STUDY OF THE USE OF DATA SYSTEMS TO INCREASE BUILDING LEADER CAPACITY AND INFORM PRINCIPAL PRACTICE IN K-12 PUBLIC SCHOOLS

Presented to
Dr. Raymond O'Connell
Doctoral Research Committee Chair
Esteves School of Education
The Sage Colleges

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Salvatore DeAngelo, Jr.
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Salvatore DeAngelo, Jr.	Date of Signature
Dr. Raymond O'Connell Associate Professor of Education Doctoral Research Committee Chair	Date of Signature

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Candidate's Name: Salvatore DeAngelo, Jr.

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The Doctoral Research Committee for the above names Doctoral Candidate gives final approval of the Individual Doctoral Research Report.

Signature:_____
Dr. Raymond O'Connell, Chair

Signature:_____
Dr. Robert Bradley, Member

Signature:_____
Dr. Richard Evans, Member

Dedicated to my daughters, Gabriella and Sophia.

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Abstract

The intention of this qualitative study was to explore the effects that instructional data systems have on a building level leader's capacity to evaluate student growth and inform principal practice. Principal leadership practices were examined through the lens of Kouzes and Postners' five practices of exemplary leadership (Kouzes & Posner, 2012).

In 2009, President Obama signed the American Recovery and Reinvestment Act (ARRA), which included $435 billion dollars of competitive grant funding called the Race to the Top Fund (RTTT). One of the four-core areas of RTTT is, "Building of data systems that measure student growth and success, and inform teachers and principals about how they can improve instruction" (USDOE, 2009). New York State received 700 million dollars of funding in the second phase of the RTTT program (USDOE, 2013). This study has direct implication to the practice of principals. Research that informs a principal's practice about how to utilize the collection, analysis and interpretations of data more effectively and efficiently into actionable instructional steps will make an important contribution to the field.

The sample consisted of 18 principals from six school districts in upstate New York. Larger school districts, with student enrollments above 2000 were selected to ensure that there were multiple building principals available from any particular district that was selected to participate.

The study found that a majority of the principals reported that the instructional data systems in use in their districts provided them with the capacity to effectively evaluate student growth. Several different types of instructional data systems were found to be in use in the districts studied. They included assessment systems, student information systems and data management systems..

Fifty percent of interviewed principals felt that they have received adequate training on

the use of the instructional data systems in their district. There did not appear to be a clear relationship between the data obtained from the instructional data systems and the design of professional development for principals. While there was some indication that the sharing of best practices for the use of instructional data systems and student data among principals existed in the districts, no participant reported that a consistent and well established process for doing so was in use anywhere. Interviews from the study revealed several different delivery models for professional development that the principals received on the data systems they use, however there was no indication that any of the models contained an ongoing component to them. Only four of the eighteen principals interviewed indicated that they were affiliated with a professional organization that was either solely or partially focused on the use of data in schools.

Modeling the Way emerged as the number one leadership practice from the model by Kouzes and Posner (2012) that principals employed to inspire teachers to use instructional data systems to inform their practice in the study.

The study also explored any potential barriers that may be perceived or exist that might work against a principal's objective to use data effectively in their buildings. Twelve of the eighteen principals indicated that time was one of the two most cited barriers to the effective use of instructional data in their schools. The main conclusion of the study is that principals do use data systems to evaluate student growth and inform their practice. More work remains however in providing principals with meaningful ongoing professional development, strategies to improve best practices, pedagogical data literacy and the reduction of the barriers to implementation identified in the study.

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CHAPTER I

Introduction

The intention of this qualitative study was to explore the effects that instructional data systems have on a building level leader's capacity to evaluate student growth and inform principal practice. Nearly 90,000 public school principals oversee a majority of school operations that include 3.4 million teachers and 55 million PK-12 students (Clifford, Behrstock-Sherratt, & Fetters, 2012). The operations include activities like hiring, resource allocation, and professional development within their buildings. Principals also account for a large portion of the impact teachers have on teaching and learning. After quality classroom instruction, leadership is the second most influential school related factor on student achievement (Leithwood, Louis, Anderson, & Washlstrom, 2004; Cotton, 2003; Waters, Marzano, & McNulty, 2003).

Effective principals need to possess strong instructional leadership skills that promote student growth, manage human resources, support instructional staff, and use data to inform decision-making (Briggs, Cheney, Davis & Moll, 2012). They are responsible for building teacher capacity and facilitating student learning. Federal No Child Left Behind (NCLB) accountability mandates established in 2001 placed a focus on the use of data for school improvement. In February of 2009, President Obama signed the American Recovery and Reinvestment Act (ARRA). As a result, a $435 billion dollar competitive grant program called the Race to the Top Fund (RTTT), was created and continue the trend of focus on the use of data in schools to improve results (USDOE, 2009). RTTT was initiated to reward States for the creation of innovative programs and reforms that would lead to improved student outcomes (USDOE, 2009). Consistent with

the idea that data provide power to make effective positive change that benefits students (Bernhardt, 2004), one of the four-core areas of RTTT is, "Building of data systems that measure student growth and success, and inform teachers and principals about how they can improve instruction" (USDOE, 2009, p. 2). The New York State Education Department submitted a RTTT application in the spring of 2010.

In August of 2010, New York State was one of only ten states to receive funding in the second phase of the RTTT program (USDOE, 2013). New York received 700 million dollars in this phase of the program. The creation and building of instructional data systems that enable districts to measure student success, inform principal practice and develop effective building leaders, is the focus of the RTTT initiative. Use of instructional data systems are also consistent with New York Regents Reform Agenda objectives (NYSED, 2013). Data help schools improve process and student learning (Bernhardt, 2004).

Highly effective principals will include those that can demonstrate the transformational leadership abilities delineated in Kenneth Leithwood's (1994) model of school leadership. The characteristics identified in Leithwood's model include a leader's ability to provide personal attention, encourage new solutions to old problems, communicate high expectations and model the behavior they expect of their teachers (Leithwood, 1994).

Similar characteristics are also present in Kouzes and Posners' (2012) model of exemplary leadership practices. Kouzes and Posners' model is a result of over 30 years of research on leadership practices. Kouzes and Posners' five exemplary leadership practices

are, Model the Way, Inspire a Shared Vision, Challenge the Process, Enable Others to Act and Encourage the Heart (Kouzes & Posner, 2012). Kouzes and Posners' model will be used as a lens by which the results of this study will be analyzed and through which recommendations will be presented. Since "providing direction and exercising influence are at the core of most leadership definitions", (Leithwood, et al., 2004, p. 20), effective leadership will be required for principals to establish a data culture in their buildings.

The United States Department of Education defines a highly effective principal as one whose students achieve high rates of growth and further requires that the growth be a significant factor of a principal's evaluation (U.S. Department of Education, 2011). Consistent with the USDOE's definition, New York Education Law Section 3012-c requires an Annual Professional Performance Review (APPR) process to be in place for not only teachers but also principals in all public school districts in New York State. To include growth as a part of the evaluation process, the State Education Department has created a Growth Reporting System (GRS). This GRS has established a student growth measure called the Student Growth Percentage (SGP). To determine teacher and principal effectiveness under the APPR program, growth measures will be combined with local assessment data and evaluations (NYSED, 2013). Principals will receive an annual score which is a composite rating that identifies a principal as either highly-effective, effective, developing or ineffective (NYSED, 2013).

Two important data elements are required to measure a student's growth as it relates to the instructional program they receive. The two measures are ongoing student

assessment scores and a teacher-student linkage. The teacher-student linkage is data that represents the relationship between the course a student is enrolled in, the start and end dates for the student's enrollment in the course, the teacher of record for the course and the duration of time or instructional minutes the student was exposed to in the course (NYSED, 2012). "By measuring academic growth rather than just proficiency, we can identify strengths and gaps in student progress and help teachers better support students with different academic needs" (NYSED, 2013b, p.3-4).

Technology will be an essential component in transforming districts and schools to be data driven (USDOE, 2013). As principals implement RTTT programs and seek to produce the next generation of college and career ready students, it is important that their schools keep pace with emerging technologies. (Bambrick-Santoyo, 2010). Principals must insure that appropriate technology is in place to support data driven decision-making and instruction in an effort to increase instructional effectiveness, increase efficiency and achieve improved academic results (Bambrick-Santoyo, 2010).

Principals must cultivate a data culture that operationalizes the actions that have achieved proven results. They must anticipate that there will be various phases to establishing a culture of data-driven instructional practices (Bambrick-Santoyo, 2010).

"Data must become an enculturated tool for all educators" (Mandanich & Jackson, 2012, p. 107). Part of enculturation is the trust developed among teachers and administrators (Datnow, Park, & Wohlstetter, 2007). Teachers want to know that it is safe for them to share data and best practices without there being negative or punitive consequences. Principals create an atmosphere of trust through their actions (Waters,

Marzano, & McNulty, 2003). Principals can also build trust and achieve the needed buy-in from teachers through the strategic implementation of targeted professional development and the creation of a supportive setting that encourages the use of data-driven instruction (Bambrick-Santoyo, 2010).

Effective data-driven instruction requires that meaningful data be obtained through quality assessments (Bambrick-Santoyo, 2010). It is the Student Growth Percentage (SGP) and local assessment information being stored in instructional data systems that provide an opportunity for principals to perform analysis and visualizations of the data and take action to drive instructional and professional development decisions (Bambrick-Santoyo, 2010).

The leadership practices of principals surrounding the use of data with teachers and the manner by which they model and share best practices will be examined in this study. Principal leadership practices will be examined through the lens of Kouzes and Postners' five practices of exemplary leadership (Kouzes & Posner, 2012).

Importance of this Study

This research examines the effect that data systems have on a principal's ability to build their own capacity to leverage data as an instructional tool. Consequently this investigation has direct implication for the practice of principals. "Human capacity simply cannot handle the amount of data with which educators are being confronted" (Mandinach & Jackson, 2012, p. 15). Research that informs a principal's practice about how to utilize the collection, analysis and interpretations of data more effectively and efficiently into

actionable instructional steps could make an important contribution to the field. The use of "data is no longer a passing fad" (Mandinach, 2012, p. 11). However, in many schools, there is still a large gap between the use of data to effectively inform teaching and learning and that which is used ineffectively or solely for compliance or accountability purposes. (Bambrick-Santoyo, 2010; Kerr, Marsh, Ikemoto, Darilek & Barney, 2006). The demands on a building level leader are numerous and time is a major constraint (Ingram, Louis, Schroeder, 2004).

Educators need support to use data effectively (Wayman, 2005). The research was designed to identify best practices and professional development activities that principals are using to support each other within a district. Practices include but are not limited to those that assist teachers with turning data into actionable knowledge and improving classroom instruction. The study further sought to have principals identify any barriers or impediments to effectively leveraging data in the participating schools. Barriers are identified along with strategies that principals used in their effort to overcome them.

Conceptual Framework for the Study

The conceptual framework provided in Figure 1 below was created by the researcher to represent visually the research questions that were presented for study, the intended course of action, and the concepts that were explored. In addition, possible barriers were indicated in an effort to determine whether these conditions existed in any of the schools where principals were interviewed.

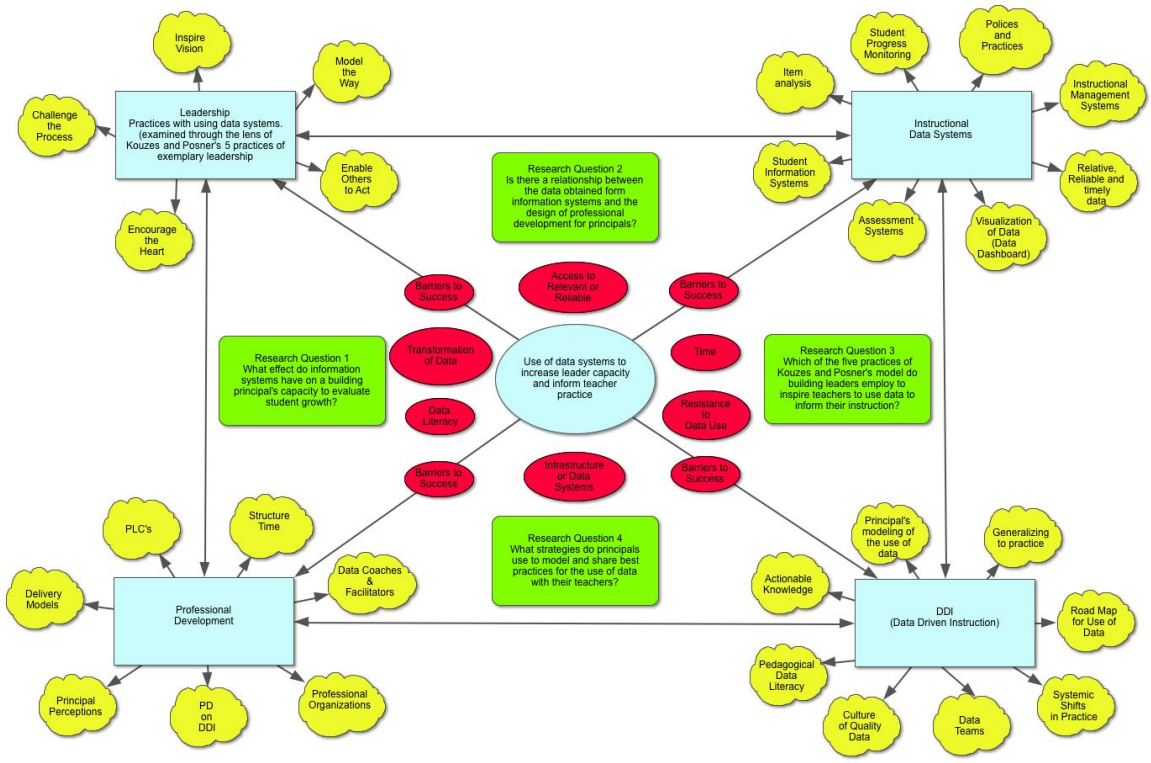


Figure 1: Graphical representation of the research design.

In Figure 1, the green boxes represent the four research questions that are addressed in this study. The blue boxes indicate the four central areas upon which the study focused based on these research questions. The yellow clouds represent the elements, related to the central areas in blue, which were identified in the literature review and research study. The clouds form the basis for the development of the coding system that was used in the study to analyze the information obtained during the interviews. The red boxes, also identified through the literature review, indicate some of the barriers that the researcher seeks to examine and determine if any exist in the schools where the study was conducted.

The researcher used the conceptual framework above as the basis for the analysis of data that will be presented in chapter four of this study.

Research Questions

This study is intended to add to the research on the effect instructional data systems have on a building level leader's capacity to evaluate student growth and inform their practice. The research intends for the findings to provide information that will inform district and building decision makers on the types of data systems, professional development and practices that will lead to a more effective use of data to drive improved student outcomes. The following research questions were designed to achieve these goals:

1. What effects do instructional data systems have on a building principal's capacity to evaluate student growth?
    a. What type of data systems are in place?
    b. How are they used by building level leaders?
    c. Is there a relationship to capacity building?

2. Is there a relationship between the data obtained from instructional data systems and the design of professional development for principals? Do system leaders and principals, if they are responsible for their own professional development opportunities, use data to inform the process that determines the types and design of professional development they received that is intended to improve their practice and ultimately their effectiveness as a building leader?

3. Which of the five practices of Kouzes and Posners' model do building leaders employ to inspire teachers to use instructional data systems to inform their practices? This question explores and seeks to answer whether system building

leaders employ any of the five practices defined by Kouzes and Posners' model (Kouzes & Posner, 2012) which are Model the Way, Inspire a Shared Vision, Challenge the Process, Enable Others to Act and Encourage the Heart.

4. What strategies do principals use to model and share best practices for the use of data with their teachers?

Definition of Terms

The following definitions of terms will be used throughout the study and are provided as an aid to the reader in an effort to establish a common language or clearer understanding of what the researcher is discussing.

Assessment System is defined as a technology application that enables educators to create tests, score and analyze them and report results. The system organizes information about the process and context of students' learning and development, and assists principals and teachers in making informed instructional and programmatic decisions. (Mandinach & Jackson, 2012; USDOE, 2012)

Capacity building is the planned development of or increase in knowledge, management, skills, and other capacities of a person or organization through acquisition, incentives, technology, or training. (Mandinach & Jackson, 2012)

Data Culture is an environment within a school that values the importance of using data to inform practice. The environment contains attitudes and values around data use,

recognize behavioral norms and expectations to use data, and objectives for why data are to be used, informed by the district level or school level vision for data use. (Mandinach & Jackson, 2012; National Forum on Educational Statistics, 2005)

Data-Driven Instruction (DDI) is the philosophy that focuses on one question: Are our students learning? By using results from various assessments to plan and modify instruction, schools break away from the traditional emphasis on what teachers teach in favor of fact-based focus on what students learn. (Bambrick-Santoyo, 2010; McGraw-Hill, 2005).

Data-Driven Decision Making (DDDM) is the collection, examination, analysis, interpretation, and application of data to inform instructional, administrative, policy, and other decisions and practice. (Mandinach & Jackson, 2012)

Data Warehouse is a technology-based repository of data that collects and manages data from a variety of sources within a school district or state education department. (Washington State University, 2012)

Distributed Leadership is the theory that leadership in a school does not reside solely in the principal, but that management and leadership can be distributed across a number of educators to create a shared sense of ownership, responsibility, and leadership. (Wallace Foundation, 2004)

Instructional Data Management Systems (IDMS) is a technology-based tool that assists educators to design and structure their instruction, using data to inform their instruction. (Mandinach & Jackson, 2012)

No Child Left Behind Act of 2001 (NCLB) is an act of Congress, which supports a standards-based education reform with annual testing requirements and sets standards for the establishment of measurable goals to improve student outcomes that are reported annually.

Pedagogical Data Literacy is the ability to transform data skills and knowledge into instructional actions. Pedagogical data literacy combines the understanding of data driven decision-making and pedagogical content knowledge, thus enabling the transformation of data into instructional steps. (Mandinach & Jackson, 2012)

Student Information Systems (SIS) is a technology application that helps districts and schools collect and manage student data. (Mandinach & Jackson, 2012)

Visual Data Analysis or Data Visualization is a blend of highly advanced computational methods with sophisticated graphics to provide the ability for humans to see patterns and structure in complex visual presentations. (New Media Consortium, 2013)

Limitations and Delimitations of this study

The scope of this qualitative study was delimited in several ways. First the sample

size of participating principals was limited to eighteen. Second these principals only represented six school districts in the Capital Region of New York State. These six districts represented less than one percent of the total number of 695 school districts in the entire state. Delimitations of the study also included a focus on the building level leader or principal. It did not include the perspectives of classroom teachers or system leaders. The small sample size and qualitative nature of the study make it difficult to generalize the findings to building leaders in a variety of other types of school districts including those of different sizes, different demographics or in other geographic areas or states.

Summary

The impetus for the study was a desire to explore the elements that build the capacity for building level leaders to assist teachers in transforming data into information and finally into actionable knowledge. Actionable knowledge can be used by teachers to modify their instruction to increase student achievement (Nieto, 1999). Effective principals build a culture that has a positive effect on their teachers (Leithwood and Riehl, 2003). Building a data culture within their schools promotes the systemic and strategic use of data, which in turn positively influences students (Leithwood and Riehl, 2003). "Data must become an enculturated tool for all educators" (Mandinach & Jackson, 2012, p. 107). Once data is an enculturated tool, it can be used to drive instructional decisions that building principals and teachers make on a daily basis. "Districts are learning organizations that consistently are changing, morphing and evolving in response to many internal and external constraints" (Mandinach, 2012, p. 225). One of the fundamental components of learning organizations is data driven decision-making (Senge, 1990).

In the next chapter, an overview of the literature that supports the study will be presented.

CHAPTER II

Literature Review

This chapter gives an overview of the literature that will be utilized as a framework for this study. The literature is organized around the conceptual framework presented in figure 1. A variety of literature related to leadership, human capacity and instructional data system was explored and presented in this chapter. Nine topic areas are covered in this chapter. They include: leadership, Kouzes and Posner's Five Practices of Exemplary Leadership, vision, data culture, human capacity, professional development, instructional data systems, data-driven instruction and barriers to success using data.

