at any point during the study.
3. Your identity will be protected in all reports of the research.
4. Consent or refusal to participate in this study will not affect your employment in any way.

I, (Name _____), (District_____), (Date___/___/___) give permission for researcher Matt Pearce to interview me and use my responses as part of his dissertation research on Principal Communication and Knowledge Creation.

_____
Signature

If you have any questions, concerns, or comments about the interview please feel free to contact me by phone, email, or U.S. Mail.

Cell 417-827-5582
School 417-523-7210
Home 417-882-0527
mpearce@spsmail.org

Mailing address
Matt Pearce
1450 West Highpoint Circle
Springfield, MO 65810

Thanks for your help during this stage of the dissertation process.

Matt Pearce

VITA

Matthew S. Pearce was born October 21, 1970 in Springfield, Missouri, the son of Raymond W. Pearce and Sara J. Pearce. He attended public schools in Springfield, Missouri for 13 years, graduating from Kickapoo High School in 1989. He received a B.A. in Political Science with a minor in United States History from the University of Missouri (1993). Teacher certification was granted from Missouri State University in 1996, and a M.S. Ed. in secondary school administration was granted from Missouri State University in 2002. As part of the University of Missouri – Columbia statewide cohort program, he completed an Ed.D. in Educational Leadership and Policy Analysis (2007). He has been married to Yvette A. Pearce (Buhlig) for 12 years and has a son Logan Matthew (9) and a daughter Emma Kathryn (5). He has worked for Springfield Public Schools for 11 years and currently serves as the principal of Cherokee Middle School.