

ILLINOIS ELEMENTARY PRINCIPALS' INFLUENCE IN THE ESTABLISHMENT
OF DATA-INFORMED DECISION MAKING: A COMPARATIVE CASE STUDY

BY

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DISSERTATION

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Abstract

This comparative-case study examined how principals of three suburban elementary schools near Chicago, Illinois influenced data-rich cultures to inform decisions within their schools. Specifically, this study examined the leadership behaviors and activities of the principals as they established data-informed decision-making procedures in their schools, built capacity to enrich a data-savvy culture, evaluated the effectiveness of their data-informed systems, and negotiated through obstacles as they worked to establish data-enriched cultures within their schools. The participants included 3 principals; each interviewed on 3 different occasions; 4 central office supervisors; and 16 teachers, including reading, math, and data specialists. Three meetings were observed and nine interviews were conducted between January and April 2012, along with three follow-up telephone interviews of the principals in late April 2012.

The findings from this study demonstrated that a productive culture in the three schools focused attention and effort on improving student learning, guided the learning of individual professionals, and employed a systems-learning approach. Data-informed leaders created structures and systems that included participation of faculty in decision making around data. The three principals demonstrated analytical, mathematical, and/or research backgrounds that influenced their ability to foster a culture of data-informed decision making. The principals found the key to fostering a data-rich culture was to involve the faculty in data conversations. As the main users of data, the involvement of the teachers was crucial for success. The emphasis placed on data as the primary source of information assisted with the identification of best practices and ensured effective school reforms by identifying successes and gaps in student learning.

In each school, the principals were effective in implementing a distributed leadership model, empowering the faculty to participate fully in problem solving, innovation, and collaboration. The culture of distributed leadership at each school relied not upon an individual but on the school unit, which is the most appropriate structure for leadership expertise. Distributed leadership practices within the schools recognized that the knowledge and skills necessary to exercise data-informed leadership was best situated within learning communities. Ultimately, a data-savvy culture was established in which teachers and administrators worked together in a community of practice: trusting data, focusing on results and not the person, and engaging in using data for systematic reflection and planning.

The comparative case study also discovered that each school has multiple systems to use data to inform decisions. At the beginning of the year, each school conducted a data review, which the principals found was essential for facilitating student learning. Productive teams reviewed results of student achievement based on periodic common assessments and focused their reflective conversations on improving teaching and learning practices. Principals in this study established learning as the central focus and fulfill the social contract to the communities they serve. However, it was observed that the principals narrowly defined student learning within their schools as literacy and mathematics, because these were the only areas that were included in the Illinois state assessments.

With the establishment of the Common Core State Standards, revised Illinois teacher evaluation requirements that include a significant emphasis on student growth, and state-mandated assessments, principals must be effective users of data. Fostering a culture of data-informed decision-making requires a sustained focus on collaboration, transparent review of data related to instructional practices, and the trusting environment to move student learning forward.

This work is dedicated to my loving and very patient wife. Without the tender loving support from her this work would not have been possible. Ryan, Brendan, Lindsay, and Zach, I hope to make you proud and to show you that you can achieve any goal if you dedicate all your heart, mind, and soul to attain it. Ann, you are my best friend and I love you more than I can express with words. You are a wonderful partner in life!

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Chapter One

Introduction

In this current educational reform era, principals are held accountable for facilitating student-learning gains in their schools. As the formal leaders of their buildings, principals are responsible for creating data-savvy cultures, assisting their faculties with analyzing evidence of student learning and promoting effective data-informed decision making. The stakes are becoming increasingly high for educators, as a growing number of states have enacted legislation that requires student-learning data to be incorporated into individual teacher and administrator performance evaluations (Hallinger, 2011). Recently enacted legislation in the state of Illinois, Performance Evaluation Reform Act (PERA) and Senate Bill 7, requires student performance data to comprise at least 30% of teachers' and principals' performance evaluation ratings by September 1, 2016 (Illinois State Board of Education, 2011). The Illinois State Board of Education (ISBE) also established four new areas of focus: (a) adopt the Common Core State Standards in English Language Arts and mathematics, (b) collaborate with 26 states to form a Partnership for Assessment of Readiness for College and Careers (PARCC) testing group, (c) establish a Growth Model Working Group, and (d) design the Illinois Longitudinal Data System (ISBE, 2011). These student achievement pressures increasingly hold principals and teachers accountable for demonstrating student learning gains.

A sense of urgency has been created for immediate results, as state mandates and local stakeholders do not permit the luxury of slow and steady school reforms. Principals can ill afford to ignore ineffective teaching and learning practices within their schools. Educators must make high-yield, strategic decisions based on deep understanding of the school context, student learning needs, and student performance profiles to help maximize learning (Monpas-Huber,

2010). Under the No Child Left Behind (NCLB, 2002) accountability mandates, a growing number of schools are being labeled as low performing and placed under accountability sanctions (Finnigan & Stewart, 2007). Achieving student achievement gains is a complex process, and principals must systematically look for solutions to eliminating the achievement gap that exists in many schools (Young, 2006).

School systems in the United States have evolved dramatically in recent years. School leaders historically have been charged with managerial responsibilities, and the school principal often has been characterized through a “Lone Ranger” leadership model (Hernez-Broome & Hughes, 2004). However, the increasing complexity of school reforms demands a review of the school leader’s role and responsibilities. Current leadership models are more comprehensive, complex, and innovative than traditional hierarchical ones and expand the involvement of faculty through leadership teams (Supovitz & Christman, 2005). The 1980s initiated the accountability movement as states introduced curriculum standards that students must master (Ravitch, 2010). Prior to the release of *A Nation at Risk* (National Commission on Excellence in Education, 1983), the principal was considered to function primarily as a manager. Burns (1978) and Bass (1985) began to distinguish the roles of management and leadership in order to display the necessity for one or the other depending on the needs of the school. Nanus (1989) moved principals in a paradigm shift from industrial management to postindustrial leadership, noting that “managers do things right and leaders do the right things” (p. 21).

Societal pressures in the past half century have brought about significant changes in education—particularly as it relates to the school principal’s role. An emphasis on instructional leadership emerged in the 1980s, as a result of external pressures on school leaders to shape, develop, and supervise teachers’ instructional practices in school settings. Asserting that

instructional leadership is a research-based construct, Bossert, Dwyer, Rowan, and Lee (1982) noted principals employing instructional leadership practices positively influenced teaching practices. By the mid-1990s, instructional leadership had become the most prevalent framework adopted by researchers engaged in the study of school leadership effects (Hallinger & Heck, 1996, 1998). The instructional leadership model focused the work of principals on curriculum, instruction, assessment, and professional development, which expanded their conventional leadership and management responsibilities and practices (Hallinger, 2011). However, the instructional leadership model had significant limitations, including the lack of the following elements: a clearly defined organizational structure, systemic focus on learning, and a process for teacher leadership development.