Traditional views of the building leader as a manager focusing on operations have been extended to include them as instructional leaders (Clifford et al., 2012; The Wallace Foundation, 2008). The field of educational leadership is continually evolving, so educators must be lifelong learners. Teachers daily diagnose the strengths and weaknesses of their students and determined appropriate instructional actions. The use of data systems and emerging technologies in schools has precipitated the need for educators to develop the knowledge and skills to use data effectively and obtain pedagogical data literacy (Gartner, 2012; Mandinach & Jackson, 2012; Bryan & Harrison, 2008).

Building the human capacity for data use is an essential component of teaching and learning (Datnow, et al., 2007). It requires more than a one-time inoculation of

professional development. It is an ongoing and deliberate leadership practice on the part of the building leader (Institute of Education Sciences, 2009). It is a process that should begin during leadership preparation and continue throughout the careers of administrators and teachers (Knapp, Swinnerton, Copland, Monpas-Huber, 2006).

Achievement data have been historically seen as a summative measure to determine what students learn at the end of a program (Hamilton, Halverson, Jackson, Mandinach, Supovitz, Wayman, 2009). Assessing student learning, progress or growth is formative in nature and is used to assist educators in determining what the student has learned and what deficits may exist (Mandinach & Jackson 2012). It is the transformation, in context, of these elements into actionable knowledge that improves results in the classroom (Mandinach & Jackson, 2012). The primary purpose for data use in most classrooms, schools and districts centers on helping students to learn effectively by improving teaching and learning (Easton, 2009).

The use of data is important because it provides the foundation to base decisions on evidence rather than assumptions, politics, anecdotes and judgment. (Coburn, Toure' and Yamishita, 2009; Slavin 2002). Data support the change in practice (Mandinach & Jackson, 2012). Despite the importance of data, building human capacity around its use and demonstrating the impact on learning will be equally important (Hakel, Koenig, & Elliott, 2008). This is due in part because previously data use fell "between the cracks and funding tended to go to professional development around specific curricula and content areas" (Mandinach, 2012, p. 18). A systemic commitment to the use of data across all levels of the school district can be a cultural shift that will require strong

leadership (Mandinach, Rivas, Light, & Heinze, 2006; Mandinach & Cline, 1994). The mandate for this cultural shift is supported by greater demand from stakeholders like parents for schools to be responsive to customer satisfaction and transparency with data. (Rinehart, 1993; Peck & Carr 1997). This has resulted in attempts in many states like New York to make school's and teacher's results available to parents and the public (Ingram, Louis, Schroeder, 2004). In New York State, the Education Department is scheduled to launch a new initiative in the fall of 2013 called the Educational Data Portal (EDP). The intent of the portal is focused on better supporting teaching and learning by making student data available to educators, students and their families (NYSED, 2103).

Leadership

After teacher quality, leadership is the second most influential school level factor in student achievement (Waters, et al., 2005). Despite the demands on principals for increasing accountability, expectations of them and teachers assumes that they are prepared to use data effectively. To leverage data is to use it in a manner that identifies where students are academically and provide insights into why they are where they are (Bambrick-Santoyo, 2010). Data should be used to develop a plan that targets deficiencies, is responsive and flexible. (Lee and Hermas, 2000). The Interstate School Leaders Licensure Consortium (ISLLC) contains several standards related to the use of data (CCSSO, 2008). The standards include language that addresses the need for leaders to collect and use data to identify goals, assess organizational effectiveness, promote organizational learning and examine trends (CCSSO, 2008).

"Data must become an enculturated tool for all educators" (Mandanich & Jackson, 2012, p. 107). Part of enculturation is the trust developed among teachers and administrators (Datnow, et al., 2007). Educators want to know that it is safe for them to share data without there being negative or punitive consequences. Sosik (2004) characterizes trust building as, "the process of establishing respect and instilling faith into followers based on leader integrity, honesty, and openness" (Sosik, 2004, p. 147). To meet the needs of teachers and monitor their progress, effective principals adapt their leadership practices (Clifford et al., 2012). Transformational leadership requires school principles to assist staff in addressing old problems in new ways (Marzano, et al., 2005).

School leaders need to learn how to use a variety of data systems. These sources of data can be used for resource allocation, teacher evaluation and curriculum decisions (Mandinach & Jackson, 2012). It is imperative for leaders to learn how to use data and be able to translate it into practice. (Datnow et al., 2007). Support for effective data analysis and interpretation relies heavily on the vision school and district leadership have for data use in schools and classrooms (Earl & Katz, 2006).

Administrators must possess pedagogical data literacy, which requires them to apply their knowledge of administrative functions in conjunction with data skills to inform their practice (Shulman, 1986). "Developing effective action is about changing student learning at its core" (Bambrick-Santoyo, 2010, p. 70). Not all leaders possess the same aptitude when it comes to pedagogical data literacy (Knapp et al., 2006), some are "woefully inadequate" and sometimes inaccurate (Earl & Katz, 2002).

Principals who adopt a systematic framework for the use of data support teachers in a cyclical data inquiry process (USDOE, 2009). In a cyclical data inquiry process, teachers instruct, assess, collect, analyze, interpret, modify, monitor and triangulate a variety of data about a student's learning needs (Mandinach & Jackson, 2012). One framework that has been developed to assist leaders in the transformation of values and vision into action and reality is a result of over thirty years of research. The framework is referred to as the Five Practices of Exemplary Leadership and was developed by James Kouzes and Barry Posner (Kouzes & Posner, 2012).

Kouzes and Posner's Five Practices of Exemplary Leadership

Kouzes and Posner's (2012) research led them to identify Five Practices of Exemplary Leadership. In addition to the five practices, they have identified ten commitments. Each practice contains two commitments (Kouzes and Posner, 2012). Their research, which began in 1982, sought to understand what comprised exemplary leadership. The Five Practices was a result of their research study that included men and women of all ages, at all levels in an organization representing a wide diversity of companies around the world (Kouzes and Posner, 2012). The leadership practices of principals surrounding the use of data with teachers and the manner by which they model and share best practices will be examined in this study through the lens of Kouzes and Postners' five practices of exemplary leadership (Kouzes & Posner, 2012).

Kouzes and Posner's (2012) first practice is "Model the Way". The premise is that leaders must model the behavior leaders expect of others. The two commitments

under this practice are, “Clarify Values - Find Your Voice and Affirm Shared Values” and “Set the Example”. Kouzes and Posner’s research revealed that personal values have a significant effect on behavior at work. The leader’s voice must be the words or represent an expression of themselves. The second commitment, affirmed shared values, relates to the leader's responsibility to build an organization’s shared values. Kouzes and Posner’s (2012) posit that leaders will fail in their efforts to motivate constituents if they, stand or affirm values which are not representative of the group. “Unity is forged, not forced” (Kouzes and Posner, 2012, p.17). There is an expectation that in order for leaders to engage their constituents, a conversation about values must take place. What emerges as a result of this engagement is an understanding of how people will be treated and how their organization differentiates itself from others (Kouzes and Posner, 2012). Strong leadership requires the maximizing of effectiveness. Modeling expected results for faculty allows them to visualize the desired action prior to their own implementation (Bambrick-Santoyo, 2010)

Kouzes and Posner’s (2012) second practice is, “Inspire a Shared Vision”. To inspire a shared vision, effective principals need to set high expectations while modeling good instruction, coaching and providing teachers with opportunities for feedback and reflection on their practice (Clifford et al., 2012). The two commitments under this practice are, “Envision the Future – Imagine the Possibilities” and “Enlist Others – Appeal to Common Ideas” (Kouzes and Posner, 2012). Envision the future is about a leader’s ability to look at the proximity and scrutinize patterns that point towards the future. Leaders prospect the future for opportunities (Kouzes and Posner, 2012). Commitment cannot be commanded; it has to be inspired. Others must be enlisted on the

leader's journey by appealing to everyone's shared aspirations. Enlisting others by the articulation of a leader's vision, is consistent with the ISLLC's first standard, "An education leader promotes the success of every student by facilitating the development, articulation, implementation, and stewardship of a vision of learning that is shared and supported by all stakeholders" (CCSSO, 2008, p.14).

Kouzes and Posner's (2012) third practice is, "Challenge the Process". "Challenge is the crucible for greatness" (Kouzes and Posner, 2012, p.19). Kouzes and Posner found in their study that to achieve one's personal best change is often needed. Max Dupree stated, "We cannot become what we want to be by remaining what we are" (DuPree, 2004, p. 169). The two commitments under this practice are, "Search for Opportunities" and "Experiment and Take Risks". Leaders venture out in a search for opportunities. Often challenges are cleverly disguised opportunities that require the leader to experiment and take risk. Innovation and change are laundered with experimentation and risk-taking. Failures are inevitable. Leaders generate small wins and quickly move past failure and obstacles, all the while learning and reflecting from their experiences (Kouzes and Posner, 2012).

Kouzes and Posner's (2012) fourth practice is, "Enable Others To Act". The two commitments under this practice are, "Foster Collaboration" and Strengthen Others". According to Kouzes and Posner's (2012), leaders build trust, fuel collaboration and facilitate relationships. By strengthening others constituents become motivated to be more productive and outperform our expectations. The role of a building leader is moving away from that of a soloist towards that of an "orchestra conductor" (Wallace

Foundation, 2006). Effective leaders distribute responsibilities to teachers who skills and capacities match the required tasks (Walker 2002).

Kouzes and Posner's (2012) fifth practice is, "Encourage the Heart". Genuine acts of caring allow people to make progress. "People do not care what you know until they know you care" (Maxwell, 2007). Leaders must recognize the contributions of their teams. It is incumbent for the leader to create a culture that includes celebrating success and promotes a sense of community (Kouzes and Posner's (2012). Kouzes and Posner's research revealed, "a leader's behavior explained the vast majority of constituents' workplace engagement" (Kouzes and Posner, 2012, p.25).

Vision

The leader's role is moving away from being a soloist towards that of a conductor providing vision and setting expectations for the use of data (Hamilton et al., 2009). Administrators need to set examples and communicate clear expectations for data use (Means, DeBarger, Padilla, 2010). The articulation of a clear vision for the use of data by leaders is an essential component in creating a culture that institutionalizes data driven practices (Hamilton et al., 2009). In the absence of a clear vision for the use of data, unsystematic use may result in the diminished effectiveness and capacity of the leader (Mandinach, 2012). The vision for the effective use of data must also support a sustained professional development initiative (Mandinach, 2012). Professional development provides an opportunity for principals and teachers to develop experience with and expertise on how data can drive instructional practices.

"Vision paves the way for the creation of culture" (Mandinach, 2012, p. 120). Culture implies the establishment of the collaborative environment not just an autocratic leadership mandate, but supports shared learning, where teachers learn from each other (Means, 2011).

Data Culture

Data Culture is an environment within a school that values the importance of using data to inform practice (Mandinach & Jackson, 2012). The environment contains attitudes and values around data use, establishes behavioral norms and expectations to use data, and objectives for why data are to be used. District level or school level vision for data use play an important role in the process (Mandinach, & Jackson, 2012; National Forum on Educational Statistics, 2005). Feldman and Tung (2001) observed that a more professional school culture was often a byproduct of the use of data in schools.

Research supports the importance of the principal's role in the establishment of a data culture. Datnow, Park, and Wohlstetter's (2007) study of four school systems with records of improvements in student achievement found that each system had established a culture of data use. System leaders in the districts created clear norms and expectations for the use of data. The study further showed that principals played a critical role at the building level by reinforcing the expectations set by the district for the use of data (Datnow, et al., 2007). Findings from studies conducted by Armstrong and Anthes (2001) and Massell (2001) showed that data use was valuable in improving the attitudes of educators in regard to educational practice. The more explicit, sustained, consistent

and vertically aligned a principal's vision for data use from a systems perspective the better the results will be (Long, Rivas, Light, Mandinach, 2008). Conflicting messages only serve to create confusion. Principals, teachers and instructional leaders should all be on the same page beginning with senior leadership (Long et al.,, 2008). The communication of vision is achieved both through explicit verbal messages and by actions modeled and the resources provided (Bettesworth, 2006).

Human Capacity

A culture of quality data is also supported through the establishment of a robust technological infrastructure and professional development activities that build human capacity around data driven practices (Mandinach & Jackson, 2012).

Principals can build capacity to use data by training teachers and instructional specialists to become school-level data coaches. The coach's role is to assist teachers to process, analyze and question data in a structured approach (Love, 2002, 2009).

Establishing trust is a process that includes respect, integrity, honesty and transparency (Sosik and Dionne, 1997). Principals can create an atmosphere of trust through their daily actions (Marzano et al., 2005). Teachers must trust their principal and coaches in order to feel safe enough to share challenges in search for effective instructional strategies. The ability and willingness to exchange ideas and learn from challenges is critical. To build the capacity of teachers to improve practice and student achievement, data use in schools needs to be safe and transparent (Berliner, 2006).

The discussion of building human capacity is connected with issues of professional development to improve pedagogical data literacy (Mandinach & Jackson, 2012). If human capacity around data driven decision-making is going to improve, the skills of teachers and principals must be continually developed (Mandinach & Jackson, 2012). Targeted professional development in the fundamentals of strong classroom instruction, is critical to success (Elmore, 2000). It will be incumbent upon principals to ensure that teachers have the appropriate professional development opportunities in order for them to address capacity concerns (Marzano et al. 2005).

Professional Development

Quality professional development is essential to any educational improvement effort, "particularly those that seek to integrate technology in support of classroom instruction" (Martin and Strother, 2010, p. 53). The findings of a research study conducted by Martin and Strother (2010) revealed a positive relationship between student achievement and the overall implementation of professional development. Their study also found that the utilization of technology had the "most consistent relationship with student achievement across all grade levels" (Martin and Strother, 2010, p. 66). Educators need professional development opportunities to build their capacity to use data and access to technology systems that support data driven decision-making (Mandinach, 2012; Bambrick-Santoyo, 2010; DuFour & Eaker, 1998). Despite these types of professional development opportunities, many teachers and principals do not know how to make even basic queries to obtain the kind of data they need to answer their questions (Wayman & Stringfield 2006; Confrey & Maker, 2005). Since building

capacity around the use of data is essential (Baker, 2003), required professional development on the use of data within a district will need to be role dependent (Wayman & Cho, 2009), be ongoing, include coaching and support, and be closely connected to practice to have impact (Martin and Strother, 2010). Means et al. (2010) espouse that professional development on a continuing basis is seen as more beneficial than formal, one time training.

Districts report large disparities between the professional opportunities that are currently available versus those they report needing (Mandinach, 2012). Love et al. (2008) posits that a combination of continuous professional development and technical support is a sensible model that is being implemented. Collaboration or teaming around data use is gaining attention in schools (Hamilton et al. 2009). Teachers feel supported when they work with and learn from their colleagues (Mandinach, 2012). Data teams are considered a form of a Professional Learning Community (PLC). In a PLC, "educators create an environment that fosters mutual cooperation, emotional support, and personal growth as they work together to achieve what they cannot accomplished alone" (DuFour & Eaker, 1998, p. xii). Love et al. (2008) postulates that a combination of continuous professional development and technical support is a sensible model that is being implemented. PLC's are a "major vehicle" for the collaborative use of data (Mandinach & Jackson, 2012).

In addition to professional development, teachers need access to adequate resources. "Resources are to a complex organization what food is to the body" (Marzano et al., 2005, p. 59). Resources in a school extend beyond books and materials (Deering,

Dilts & Russell, 2003). Technological resources like data systems are an essential component in a district and a school's effort to build the capacity for instructional improvement (Fullan, 2001).

Instructional Data Systems

Instructional data system is a broad term that encompasses three primary areas of information systems used by educators in districts and schools include assessment systems, instructional data management systems and student information systems. Assessment systems enable educators to create tests, score and analyze them and report results. These systems organize information about the process and context of students' learning and development, and assist principals and teachers in making informed instructional and programmatic decisions. (Mandinach & Jackson, 2012; USDOE, 2012). Instructional Data Management Systems (IDMS) assist educators in designing and structuring their instruction, using data to inform their instruction. (Mandinach & Jackson, 2012). Finally, Student Information Systems (SIS) permit districts and schools to collect and manage student data. All of these systems must be able to provide access to multiple sources of information (Mandinach & Jackson, 2012).

The types of data that educators use are as varied as the purposes for which they are being collected and used. Data also vary according to the level and one's role with in the educational system (Long, et al., 2008). Data systems must incorporate data elements that reflect student learning, demographic, perception data, teacher and course information, disciplinary, transportation, and other types of data (Mandinach, 2012).

Other important characteristics of data systems are that they should be accessible, comprehensive, and flexible. The data contained within them needs to clearly support instructional decisions.

Data systems must be interoperable in the ecosystem of the school district (Hamilton et al. 2009). Interoperability of systems means that various data systems are all interconnected in a way that allows for information to be easily shared between them. Disparate systems do not easily allow for data to be aggregated and may lead to a source of frustration on the part of the staff (Wayman et al., 2009). Data silos, caused by the use of disparate systems, often present challenges in the effective use of data (Rugg, 2007). Data silos are databases of information contained in data systems that are unable to communicate with other information systems within the same organization. Historically, data system acquisition was primarily driven by accountability requirements and not for the support of curriculum and instruction (Mean et al., 2010).

It is incumbent upon educators and school leaders to harness the potential to inform daily instructional practices that they offer (Mandinach, 2012). Preliminary recommendation number four in the New York State Education Department's Reform Commission's "Putting Students First" education action plan, states that schools should invest in "transformative technology in order to increase student achievement" (NYSED, 2012). Data can be used to identify students' strengths and weaknesses and prescribe appropriate instructional strategies (Brunner et al., 2005). Using technology, assessments can become more meaningful, timelier and seamlessly integrated into the curriculum, and drive instructional decisions (Pellegrino & Quellmalz, 2010).

Data Driven Instruction and Decision Making

The RTTT requires teachers to draw on best practices and use data to differentiate instruction. It further requires principals to use data for recruitment, hiring, evaluation and professional development (CRREO, 2012). Using data informed decisions have long been a strategy of high-performing learning organizations (Senge, 1990). "The closer and more aligned data are to instruction, the more likely they will be integrated into practice" (Mandinach and Snow, 1999, p. 16). The principal's goal is to use data to improve student learning and build teacher capacity to enhance the teaching and learning process.

No Child Left Behind NCLB and RTTT both dictate the use of data to improve results, making data driven instruction (DDI) of high interest in schools (Hamilton et al., 2009). Data driven instruction is further supported by the improved capacity of schools to process and disseminate data efficiently and in a timely manner. Data driven instruction, is seen by some educators as a compromise between the use of data and teaching for their time. However, the return on investment of time is achieved by the creation of the structure that improves teacher's effectiveness in delivering more targeted instruction (Mandinach & Jackson, 2012).

Barriers to the Use of Data

One of the biggest barriers to data use is time (Means, 2010; Ikemoto, March, 2007; Ingram et al., 2004). Other barriers included the lack of professional development,

teacher preparation, lack of technical skills for data systems, preparation of principles, lack of clear vision, system usability, unusable data, and untimely data (Ingram et al. 2004). Principals must set examples, what they tell staff they expect must be consistent with the support and resources they provide (Mean et al., 2010).

Time is a valued commodity for educators because of the constraints of the school calendar, school schedules and other conflicting initiatives. Principals in support of data use must make adjustments in teachers' schedules to allow for adequate time to gather and interpret data for decision-making (Ingram et al., 2004).

It is not sufficient for principals to just acquire the knowledge and skills around the use of data. (Airola, Garrison, & Dunn, 2011). Their attitudes, beliefs, self-efficacy and desire to address educational concerns are also needed to overcome the barriers to effective data use (Airola et al., 2011). Bernhardt (2004) report that schools do not have databases that provide easy access and analysis of data. There is also an absence of adequate professional development in enabling teachers to see the importance that data can have in making a difference in the classroom.

Some smaller districts may have another barrier. They may not have data facilitators or data coaches who have the sufficient expertise to support teachers (Mandinach & Jackson, 2012). Collaboration among educators to examine data, without the assistance of a facilitator, yield knowledge and understanding diminishes the chances for the incorrect use of data (Hamilton et al., 2009).

Trust may be a barrier. Part of enculturation of a data culture is the trust developed among teachers and administrators (Dalnow et al., 2007). Educators want to know that it is safe for them to share data without there being negative or punitive consequences. Discussion of the "undiscussables" (Love et al., 2008), the difficult topics that need to be addressed before any progress or improvement can be achieved.

Data systems must incorporate data elements that reflect student learning, demographic, perception data, teacher and course information, disciplinary, transportation, and other types of data (Mandinach & Jackson, 2012). The lack of access by principals to these types of systems is a barrier. Disparate systems do not easily allow for data to be aggregated and may lead to a source of frustration on the part of the staff (Wayman et al., 2009). Principals and teachers need to learn how to strike a balance between the art and science of teaching and learning in education (Gage, 1978).

The literature review addressed the leadership practices, data systems, professional development and data driven instructional decision-making through the perspective of a building level leader. The areas presented are all interrelated and systemic in nature. The next chapter will present the methodology that was used to conduct this study.

CHAPTER III

Research Methodology

The intention of this qualitative study was to explore what possible effects instructional data systems might have on a building leader's capacity to evaluate student growth and inform principal practice. A qualitative research approach was selected for this study based on the researcher's desire to have participants take the necessary time to elaborate on their responses to the research questions. This is not as easily accomplished using a survey format (Vogt, Gardner, & Haeffele, 2012). This qualitative approach provided the opportunity to study the subject area in depth in order to gain a better understanding of those practices that allow a building principal to build their own capacity to effectively use data to drive improved student outcomes.

New York Education Law Section 3012-c, requires an Annual Professional Performance Review (APPR) process be in place for teachers and principals in all public school districts in New York State. The State Education Department has created a Growth Reporting System (GRS). This GRS has established a student growth measure called the Student Growth Percentage (SGP) to determine teacher and principal effectiveness under this program. Growth measures will be combined with local assessment data and evaluations.

Under this New York state model, two important data elements are required to measure a student's growth as it relates to the instructional program they receive. The two measures are ongoing student assessment scores and a teacher-student linkage. Highly

effective principals, which is one of four designated categories in the new AAPR, will include those that can demonstrate the leadership abilities identified in models developed by persons like Kenneth Leithwood (1994) and Kouzes and Posners. In Kouzes and Posners' (2012) model, five exemplary leadership practices are identified. The practices are Model the Way, Inspire a Shared Vision, Challenge the Process, Enable Others to Act and Encourage the Heart (Kouzes & Posner, 2012).

Given the existence of these new data information systems, a qualitative study of the relationship between data and professional development for principals can take place. The leadership practices of principals surrounding the use of data with teachers and the manner by which they model and share best practices will be examined in this study. Principal leadership practices will be examined through the lens of Kouzes and Postners' five practices of exemplary leadership (Kouzes & Posner, 2012).

Research Questions

This study is intended to add to the research on the effect instructional data systems have on a building level leader's capacity to evaluate student growth and inform their practice. The researcher intends for the findings to provide information that will inform district and building decision makers on the types of data systems, professional development and practices that will lead to a more effective use of data to drive improved student outcomes. The following research questions were designed to achieve this goal:

1. What effects do instructional data systems have on a building principal's capacity to evaluate student growth?

(a) What type of data systems are in place?

(b) How are they used by building level leaders?

(c) Is there a relationship to capacity building?

2. Is there a relationship between the data obtained from instructional data systems and the design of professional development for principals?
3. Which of the five practices of Kouzes and Posners' model do building leaders employ to inspire teachers to use instructional data systems to inform their practices?
4. What strategies do principals use to model and share best practices for the use of data with their teachers?

Population and Sample

The target population for this study was school building leaders. The study investigated the relationship between the leadership practices surrounding the use of instructional data systems and the capacity of building principals to use the data to inform decisions. Capacity includes the leader's ability to inspire a shared vision for the use of data as well as the modeling best practices (Kouzes & Posner, 2012).

The sample consisted of 18 principals from six school districts in upstate New York. Larger school districts, with student enrollments above 2000 were selected to ensure that there were multiple building principals available from any particular district that was selected to participate. Wealth and type of district were not determining factors in choosing a school district for participation in the study.

The school districts in upstate New York selected for the study were chosen based on purposeful sampling. Purposeful sampling is used to intentionally find participants that

will provide the researcher with the best information to understand the problem or central phenomenon (Creswell, 2009, 2012). Through the examination of district websites, publicly available information about the number of schools, and the data systems in use, the researcher determined the six districts that would be the focus for this study.

The interviewees, which are building principals in the six districts, were selected based on a combination of homogeneous and snowball sampling. Homogeneous sampling, is where the researcher "samples individuals or sites based on membership in a subgroup that has defining characteristics" (Creswell, 2012, p.208). Qualitative snowball sampling is where the researcher asks participants to recommend others to be sampled. (Creswell, 2012).

The selection characteristics for the initial participants included those principals in school districts using instructional data systems. Example of these systems include LinkIt, DataMate, SchoolTool, eSchoolData, Powerschool, Infinite Campus, Pearson's Student Management System and eSchoolPlus. The first principal in each district was contacted by an email address available on the district's website. Once a principal accepted an invitation to participate, he or she was asked to suggest other possible participants.

In all of the districts except one this worked to identify other potential principals who could be invited to participate. In District D (See Table 1.), the first principal was contacted and participated in the study. However, the two other principals recommended for participation in the study did not respond to two separate email invitations sent by the researcher.

To maintain confidentiality throughout the study, the researcher did not share with the participants who recommended them for the study or who the other participating

principals in the study were. Having multiple participants from a district also provided the opportunity for the researcher to triangulate information within most of the school districts. Triangulation is a strategy that a researcher uses to corroborate evidence among a variety of sources (Creswell, 2012). An example in this qualitative study would be the triangulation among principals in the same district. The purpose of triangulation in qualitative research is to increase the credibility and validity of the results (Creswell, 2012).

Table 1

Number of Principal Participants Per School District

School District	Number of Principal Participants
A	3
B	3
C	5
D	1
E	3
F	3
Total	18

Instrumentation

After the consent form was signed, the researcher began the digital recording and

proceeded to interview the participant. An interview protocol, which included a script of research questions (See Appendix C.), was followed for each interview. The interview questions were based on the research questions and developed as a result of the completion of a literature review. Kouzes & Posner's (2012) model was used as a basis for the development of the research questions designed to study the practices that principals use to inspire teachers to use information systems to inform their practices. The interview script, which included fifteen open-ended questions and research questions, were not shared with the participants ahead of time. The researcher did not deviate from the script except to ask questions for clarification purposes when required. Interviewing of the principals included questions that identified those instructional data systems and practices in use in their district and school. Participants were asked to participate in approximately a 45-minute interview. Sixteen of the interviews took place in the principal's offices and two were conducted by phone. The interviews lasted between eighteen and fifty-six minutes, with the average being twenty-eight minutes in length.

A digital audio recorder was used to record the audio of all personal interviews. The researcher was the only person who was aware of the actual participant's name and school affiliation. All names and school affiliations in the study were substituted with pseudonyms to protect the confidentiality of the participants. The informed consent form notified the participant that a confidentiality agreement was also in place with the transcriber to further insure that confidentiality would be maintained during and after the study was completed. At the conclusion of the interviews, the digital files containing the audio from the interviews were securely uploaded to a transcription service. Each school district was assigned a number, each school a letter and each principal a number. For

example, the fifth principal from district four and school E would be referenced as participant "4E5" in the study. A secure spreadsheet or "codebook" was kept on the researcher's password protected and encrypted computer.

The transcription service notified the researcher approximately three weeks following the upload that the audio had been transcribed and was available in Microsoft Word format for download from the company's secure website. The researcher accessed the secure website by using a username and password set up on the site and the files were downloaded to the research's password protected computer.

The digital recorder was secured in a locked filing cabinet in the researcher's home office. All digital recordings and transcription notes were kept securely on a password-protected computer with an encrypted hard drive and were destroyed or deleted after the committee has approved the study.

Data Collection

Eighteen principals representing six school districts in upstate New York were interviewed. The researcher emailed an invitation (See Appendix A) to twenty potential principals to participate in the study. Two principals did not respond to the invitation. The email detailed the scope of the study as outlined in this document. Details of the email included the purpose for the study, the expectation of the amount of time the interview would take and the assurance that their confidentiality would be protected at all times.

Prior to the commencement of the interviews, an informed consent form (See Appendix B.) was reviewed with the principals. The consent form again outlined the

purpose for the study, the researchers involved, the expected time commitment for the interview and the format of the interview questions. It also explained how confidentiality would be maintained during and after the conclusion of the study, the manner by which the interview session would be digitally audio recorded and how the recordings and resulting transcripts would be secured. In addition, the researcher identified that a potential benefit to the participants from the results of the study could be the identification of the relationship between data systems and capacity building as well as best practices for the use of data with their teachers. Principals were reminded in the informed consent form that there would be minimal risk in participating in this study and no personally identifiable data would be reported at any time. The researcher notified the principals that participation was voluntary and they could chose not to answer any question, revoke consent or withdraw from the study at any time without penalty. Prior to the start of the interview questions, the principals were given an opportunity to read the entire agreement and ask any questions about participation. The principals were then asked to sign the agreement. Copies of the agreement were securely transported in a locked briefcase and afterwards were locked in filing cabinet in the researcher's home office. Upon conclusion of the presentation of the finding and acceptance of the study by the committee, all documents will be shredded and digital recordings permanently deleted.

Reliability and Validity

Reliability refers to the consistency of a measure. Reliability within the context of this qualitative study was achieved through various methods. The researcher strictly followed the interview protocol and research questions approved by the Sage College of Albany Internal Review Board. The researcher was extremely careful not to deviate from

the script except to ask for clarification. The researcher did not alter the transcripts based on this review.

In addition, the use of member checking (Creswell, 2009) to verify the accuracy of the findings was conducted. This process included the researcher sending the respective transcript back to participants and providing them an opportunity to give feedback on the findings by a specific date. Eight of the eighteen participants responded by the predetermined deadline. One the eight requested minor corrections to the text related to the use of acronyms. Reliability was also maintained during the coding and analysis process. The researcher established eighty codes and consistently and objectively applied them to the interview transcripts.

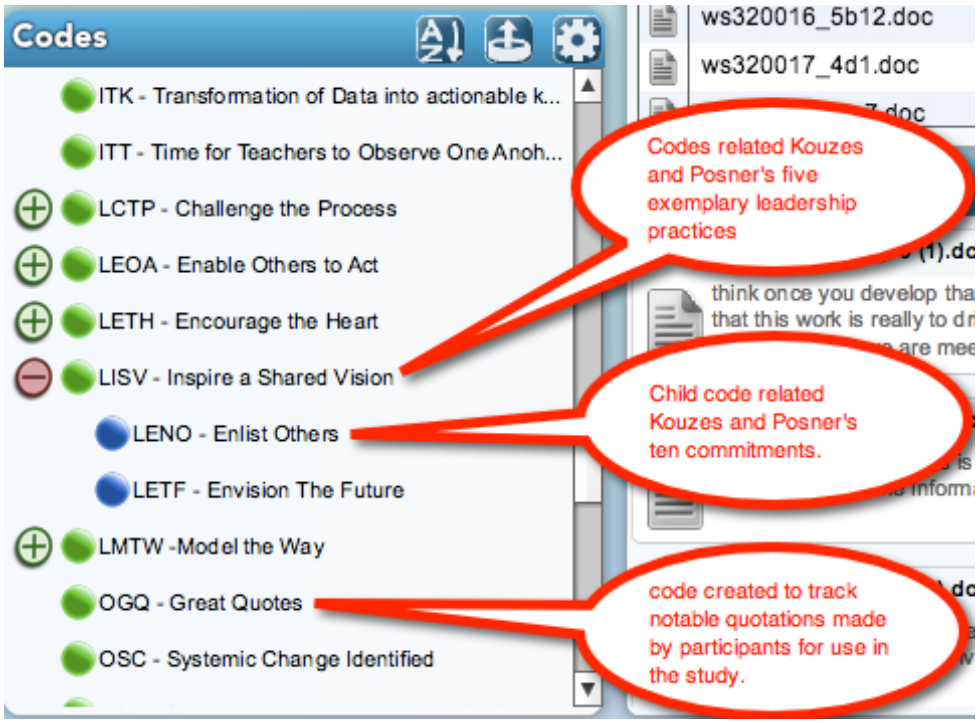
Validity is he extent to which a measuring device measures what it intends to measure. Validity was also established by having a principal, who was not participating in the study review the research questions. The principal was asked to comment on appropriateness of the questions and the length of the interview. In regard to the content of the research questions, validity was achieved by using other seminal studies to inform the development of the research questions and triangulation of the results.

Data Analysis

The analysis of data began with the researcher reading through all of the transcripts from the interviews several times to become familiar with the content. The eighteen transcripts were then electronically loaded into a web-based software product call Dedoose (www.dedoose.com) that was used to apply codes to excerpts of the transcripts and conduct analysis of the information. Participants were identified by

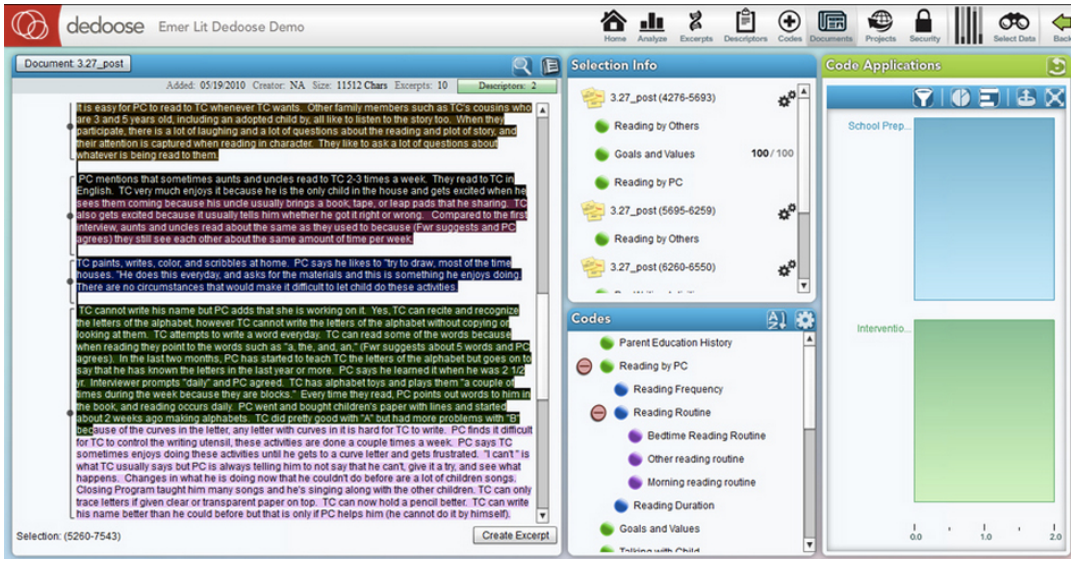
pseudonyms through the entire process of the study. The researcher is the only one who knew the identities of the participants.

The custom coding system built by the researcher and input into Dedoose, was created based on four factors all related to the research questions. During this process, the definition of codes were carefully managed to ensure that there were no shifts in the meaning of the codes (Creswell, 2009). The four factors were the literature review conducted for this study, the five practices of exemplary leadership and the ten commitments in Kouzes and Posners' Leadership Challenge model, emerging themes from the review of the transcripts and a code reserved to identify participant quotes that support the research study and the findings. In total, eighty codes were created. Fifty-eight of the codes were related to the literature, fifteen were related to Kouzes and Posners' Leadership Challenge model, six related to emerging themes and one was created to identify great quotes. See the example in figure 2 below.



Dedoose Version 4.5, (2013)

Figure 2: Screen shot from Dedoose software illustrating the coding system.



Dedoose Version 4.5, (2013).

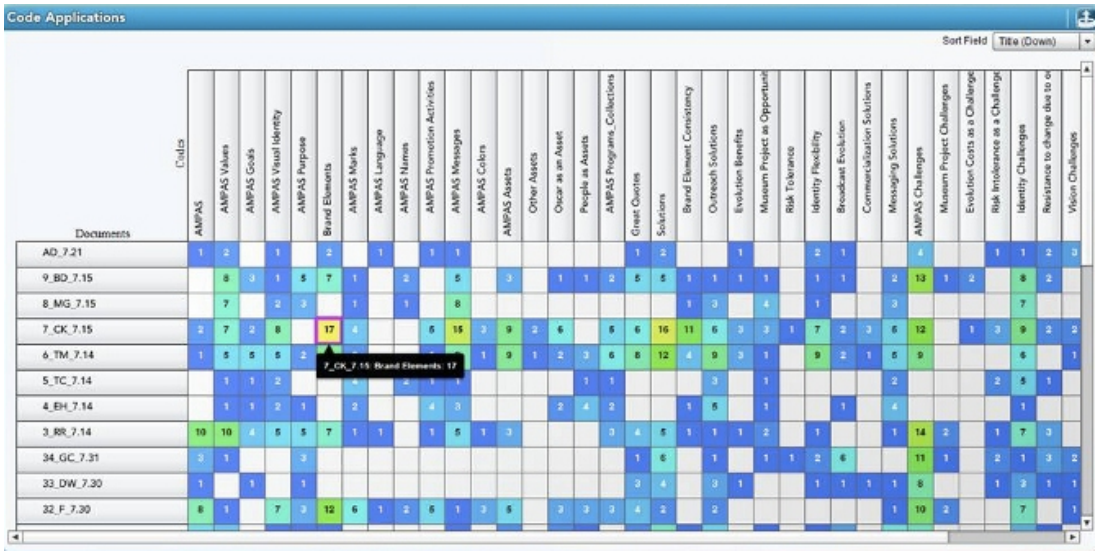
Figure 3: Screen shot from Dedoose software illustrating the color-coded excerpting of the transcripts using the established coding system.

Transcripts were carefully reviewed in the Dedoose platform. Dedoose allows the researcher to excerpt meaningful segments of the interview text by assigning multiple codes (*See Figure 3.*). Codes can be nested to provide for parent and child relationships. The use of child codes in this application allowed the researcher to explore relationships between various dimensions of a parent code. For example, a parent code was created to represent each of Kouzes and Posner's five practices of exemplary leadership. In addition, two child codes were created under each parent code in Kouzes and Posner's model. The child codes represented the two commitments that Kouzes and Posner state, "serve as the template for explaining, understanding, appreciating, and learning how leaders get extraordinary things done in organizations" (Kouzes and Posner, 2012, p. 28). The researcher was then able to use this information in the analysis of the findings to identify if there was any evidence of the leadership commitments.

Some codes were also weighted to identify to what degree the evidence supported an emerging theme. For example, the researcher created a weighted code called "%TMI". This code, which had a weight ranking of 0-100 was used by the researcher to record the principal's perception of the percent of teachers in their school who modify instruction based on assessment data. In the application of this weighted code, the researcher used this perceptual data to triangulate information among other principals in a particular district as well as the entire study. Another example of the application of weighted codes included the coding of closed-ended yes and no questions. Affirmative or yes responses to questions were assigned a number of one, while negative responses were assigned the number zero. This allowed the researcher to remain objective during the coding

processes.

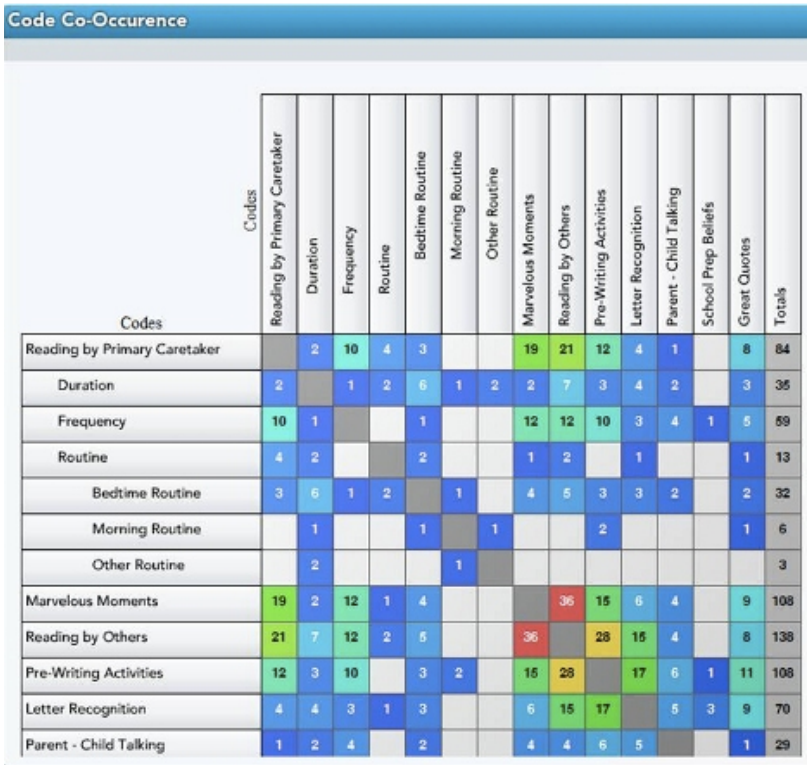
The software also allowed the researcher to create descriptors and record any quantitative data that resulted from the interviews. In this study, the principal's gender, number of years employed in their current school district, number of years in education and the number of years as principal in their current assignment were recorded and entered into Dedoose. This allowed for analysis to take place related to the descriptors. An example of this can be seen in Figures 4 and 5 below. These figures represent the code application and code co-occurrence matrixes that can be generated within Dedoose.