Among the global trends in educational leadership that emerged at the turn of the 21st century, few have had a more significant, widespread, or persistent effect than the focus on understanding linkages between school leadership and student learning (Copland, 2003; Hallinger, 2011; Knapp, Swinnerton, Copland, & Monpas-Huber, 2006; Murphy, Elliott, Goldring, & Porter, 2007). In contrast to instructional leadership, which primarily emphasized teachers' instructional practices, leadership for learning addresses effective teaching and learning practices that have a positive influence on student learning. Leadership for learning merits investigation as principals attempt to create schools in which all students reach ambitious targets of academic performance (Hallinger, 2011). The new age of accountability asserts that schools demand high test performance, which requires administrators to be involved in the leading of student learning efforts (Knapp et al., 2006). This push to engage administrators is an important mechanism to ensure that students are learning and that there is someone invested in the leadership of that effort. Spillane and Miele (2007) asserted the pooling of data and expertise

should, in theory, enable a group to make more informed decisions. That is, it should allow individuals to exchange multiple forms of data, which can lead to new insights, understandings, and perspectives on student and organizational learning (Spillane & Miele). In order to be effective learning leaders, principals must be highly proficient in the analysis and use of student learning data.

Statement of the Problem

Numerous researchers have concluded that school principals generally do not measure student proficiency gains with data and that they are ineffective in assisting their faculties in making informed decisions concerning student and organizational learning (Dembosky, Pane, Barney, & Christina, 2005; Earl & Fullan, 2003; Hamilton et al., 2009; Knapp, Copland, & Swinerton, 2007; Wayman & Stringfield, 2006). Due to the lack of data-informed leadership, there is a need to examine the leadership practices of principals who are highly proficient in the uses of data, so that their behaviors can be identified and others can learn from them. The NCLB Act (2001) requires states to hold schools accountable not only for making building-wide learning progress but also for making directed individual progress as evidenced by student achievement data. The primary focus and charge placed upon principals is to close the achievement gap in their schools by ensuring that all students progress in their learning. Schools are public institutions under a form of social contract with their community to certify student growth; therefore, principals must create a learning-focused culture in their schools (Stiggins, 2004). As learning leaders, principals must provide opportunities for faculty to collaboratively analyze student learning data so that they can make data-informed decisions, build collaborative teams that value learning, distribute leadership, and ensure continuous organizational learning

(Copland, 2003; Knapp et al., 2006; Lachat & Smith, 2005). However, even when there is a concerted effort for reforming practices in schools, establishing a data-rich culture can be difficult to achieve (Hamilton et al., 2009). Due to this dynamic accountability environment, it takes a systematic leader to build capacity that is centered on learning (Copland, 2003; Hamilton et al., 2009; Wayman, Brewer, & Stringfield, 2009).

Rationale for the Study

Many principals are looking beyond the exclusive use of externally-mandated student achievement test data to evaluate how students are making progress toward building learning goals. Principals are in a position to foster a data-rich culture and it is necessary for someone to initiate the vision for data; that person is most commonly the principal. Hess (2009) has argued that the inability of schools to effectively use data is the “new stupid” (p. 12). Describing the old stupid as the resistance to monitor student learning through operative data use, Hess noted the new stupid as having three attributes: “using data in half-baked ways, translating research simplistically, and giving short shrift to management data” (p. 14). He suggested that the wise use of time and a more in-depth view of data may be antidotes for the new stupid. Paoletti (2009) concurred, noting that factors such as leadership and external accountability influence teachers’ use of data. Furthermore, educators’ professional knowledge, beliefs, and experiences are important factors in data-informed decision making. Facilitating student learning progress requires the effective use and analysis of data, and understanding the next steps requires effective decision making.

Learning leaders create structures that include participation in decision making around data (Hamilton et al., 2009). Prior to the current accountability era, administrators made

instructional decisions based merely upon intuition or informed guesses and failed to utilize data that was readily available to them in their schools (Murphy, Picione, & Holme, 2010). Yet, the practice of data-informed decision making can be met with resistance because it contradicts traditional intuitional methods. Data helps teachers to identify the need to differentiate instruction within their classrooms, and the feedback generated by data also helps teachers and leaders determine whether students are progressing toward learning targets (Breiter & Light, 2006).

This study focused specifically on the leadership of the elementary principal rather than that of middle and high school principals. Research by Diamond and Spillane (2004) found that elementary school staff members paid more attention to tests results and sought to improve students' outcomes based on student learning evidence. In most elementary schools, children receive their instruction in self-contained classrooms with a consistent set of peers and only one or two teachers. Elementary teachers' reports, testing, and accountability policy also appear to influence the instructional content covered and the priority placed on different subject matter areas (Diamond & Spillane). Middle-level schools include multiple variables based on the transition that emerging adolescents experience and the multiple teachers to which middle school students are assigned during the instructional day. Akos (2002) found that boys and girls experienced significant increases in physiological and physical stress concerning the change in academic setting to middle school. Boys are prone to evidence a reduction in academic achievement, whereas girls are more likely to experience psychological stress during the middle-grades years. The unique challenges high schools face in the delivery of systematic data-informed decisions is due to their disciplinary compartmentalization. This departmentalization of high schools led Schlechty (1997) to cite multiple barriers, challenges, and issues that often

confront high school principals as they attempt to implement systemic reforms within their organizations.

Studies have found the leadership of the principal to be a key factor in the school improvement process (Knapp et al., 2006; Sergiovanni, 2006; Wayman & Stringfield, 2006; Youngs & King, 2002). Advancing both organizational and student learning requires the principal to assume a role as a learning leader, ensuring that data are used effectively to determine if students are meeting learning targets (Knapp et al., 2006). The school culture can be a powerful influence, serving as either a barrier or facilitator to data use (Ingram, Louis, & Schroeder, 2004), and is the responsibility of the principal to create an expectation of data usage within the school. Wayman et al. (2009) also detected a lack of clarity for the facilitation of data use in the school district. If the principal only occasionally analyzes data and fails to include the faculty in this process, data will not become engrained as a normal part of the work life of the faculty (Wayman et al.). School leaders who are proficient with data analysis often develop a mindset of being in charge of their own destiny, and they increasingly are able to acquire and use information to inform their schools' improvement activities (Earl & Katz, 2005).

Much of the research that has been conducted on school-level practices encourages educational professionals to use data in reaching objective decisions. The phrase used most often throughout the literature is derived from Deming's Total Quality Management System, Data Driven Decision Making model (Luo & Childress, 2009). However, Knapp et al. (2006) cautioned educational leaders against falling into the trap of thinking that data "drives" decisions, which gives the impression that data use has deterministic implications. Knapp et al. argued that a preferable term, *data-informed leadership*, broadens the scope of deliberation based on effective leaders' use of data. Data-informed leaders are not driven by bottom-line numbers but

instead use this information to decipher complicated educational situations, identify potential solutions, and reach decisions based upon careful analysis of this information. Also, data cannot drive decisions when this information merely illuminates questions without providing answers. For example, disaggregating data reveals the achievement gap is real, but it does not identify or “drive” exacting practices that will successfully close the gap (Knapp et al.).