Dedoose Version 4.5, (2013)

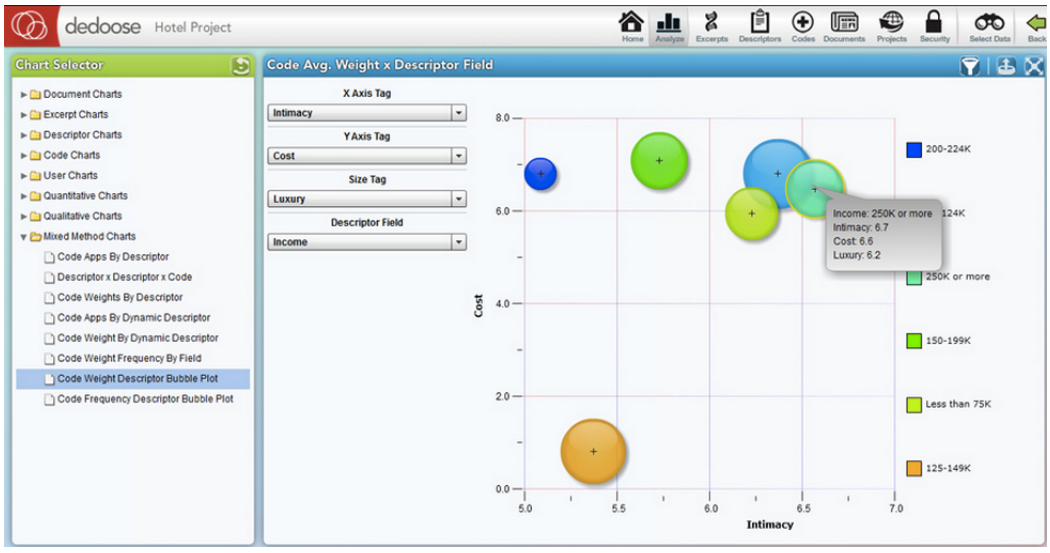
Figure 4: Screen shot from Dedoose software illustrating the code application matrix, which indicates how many times a particular code appeared in the excerpt of a specific transcript. The matrix also provides a row indicating the total number of times any particular code appeared in the excerpts.

Bubble plots (see Figure 6) were also available within the software. These plots were particularly useful in analyzing relationships between codes and descriptor data.



Dedoose Version 4.5, (2013).

Figure 5: Code Co-Occurrence Matrix represents the number of times multiple codes appear in any particular excerpt.



Dedoose Version 4.5, (2013).

Figure 6: Bubble Plot produced by Dedoose software

The code application matrix was useful with the triangulation of data. The triangulation of data in the study consisted of gaining various perspectives on the same question from a variety of different research participants. The code application matrix enabled the researcher to identify when the frequency of particular codes emerged among participants from the same district. Creswell (2012) posits that the common patterns or themes that emerge provide the basis for which observations can be correlated. From the observations the research's conclusions were drawn. This further enhanced the validity of the study.

Researcher Bias

The researcher is currently a Chief Technology Officer of a suburban school district with over 30 years of experience in education. The researcher is very versed in the means by which information systems and assessment data can be used to measure student growth, develop professional development opportunities and inform teacher practice. To guard against any researcher bias arising from his background, the researcher steadfastly followed the interview protocol and did not deviate from the script. The researcher also took great care to objectively and consistently apply the codes to the interview transcripts during the excepting process.

Conclusion

A qualitative research approach was selected for this study based on the researcher's desire to gain an in-depth understanding of the principal's behavior and practices. Eighteen principals in total representing six school districts in upstate New York were interviewed.

The researcher at all times strictly followed the interview protocol and research questions approved by the Sage College of Albany Internal Review Board. The researcher was extremely careful not to deviate from the script except for clarification purposes in an effort to maintain the reliability of the study. All transcripts were electronically loaded into a web-based software product call Dedoose (www.dedoose.com) that was used to apply codes to excerpts of the transcripts and conduct analysis of the information. Transcripts and recordings were secured by the researcher and will be destroyed upon completion of the study. Participants were identified by pseudonyms through the entire process of the study to insure that the study remains confidential throughout all phases.

Through this qualitative research methodology, the researcher intended for the findings to provide information that will inform district and building decision makers on the types of data systems, professional development and practices that will lead to a more effective use of data to drive improved student outcomes.

CHAPTER 4:

Data Analysis

The purpose of this chapter is to report and analyze data that were collected, as they relate to the four research questions designed for this study. The purpose of this qualitative study was to explore upstate New York school district building level leadership practices associated with the use of instructional data systems with the intent to add to the research on the effect that instructional data systems have on a building level leader's capacity to evaluate student growth and inform their practice. Leadership practices in the study are examined through the lens of Kouzes and Posner's five practices of exemplary leadership. The five practices are Model the Way, Inspire a Shared Vision, Challenge the Process, Enable Others to Act and Encourage the Heart (Kouzes & Posner, 2012).

This chapter is organized into six sections. The first four sections present the analysis of the four research questions including sub-questions and the findings that relate to each specific question. The fifth section analyzes the barriers to the use of data that the principals addressed. The final section provides a summary of the findings.

Participants

The study sample consisted of eighteen principals from six school districts in upstate New York. Larger school districts, with student enrollments above 2000 were selected to ensure that there were multiple building principals available from any particular district to participate. Wealth and type of district were not determining factors in choosing a school district for participation in the study. Table 2, provides sample characteristics of the principal participants.

Table 2

Characteristics of the Principal Participants

Characteristic	Principal Participants
Gender	
Male	7
Female	11
Average Years	
Principal in the school	4.7
Employed in the district	11.3
In the field of Education	18.6

The interviewees were selected based on a combination of homogeneous and snowball sampling. Participants were asked to participate in a 45-minute interview. Sixteen of the interviews took place in the principals' offices and two were conducted by phone. The interviews lasted between eighteen and fifty-six minutes, with the average being twenty-eight minutes in length. A digital audio recorder was used to record the audio of all personal interviews. The researcher is the only person who is aware of the actual participant's name and school affiliation. All names and school affiliations in the study are substituted with pseudonyms to protect the confidentiality of the participants.

The researcher, to visually represent the research questions that were used for study and the concepts that were explored presented the conceptual framework provided in Figure 1 of Chapter 1. In addition, based on the literature reviewed, principals interviewed and data analyzed, possible barriers to success and capacity building are explored.

Student growth can be defined in terms of qualitative and quantitative data. The manner in which principals in the study defined student growth varied by principal, which is illustrated in many of the responses to the researcher's interview question, how do you define student growth in your school? Seventeen of the eighteen principals described student growth as having some measure of both qualitative and quantitative elements. They also spoke in some way for the need to be looking at the entire child when student growth is discussed. Principal P15 feels that student growth is measured in,

> Many different ways. I am looking at the whole child now. We have academic growth; there's social growth; there's emotional growth. (P15, personal communication, April, 2013)

Elementary Principal P3 commented, "Being at the elementary level, I think we define growth in a lot of ways certainly academically and cognitively." (P3, personal communication, March, 2013)

Principal P9 stated,

> We define it as starting from a point – we take an assessment of a starting point for kids, and we define it based on reaching another point as measured by data form our System A. So we use specific data to have a starting point and then measure that amount of improvement. And that is how we define our growth. (P9, personal communication, April, 2013)

Principal P9 and several other principals concurred that student growth is a quantitative measure, Student growth in my school. That's a loaded question I feel like. I mean New York State defines it a certain way, with their New York State testing results that we just got last year, everybody gets this number. (P2, personal communication, March, 2013)

Principal P17 commented,

> As a team, we looked at our state assessment results from last year in math and ELA. First we looked at it as a building, total score. We as a building or as a team determined we wanted a X percent growth in each of those and from there, we went back and used our student information system to identify who the kids were that were threes and fours competent at each level and who the kids were that were ones and twos. (P17, personal communication, March, 2013)

Principal P5 stated, "Well, there's a traditional method, the rate of improvement that we can analyze through the data." (P5, personal communication, March, 2013)

While Principal P6 posited,

> This year we're looking at growth as defined in the reformed agenda. So, one of the ways is we started off the year and looked at the growth scores that were provided to us from the state. We looked at the MGP's. (P6, personal communication, March, 2013)

Principal P15 had a more qualitative viewpoint and added the teacher's perspective, in this response,

> That is, it is, obviously, key to any teacher; however, with some of the conversations and the meetings we have had, we all know and we all agree that if a child's emotional and social wellbeing is not there, it is hard to reach that child academically. (P15, personal communication, April, 2013)

> We actually have implemented a program called X2. In this program, we connect kids with mentors in the building, where it is almost like a check-and-connect program. And so in the end, there is a lot of different factors about growth and student growth. (P15, personal communication, April, 2013)

Principal P4, introduced students' character into the conversation and reported that in his building they were creating a program to measure a student's character growth in the future,

> I think the other area that is a little bit softer is character. We hope that we are impacting students' growth in their character and we are innovating a program that will help us to quantify that growth in the next year. (P4, personal communication, March, 2013)

Principal P12 spoke to two additional dimensions of growth, behavior and independence as elements, "We also look at the social and emotional growth. Sometimes that even includes behavioral growth and level of independence completing tasks." (P12, personal communication, March, 2013)

The researcher received a similiar comment from principal P10, who is from a different district, she also added a comment about the consideration of a student's disposition,

> We also look for the social emotional growth of the children. We really are looking for independent, creative thinkers that we look at that also as being college and career ready. So we want our children to be happy, too, and to love school. (P10, personal communication, April, 2013)

Research Question #1 What effects do instructional data systems have on a building principal's capacity to evaluate student growth?

According to research, building human capacity around data use and demonstrating the impact on learning will be equally important (Hakel, Koenig, & Elliott, 2008). One principal commented on the mandate to improve results,

> I think one of the positives coming from New York State mandates. We are sort of forced now to look at data that we should have been looking at more closely all along. (P17, personal communication, March, 2013)

The use of data is important because it provides the foundation to base decisions on evidence rather than assumptions, politics, anecdotes and judgment. (Coburn, Toure' and Yamishita, 2009; Slavin 2002). Consistent with the theory that data are important, principal P20 noted, "Data helps us move away from the I think, I feel type of achievement, and to really have some tangible measures of growth, to evaluate programs with." (P20, personal communication, April, 2013)

Several principals reported that the use of data to accurately and adequately measure student growth is still a work in progress. In four cases the principals reported that in the last several years they have seen a more systemic approach being initiated in their district related to the use of assessment data. Principal P16 remarked, "I think the new superintendent is really looking for some systematic ways to evaluate student achievement and student growth." (P16, personal communication, April, 2013)

In support of the perception of several principals that there has been a systemic increase of

assessment data in schools, another principal P17 from the same district had a similar comment,

> I have seen things put in place that I ever have had in the past from a systematic standpoint where I think that instruction is coming up. Our assessments have increased tremendously this year. (P17, personal communication, March, 2013)

Principals reported a variety of instructional data systems used in the schools that they serve. In response to the interview question, how are the instructional data systems available in your district used to measure, track and analyze student growth, principal P5 spoke about a specific product that is being used:

> Product A has really helped us with that, looking at the rate of improvement. So we can see what the expected rate of improvement was. We never had that before. So that is helpful. Then we are comparing apples to apples instead of with state data. Sometimes it's apples to oranges. (P5, personal communication, March, 2013)

Principal P8 further remarked,

> Data systems that contain our in-depth assessments allow us to make a determination why the student's having the difficulty they are having and to make instructional decisions that will help show more growth. (P8, personal communication, March, 2013)

In addition, principal P10 shared this perception supporting the use of instructional data systems to provide the capacity for principals to measure growth,

> I would say as part of our APPR process, there is certainly focus on – I would say planning and preparation, knowing your students is knowing where they are at instructionally. So there is – that is sort of a demonstration of understanding the data and understanding where your students are at. And there are also other areas where you would – you are going to review your students to decide who qualifies for AIS, who is not making growth, so you are going to perhaps bring those to the student support team, which is a precursor to potentially a CSE situation. So we are always kind of looking at the child and the data that support it. (P10, personal communication, April, 2013)

Research Sub Question #1(a) What type of data systems are in place?

The interview responses received from the principals revealed that a variety of instructional data systems are in use in the schools that participated in the study. They included data assessment systems, student information systems and data management systems. Principal P12 offered this comment in regard to a specific system in use in her school,

> To help us record data and use data over time with students to look at growth, we are using Product P more so that we can have a consistent reliable measure to look at students' profile over time. (P12, personal communication, March, 2013)

In school 19, student information systems were used in the following manner,

> We have a student information system that allows us to query. We call them ad

> hoc reports. Any arrangement of data almost that we have within the district. I personally export those and use them in my daily work. (P19, personal communication, April, 2013)

In response to the interview question, do teachers in your building have a way to access student level performance data and can progress monitor their students, the following comments were provided by principal P20,

> Using the progress monitoring feature of Product R, assessments are administered three different times throughout the year, and then finding and giving that information to teachers so they can then inform instruction. (P20, personal communication, April, 2013).

Many principals commented that reliability of the data and timely access were also important elements to be considered at all levels of the organization. Principal P4 stated,

> Whether it is a teacher, administrator, supervisor, or even a technician, the ability to get things pretty quickly, pretty easily, will obviously impact the teachers' use of data. (P4, personal communication, March, 2013)

Features offered by the different instructional data systems used by the principals in their districts' varied by product but provided other value added components according to the participants. This is the case in School 16 where Product R also contained an instructional content component. Principal P16 mentioned that,

> Product R is whole program in itself that we can track student data over time and even have access to instructional modules associated with the student's weaknesses. (P16, personal communication, March, 2013)

The principal in School 6, finds added value in the Product P they are using,

> With Product P we are able to run reports based on item analysis, so you can actually identify how many students answered a particular question correctly and how many did not. There is a feature where you can actually click on the number and it gives you a report out of – for those students that answered the questions correctly and which ones didn't. And then what you can do is take that number and actually create some questions specific to that particular standard. (P6, personal communication, March, 2013).

There is a heavy reliance on their student information system to handle the many tasks of storing and analyzing student data in School 4's district. Principal 4, articulated that,

> There is a student management system to run quarterly reports, to run discipline reports. We can query those to find out what students' quarterly averages are. We can run grading reports to look at grade comments. I obviously can look at attendance factors. I can look at disciplinary referrals. Those are probably the most common means. (P4, personal communication, March, 2013)

Research Sub Question #1(b) How are they used by building level leaders?

The review of the literature showed that the RTTT requires teachers draw on best practices and use data to differentiate instruction. It further requires principals to use data for evaluation (CRREO, 2012). The more aligned data are to instruction, the more likely they will be integrated into practice (Mandinach and Snow, 1999). The goal of the principal as instructional leader of the building is to encourage teachers to use data to

improve student learning and the capacity for teacher's to enhance the teaching and learning process. (Stronge, Catano & Catano, 2008) Principals were asked, what percentage of your teachers modify instruction and/or interventions based on assessment data? Based on the participant responses the percentage was recorded by the researcher in Dedoose. The results of the principals' responses are shown in figure 7. Principals as a group report that their perception was that about 70% of their teachers in some way modified their instruction and/or interventions based on assessment data.

Figure 7. Chart representing weighted research code: %TMI - Principal perception of percent of teachers in their building who modify instruction based on assessment data

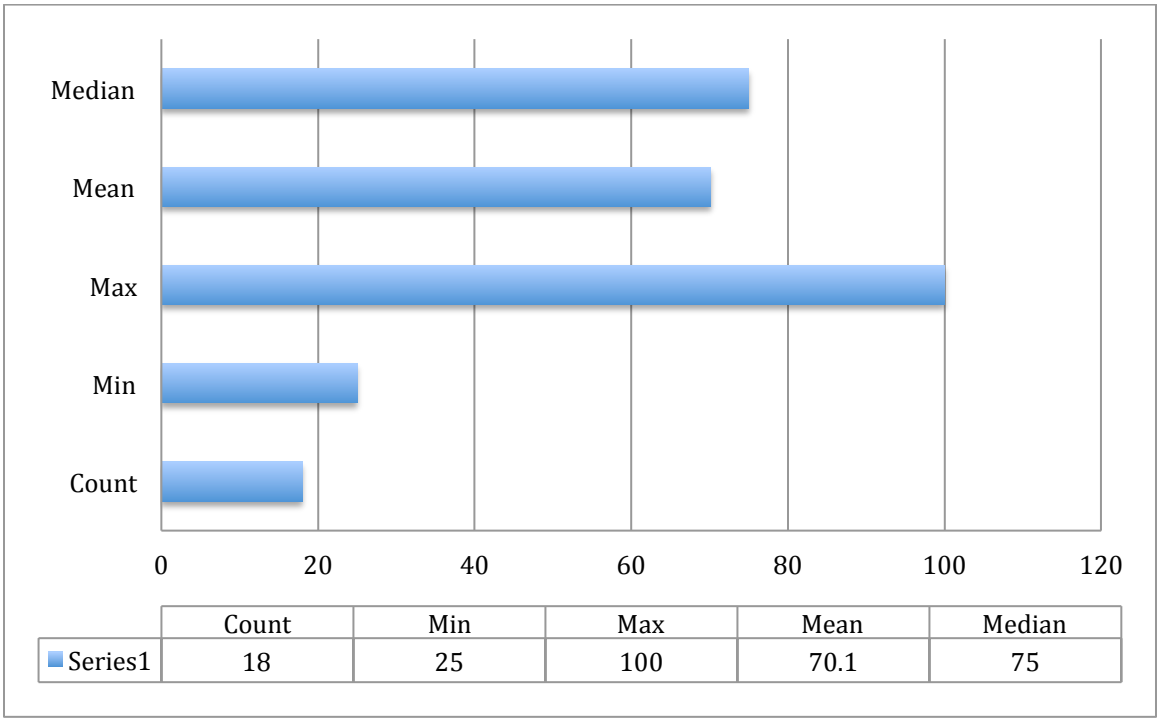


Figure 7. This chart represents a summary the responses of the eighteen principal participants to research question 7(d) (see appendix 3).

The researcher asked the follow up question, how do you know? Comments

similar to this one from principal P16 were shared, “I know that because in our data meetings we are talking about the data”. (P16, personal communication, April, 2013)

Other ways principals reported using instructional data systems include measuring teacher effectiveness. When one principal was asked if instructional data systems are used to improve teacher effectiveness, he replied, “We certainly share data amongst teachers that shows how they are doing personally compared to the entire team of people they are with.” (P4, personal communication, March, 2013)

He continued with an example,

> With a writing initiative we have, we collect data routinely at four different time points throughout the year. That data is quantified according to a rubric and then we share that back with teachers to demonstrate student growth. (P4, personal communication, March, 2013)

Principal P1, uses data in the follow manner to look for patterns and trends,

> I try to look at the data and see if common or the same teachers tend to fall either to the top or the bottom of whatever cohort I am looking at, whether it is all the teachers in the district or all the teachers in that grade level or in my building so I try to see if, for each one of those pieces of – or assessments maybe, do they tend to fall either low or high over and over again – a pattern, I am looking for a pattern or a trend in it. (P1, personal communication, March, 2013)

Principals were asked how they encouraged teachers to use instructional data within their building, principal P2 shared,

> "I think it has been interesting because when I started here, people did not want to look at data. The teachers were like, “Why are we doing this?”, “This is crazy”. As much as I think New York State has gone too far, too fast, I do appreciate the fact that they are moving in the direction of using data to guide instruction and requiring that." (P2, personal communication, March, 2013).

She additionally shared this comment related to the hiring process,

> So I feel like that is improved a lot. I have really tried to hire teachers who work well with others and who are interested in reflecting on their practice and building on their practice and doing things better. (P2, personal communication, March, 2013).

Principals gave several responses about how they are using data systems in their schools. During meetings with teachers, principal P5 uses them to examine current data,

> We have continuous improvement meetings where we look at the data as it comes about, fresh data, and we also use the Product A and Product L data. (P5, personal communication, March, 2013).

Principal P7, in the following comment reinforces the assertion that instructional data systems support his efforts to measure and track student growth.

> With Product D, you can actually see the target line that the students are measured against so every time you create a data point whether it be the benchmark or the progress monitoring you can see if they are student meeting the target line or not, are they showing growth, are they showing enough growth to meet that target. (P7, personal communication, March, 2013).

Principal P16 shares the value of Product P in providing the capacity to perform item

analysis, run a variety of reports and create custom assessments that target specific standards,

> Product P, there is a slew of reports that you can run. You run item analysis. You could run – you can compare – you can do by standards. You can run reports by performance indicators. You can run reports by individual classroom levels. You can create an assessment utilizing the data that you collect. So you have a particular group of kids that are missing a particular standard, you can hone in on that and provide some targeted practice with specific questions that are in line with that standard that they're missing. (P16, personal communication, April, 2013)

Other principals in the study talked about the opportunity that instructional data system provide to manage student growth expectations,

> We look at each benchmark and then once students fall below the benchmark we are making sure progress-monitoring activities are in place to ensure that each student is growing as we expect them to. (P8, personal communication, March, 2013).

Principals reported engaging many other professionals when collaborating with staff around student data. In this example, principal P16 talks about how the IST Instructional Study Team uses data to monitor student progress,

> In the building we have an instructional study team that we look at individual progress of students who are within interventions with progress monitoring. (P16, personal communication, April 2013).

Principal P2 discusses how she uses instructional data in School 2 to facilitate communication with parents,

> We use it to provide feedback to parents so that we can say, "This is where your child was, and this is where they are now. We feel like they are doing really well or there is a problem here. (P2, personal communication, March, 2013)

Research Sub Question #1(c) Is there a relationship to capacity building?

If human capacity around data driven decision-making is going to improve, the skills of teachers and principals must be continually developed (Mandinach & Jackson, 2012). To build the capacity of teachers to improve practice and student achievement, data use in schools needs to be safe and transparent (Berliner, 2006).

Principals indicated that district priorities involving data and data systems are providing the impetus for the exchange of ideas and improved capacity for the use of data. Principal P15 commented about her experience in regard to the heightened pressures from district leadership to do so,

> Now, we have more of a district-wide awareness and reports are coming to us from district office and from the superintendent to the building leaders to really start focusing in on data. What skills are our students' deficit in? and then really, How can we address those needs? (P15, personal communication, March, 2013)

Principal P2 discussed how growth scores became a source of validation for her and her teachers who had high scores,

> And even though I do not necessarily agree with how they have come to these growth scores that teachers get. I had some teachers who got really high growth scores, and they felt validated by those. And I found them validating too because

it pointed out who did really well. (P2, personal communication, March, 2013).

Consistent with the literature (Sosik, 2004) around the need for principals to support the non-punitive or safe use of data in their school and build capacity of teachers to improve practice and student achievement, she also shared how she facilitates open discussions with teachers in data meetings,

> "So we have the discussion and we talk about, well, you know, "I have had him in AIS for a year, and he is still a yellow kid. We want him to be a green kid, but he is not there yet. And I feel like I have been doing X, Y and Z with him, but it is not working, so I need to change that" (P2, personal communication, March, 2013).

Findings for research question number one:

- The study found that a majority of the principals reported that the instructional data systems in use in their districts provided them with the capacity to effectively evaluate student growth based on the broader definition of student growth being characterized in terms of qualitative and quantitative data. While a few principals commented that the use of data was still a work in progress, there were many of examples provided that the data systems in use produced consistently reliable and tangible measures that evaluated and tracked student growth.
- Several different types of instructional data systems were reported to be in use in the districts studied. They included assessment systems, student information systems and data management systems. Timely access to data was noted as a consideration that may impact a teacher's use of data.

- Systemic use of data is on the increase in many of the districts, which reportedly helps principals with their capacity to see patterns and trends emerging within their schools. Systemic use of data is particularly useful during the collaboration around data by staff and during the principals' assessment of teacher effectiveness.
- Instructional Data Systems provide the principal with the capacity to predict the expected rate of student improvement over time.

While research question number one addressed what effects instructional data systems have on a building principal's capacity to evaluate student growth, quality professional development is essential to any educational improvement effort. (Martin and Strother, 2010). This led the researcher to develop question two to explore the types of professional development principals receive based on the data systems that are in place within their districts.

Research Question # 2 Is there a relationship between the data obtained from instructional data systems and the design of professional development for principals?

This research question sought to explore whether principals use data to inform the process that determines the types and design of professional development they receive to improve their practice and effectiveness as a building leader. A culture of quality data is supported in part through the professional development activities that build human capacity around data driven practices (Mandinach & Jackson, 2012). The researcher used a weighted coding system to track the response of the participants to interview question 6(a) (See appendix C). As a result of the coding process, sixteen of the responses were

charted in figure 8. As you can see from the results, the group was split. Fifty percent of the principals felt that they had received adequate training and fifty percent did not.

> One principal P20, shared his frustration up front,
>
> The frustration, I guess, is not knowing what you know and what you do not know or you do not have what you do not have. So constantly having the time to pursue what is good data? What is the best format to give it to teachers? How do you make it widely understood and accessible and beneficial? (P20, personal communication, April, 2013)

When asked if the professional development for principals around the use of instructional data systems was adequate, one principal replied, "I guess it is adequate. I guess I do not know what I do not know." (P10, personal communication, April, 2013).

Figure 8. Chart representing weighted research code: %PPT – Principal perception of adequate training on data systems. (Code weight of zero = no, code weight of 1 = yes)

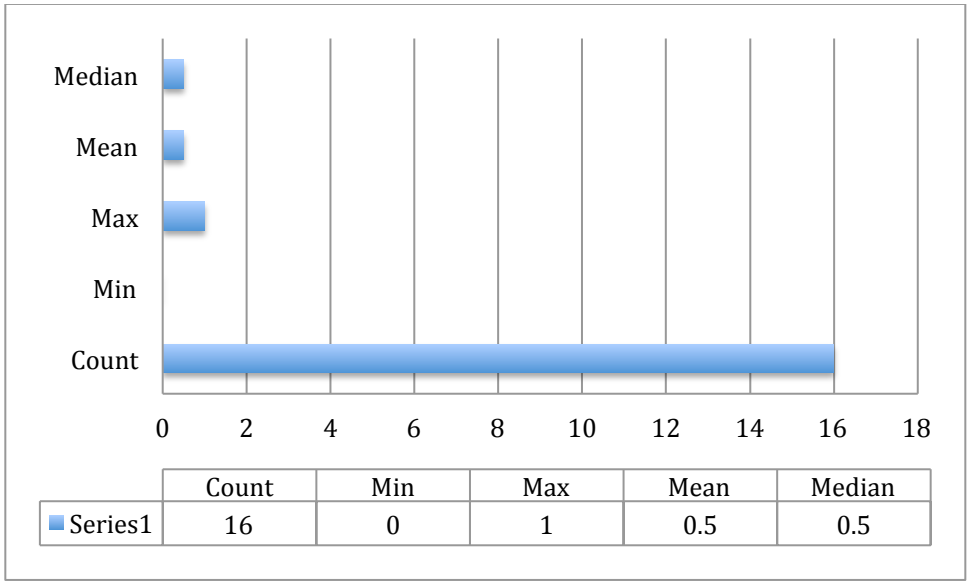


Figure 8: This chart represents a summary the responses of the sixteen of the eighteen principal participants to research question 6(a) (See appendix 3).

Principal P7 also described the need for more training in his comments,

> I think that we could use more specific training for the principals in how to use that data and helping teachers and how to use the data in helping teachers just understand the assessment and how to read the reports. That will go a long way in calming people back down. (P7, personal communication, March, 2013)

According to Mandinach (2012), districts report large disparities between the professional opportunities that are currently available versus those they report needing. Principals in this study also did not appear to have a consistent response to the interview question that sought to explore the relationship between the data obtained from instructional data systems and the design of professional development for principals. Here were a variety of examples that principals gave in response to this question. Principal P4 commented.

> You know an example of one thing that might speak to that is I think one of the things that has come about from our discussions is our assistant superintendent is bringing back something called a PD1 that will run this summer. As much as that is driven to lead teachers in their growth, it also provides opportunities for our administrators to collaborate on what we see are the most important issues facing our teachers. That's obviously helpful for us as well. (P4, personal communication, March, 2013).

She additionally commented on the sharing of best practices among principals,

> We do. As a matter of fact, at our next elementary principals meeting, I'm going to have a discussion with our elementary principals and our superintendent about our

> ELA data and tools that we may use, either three through five or three through eight that could impact students that need intervention. (P4, personal communication, March, 2013)

In District D1, principal P9 answered affirmatively in regard to instructional data systems informing professional development opportunities,

> Yes. I would say elementary colleague principals, we have used our data to kind of really sit down and talk about what do we really need to help us understand this more? And how can we use this data to kind of drive the professional development in our schools? (P9, personal communication, April, 2013)

A principal P1 from another district had a similar response to Principal P9,

> We also tend to plan a lot as a group so if there is a PD for one of our buildings hopefully we can offer it to the others or if I am meeting with a group every week then hopefully some of the other ones are so we just share best ideas I guess. (P1, personal communication, March, 2013)

Principal P15 described another type of professional development opportunity for principals in the individual support she gets from a district-wide data facilitator,

> She is a data person and she has come over several times. She is always available by phone and she walks me through whether it is a report and I cannot quite get it to where I want it; she will help me. So, all of that is professional development, in my mind. (P15, personal communication, April, 2013)

Principal P9 shared an example of training in District D1 that included both teachers and administrators. This training also provided an example of collaboration among district level administrators, the principal and teachers. According to Hamilton et al. (2009),

collaboration or teaming around data use is gaining attention Teachers feel supported when they work with and learn from their colleagues (Mandinach, 2012). The literature review indicated that data teams are considered a form of a Professional Learning Community (PLC). In a PLC, "educators create an environment that fosters mutual cooperation, emotional support, and personal growth as they work together to achieve what they cannot accomplished alone" (DuFour & Eaker, 1998, p. xii). Here are Principal P9's comments,

> Yes. I would say that it does. For example, you would ask what kind of training had we had? There was actually – I did not mention there was one other session that was at the very beginning of the year for both principals and teachers. Some teachers, turnkey trainers. But I would say that as we have been using this data, it has shown us we need some more training in specific areas. So the ELA director and our two reading teachers and myself sat down and designed some professional development to be implemented at faculty meetings. (P9, personal communication, April, 2013)

Other principals shared examples in response to interview question 11(b) (See Appendix C) and in support of the existence of the relationship between data obtained from instructional data systems and the design of professional development that is available to principals. Principal P10 commented about the support she receives from the district,

> Definitely. Do you need more help with running the Product A reports? Like do you need a refresher on that or something? Or we do a lot with APPR, too, like a lot of review of stuff, how we are evaluating, and the consistency among and between levels and groups and people. For Product A we have had a series of

> trainings. And we do continue to – like we just last week had a phone conference with their lead statistician professor because of some questions that have come up. (P10, personal communication, April, 2013)

Principal P10 commented about principal collaboration being and ongoing process,

> That is an ongoing piece each and every day. We are fortunate to have a solid administrative team with lots of other colleagues to reach out to and to bounce ideas off of, as well as collaborate on caring and splitting up the workload of many different initiatives. So that's an ongoing process where we meet, as a PLC, with our own elementary group, as well as with the district level academic administrators, as well as then a K-12 cycle as well, to then correlate with the superintendent on a monthly basis at least. All different venues, so at least three different types of meetings, to then bounce those ideas, go through process, go through different strategies and things we're working on within that network. (P20, personal communication, April, 2013).

Principal P20 articulated another example of the existence of professional development among the administrative team in his district,

> You know, I think that is the time to have the trainings, and also the expertise of someone who is familiar with it. A lot of it has been our administrative group collaborating, discussing, and I guess if that is a form of professional development, we have liaisons that work and then share out information about how to utilize it. It has not been as much of a formal sit-down, here is how to use this. I think it is the collaborative time as an administrative team that we have had about the best use of it, the best way to utilize the teachers, the best way to disseminate

information. (P20, personal communication, April, 2013).

Principal P5 describes her opportunities to attend professional development outside her district,

> Looking at our reading results, for example, we recognized there are certainly some areas that we have for improvement. So we are looking to attend teachers' college programs over the summer. My district also provided me the opportunity to attend one of the best trainings I have ever attended, it was a Paul Bambrick-Santoyo two-day workshop on data driven instruction and new uses of data. (P5, personal communication, March, 2013).

A principal P4, from the same district as P5 had a very similar comment in regard for the need to see what others are doing in districts other than your own,

> I think a danger that any great leader or good leader has to be aware of at all times is that they become too immersed in their own culture to the point where they do not see best practices that are evolving in other places. So to the extent that you can keep your radar out for what is going on in other places, you can bring those things back and impact your own culture." (P4, personal communication, March, 2013)

Principal P16 addresses the sustainability of effort for data use in this comment,

> We decided that we were going to get together and share some best practices for data use. It initially started out really well and that was a suggestion that I made because I think we all have our strengths and areas in need of improvement and if we can work off of each other's strengths and we can really build the capacity to do great things. But as time progressed, it just became – the workload becomes

very overwhelming and taxing on the schedule and it becomes difficult for people to leave their building. So that sort of fell by the wayside (P16, personal communication, April, 2013)

Interview question 12 (see appendix 3) asked principals if they belonged to any professional organizations that focus on the use of data and data driven instruction. Only two indicated that they were members of DATAG (NY Schools Data Analysis Technical Assistance Group), which is an example of a group with a dedicated focus of the use of data. Two others indicated that they felt that the professional organizations they belong, although not solely focused on data, shared information on the use of data.

Findings for research question number two:

- Fifty percent of principals interviewed felt that they have received adequate training on the use of the instructional data systems in their district.
- The interview responses did not appear to suggest a relationship between the data obtained from the instructional data systems and the design of professional development for principals.
- There are indications that the sharing of best practices for the use of instructional data systems and student data among principals existed in the districts. However, no participant reported that a consistent and well-established process was in use.
- Interviews from the study revealed several different delivery models for professional development that the principals received on the data systems

in use, however there was no indication that any of the models contained an ongoing component to them.

- Only four of the eighteen principals interviewed indicated that they were affiliated with a professional organization that was either solely or partially focused on the use of data in schools.

The study focused on instructional data systems in schools in the preceding two research questions. The focus of the first two questions was whether instructional data systems provide the principal with the instruments to measure student growth an how they inform professional development targeted toward the building level leader. Research question three focused the study's attention on the leadership practices of principals that inspire teachers in the use data systems that informs classroom instruction.

Research Question #3 Which of the five practices of Kouzes and Posners' model do building leaders employ to inspire teachers to use instructional data systems to inform their practices?

This question sought to explore whether principal demonstrate any of the five practices defined by Kouzes and Posners' Leadership Challenge model (Kouzes & Posner, 2012) These practices are entitled Model the Way, Inspire a Shared Vision, Challenge the Process, Enable Others to Act and Encourage the Heart.

Model the Way

Modeling expected results for faculty allows teachers to visualize the desired action

prior to their own implementation (Bambrick-Santoyo, 2010). Modeling the Way emerged as the number one of Kouzes and Posner's leadership practices in the study. Based on the researcher's coding system as indicated in the code application matrix (see appendix G), Modeling the Way received the highest number of code applications by a sixteen percent margin over Inspiring a Shared Vision. According to Kouzes and Posner (2012) "Unity is forged, not forced" (p.17). Principal P20 concurs with this when he commented,

> The trust one is just walking every step with them. And it is having them know that it is a journey together, I think. It is doing everything we can not to point a finger in another direction, but point it inwards at ourselves. (P20, personal communication, April, 2013)

Principal P9 teaches a section of math everyday in her elementary school. In her response below, she demonstrates how she models her practice for her teachers:

> Through our conversations at PLC's and our midyear check in. We actually take a look at each teacher's specific data for each of their kids, and we talk about each of their kids. And we talk about setting targets and what teachers are going to do specifically to change their instruction. So I think just going through that process with them and having that conversation helps and also in teaching math myself. I'm doing that not only as a principal, but I'm looking at my own data as a teacher. And so I work with third grade teachers as a colleague to kind of sort through that myself. (P9, personal communication, April, 2013)

The importance of unity among the staff within a school is seen here again in the

comments shared by principals P2 and P9,

> "Again, I think we're all in this together." (P2, personal communication, March, 2013).
>
> We all have professional learning communities in every building and at every grade level and with other subjects that are non-grade level specific. And we, by practice, sit down as grade level teams and other PLC's, and we actually look at our data and analyze it and think about what do we need to do to improve our instruction using it? (P9, personal communication, April, 2013)

Principal P8 uses respect to create a non-punitive and safe environment for the use of data. Sosik and Dionne (1997), posit that establishing trust is a process that includes respect, integrity, honesty and transparency. Trust is an essential element that must be built among the teachers and administrators. Here are some comments principal P8 made,

> I use the expression; listen for understanding before you seek to be understood. I don't think teachers feel respected until that they know you are listening to them and hearing what their concerns are and creating an environment that is safe to share so that is my approach. (P8, personal communication, March, 2013)

"Data just by itself without the conversation is useless." (P20, personal communication, April, 2013). In the next section the study explores how principals accomplish the establishment of a vision for the use of data in their buildings.

Inspire a Shared Vision

The leader's role is moving away from being a soloist towards that of a

conductor, providing vision and setting expectations for the use of data (Hamilton et al., 2009). In the absence of a clear vision for the use of data, the leader's capacity will be diminished. (Mandinach, 2012). There were many examples in the study of how principals inspired a shared vision for the use of data. One principal shared the approach she shares with her teachers,

> I've been trying to learn as much as I can to help guide you, but a lot of you know as much as I do, or if not more. So let's do it together and figure it out together. (P2, personal communication, March, 2013).

Principal P16 speaks to the critical value given the high accountability stakes associated with data,

> "I think that building the culture around support and trust is really critical now. I think teachers need to understand that it is a tough time to be doing this because of the APPR and other initiatives." (P16, personal communication, April, 2013)

Unity of staff in a school and shared vision are again addressed in these comments from principal P12,

> "We are letting teachers know that they are not alone in this, that our math specialists and reading teachers are also valuable resources to help teachers use this data together. We are all in this together." (P12, personal communication, March, 2013).

Inspiring a shared vision and soliciting buy-in may provide manageability according to principal P4,

> "We bought buy-in by allowing people to shape the plan. Essentially, the suggestions that we got were very helpful because it made the plan more

manageable. It made it easier to implement and easier to manage from a time perspective." (P4, personal communication, March, 2013)

Another principal P11 from the same district states,

> We have made a conscious effort to share state assessment results with the faculty as a whole to try to make everyone come on board and realize that we are all working towards the same goal. (P11 personal communication, April, 2013)

A principal from another district agrees with her colleagues in the study when she states,

> I like to involve as many people as possible in decision making and shared leadership because it is not my school, it is our school." (P10 personal communication, April, 2013)

Inspiring a shared vision is one step in an ongoing process. Principal P20 says, "So data is only as good as the change it makes." (P20, personal communication, April, 2013).

Challenge the Process

"Challenge is the crucible for greatness" (Kouzes and Posner, 2012, p.19). Kouzes and Posner's two commitments under this practice are, " Search for Opportunities" and "Experiment and Take Risks". The principals that were interviewed for this study shared a number of insights into how they are challenging the process and trying to make positive changes in their schools. Principal P12 challenges her teachers by asking her teachers how are they modifying their instruction in the classroom,

> I want all students to be learning and achieving to the best that they can and that's a

question I ask of our teachers, how are they using data to modify their instruction?" (P12, personal communication, March, 2013)

Principal P4 reported that he openly shares data in an attempt to challenge his teachers,

> We certainly share data amongst teachers that shows how they're doing personally compared to the entire team of people they are with" (P4, personal communication, March, 2013).