Data-savvy principals serve as the critical central hub to the data-informed initiative within the school. Wayman et al. (2009) noted, “Data use lives and dies in the principal’s office, and nearly every piece of research on school data use has discussed the role of the principal in some form” (p. 90). Yet, many school leaders may not be proficient with data usage. The majority of the nation’s principals complete administrative coursework to prepare them for their administrative licensure, but this training often is insufficient to fully prepare them to be data-informed leaders (Monpas-Huber, 2010). Principals will have difficulty guiding their faculty through the use of effective data without at least a basic knowledge of statistics, data analysis, and computer software skills (Wayman & Stringfield, 2006). Additionally, the skills necessary for effective data leadership practices continually evolve, so principals must regularly upgrade their data usage skills.

The primary charge placed upon principals is to close the achievement gap by ensuring that all students progress in their learning. For data-informed educators to be viewed as exceptional, they need to move the use of data closer to the classroom (Blink, 2005). The learning leaders’ behaviors center on modeling, monitoring, and collaboration as well as utilizing a systems approach in their organizations (Hoy, Tarter, & Hoy, 2006; Knapp et al., 2006). The ability to analyze complex problems in schools and establish systems that are organically driven

defines leaders as courageous and grounded in this dynamic environment (Copland, 2003). The focus on learning leads to new ways to collaborate and new thinking about student learning.

Purpose of the Study

The purpose of this study was to identify effective learning leadership practices of data-informed elementary principals and to link the systematic practices through a comparative case study in order for others to learn from their behaviors. Research indicates that strong leadership plays a significant role in regard to the effective use of data (Halverson, Grigg, Prichett, & Thomas, 2007; Hamilton et al., 2009; Knapp et al., 2007; Wayman & Stringfield, 2006). Several empirical studies have focused on the elementary principal due to their importance in this foundational period of student learning (Diamond & Spillane, 2004; Finnigan & Stewart, 2009; Youngs, 2007). The ability to harness information concerning what is happening within the school and converting it into knowledge while monitoring state and federal mandates is representative of elementary principals who are effective in promoting improved student learning (Picciano, 2009). Therefore, this multi-case study examined the influence of elementary principals in the establishment of data-informed decision making.

Research Questions

This study addressed the following research questions:

1. In what leadership behaviors and activities do data-savvy elementary principals engage as they establish a data-informed decision making culture in their schools?
2. How do elementary principals build capacity to enrich the data-informed decision making culture?
3. How do principals evaluate the effectiveness of the data-informed systems in their schools?

4. What obstacles have elementary principals encountered when establishing a focus on data-informed decision making, and how have they negotiated through these obstacles?

Conceptual Framework

Principals who focus on student learning look beyond the exclusive use of state-mandated assessments to evaluate how students are progressing through the school year. These data-informed principals initiate multiple ways internally to assess learning and improve teaching and learning practices. This study utilized the mediating school leadership model developed by Hallinger and Heck in 1998 and further refined in 2011. The model proposes the use of mediating school-level variables to determine the degree to which they can account for the relationship between leadership practices and school level outcomes. The mediating school level variables are based on the anchors developed by Knapp et al. (2006) for effective data-informed leadership. According to Knapp et al., several conditions can be linked to the principal's ability to foster a data-rich culture: (a) leadership that focuses attention and effort on improving student learning, (b) leadership that guides the learning of individual professionals, and (c) leadership that guides what has been called "system learning" (p. 12). Figure 1 illustrates the conceptual framework used for this study.

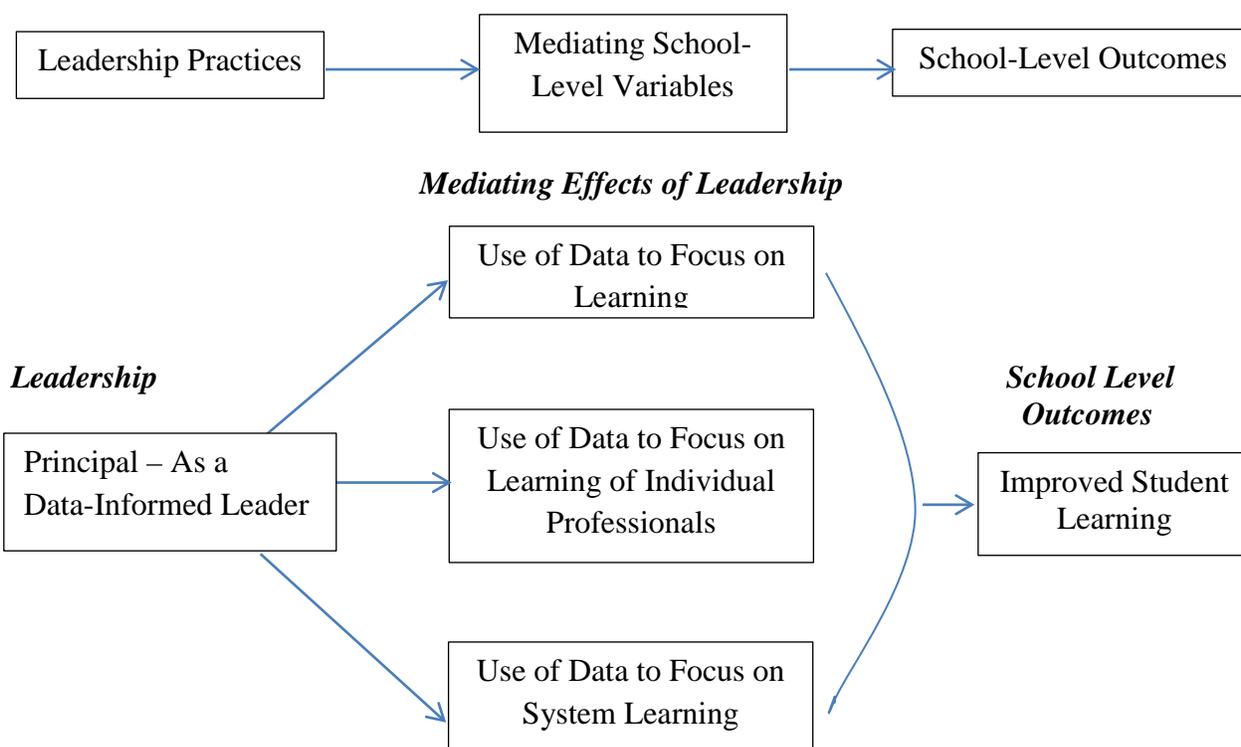


Figure 1. Conceptual framework for studying leadership for learning practices that focus on data-informed decision making that affects student outcomes. Adapted from Knapp et al. (2006b).

The first anchor proposes that principals are in a unique position to foster a data-rich culture to focus on improving student learning. It is necessary for someone within the school to initiate the vision for data use, and that responsibility rightly falls on the principal, as the school's formally appointed leader. Through observing the principal modeling data-informed decision-making processes, faculty can gain an enhanced understanding of its importance and benefits in promoting organizational learning and improved student learning (Knapp et al., 2006). Nearly every empirical research study focused on school data use discusses the importance of principal leadership that centers on learning (Knapp et al.; Lachat & Smith, 2005; Wayman & Stringfield, 2006; Young, 2006).