In regard to searching for opportunities principal P12 turns to the data about student that she is familiar with as a source of information,

> It also puts in perspective sometimes the students that I know the best, our most struggling students so that data gives me more information about those students that we talk about frequently because I'm not in the classroom with them. The data gives me a very clear picture, more accurate picture of some of these real struggling students and where their skill set is or the progress that they're making. We've also adopted reading recovery this year. (P12, personal communication, March, 2013).

Principal P17 sums up his challenge in the following statement,

> The biggest hurdle is getting the data to actually make an impact. (P17, personal communication, March, 2013)

The next leadership practice is action oriented in the following section, Enable Others to Act. Kouzes and Posner's (2012) model contains the two commitments of "Foster Collaboration" and Strengthen Others". According to Kouzes and Posner's (2012), leaders build trust, fuel collaboration and facilitate relationships. The role of a

building leader is moving away from that of a soloist towards that of an "orchestra conductor" (Wallace Foundation, 2006). Effective leaders distribute responsibilities to teachers who skills and capacities match the required tasks (Walker 2002).

Enable Others to Act

Principals in the study provided numerous examples of how they foster collaboration. Principal P4 shared this example of teacher leadership,

> We had not just one person driving the initiative but a number of people and then that translated into an even greater distributed leadership model when we had our English Language Arts teachers leading the turnkey training when they were teaching teachers how to use a rubric and how to score writing. (P4, personal communication, March, 2013)

Principal P15 tells how two teachers returned from a conference that they attended on their own,

> Then, when they came back, they shared with me something. Then, I just had them present that to staff at a faculty meeting. And, at that same faculty meeting, I had two other teachers share something that they are using for writing down information on students for meetings so that we have a uniform system of everything that, when we go to these SBIT (School Based Intervention Team) meetings, we have all the information right there instead of a teacher going, "Well, let me pull out this binder and let me find this information. (P15, personal communication, April, 2013)

Principal P10 shares a little of her philosophy on shared leadership in this excerpt, "I like

to involve as many people as possible in like the decision making and share leadership because it's not my school, it's our school." (P10, personal communication, April, 2013) Principal P6, talks about her leadership team, "Our building leadership team is an open group and anyone can join and through that we create our building goal." (P6, personal communication, March, 2013).

In these next two accounts of collaboration, principals from the same district talked about the use of grade-level teams,

> Well, actually we spend time at continuous improvement in grade-level meetings, talking about the data and planning for our modifications that we are going to make, and brainstorming some ideas together. (P5, personal communication, March, 2013).

"So my approach for being a principal has always been to develop really strong grade-level teams so that the teachers feel like they can support each other." (P2, personal communication, March, 2013). Principal P2 goes on to say, "Make collaboration as comfortable as possible." (P2, personal communication, March, 2013)

The last of Kouzes and Posner's leadership practices is, "Encourage the Heart". Genuine acts of caring help people move forward with their work. (Kouzes and Posner, 2012)

Encourage the Heart

Leaders must recognize the contributions of their teams and create a culture that includes celebrating success and promotes a sense of community (Kouzes and Posner's (2012). Principal P3, exemplifies this in the following statement as to why she became a

principal,

> One of our primary goals is to recognize and find and keep in mind the joy we have for our work and making sure that children have a joy in their elementary school. That is why I became a principal and no one will ever tell me in a different way and that is what we do, not the data. (P3, personal communication, March, 2013)

Principal P16, shares his open door policy with the researcher,

> And then just having an open door policy and making teachers aware and constantly putting this out there where, listen, my door is always open. I am here to listen. I am here to assist you in helping accomplish your goals – your job in the classroom is to best help our students. (P16, personal communication, April, 2013).

Principal P15 encourages her staff to "celebrate the movement" in this excerpt, "We started that data wall at the beginning of the year and to actually see students making progress and moving has been really powerful for staff, and to celebrate the movement." (P15, personal communication, April, 2013).

When principal P12 was asked interview question 9 (c), how do you promote collaborative goals and build trust among your teachers?, she replied, "I think that is through supporting them, showing that I value them as teachers, and celebrating the good work." (P12, personal communication, March, 2013).

Principal P11, sets aside, "celebration times in every faculty meeting". (P11, personal communication, March, 2013).

Findings for research question number three are:

- Modeling the Way emerged as the number one leadership practice among Kouzes and Posner's model that principals employed to inspire teachers to use instructional data systems to inform their practice in the study. Modeling the Way received the highest number of code applications by a sixteen percent margin over Inspiring a Shared Vision
- Principals, while Inspiring a Shared Vision for the use of data with their teachers, reported that they create a sense of trust and unity among their staff to elicit the necessary receptively or buy-in that they reported would be necessary from teachers to make effective use of the student data.
- Principals are Challenging the Process by requiring some teachers to demonstrate how they are modifying their instruction based on the data. They also using data to compare results among colleagues.
- In an effort to Enable Others to Act principals reported that they utilized concepts like shared and distributed leadership. By making collaboration as comfortable as possible, principals in the study built a variety of different teams to help build the capacity in the school for the use of data systems.
- There were limited interview responses in this study related to Kouzes and Posner's fifth leadership practice of Encouraging the Heart.

Leadership in a school does not reside solely with the principal (Wallace Foundation, 2006). In Chapter 1, distributed leadership was defined as the management and leadership within a building that can be distributed across a number of educators to

create a shared sense of ownership, responsibility, and leadership. The final research question, seeks to explore how principals model and share best practices for the use of data with their teachers.

Research Question #4 What strategies do principals use to model and share best practices for the use of data with their teachers?

Systemic commitment to the use of data across all levels of the school district can be a cultural shift that will require strong leadership (Mandinach, Rivas, Light, & Heinze, 2006; Mandinach & Cline, 1994)

Interview question 7 (e) asked principals, "Is there an established process by which teachers can provide you feedback on effective strategies they have discovered for the use of data in their classrooms?", Principal, P11 stated,

> Absolutely, staff are encouraged to bring forward things that they want to share and sometimes, you know, you get those people that are not going be the ones that are going speak up and so I make a point of saying I was in this classroom and I saw this person do this or you know, we had a post conference and we talked about this and I really wanted to commend this person and so that is something that I have been trying to do for the last two years, really just to highlight some of the great instructional things that we have going on. (P11, personal communication, March, 2013).

The literature review introduced the concept of a data culture, which is an environment within a school that values the importance of using data to inform practice (Mandinach &

Jackson, 2012). The environment contains attitudes and values around data use, establishes behavioral norms and expectations to use data, and objectives for why data are to be used. Data use in schools needs to be safe and transparent (Berliner, 2006). Establishing trust is a process that includes respect, integrity, honesty and transparency (Sosik and Dionne, 1997). Principal P16 talks about culture and trust in his interview,

> I think once you develop that culture that we can trust each other; the work is really to drive our instructional practices and make sure that we are meeting the needs of kids. I think that a constant reminder message has to be put out there and teachers actually have to see that it is occurring. (P16, personal communication, April, 2013)

Principal P2, feels that the process starts at the very beginning during the hiring process,

> So I feel like that's improved a lot. I've really tried to hire teachers who work well with others and who are interested in reflecting on their practice and building on their practice and doing things better. (P2, personal communication, March, 2013).

Principal P7, has built the culture and trust to have teachers in her building open up their classrooms to other teachers for the sharing of best practices. She uses a software package available in her district to facilitate the process, "We just recently opened up classrooms through our professional development. My learning plan, online teachers can sign up now to go into some teachers' classroom." (P7, personal communication, March, 2013). Principal P15 identifies strong teachers and sends staff to him as well as calling on other teachers to openly share during meeting,

> You know, I know that he is a strong math teacher and I do send people to him for advice or for strategies. The other thing we do, when I see something that is

> working in a class, I have my teachers, during faculty meetings, share with everybody. (P15, personal communication, March, 2013)

Principal P15 also has a low tech approach that according to her is useful,

> Through the use of that data wall in my office, we have a lot of conversations about how to move kids, and where kids are, based on the data. (P15, personal communication, March, 2013)

In principal P17's school, the teachers have been introduced by him to a strategic framework adopted from the business community called ORID. He explains more about this model as he answered interview question nine, how you model and mentor the effective use of data with your teachers,

> I have currently introduced to the staff a strategic framework called ORID, objective, reflective, interpretive, decisional. It basically gives teachers a chance to look at numbers, respond emotionally whether you are excited, disappointed, confused and converse with your colleagues to develop a plan and then the deed that is not in part is the actual plan. (P17, personal communication, March, 2013)

Principal P10, uses her strategic planning meetings as an opportunity to have her staff collaborate on the use of data,

> I use strategic planning meetings where, by grade level, I have pulled in all the support personnel together. So we take – each grade level takes – I get rotating subs for two hours at a time, and so we do a day and a half of this. The school psychologist, the two AIS teachers that do reading and math, and the Special Education teachers. I have also invited our media specialist. Together we

> collaborate and review the data, look at the trends, and decide on what is our big idea that we are focusing on? (P10, personal communication, April, 2013)

Meetings that include release time for teachers is a strategy that principal P12 uses in her school,

> We do provide release time for teachers to have monthly meetings, half-day meetings or grade level meetings so we can really focus our work to make it meaningful. (P12, personal communication, March, 2013).

Several principals reported faculty meetings as a venue they used for the sharing of best practices. Principal P11 reveals her strategy of how she gets the conversation started at her meetings,

> You get those people that are not going be the ones that will speak up and so I make a point of saying I was in this classroom and I saw this person do this or you know, we had a post conference and we talked about this and I really want to commend this person and so that's something that I have been trying to do for the last two years, really just to highlight some of the great instructional things that we have going on. (P11, personal communication, April 2013)

Principal P4, shares when she starts talking with teachers about their practice,

> I think rolling something out where you are going to talk to teachers about their practice has to start with demonstrating in context as to why there fundamentally needs to be change. (P4, personal communication, March, 2013)

She further explains how she goes about the process,

> So we created the receptivity by demonstrating where we needed growth and by quantifying it, it was really hard for teachers to say that there was sort of a place

that they could go to hide from it. (P4, personal communication, March, 2013)

Technology will be an essential component in transforming districts and schools to be data driven (USDOE, 2013). Principal P2 explains her use of technology to share data with teachers, "I have a data wiki that our teachers have access to. And that has all of the New York State test data." (P2, personal communication, March, 2013)

Principal P15 relies on the district resources of a data facilitator to assist with the sharing of best practices and professional development,

> You know, obviously, the personal attention that Ms. X has given us, that has got to be a strength. So, she is our go-to person and she has worked with grade levels for professional development also to show teachers how to pull up their classes, click on students, sort by standards or that students have weaknesses in, or sort by items, and then standards. (P15, personal communication, March, 2013)

Principal P6 describes a team approach for the progress monitoring of students,

> We have an instructional study team in the building and we look at individual progress of students who are within interventions with progress monitoring. (P6, personal communication, March, 2013)

Principal 18 shared that she is focusing teachers on their own classrooms rather than making comparison between teachers,

> We wanted them to get used to the assessments, see the value in it, and not have it be a comparison model right now, from teacher to teacher. Have it really be them looking at their classrooms to see how their students are growing, and not be scared of it and trust it and embrace it. (P18, personal communication, April,

2013).

Principal P20 echoes the need for trust in his explanation of his strategy,

> The trust one is just walking every step with them. And it is knowing that it is a journey together, I think. And it is doing everything we cannot to point a finger at a direction and point it inwards at ourselves. So by making it a collaborative process. How do we make it one step better than we were? Versus making it a matter of what we did not do. I think trying to keep it positive in every sense you can, showing that what we are looking at is going to benefit the students so that we can tie onto that, we are not doing it to be something that is an additional to-do. (P20, personal communication, April, 2013).

Principal P20 concluded with, "So are two different facets that I think are very important as educators that we thrive on, and they are how and what we prioritize." (P20, personal communication, April, 2013)

Findings for research question number four.

- Principals develop a data culture by establishing trust among their staff for the safe and transparent use of data.
- Teachers are encouraged to share best practices for the use of data during a variety of structured and scheduled meetings. In the study these included, but were not limited to, PLC meetings, faculty, grade-level meetings, continuous improvement meetings, data team meetings and planned release time.

Identified Barriers to Successful use of Data

The researcher, did not ask any question related to barriers to success until the end. The intent was to first see if any barriers were identified in the context of the main portion of the interviews without leading the interviewee to think about any barriers or obstacles to the use of data systems. Interview question number fourteen, the last question before asking the participant if they had anything to add, was reserved for the end for this reason. The question was only to be asked if the researcher determined that the interviewee made no significant mention of barriers during the interview.

At the end of the interviews, the researcher determined that responses about the identification of barriers, both perceived or real were an essential component of the study and decided to ultimately ask the question of all participants. Interview question 14 (see appendix C) asked, "Have you experienced any barriers to the use of instructional data to assess student academic growth or inform your practices? If so, can you provide some specific examples?"

Twelve of the eighteen principals replied similar to principal P9, "Yes. I would say time is a huge barrier. It is probably one of the most significant barriers." (P9, personal communication, April, 2013). This response is consistent with the literature reviewed. One of the biggest barriers to data use is time (Means, 2010; Ikemoto, March, 2007; Ingram et al., 2004). According to Ingram et al., time is followed by lack of professional development, teacher preparation, lack of technical skills for data systems, preparation of principles, lack of clear vision, system usability, unusable data, and untimely data (Ingram et al. 2004).

When one principal was asked question 7(d), what percentage of your teachers

modify instruction and/or interventions based on assessment data, and how do you know?, they answered,

> Not a high enough percent and I know this because through our instructional support team, it is one of the most difficult things to do. It is very time consuming. Also the fidelity involved in maintaining the consistency to make sure that every week the intervention is done and the data is recorded. It is very difficult with everything going on, it is a busy place. (P19, personal communication, April, 2013).

Principal P15 added this comment in regard to the many mandates that principals and teachers contend with, "Between all of the new mandates that have come down and the curriculum – the standards, you know, everything else – they just – they are lacking time."(P15, personal communication, March, 2013)

Lack of technical skills for data systems- Pedagogical Data Literacy

The following responses suggest that principals are struggling with pedagogical data literacy and the need more professional development,

> "We still struggle with becoming a data driven school, we just struggle with what to do with the data…it feels like we are spinning our wheels, we know where we would like to be, we know where we need to be, we are still struggling with the tool." (P7, personal communication, March, 2013).

> While there are resources out there and our district does offer some supports, I feel like I still need more. (P2, personal communication, March, 2013).

> I think maybe just a lack of understanding how to interpret the data and use it most effectively, so I would say a lack of understanding, or maybe a lack of training. (P9, personal communication, April, 2013).

> Some of the barriers that I have encountered have been with the teachers level of understanding and working from a common understanding of the data (P6, personal communication, March, 2013).

> I think really just teacher comfort and then myself just becoming more familiar with it and just being better at it. (P6, personal communication, March, 2013).

System usability, unusable data, and untimely data

Principal P20 spoke to the barrier of timely access to data when he shared his experience with state test results,

> I think one of my frustrations is getting assessment data in a timely fashion from state test results. (P20, personal communication, April, 2013)

Disparate systems do not easily allow for data to be aggregated and may lead to a source of frustration on the part of the staff (Wayman et al., 2009). Principal P4, talks about a vision for an integrated instructional data system that her district is considering,

> Because of the ability of those programs to speak together under one big umbrella in the systems that we have been shown, that creates an element of user friendliness for not only our teachers, but our leadership in the district with regard to building the program and building the usage of it. (P4, personal communication,

March, 2013)

She additionally added this more specific comment about the impact on teacher practice,

> To the extent that that the new data systems we are planning to use in the near future become much more user friendly for our teachers, it will create a huge impact on them and their practice. (P4, personal communication, March)

Principal P20, speaks to the inadequacy of instructional data systems he has access to, "I think the biggest barrier is access to formative assessments, progress monitoring tools that are effective and setting those up within our buildings, so that it will inform instruction on a fluid basis." (P20, personal communication, April, 2013).

Part of enculturation of a data culture is the trust developed among teachers and administrators (Dalnow et al., 2007). Educators want to know that it is safe for them to share data without there being negative or punitive consequences. Principal P7, speaks about breaking through barriers, "We are still breaking those barriers down especially when it is high stakes accountability it becomes even more difficult." (P7, personal communication, March, 2013).

Principal P2 comments on the absence of buy-it on the part of the teachers,

> I think the teachers haven't completely bought into it yet. (P2, personal communication, March, 2013).

In another statement she states it very concisely, "Some teachers are afraid of data." (P2, personal communication, March, 2013)

Another principal articulated their position on the lack of broad enough assessment measures in the following remarks,

> The only barrier that I think I can comment to is that we do not use – and by we, I say both schools and I think the state – do not use broad enough measures. I think in large part, schools feel driven by the state in some regards, primarily from an academic intervention service perspective. I think the best model, or the ideal model, would allow districts the latitude to use local measures to support a total well-rounded picture of student performance. (P4, personal communication, March)

Principal P7 remarked,

> We spent the whole month of September testing, I know it is not unique to us but again I would like to get back to where if we are going to use something, I would rather have it be something that efficiently and effectively drives instruction. (P7, personal communication, March, 2013)

The principal below spoke to the priority and objective for the use of instructional data systems and data driven instruction in her final comments of the interview,

> Our number one priority is to give students that accurate knowledge that will help teachers use their time wisely, that will help teachers form their instruction better. The data gives me a very clear picture, more accurate picture of some of these real struggling students and where their skill set is or the progress that they're making. (P12, personal communication, March, 2013)

Summary of barriers to successful use of data:

- Twelve of the eighteen principals indicated that time was one of the two most cited barriers to the effective use of instructional data in their schools.
- The second most cited barrier was access to relevant and reliable data.
- Principals in the study indicated that teachers' pedagogical data literacy, teachers' resistance to the use of data and data systems/infrastructure issues were also barriers to success that were frequently cited in the study.
- Other barriers indicated by principals were their own pedagogical data literacy, timely access to data and additional professional development.

Summary of findings

The study found that a majority of the principals reported that the instructional data systems in use in their districts provided them with the capacity to effectively evaluate student growth. While a few commented that it was still a work in progress, there were many of examples provided that the data systems in use produced consistently reliable and tangible measures where by which student growth could be evaluated and tracked. Several different types of instructional data systems were found to be in use in the districts studied. They included assessment systems, student information systems and data management systems. Lack of timely access to data was noted as a consideration that may impact a teacher's use of data.

Systemic use of data was reported to be on the increase in many of the districts study. Systemic use of data reportedly helps principals with their capacity to see patterns and trends emerging within their schools. The overall principal perception of percent of teachers in their building who modify instruction based on assessment data was fifty

percent.

Fifty percent of interviewed principals felt that they have received adequate training on the use of the instructional data systems in their district. There did not appear to be a clear relationship between the data obtained from the instructional data systems and the design of professional development for principals. While there was some indication that the sharing of best practices for the use of instructional data systems and student data among principals existed in the districts, no participant reported that a consistent and well established process for doing so was in use in their buildings. Interviews from the study revealed several different delivery models for professional development that the principals received on the data systems they use, however there was no indication that any of the models contained an ongoing component to them. Four of the eighteen principals interviewed indicated that they were affiliated with a professional organization that was either solely or partially focused on the use of data in schools.

Modeling the Way emerged as the number one leadership practice from the model by Kouzes and Posner (2012) that principals employed to inspire teachers to use instructional data systems to inform their practice in the study. Modeling the Way received the highest number of code applications by a sixteen percent margin over Inspiring a Shared Vision. Principals, while Inspiring a Shared Vision for the use of data with their teachers, reported that they created a sense of trust and unity among their staff to elicit the necessary buy-in that they reported would be necessary from teachers to make effective use of the student data. Principals are Challenging the Process by requiring teachers to demonstrate how they are modifying their instruction based on the data. They are also using data to compare results among colleagues. In an effort to Enable Others to

Act principals utilized concepts like shared and distributed leadership. Principals in the study built a variety of different teams to help build the capacity in the school for the use of data systems. There was little indication that Kouzes and Posner's fifth leadership practice of Encouraging the Heart had significant application in this study.

Principals developed a data culture by establishing trust among their staff for the non-punitive, save and transparent use of data. Teachers are encouraged to share best practices during a variety of structured and scheduled meetings. Examples of establishing trust, transparent use of data, and sharing best practices in the study included, but were not limited to, PLC meetings, faculty, grade-level meetings, continuous improvement meetings, data team meetings and planned release time.

The researcher also explored any potential barriers that may be perceived or exist that could work against a principal's objective to use data effectively in their buildings. Twelve of the eighteen principals indicated that time was one of the two most cited barriers to the effective use of instructional data in their schools. The other barrier was access to relevant and reliable data. Principals in the study indicated that teachers' pedagogical data literacy, teachers' resistance to the use of data and data systems/infrastructure issues ranked in the second group as barriers to success. Other barriers that were indicated by principals as less impactful were their own pedagogical data literacy, timely access to data and additional professional development.

A summary of the findings, conclusions and recommendations for further study will be reported in the following chapter.

CHAPTER V

Conclusions and Recommendations

This final chapter will provide the conclusions from the study about the findings and the resulting recommendations. This chapter is comprised of eight sections; the first four provide a conclusion and the recommendations for each of the four research questions. The fifth section provides a conclusion and recommendations related to the barriers to data use identified in the study. The sixth section is a technology recommendation related to the researcher's use of a web-based software tool that may provide utility to future students in research programs at the Sage College of Albany. The final two sections provide the researcher an opportunity to share some recommendations for future study and make final comments.

Research Question #3- Which of the five practices of Kouzes and Posners' model do building leaders employ to inspire teachers to use instructional data systems to inform their practices?

Conclusion

All five of Kouzes and Posners (2012) five practices were reported by the principals who participated in the study. Kouzes and Posners' Modeling the Way, was the number one leadership practice principals employed to inspire teachers to use instructional data systems to inform their practice in the study. Some principals established building level expectation and a shared vision for the use of data with their teachers. They reported that they created a sense of trust and unity among the teachers, by

providing them with a safe environment to share best practices and practice data-driven instruction. They enabled others to act, promoting distributed leadership in their buildings. By promoting and supporting the collaboration among their teachers, a variety of different teams assisted the principal in building the capacity in the school for the effective use of the data systems. Principals also demonstrated Kouzes and Posners' practice of Challenged the Process by requiring their teachers to demonstrate how they are modifying their instruction based on the data and comparing results among colleagues.

Recommendations for principals:

- Principals in collaboration with their teachers should establish a formal building plan and expectations for the use of data to drive instructional practices in the classroom and data culture. Feldman and Tung (2001) observed that a more professional school culture was often a byproduct of the use of data in schools.. The plan should be aligned with any district-wide systemic data usage efforts. The plan should include a clearly articulated vision, an implementation timeline, and required professional development in support of a data culture that ensures that decisions are based on evidence and not intuition.

- Principals should create structured time for teachers to analyze and interpret instructional data. This should include consistent and ongoing opportunities for teachers to work individually, meet as data and grade-level teams at the building level, work with support from the district or regional educational services organization and work directly with the principal if required.

Research Question - Is there a relationship between the data obtained from instructional data systems and the design of professional development for principals?

Conclusion

In the study, fifty percent of principals interviewed felt that they had received adequate training in the use of instructional data systems (see figure 8). This represented a disparity between the professional development opportunities that principals report receiving versus those they feel they need. There was no clearly explained relationship between the types of instructional data systems in a district and the design of professional development offered to principals. Most of the professional development opportunities reported were basic training on the use of the instructional data systems and did not contain any provision for building the capacity of principals to turn data into actionable knowledge. Some principals reported having disparate data systems in their districts. No principal reported that a completed integrated solution was in use in their district.

Although several professional development models were cited by the principals, the interview data did not reveal that any of the districts provided a consistent or established process for providing the professional development required by principals.

Recommendation for principals:

- Principals should consider joining and participating in organizations that regularly provide relevant professional development opportunities on the use of instructional data. Some examples of these organizations are DATAG (NY Schools Data

Analysis Technical Assistance Group and National Association of Elementary School Principals. Through resources available from these organizations such as on-line discussion groups, online courses, list serves, social networking and other means they will be able to improve their pedagogical data literacy.

Recommendations for district-level leaders:

- District level leaders should provide the necessary resources, both fiscal and knowledge, to principals for the effective use of instructional data systems in their districts. Integration of disparate data systems will provide the opportunity for interoperability between the various data systems. Data systems need to be interconnected in a way that allows for information to be easily shared between them. Disparate systems do not easily allow for data to be aggregated and may lead to a source of frustration on the part of the staff (Wayman et al., 2009). Data silos caused by use of disparate systems often present challenges in the effective use of data (Rugg, 2007). Examples include a district that has a formative assessment system that is not integrated to the student information. This lack of integration adds to the complexity of the implementation and redundancy of effort by failing to exchange basic demographic and course roster information between the systems. In addition, assessment results are not passed from assessment system to the student information system where historical student data is usually stored. This inhibits processes like analyzing the data longitudinally and sharing testing data with parents through a portal. Disparate systems do not easily allow for data to be aggregated and lead to a source of

frustration on the part of the staff because data cannot be easily located or compared.

- District level leaders should also provide ongoing structured time and opportunities for principals to work with other principals in the district to share best practices for the use of data. Since educators need support to use data effectively (Wayman, 2005), resources such as a district data facilitator or lead administrator should be made available to assist principals in building of the capacity to support teachers in their own buildings with the systemic use of instructional data. This should include, but is not limited to, technical support on the use of the instructional data systems as well as analytic support. An example of analytic support would be a data coach working with a teacher to provide statistical review of their student performance data and assistance in developing instructional action step to remediate deficiencies.

Recommendation for higher education institutions, regional information centers and leadership development programs:

- Since fifty percent of the principals in the study indicated they have not received adequate training of the use of data systems, an opportunity may exist for outside organizations to meet the growing need for building level leaders to possess the required skills and pedagogical data literacy for them to be successful in their schools. Educational leadership programs should include a course for future leaders to obtain the necessary skills to analyze, interpret and transform data into actionable knowledge. Data culture is an environment within a school that values

the importance of using data to inform practice (Mandinach & Jackson, 2012). Programs could explore with principals the various ways to create a data culture in the organizations they will lead in the future. Leadership development programs should offer ongoing seminars to current practitioners on the ever-changing trends for the use of data.

- RIC's (Regional Information Centers) across the state, if they do not already provide a service, should consider one that makes a data analyst available to school districts and principals. Analyst could provide specific professional development and support related to the use and interruption of instructional data. They should also offer regional opportunities for superintendents and principals to share best district practices with each other.

Research Question - What strategies do principals use to model and share best practices for the use of data with their teachers?

Conclusion

Some principals in the study reported developing a data culture in their buildings by establishing trust among their staff for the safe and transparent use of data. They encouraged their staff to share best practices during a variety of structured and unstructured meetings. Examples of the structured and unstructured meetings given were professional learning community meetings, faculty meetings, grade-level meetings, continuous improvement meetings, data team meetings and planned release time dedicated to data usage. It is the role of the principal to communicate high expectations for the use

of data and model the behavior they expect of their teachers for the use of data-driven practices. Trust is an essential element that must be built among the coaches, teachers and administrators. Establishing trust is a process that includes respect, integrity, honesty and transparency (Sosik and Dionne, 1997).

Recommendation for principals:

- Principals should encourage highly effective teachers using data-driven instructional practices to open up their classrooms as labs for other colleagues in the building to observe and become familiar and more comfortable with these practices. Teachers feel supported when they work with and learn from their colleagues (Mandinach, 2012).
- Principals in support of data use should make adjustments in teachers' schedules to allow for adequate time to gather and interpret data for decision-making (Ingram et al., 2004). Consistent with the literature principals need to provide scheduled time in the teachers', day, week and month in an effort for teachers to learn and implement the data-driven practice of a cyclical data inquiry process. This is a process in which teachers instruct, assess, collect, analyze, interpret, modify, monitor and triangulate a variety of data about a student's learning needs.

Research Question - What effects do instructional data systems have on a building principal's capacity to evaluate student growth?

Conclusion

Instructional data systems in use in the districts studied provided principals with the capacity to effectively evaluate student growth. While a few commented that there was room for improvement in regard to timeliness of access, there were many examples provided that the data systems in use produced consistently reliable and tangible measures by which student growth could be evaluated and tracked. School district use a variety of instructional data systems which included assessment, instructional management and student information systems. The timely access to data, which was also noted as an impediment to teacher's use of data will have to be an consideration for improvement. Not all principals reported using data to determine patterns and trends emerging within their schools. Determine patterns and trends emerging would be particularly useful during the collaboration around data by staff and during the principals' evaluation of teacher effectiveness. The perception by principals of the percent of teachers in their building who actually modify instruction based on assessment data was reported to be fifty percent.

Recommendation for principals:

- Principals need to consistently set the expectation and ongoing support for teachers to collect, analyze and transform data into actionable knowledge in the classroom. Principals should consider providing the support of a data coach who could assist teachers with aligning data with their instruction "The closer and more aligned data are to instruction, the more likely they will be integrated into practice" (Mandinach and Snow, 1999, p. 16).

- Principals should consider providing opportunities for teachers to work collaboratively to share ideas and strengthen the data culture in the building. The principal's goal is to use data to improve student learning and build teacher capacity to enhance the teaching and learning process.

Recommendation for district-level leaders:

- District level leaders should build the systemic capacity of the district to support the data-driven instructional practices of their teachers. No Child Left Behind NCLB and RTTT both dictate the use of data to improve results, making data driven instruction (DDI) of high interest in schools (Hamilton et al., 2009). This includes ensuring that the proper infrastructure and data systems are in place. District leaders must ensure that principals have clearly defined roles and responsibilities for program design, setting expectations and evaluating program initiatives associated with the use of data and monitoring results in their respective buildings.

Identified Barriers for the Use of Data in Schools

Conclusion

The identification of barriers by the principal is essential. Two thirds of the principals in the study indicated that time was one of the two most cited barriers to the effective use of instructional data in their schools. Principals and teachers, under current structures and schedules, do not have enough time and access to relevant and reliable data upon which to base instructional decisions.

Recommendation for principals:

- Since time was one of the most cited barriers, principals should plan for data use in the building to be incorporated into already established improvement activities or replace less effective collaborative activities and meetings. The return on investment of time is achieved by the creation of the structure that improves teacher's effectiveness in delivering more targeted instruction (Mandinach & Jackson, 2012).

Recommendation for district-level leaders:

- Robust data systems and network infrastructure must to in place to support the delivery of relevant and timely instructional data.
- Principals indicated barriers related to teacher and principal pedagogical data literacy, teacher's resistance to the use of data, and inadequate professional development. These barriers are all related to professional development. District leaders should provide an opportunity for PLC's to explore intensive concentration on the development of data driven best practices as part of their work..
- District leaders should encourage principals to visit other districts and schools to gain insights into different leadership styles that foster quality data cultures and expose themselves to innovative uses of data in teaching and learning.

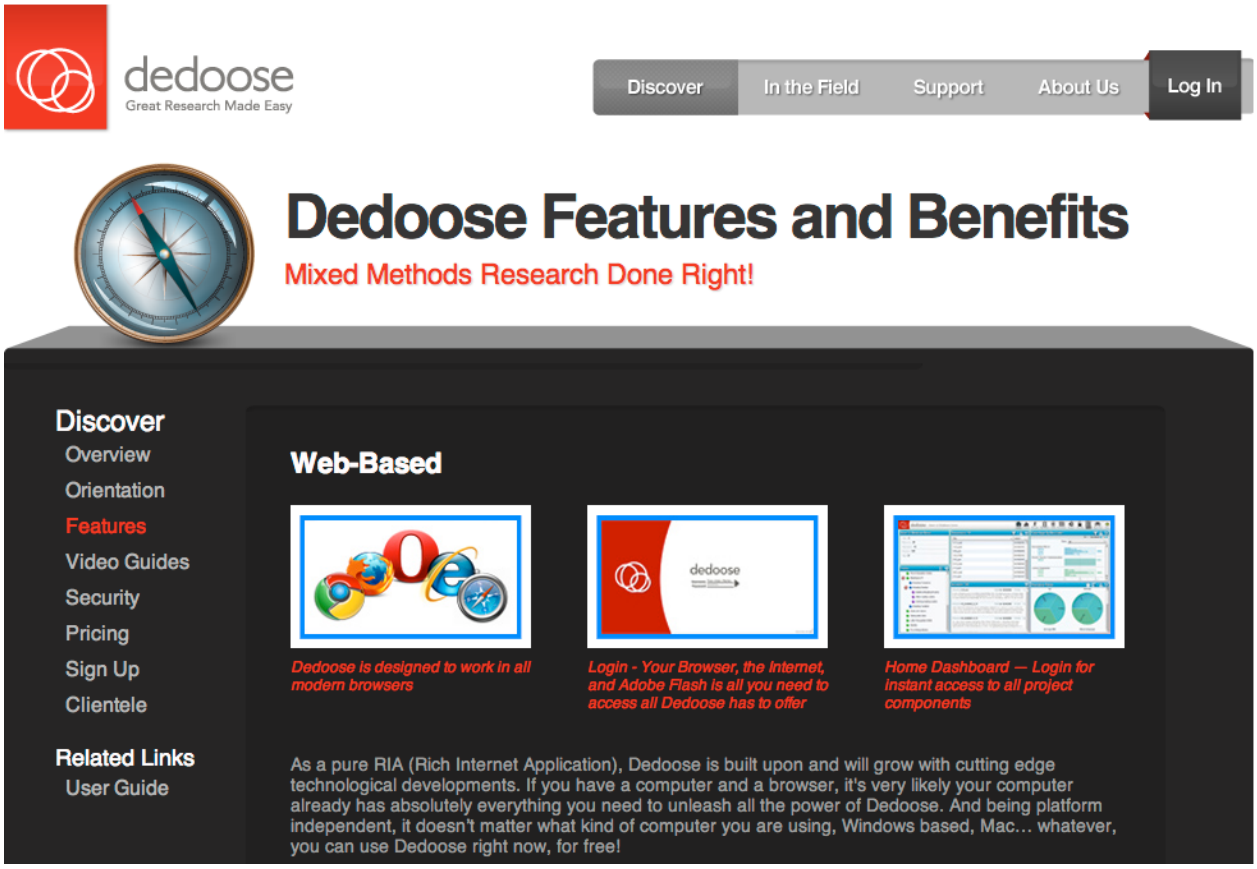
Recommendation related to methodology

In addition to the study of data systems, principal capacity and practices, the

researcher gained valuable insight into use of web-based software that provided excellent utility in completing this dissertation in an efficient manner.

Figure 9:

Dedoose a web-based software platform for researchers



Dedoose Version 4.5, (2013)

Figure 9: Screen shot of Dedoose, a web-based software tool used by the researcher.

The researcher found Deddose to be an extremely useful tool in organizing the transcripts, visualizing the data, excerpting, coding, analyzing the findings and reporting on them. The tool was designed by researchers for researchers, is affordable, very easy to learn and user-friendly to navigate, operate and manage. It can have major implications in

improving the efficiency and effectiveness of students conducting qualitative and mixed methods research studies because of its ease of use and 24/7 Internet accessibility, More information is available on the Dedoose website: www.dedoose.com

Recommendations for Further Research

The intention of this qualitative study was to explore the effects that instructional data systems have on a building level leader's capacity to evaluate student growth and inform principal practice. Recommendations for future research include:

- A larger quantitative study of the same population should be undertaken by expanding the sample size and diversity of districts considered in the sampling procedures. This will provide an opportunity to determine if the findings can be generalized to building leaders in a variety of other types of school districts including those of different sizes, different demographics or in other geographic areas or states.
- Expansion of the same study to include the perspectives of district level leaders in a closer examination of the identified barriers to success.
- A new study to include the perspective of teachers on the use of data to explore if a relationship exists between leadership vision and data culture within a school and reluctance on the part of the instructional staff to use data to drive instruction decisions made in the classroom.

Final Comments

The findings in this study explored the leadership practices of building principals

and the implications that instructional data systems have on their capacity and practice as principals to evaluate student growth in their buildings. This chapter provided the conclusions that were drawn from the findings and recommendations for system leaders to consider systemic issues at the district level. The study has offered a selection of recommendations related to the leadership practices of principals that included the building a data culture, ideas for the sharing of best practices, professional development for teachers and opportunities for collaboration among staff. The researcher reported on a web-based analytical software platform designed for qualitative and mixed-methods researchers that was used during the study and may provide utility for other students. Finally, suggestions for future study were offered in the continuous quest for understanding how a tool data can be in improving student outcomes and supporting advancements in the instructional progress of teaching and learning.

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York: Guilford Press.

Appendix A

Letter/Script used in email format to solicit participation in the study:

Salvatore DeAngelo, Jr.
Doctorial Student – Sage College of Albany
1872 Hexam Road West, Niskayuna, New York, 12309
(518) 221-8268 - deangs2@sage.edu

To: School Building Leader's name here
Address is applicable
Date:

It would be greatly appreciated if you would consider participating in a research project entitled**:**

Study of the use of data systems to increase building leader capacity and inform principal practice in K-12 Public Schools.

This research is being conducted by Salvatore DeAngelo, Jr., a doctoral student at the Sage College of Albany. The chairperson for this research is Dr. Raymond O'Connell. The purpose of this study is to explore school district leadership practices associated with the use of instructional data systems to determine whether they are related to increased capacity to assess student growth and inform principal practices.

As part of the research, I am requesting that you allow me to interview you for about 45 minutes so that I can investigate your leadership practices associated with the use of instructional data systems within your district, how data impacts professional development opportunities and how using data to drive instruction is modeled for teachers.

Interviews will consist of a series of questions. A digital audio recorder will be used to record your responses. This study is confidential. The researcher and transcriber will be the only persons who will be aware of your name and school affiliation. During all presentations of the findings, names and school affiliations in the study will be substituted with pseudonyms to protect confidentiality.

I will be following up with you in the next few days to inquire if you are interested in participating. The benefit of your participation is that your input for this project will add to the research into the leadership practices related to the effective use of data in schools.

I look forward to speaking with you in the coming days,

Sincerely,
Sal DeAngelo

Appendix B

Informed Consent Form

To: _____

You are being asked to participate in a research project entitled**:**
Study of the use of instructional data systems to increase building leader capacity and inform principal practice in K-12 Schools.
This research is being conducted by **:**
Ray O'Connell, Principal Investigator
Sal DeAngelo, Student Researcher

The purpose of the study is to examine leadership practices associated with the use of instructional data systems to determine whether they are related to increased capacity to assess student growth and inform principal practices. These leadership practices will be examined through the lens of Kouzes and Posner's five practices of exemplary leadership.

The interview process should last approximately 45-60 minutes.

You will be asked a series of questions related to your leadership practices, how instructional data systems and data are used in your school building, how data influences your decisions related to professional development opportunities and how you model the use of data with teachers.

This study is confidential but not anonymous. The researcher and transcriber will be the only persons who will be aware of the actual participant's name and school affiliation. All names and school affiliations will be substituted with pseudonyms to protect the confidentiality of all participants. All digital recordings and transcription notes will be kept securely on a password-protected computer and will be destroyed after the study has been completed.
It is the hope of the researcher that this study will provide useful information about the leadership practices of building principals that relate to the more effective use of instructional data systems and data to measure student growth and inform practice. Participants may benefit from the results by the identification of the relationship between data systems and capacity building as well as best practices for the use of data with their teachers.
There is minimal risk in participating in this study. Confidentiality will be carefully maintained during and after the study has been completed. No personally identifiable data will be reported.
Audio will be digitally recorded during the interview. The recording will be used solely for the purpose of data analysis by the researcher. No recordings will be made available to anyone or played in public and will be destroyed upon the completion of the research.
Participation is voluntary and I understand that I may at any time during the course of this

study revoke my consent and withdraw from the study without any penalty.
I have been given an opportunity to read and keep a copy of this Agreement and to ask questions concerning the study. Any such questions have been answered to my full and complete satisfaction.
I, _____, having full capacity to consent, do hereby volunteer to participate in this research study.