The second anchor centers on the principal's ability to foster a data-rich culture that involves the leadership to guide the learning of individual professionals. Researchers divide the development of individual professionals into two leadership practices. First, principals develop others by establishing multiple decision makers, implying that data-informed leadership is distributed throughout the organization. Recent studies of distributed leadership highlight the effectiveness of this leadership practice (Copland, 2003; Spillane & Healey, 2010). Copland (2003) proposed that a culture of distributed leadership is created through shared inquiry into improving student learning. Multiple stakeholders often become co-leaders, over time developing shared norms and expertise in data-informed problem solving (Knapp et al., 2006). Such activities emphasize expertise over hierarchical authority, an essential attribute of distributed leadership arrangements (Copland). Distributed leadership opens doors for sustainable, organizational, and cooperative learning, which also calls for data conversations and actions among faculty members, thus freeing the principal to function as a learning leader (Knapp et al., 2006).

Second, the establishment of collaborative teams that value learning also is a central practice for data-informed leaders as they develop individual professionals. Researchers claim the development of effective collaborative teams has contributed to an increase in motivation to use the data (Giles & Hargreaves, 2006; Goddard, Goddard, & Tschannen-Moran, 2007; Knapp et al., 2006; Lachat & Smith, 2005), identifying the combination of the collaborative process and clearly focused questions as a means to look beyond initial data and to incorporate other pertinent information. With this combination, team members are more likely to understand how data are applicable to school improvement initiatives (Lachat & Smith, 2005). This process is a

supportive condition that helps school staff recognize the benefits of basing decisions on objective data (Lachat & Smith, 2005).

The final anchor for data-informed leadership pertains to the demand that leadership take a systems approach to learning (Knapp et al., 2006). Knapp et al. (2006) found that systems learning leadership provides a picture of the school functioning as a whole organizational unit, documenting accomplishments and helping to spot problems that need improvement. As principals focus on data-informed leadership practices, their effectiveness rests on a foundation of strategic thinking that guides the leaders' analysis of data, engagement in inquiry, meaning-making, and the development of action steps (Knapp et al.). Learning leaders methodically and systematically structure the organizational learning to focus on the individual, the social learning, and the cognitive holistic learning processes. Data-rich cultures can be understood as a structural system akin to others found in the literature on systems thinking (Senge, 1990). Principals can help teacher leaders by answering their questions about how individual school goals connect with state, district, and community expectations. The creation of a systems-learning culture enables and motivates others in their use of data to make informed decisions.

Overview of the Methodology

This study examined how elementary principals influence data-informed decision making as they focus on learning by employing a comparative case study method (Creswell, 2009). Specifically, this study provided an in-depth examination of three elementary school principals to understand their influence as they established a data-rich culture. To determine a pool of participants that fit the characteristics, nominations or referrals were sought from regional and statewide organizations and entities that are familiar with local school leaders. Representatives from the 21 regions of the Illinois Principal Association (IPA) and 10 Regional Service Provider

System of Support (RESPRO) offices were asked to provide nominations or recommendations of elementary principals that have demonstrated effectiveness and have a reputation of engaging their faculty in a variety of ways. A definition of data-informed leadership was provided to nominating groups to clarify the types of faculty engagement desired.

The use of a case study was a strategy that allows the researcher to focus on a specific aspect of an individual or context that was of special interest to the researcher (Creswell, 2009; Krathwohl, 2009; Merriam, 2009). The qualitative research conditions proposed for this comprehensive research strategy aligned with the characteristics of this study: (a) the research questions were directed at “what” and “how” inquiries; (b) the researcher did not manage the events but only observe the events; and (c) the study was concerned with a current phenomenon (Krathwohl, 2009).

A comparative case study methodology was used in this study to develop a deeper understanding of data-informed decision making used by learning leaders in selected elementary schools. This research involved the analysis of data from multiple cases, as opposed to a single case, to address the research questions. Interviewing was the primary data collection system used in this research study and occurred in the natural setting of each participant’s environment. In this study, I conducted semi-structured, open-ended interviews of the principals, focus groups including the faculty data team members, and interviews of central office administrators. The use of a semi-structured interview protocol allowed me to acquire necessary data about data-informed leadership practices while allowing for unintended and unsolicited ideas to emerge during the interviews (Merriam, 2009).

Data analysis was ongoing. As an example, after each interview was concluded, I read and transcribed my notes to begin to make sense of the data. As I read the texts, notes were

written out of ideas that emerged. Each case was analyzed and then cross-analyzed themes and patterns aligned to the three cases. This inclusion of comparative themes across single-case studies enhanced the validity and generalizability of the study's findings (Merriam, 2009). The final step in the analysis phase included an interpretation of the data. The challenge of qualitative analysis lies in making sense of massive amounts of data (Patton, 2002). This involved reducing the volume of collected data, sifting insignificant data from significant data, identifying relevant patterns, and constructing a framework for communicating the essence of what the data revealed. I included an interpretation from my own perspective; however, I also included the perspective as it related to the literature or theories established in the literature review.

Limitations

Many factors can influence the outcome of a qualitative study. The small sample size as well as short duration period to conduct this study was considered limitations. Due to the nature of the case-study approach, the findings from this four-month study may affect its generalizability to the activities and behaviors all public elementary school principals. Case study sites were identified through recommendations made by representatives of multiple statewide organizations familiar with leaders of elementary schools and subsequent review of state reports on the academic performance trends of the individual schools. These methods did not comprehensively identify all elementary principals within the state of Illinois who exercise the most extensive levels of data-informed leadership.

Another limitation was the risk that the researcher did not obtain truthful responses from the participating principals and team members. Although the researcher attempted to establish trust there was the likelihood that participants were not forthright in expressing their true ideas

and approaches. If the practices were be perceived by the participants to reflect badly on the school or its students and staff, they may elect to modify the substance of their responses.

Delimitations

I intended to delimit the pool of participants in some substantive ways. First, I reviewed reports from the Illinois State Board of Education to identify schools demonstrating growth in the last three years on the state Illinois State Assessment Test in all three grade levels (third to fifth grade). I also delimited the participating schools based on the diversity of their students within the school. Schools with homogeneous populations were excluded to provide more generalizable recommendations based on the findings. The study did not center on the specific practices of individual teacher data use, except for the leadership provided by the principal to support the teachers in their use of data. Additionally, this study desired to gain an understanding of the principal as a learning leader within the context of data use. For the purposes of this study, the specific interest was to examine the activities of the principal as a learning leader within the context of data use.

Significance of the Study

This study was significant because it provides principals, teachers, and superintendents with an understanding of the necessary practices effective principals implement to foster a data-rich culture within their schools. Most principals state that they use data; however, many principals are not fully successful in establishing a culture within their schools that focuses on learning and uses data to inform changes in teaching and learning practices (Dembosky et al., 2005; Earl & Fullan, 2003; Hamilton et al., 2009; Knapp et al., 2006; Wayman & Stringfield,

2006). The new teacher and principal evaluation system initiated in the state of Illinois must be implemented by the beginning of the 2012-2013 school year and mandates that at least 50% of principal performance evaluation will be based on student growth. Because of the increasing political and community accountability pressures on our educational leaders, there is no better time for a clear delineation of the practices that principals use to foster a data-rich culture.

Principals who influence data-informed decision making establish learning as the central focus and fulfill the social contract to the communities they serve. With the establishment of the Common Core State Standards, the new Illinois evaluation requirements, along with the state-mandated assessments, principals must be effective users of data. The findings generated from this study can provide information that other school leaders can use to be more effective in building capacity toward a culture of data-informed decision making.

Definition of Terms

Data-informed leadership. Data-informed leaders generate powerful, equitable learning opportunities for students and teaching professionals through the use of data, and center on systems learning through the use of data (Knapp et al., 2006).

Data literacy. Data literacy specifically matches the depth of knowledge principals have toward data to what they are able to do with the data. Data-literate principals understand the collection of data, the representation of data, and the analysis of data to provide school-wide informed decisions (Earl & Katz, 2005).

Data-informed decision making. Effective data-informed decision-making practice involves regular systematic data collection, data analysis, and ongoing implementation of improvements. It is a process that incorporates the analysis of educational data to support

decisions intended to improve teaching and learning at the school and classroom levels (Knapp et al., 2006).

Distributed leadership. Distributed leadership is focused on building and sustaining leadership capacity throughout the organization. Principals engage multiple professionals within an organization in order to benefit from the combined expertise as they lead in the decision-making process (Spillane, Halverson, & Diamond, 2001).

Systems learning. Systems learning include assembling and interpreting information about the school system as a whole plus developing new policies, practices, and structures that alter and hopefully enhance the holistic performance (Knapp et al., 2006). Ingram et al. (2004) described an organization utilizing systems learning as one that “works efficiently, readily adapts to change, detects and corrects error, and continually improves its effectiveness” (p. 1261).

Summary

This chapter presented a rationale for this proposed study of elementary school principals who are successful in their use of data to promote improved student learning. It detailed the purpose of the study, which was to identify effective leadership practices of data-informed elementary principals and to link the practices through a comparative case study in order for others to learn from their behaviors. Chapter Two provides a review of literature related to the evolution of school leadership practices and the necessity for data-informed leadership due to the current era of accountability. Chapter Three contains information on the research design and methodology including research questions, design of the study, population and sampling procedures, data collection, and data analysis. Chapter Four examines each of the three cases in detail, recounting the environment and idiosyncrasies of each site. Chapter Five reports each of

the research questions in a cross-case analysis, providing findings for each question and a comparison across the cases. Chapter Six, the final chapter, offers a summary of the research study, which includes the statement of the problem, a description of the methodology, and the major findings. Additionally, the research questions are explored, which provide a context to interpret the results. A discussion of the results allows for further explanations for the findings, as well as implications of the study. The chapter concludes with recommendations for further research.

Chapter Two

Literature Review

“In God we trust; all others bring data.” W. Edwards Deming

The age of accountability thrust upon today’s elementary principals creates the necessity for responsible data-informed decision making. Recently enacted legislation in the state of Illinois, Performance Evaluation Reform Act and Senate Bill 7, requires student performance data to comprise at least 30% of teachers’ and principals’ performance evaluation ratings by September 1, 2016 (Illinois State Board of Education, 2011). The Illinois State Board of Education (ISBE, n.d.) established four areas of focus: (a) adopt the Common Core State Standards in English Language Arts and mathematics, (b) collaborate with 26 states to form a Partnership for Assessment of Readiness for College and Careers (PARCC) testing group, (c) establish a Growth Model Working Group, and (d) design the Illinois Longitudinal Data System. The current fast-paced and dynamic national student achievement measurability movement holds principals and teachers accountable for student learning gains.

The challenge for educational leaders is to identify the specific sets of available data that will assist them in making informed decisions to improve student learning and close the achievement gap. State-level policymakers and school district personnel long have engaged in the process of establishing standards for student achievement, but the current dialogue is more targeted toward student learning gains (Felner, Bolton, Seitsinger, & Burns, 2008). Felner et al. asserted that the national trend to hold schools accountable is unquestionably becoming a major factor in modern educational policy. Since the federal No Child Left Behind (NCLB) Act places pressure at the state, district, school, and classroom levels by requiring all students to demonstrate learning proficiency by 2014, it is essential that principals understand the role of

data in student assessments and school improvement activities (Halverson et al., 2007).

Accountability for student learning comprises more than observations and tests scores: It embraces highly efficient data collection, collaboration with feedback, implementation, and continuous review of an indicator system (Felner et al.).

This review of literature centers on three strands of research because of the extensive external forces placed upon current principals. First, the role of the principal and its relationship to student achievement is examined. This body of research establishes the importance of the school leader in relation to student learning. Second, leadership for learning as a conceptual framework is reviewed, noting how it has evolved from previous conceptions of the principal's practices. This strand examines how the principalship has transformed from managerial and instructional practices, which focused on operations and teacher behavior, to learning-centered leadership that centers on student learning. Finally, research on data-informed leadership is examined within the framework of leadership for learning. This review focuses on the principal and the need to establish a data-rich culture to ensure all stakeholders focus on learning.

The Influence of Principal Leadership on Student Learning

Numerous empirical studies over the last 30 years have concluded that leadership can make a difference in student learning. Several theoretical models were developed in the 1970s and 1980s relative to leadership behaviors of the principal, but researchers during that era were unable to determine whether the association between principal leadership and student achievement reflected a cause-and-effect or a coincidental relationship (Heck, Larsen, & Marcoulides, 1990). Confusion about principal leadership practices led some researchers to conclude that principals—because they are not directly involved in classroom instruction—do

not influence academic achievement in the same manner as teachers do. They concluded that principal leadership provided an indirect relationship to the academic success of students rather than a direct relationship (Bossert et al., 1982; Bridges, 1982). These initial studies exposed the need for empirical research to clarify the influence of principal leadership on student achievement.

Heck et al. (1990) set out to validate a causal relationship between principal leadership and student achievement, using survey research methods involving 168 elementary and high school teachers and 30 principals in the state of California. The participants completed a questionnaire that consisted of items investigating the frequency of multiple leadership practices, which concluded that principals can influence student achievement within their schools through their leadership practices. Heck et al. encouraged policymakers to reconceptualize leadership preparation programs, so they could more effectively prepare aspiring principals to become effective leaders who positively affect student learning.

Hallinger, Bickman, and Davis (1996) examined whether principals made a difference in promoting student learning within their schools. Using the framework of instructional leadership, they established a multidimensional model of principal leadership on student learning in the area of reading. The two dimensions of principal leadership included instructional climate and instructional organization. Their findings suggested that elementary school principals who are perceived by teachers as strong instructional leaders promote student achievement through influencing a school-wide learning climate (Hallinger et al.).