Signed: _____ Date:_____
Research participant

This research has received the approval of The Sage Colleges Institutional Review Board, which functions to insure the protection of the rights of human participants. If you, as a participant, have any complaints about this study, please contact:

Dr. Esther Haskvitz, Dean
Sage Graduate Schools
School of Health Sciences
65 First Street
Troy, New York 12180
518-244-2264
haskve@sage.edu

Appendix C

Interview Protocol and Questions

Date: _____ Location:_____ Time:_____

Method of communication: _____ In-person _____ Telephone ____ Video Conference

Interviewer_____

Position: _____

Start digital audio recording here:

Researcher will state the following codes for the audio recording…

District code:_____ Interviewee code:_____

Today I will be conducting an interview to gather data for a research study. The purpose of this qualitative study is to explore New York State school district leadership practices associated with the use of instructional data systems to determine whether they are related to increased capacity to assess student growth and inform principal practices.

Would you like to take a few minutes to clarify any questions or concerns you may have about the study? (Interviewee is free to ask any questions that will make him/her more comfortable with the study. I will answer all of the questions until the interviewee and I are satisfied that we share a common understanding of the vocabulary, context, concepts, questions and intent of the study.)

I would now like to begin…

1) Can you please provide a brief background about yourself, including:

    (a) the number of years in education?

(b) the number of years in this particular school district?

(c) the number of years in your current position as building principal?

2) How do you define student growth in your school?

3) How do your teachers define student growth?

4) To what extent do you feel the use of instructional data is considered an important priority in your district?

(a) What makes you feel this way?

(b) Are there clear policies and/or practices in place that encourage the use of instructional data in your district/school?

5) How are the instructional data systems available in your district used to measure, track and analyze:

(a) Student academic performance?

i. Can you filter the data to provide detailed item analysis at the student level?

ii. Can you filter assessment results by standards or skills?

(b) Student academic growth?

6) Can you describe the professional development you have received on the use of the instructional data systems that you identified as being used to measure, track and analyze student academic growth?

(a) Do you feel you have received adequate training on the effective use of these systems? Explain why you answered as you did.

(b) If so, what were the strengths of that training? If not, what were the weaknesses?

7) Do teachers in your building have a way to access student level performance data?
    (a) Can they filter the data to provide detailed item analysis at the student level to identify deficits and at-risk students?
    (b) Can they filter assessment results by standards or skills
    (c) Can they progress monitor their students by skill for pre- and post-test data? Is this done visually?
    (d) What percentage of your teachers modify instruction and/or interventions based on assessment data? How do you know?
    (e) Is there an established process by which teachers can provide you feedback on effective strategies they have discovered for the use of data in their classrooms?
8) Do you use the information systems to improve teacher effectiveness by:
    (a) setting a common vision on how data can be used?
    (b) comparing individual teacher data with averages for your school and district?
    (c) targeting low performing teachers?
    (d) determining the type and design of professional development programs you offer your teachers?
    (e) collaborating with principals from other schools within your district or district-level administrators?
    (f) identify teachers with more successful practices in an effort to share their instructional approaches with other teachers in your building?

9) The following questions relate specifically to how you model and mentor the effective use of data with your teachers:

(a) How do you encourage teachers to use instructional data within your building?

(b) Do you use data teams, data coaches or any other strategies to collaboratively share student performance data vertically and horizontally in your school building? Yes or No

If yes is answered to the above question then this follow up question will be asked: Can you provide specific examples of how each of the strategies you have indicated are used to support the use of data in your school?

(c) How do you promote cooperative goals and build trust among your teachers?

(d) In what ways are subject areas supervisors or curriculum coordinators involved in this process?

(e) Do you provide specific professional development for teachers on how to interpret data and modify instruction based on student assessment results?

If yes is answered to the above question then this follow up question will be asked: Can you provide some specific examples of the types of professional development opportunities offered and how each of them is used to accomplish this objective?

(f) Do you schedule time in the teacher's day/week/month for them to

work with student data?

If yes is answered to the above question then this follow up question will be asked: Can you provide some specific examples of how a teacher's schedule is structured to provide them with an opportunity to work with student data?

(g) Do you track teacher use of your information systems? Yes or No

If yes is answered to the above question then this follow up question will be asked: How do you use this information?

10) Do you use instructional data to set school improvement plans or building goals? Yes or No

If yes is answered to the above question then this follow up question will be asked: In what ways do you use this data to construct your improvement plans and goals?

11) Do you have an opportunity to share best practices for the use of building data with other principals within your district? Yes or No

(a) In what context and how often does this that place?

(b) Do results from (a) above inform any professional development activities directly specifically toward principals?

12) Do you belong to any professional organizations that focus on the use of data and data driven instruction (ie. Datag)?

If yes is answered to the above question then this follow up question will be asked: Can you indicate which ones you belong to and why?

If no is answered to the above question then this follow up question will be

asked: Are there nay reasons why you do not belong to or would consider belonging to these organizations?

13) Do you use data to place or group students in class? For example in elementary school, do you use data to place students in particular classes. In middle or high school, is data used to schedule students into particular course sections?

14) Please note: Question 14 will only be asked if the participant made no mention of or addressed potential barriers to the use of instructional data systems to building leader capacity and informing their practice. – Have you experienced any barriers to the use of instructional data to assess student academic growth or inform your practices? If so, can you provide some specifics examples?

15) Is there anything important to this study that you think I should have asked you, but did not?

Thank you for your participation.

Stop digital audio recording.

Appendix D

Salvatore DeAngelo, Jr. – Student Researcher –Sage College of Albany
1872 Hexam Road West
Niskayuna, NY 12309
(518)- 221-8268

Transcription Confidentiality Agreement

Agreement and acknowledgement between GMR Transcription Services Inc (Transcription Company/transcriber) and Salvatore DeAngelo, Jr. (client/researcher).

The Client has or shall furnish to the Company certain confidential information, all on the following conditions:

1. The Company/transcriber agrees to hold all confidential or proprietary information in trust and confidence and agrees that it shall be used only for the contemplated purposes, and shall not be used for any other purpose or disclosed to any third party under any circumstances, whatsoever.

2. No copies may be made or retained of any digital audio or written information supplied.

3. At the conclusion of our discussions, or upon demand by the client, all information, including digital audio or written notes shall be returned to the client. Company/transcriber shall not retain copies or written documentation relating thereto.

4. This information shall not be disclosed to any employee, consultant or third party unless party agrees to execute and be bound by the terms of this agreement, and disclosure by client is first approved.

5. The Company/transcriber acknowledges the information disclosed herein is proprietary and in the event of any breach, the Client shall be entitled to injunction relief as a cumulative and not necessarily successive or exclusive remedy to a claim for monetary damages.

6. This constitutes the entire agreement. Signed this 4th day of March, 2013 ~~2012~~.

Witnessed:

Witness

Beth Worthy, Director of Operations
Company Representative/transcriber

Appendix E

National Institute of Health (NIH) Certificate

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Salvatore DeAngelo** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 09/10/2011

Certification Number: 750571

Appendix F

Sage College Internal Review Board (IRB) Email Approval

As per program requirments, this exhibit has been removed
from this version of the document.

Appendix F continued

Sage College Internal Review Board (IRB) Approval Letter

As per program requirments, this exhibit has been removed
from this version of the document.

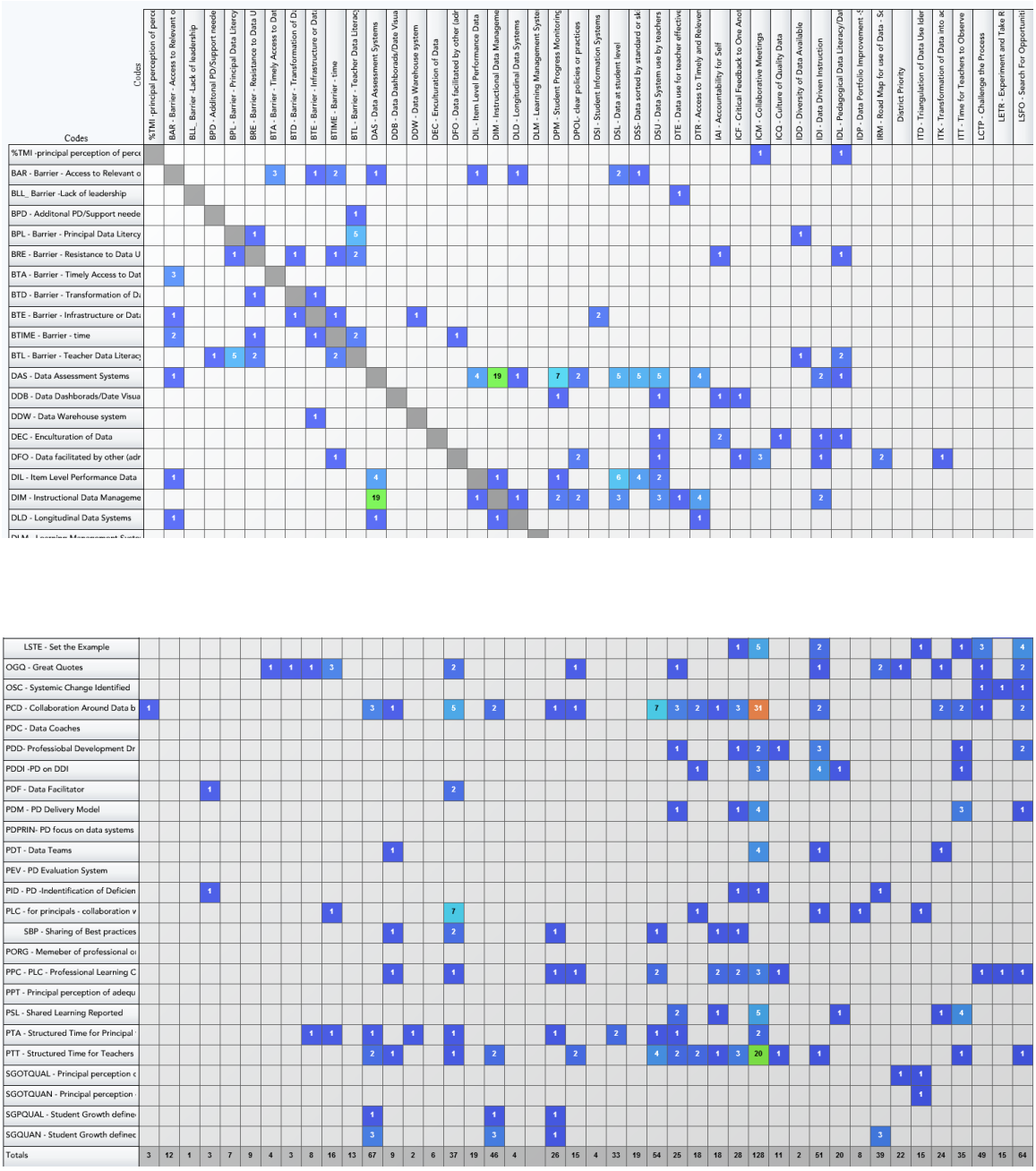
Appendix G

Code Application Matrix

Source: Dedoose Version 4.5, web application for managing, analyzing, and presenting qualitative and mixed method research data (2013). Los Angeles, CA: SocioCultural Research Consultants, LLC (www.dedoose.com).

Appendix H

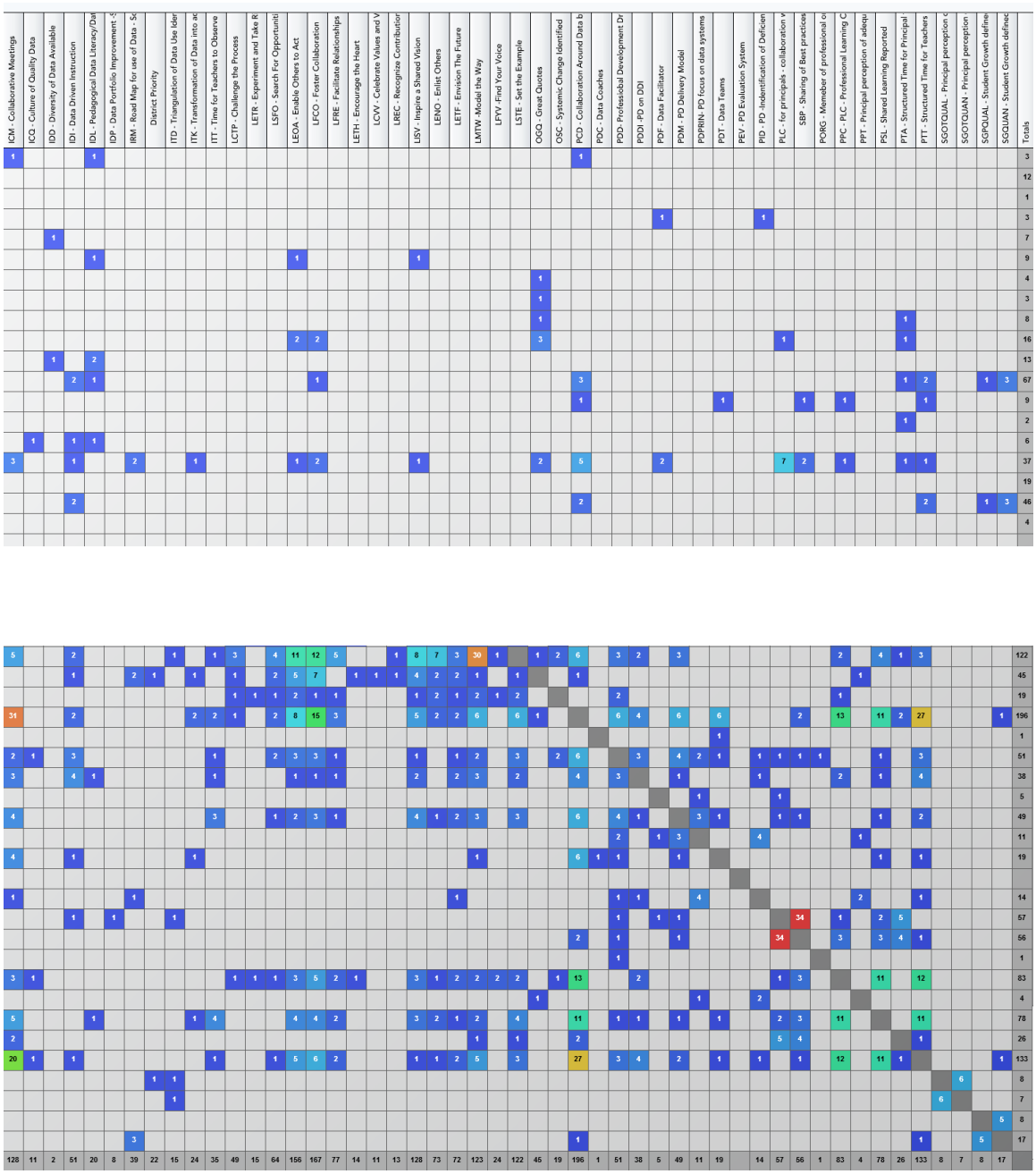
Code Co-Occurrence Matrix



Source: Dedoose Version 4.5, web application for managing, analyzing, and presenting qualitative and mixed method research data (2013). Los Angeles, CA: SocioCultural Research Consultants, LLC (www.dedoose.com).

Appendix H continued

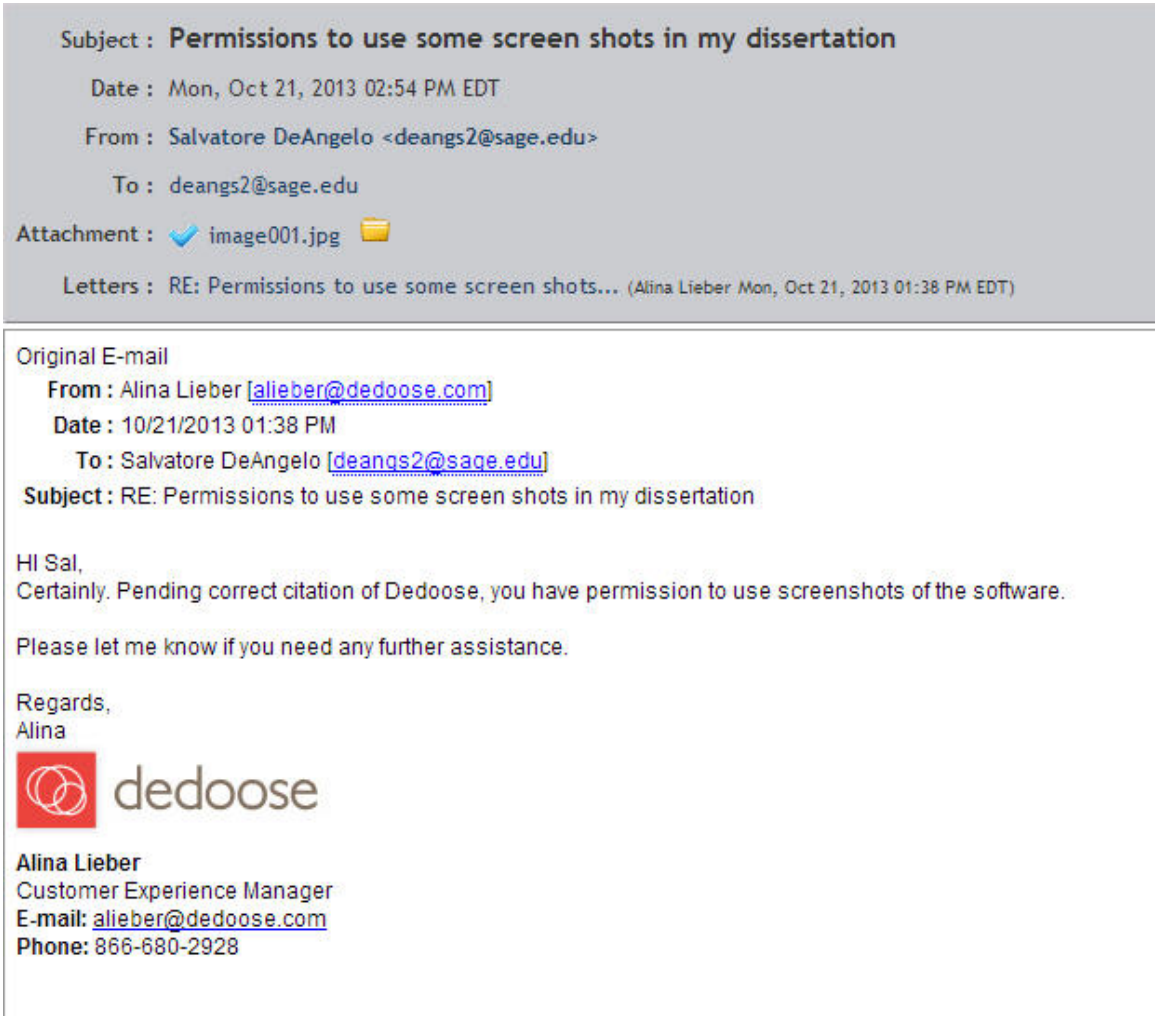
Code Co-Occurrence Matrix



Source: Dedoose Version 4.5, web application for managing, analyzing, and presenting qualitative and mixed method research data (2013). Los Angeles, CA: SocioCultural Research Consultants, LLC (www.dedoose.com).

Appendix I

Email Permission to Use Dedoose Screen Shots



Subject : **Permissions to use some screen shots in my dissertation**

Date : Mon, Oct 21, 2013 02:54 PM EDT

From : Salvatore DeAngelo <deangs2@sage.edu>

To : deangs2@sage.edu

Attachment : image001.jpg

Letters : RE: Permissions to use some screen shots... (Alina Lieber Mon, Oct 21, 2013 01:38 PM EDT)

Original E-mail

From : Alina Lieber [alieber@dedoose.com]

Date : 10/21/2013 01:38 PM

To : Salvatore DeAngelo [deangs2@sage.edu]

Subject : RE: Permissions to use some screen shots in my dissertation

HI Sal,
Certainly. Pending correct citation of Dedoose, you have permission to use screenshots of the software.

Please let me know if you need any further assistance.

Regards,
Alina

dedoose

Alina Lieber
Customer Experience Manager
E-mail: alieber@dedoose.com
Phone: 866-680-2928

Appendix J

Crosswalk between Research and Interview Questions

Research Questions	Interview Questions
1	2, 3, 4a, 4b, 5a, 5b
2	6a, 6b, 8e, 11 a-b, 12
3	7 a-e, 8a, 8b, 8c, 8d, 8f, 9a, 9e-g, 10
4	8a, 8d-f, 9b-d, 9f, 9g
Barriers	14