The relationship between principal leadership and student achievement was further developed by Hallinger and Heck (1998), who conducted a meta-analysis of over 40 empirical studies completed between 1980 and 1995. They organized the studies into three categories:

direct effects of leadership practice on student outcomes; mediated effects studies, in which principal leadership was mediated by variables including other people, events, or organizational factors; and reciprocal effect studies attempting to determine relationships between leadership efforts and the school environment. They found a general pattern confirming that principals indirectly affect school effectiveness and student achievement, concluding that “principals exercise a measurable, though indirect effect on school effectiveness and student achievement. Although this indirect effect is relatively small, it is statistically significant, and we assert, meaningful” (Hallinger & Heck, p. 186).

The significance of the elementary principal position is an important element for a school community’s holistic connections. Sergiovanni (2006) asserted that principals connect the heart, the head, and the hand to the body of the community. The heart represents what the person believes, values, and is committed to represent. The head represents the multiple theoretical practices ensuring educational excellence for all students of the community. One hand of the principal represents the policies and actions that bridge the teachers, students, and parents and the policymaking structures (superintendent, school board, and taxpayers) are represented on the other hand. Leading teachers to form relationships with their students and to achieve results with high standards requires a new conceptualization of the principalship (Darling-Hammond & Friedlaender, 2008; Hoy et al., 2006; Waters, Marzano, & McNulty (2004). Several empirical studies have concluded that there is a strong direct effect between principal leadership and instructional practices, which leads to an indirect effect on student learning. Supovitz, Sirinides, and May (2010) studied a mid-size urban school district in the southeastern United States during the 2006-2007 academic year. They reported a direct relationship between principal leadership

and teachers' changes in instructional practices, suggesting that principals who focus on instruction are more effective in promoting instructional reforms.

Leithwood, Louis, Anderson, and Wahlstrom (2004) developed a conceptual model of how leadership at different levels of the education system (state, district, and other stakeholders) influences school leadership. They noted that the literature on the relationship between principal practices and student learning indicates two findings. First, it validates that principals can have a significant effect on student learning outcomes, and second, these effects are more likely to be facilitated by other school and classroom factors than directly by principal actions. Overall, they concluded that school leadership "is second only to teaching among school-related factors in its impact on student learning" (p. 5).

Waters et al. (2004), in a meta-analysis of 69 studies from 1970 to 2005 involving approximately 3,000 schools, found a correlation linking the principal's behavior to student learning. Walters et al. concluded, "The data from our meta-analysis demonstrates that there is, in fact, a substantial relationship between leadership and student achievement. We found that the average effect size (expressed as a correlation) between leadership and student achievement is .25" (p. 3). Waters et al. pointed out another finding that they suggest is of equal concern: Principal leadership can have either a positive or a negative effect on student learning.

Scholars have acknowledged the limitations of meta-analyses that have examined principal practices, noting that these analyses do not identify specific principal behaviors that lead to student learning gains within their schools (Bridges, 1982; Hallinger & Heck, 1998; Waters et al., 2004). Therefore, delineating these leadership behaviors is a critical area for further study.

Recent Advances in Principal Leadership Practices

Educational reforms have not always been swift and comprehensive. Upon conducting a meta-analysis of research published between 1967 and 1980, Bridges (1982) concluded that “there is no compelling evidence to suggest that a major theoretical issue or practical problem relating to school administrators has been resolved by those toiling in the intellectual vineyards since 1967” (p. 25). Bridges noted that there was no evidence to suggest that principals had shifted away from their managerial roles during this 13-year time period. When assessing the impact of the principal elements during this time, researchers were more likely to focus on organizational maintenance than on organizational achievement.

School leaders historically have been charged with managerial responsibilities, and the school principal often has been characterized through a “Lone Ranger” leadership model (Hernez-Broome & Hughes, 2004). The release of *A Nation at Risk* (National Commission on Excellence in Education, 1983), however, prompted a review of the school leader’s role and responsibilities, due to the increasing complexity of school reforms. Burns (1978) and Bass (1985) began to distinguish the roles of management and leadership in order to display the necessity for one or the other, depending on the needs of the individual school district. Current leadership models are more comprehensive, complex, and innovative than traditional hierarchical ones and have expanded leadership roles to embrace the involvement of faculty through leadership teams (Supovitz & Christman, 2005).

Instructional Leadership

The conceptualization of principal as instructional leader emerged in the 1980s as a result of external pressures on school leaders to shape, develop, and supervise instructional practices in

school settings. Bossert et al. (1982) asserted that instructional leadership is a research-based construct and noted how principals who employ instructional leadership practices positively affect teaching practices. Bossert et al. developed a conceptual framework focusing on the formal and informal practices of instructional leaders. The researchers postulated that if their study became empirically validated, instructional leadership could prove helpful as a mechanism to improve student learning. However, the Bossert et al. model focused on leader behaviors, teacher practices, and building climate, with relatively little attention paid to student learning.

By the mid-1990s, Hallinger and Heck (1996) observed that instructional leadership had become the most prevalent perspective adopted by researchers engaged in the study of school leadership effects. The instructional leadership model focused the work of principals on curriculum, instruction, assessment, and professional development, which expanded their conventional leadership and management responsibilities and practices (Hallinger & Heck). At the center of this approach was the changing focus on the role of the principal, traditionally characterized by organizational management and leadership duties (Hallinger, 2005). However, significant limitations were inherent in the instructional leadership framework, including the lack of a clearly defined organizational structure, a process for teacher leadership development, and a systemic focus on learning (Hallinger 2005). Hallinger (2005) presented the following observations concerning a strict instructional model:

- Instructional leadership was conceived as a role carried out by the school principal with little inference toward teachers, assistant principals, and department heads as instructional leaders.
- Instructional leaders were described as strong, directive leaders who had been successful at “turning their schools around.”
- Instructional leaders were viewed as culture builders. They sought to create an “academic press” that fostered high expectations and standards for students, as well as for teachers.

- Instructional leaders focus on coordinating, controlling, supervising, and developing curriculum and instruction. The principal was again the primary instrument for managing the school organizational system.
- Instructional leaders appear to lead from a combination of expertise and charisma.
- Instructional leaders were goal-oriented, and focused primarily on the improvement of student academic outcomes.
- Instructional leadership was characterized as a rational model of leadership. (pp. 3-4)

The above postulates depict the limitations of the strict instructional leadership model presented throughout literature between 1980 and 2000. The following sections will review previous studies that conclude instructional leadership lacks clearly defined organizational structures, lacks a process for teacher leader development, and lacks a systematic focus on learning.

Organizational structure. Curriculum and instruction are essential practices of the instructional leadership model, yet the organization's political, structural, and managerial demands often drive the daily functions of the principal (Hallinger & Murphy, 1985). Hallinger and Heck (1996) expanded the role of instructional leaders, indicating that they influence the quality of school outcomes through the alignment of school structures (e.g., academic standards, time allocation, and curriculum) and culture with the school's mission. Prior research promoted popular images of principals as evidencing active hands-on involvement in classroom, but Hallinger and Heck noted that relatively few studies actually had found that instructional leaders demonstrate this type of oversight of classroom instruction.

Several years later, Hallinger (2005) concluded from his meta-analysis that there was still little evidence to support the view that principals have become more engaged in hands-on directed supervision of teaching and learning in classrooms. The classroom doors appeared to remain as impermeable as a boundary line for principals in 2005 as in 1980, or indeed in 1960,

1940, or 1920. It is interesting to note the absence of any empirical evidence that principals spend more time directly observing and supervising classroom instruction than they did 25 years ago (Hallinger).

The underlying conceptualization of instructional leadership assumed that schools would improve if principals were able to create clear academic goals, motivate staff and students to work toward those goals, monitor progress, and align teaching and learning activities to achieve the desired academic outcomes (Hallinger & Heck, 1996). Unfortunately, as logical as this approach to leadership may have seemed, the non-rational, structural conditions that characterize schools made it difficult for principals to actually sustain the practices over a long period of time (Hallinger, 2005). Bossert et al. (1982) expanded on the lack of organizational structure by indicating several flaws that limit the understanding of instructional leadership:

Although it is thought that strong instructional leadership facilitates school success, it is equally plausible that the perceptions of strong leadership result from the process of becoming a successful school. The “black box” and correlational approaches of most of these studies obscure the causes and effects of school structures. (p. 36)

The complexity of instructional leadership models and research led Hallinger (2005) to conclude that the principal’s effect on classroom instruction appears to be through the influence of the school’s culture and by modeling rather than through direct supervision and evaluation of teaching.

Finally, Hallinger’s (2005) review of the literature on principal effects concluded that it is essentially meaningless to study principal leadership without consideration of the school context. Contextual variables of interest to principals include student background, community type, organizational structure, school culture, teacher experience and competence, fiscal resources, school size, and bureaucratic and labor features of the school organization (Bossert et al., 1982;

Hallinger & Heck, 1996). The school context is complex, which inhibits the ability of instructional leaders to have a clearly defined organizational structure.

Teacher leader development. Early school leadership models represented the school principal or headmaster as the singular individual who was in charge of organizational management, leadership, and decision making in the building. However, new conceptual models have been advanced in the past 30 years focusing on the manner in which educational leadership affects instructional outcomes and the role of school leaders in this process (Hallinger, 2005). At least three developments have been identified as precursors for the changes in school leadership paradigms: (a) serious critique of authoritative leadership, which has produced more inclusive leadership approaches; (b) the establishment of teacher leadership within established learning communities and school improvement teams; and (c) added emphasis on the responsibilities and leadership roles of classroom teachers (Andrews & Crowther, 2002).

The hierarchical aspect of traditional school leadership approaches has been criticized as being too controlling and capable of stifling the skills and leadership abilities of others in the organization is still predominate in school contexts today (Boyd & Crowson, 2002). The vast leadership literature reveals that educational leadership largely has been premised upon an individual endeavor rather than collective action, which equates leadership with having all-encompassing authority (Hallinger, 2005). Until the current educational reform era, teachers generally did not assume formal or informal leadership positions and roles within their schools (Spillane, Halverson & Diamond, 2004). However, the “instructional leadership focus gave way to reform efforts based on teacher empowerment. Standards-based and systemic reform promoted the devolution of authority and the transformation of the governance landscape through site-based management and shared decision making” (Lemahieu, Roy, & Foss, 1997, p.

583). Subsequently, one of the necessities for teacher empowerment that became incorporated into new leadership models was an increased emphasis on teacher participation in leadership activities (Spillane et al., 2004).

Top-down forms of school leadership seem to be the most common approach in reformation movements (Hallinger, 2005). However, one of the hindrances to effective school leadership is trying to carry the mission and vision alone. When the principal assumes the challenges of going beyond the basic demands of the job, the burden becomes even heavier (Hallinger, 2005). Lambert (2002) noted that the days of the lone instructional leader are over. Studies have found that top-down leadership styles do not necessarily promote effective change to improve student learning gains (Elmore, 2000; Hallinger, 2005; Hallinger & Heck, 1998).

Principals who practice effective leadership have the capacity to involve teachers in leadership roles beyond the boundaries of their classrooms as they work toward transforming the school culture from a workplace into a learning place (Barth, 1986). Traditional instructional leaders do not fully develop a culture of learners, but new leadership establishes multiple opportunities that are necessary to create a community of learners (Barth, 2002). Effective school principals began to implement a focus on learning by clarifying organizational structures and establishing a process for teacher leader development.

Systemic focus on learning. Popular images of instructional leadership have portrayed principals as evidencing active hands-on involvement in the classroom. It is interesting to note, however, that relatively few studies actually have identified instructional leaders who display this type of hands-on supervision of classroom instruction and learning (Hallinger & Heck, 1996). A systemic focus on learning emphasizes the role of the principal and other school-level

leaders in supervising, guiding, and monitoring instruction and instructional practice (Knapp, Copland, & Talbert, 2003). Knapp et al. (2003) described educational leadership of the past:

For most of the last century, views of what constituted high-quality educational leadership centered mainly on time-tested ideas about managing organizations, often through generic exhortations reminiscent of those found in private-sector management literature. Applying such conceptions to education arguably served a purpose in the development of school as an enterprise in the United States, fostering bureaucracies that efficiently made routine many of the conditions that surround teaching and learning. (p. 11)

Principals who systematically focus on learning emphasize collaborative work among professionals that is centered on student learning. Learning-focused principals seek to understand how different leaders and teacher teams influence teaching and learning (Knapp et al., 2006).

Robinson, Lloyd, and Rowe (2008) conducted a meta-analysis to examine the influence of different types of leadership on student academic and learning outcomes. They specifically studied instructional leadership and compared it to the transformational leadership model to determine their effects on student outcomes. The findings determined instructional leadership to have a significant effect on student outcomes as compared to transformational leadership models. They identified five leadership dimensions that were derived from the published research studies:

Dimension 1: Establishing goals and expectations.

Dimension 2: Resourcing strategically.

Dimension 3: Planning, coordinating, and evaluating teaching and the curriculum.

Dimension 4: Promoting and participating in teacher learning and development.

Dimension 5: Ensuring an orderly and supportive environment. (Robinson et al., pp. 659-664)

Robinson et al. concluded, "It seems clear that if we are to learn more about how leadership supports teachers in improving student outcomes, we need to measure how leaders attempt to influence *the teaching practices that matter*" (p. 669). They noted that each of the five

leadership dimensions required the integration of task and relationship considerations rather than a systematic focus on student learning.

Hallinger (2005) reconceptualized the instructional leadership model to include an enhanced focus on organization structures, teacher empowerment, and student learning with a system for monitoring the outcomes. Hallinger noted that the reconceptualization that emerged over the past 25 years would have the instructional leader focus on the following:

- Creating a shared sense of purpose in the school, including clear goals focused on student learning.
- Fostering the continuous improvement of the school through cyclical school development planning that involves a wide range of stakeholders.
- Developing a climate of high expectations and a school culture aimed at innovation and improvement of teaching and learning.
- Coordinating the curriculum and monitoring student learning outcomes.
- Shaping the reward structure of the school to reflect the school's mission.
- Organizing and monitoring a wide range of activities aimed at the continuous development of staff.
- Being a visible presence in the school, modeling the desired values of the school's culture. (p. 13)

The demarcations between instructional leadership and a focus on learning are beginning to become less pronounced, as Hallinger (2011) uses the terms instructional leadership and leadership for learning synonymously. Hallinger claimed, "At the turn of the millennium, instructional leadership metamorphosed from a largely North American perspective into a construct with international currency as policy makers across the globe evinced a mounting desire to understand and strengthen leadership for learning" (p. 272).

A strong challenge to effective principals lies in understanding how to connect leadership practice with student learning, and then to engage the staff energies and commitment accordingly

(Knapp, Copland, Plecki, & Portin, 2006a). The new focus on learning provides leadership with a model that could be used to inform school-wide practice (Knapp et al., 2006a). Knapp et al. (2006a) provided a lens for leadership to shift the focus from away from the instructional component and onto the learning component. They found three layers of activity that contribute to the current state of affairs and to possible alternative futures:

- Specific leadership activities in schools and districts that enable educators to focus on, and mobilize efforts toward, the improvement of learning.
- Related activities that seek to support or guide leadership practice toward greater attention to issues of learning and how to improve it.
- The creation of policy environments that affect how, and how well, leaders concentrate effort on learning priorities. (Knapp et al., p. 18)

The three kinds of leadership actions listed above are essential components of the specific learning improvement strategies that leaders use as they become learning-centered leaders or leaders for learning. Instructional leadership is deficient because it centers on the instructor, lacks clearly defined organizational structures, lacks a process for teacher leader development, and lacks a systematic focus on learning; thus, new models are necessary to realign the focus solely on learning.

Leadership for Learning

The new collection of research into instructional leadership practices that address student achievement is called by various names, such as leadership for learning, learning-centered leadership, and learning-focused leadership. The central focus appears to be grounded in two main principles. First, it appeals to leaders in staying focused on the core technology of schooling, or learning, teaching, curriculum, and assessment (Murphy et al., 2007). Second, it supports leaders in ensuring that all the other processes of schooling (e.g., management,

organization, finance) come alongside systemically for the ultimate purpose of improved student learning (Murphy et al., 2007). Furthermore, learning-focused leadership encourages all stakeholders to focus on all students, regardless of the challenges they face, the means to master challenging content and skills in subject areas, develop habits of mind for further learning, and prepare for fulfilling future careers and citizenship in a democracy (Knapp et al., 2003).

Among the global trends in educational leadership that emerged at the turn of the 21st century, few have been more significant, widespread, or persistent than the focus on considering the connections between school leadership and student learning (Copland, 2003; Hallinger, 2011; Knapp et al. 2006b; Murphy et al., 2007). Leadership for learning merits investigation as elementary principals attempt to create schools in which all students reach ambitious targets of performance (Hallinger, 2011). The current age of accountability demands high test performance in schools, which requires administrators to be involved in the leading of student learning efforts (Knapp et al., 2006b). The original intent of the standards-based reform policies was to improve the quality of learning for all students, but interpreted too literally, these reforms easily can push educators to become preoccupied with achievement score measures, rather than with a broader concept of learning and learning improvement (Knapp et al., 2006b).

This momentum to involve administrators in systemic organizational learning is an important way to ensure that the students, the teachers, and the system as a whole are learning and there is someone invested in the leadership of that effort. The concepts about what and how organizations learn originated outside of education in scholarship on private and public sector organizations, where scholars long have focused on questions of organizational change, innovation, and optimal performance (Knapp et al., 2006b). In the 1970s and 1980s, scholars of organizational learning generated applications to educational leaders that subsequently began to

appear in the late 1990s (Collinson & Cook, 2007; Leithwood & Jantzi, 2000, Leithwood & Louis, 1998; Senge, 1990). This organizational learning foundation has led to the development of four leadership for learning models that are based on extensive case-study analysis. The following sections chronologically review the models and culminate with the most recent model, which provides the foundation for the conceptual framework in this study.

Four Models Based on Leadership for Learning

The first model to encourage educational leaders to focus on learning was developed by Resnick and Glennan (2002). Their partnership developed due to the growing accountability movement and the inability of the achievement gap to close in urban schools. They began their advocacy for high-poverty urban school children who were falling behind in their learning as the accountability indicators began to take hold. Given high-quality learning opportunities, poor and minority students can succeed academically according to measures from achievement test scores to college entrance and completion (Resnick & Glennan). Therefore, they focused their efforts to take powerful teaching and learning to scale in urban school districts.

A multi-site case study conducted by Resnick and Glennan (2002) generated a recommended set of design principles for districts to follow in which all students learn and reach high standards:

- A commitment to an effort-based concept of intelligence and education.
- A focus on classroom instruction throughout the district.
- A culture emphasizing continuous learning and two-way accountability—the core elements of nested learning communities—throughout the system.
- Continuing professional development for all staff, based in schools and linked to the instructional program for students.

- Coherence in standards, curriculum, assessment, and professional development. (pp. 11-13)

Implicit in these design principles is a commitment to a common set of beliefs in the school concerning good instructional practice, sustained communication among professionals concerned with instruction, and a shared conviction that continued learning is a professional responsibility (Resnick & Glennan).

These principles appeared in a collection published in 2003 by researchers at the University of Washington, which focused on the school and effective practices principals can initiate as they influence a culture of learning (Knapp et al., 2003). The second model by Knapp et al. (2003, 2006a) provided effective activities principals should practice as they pursue a leadership for learning focus, which were slightly modified three years later. Knapp et al. (2006a) identified the following principal behaviors as they pursue a leadership for learning focus:

- Establishing a persistent, public focus on learning—for example, by regularly visiting classrooms, initiating or guiding conversations about student learning, or communicating frequently about student learning to parents, the community, or the media.
- Building professional communities in the school and district that place a high priority on learning—for example, by creating structures for regular staff interaction about learning and teaching issues, and by modeling or facilitating participation in professional communities that value learning.
- Engaging groups in the external environment that matter for learning—for example, by creating occasions for regular interaction with parents about learning issues, forming partnerships with relevant neighborhood groups, and seeking out external resource groups that can offer relevant expertise.
- Developing shared leadership strategies along a variety of pathways that can influence learning—for example, by selecting “ripe pathways” of activity where significant leverage can be exerted on the pressing problems of practice, and by distributing leadership along these pathways.
- Creating coherence among the various activities that are directed at learning improvement—for example, by linking disparate activities to common commitments, by

making data widely available on a variety of school programs, or by aligning resources across schools or units within the school. (p. 20)

Knapp et al. (2006a) sought to delineate the effective activities for learning leaders but found that the fine detail of learning-focused leadership and the corresponding leadership support systems have yet to be designated and studied in ways that inform practice. This model moves away from the traditional model of leaders solely centering on instructional leadership, which empathized supervising, guiding, and monitoring instruction and instructional practices.

The third model developed in 2007 by Murphy et al. examined the components of leadership for learning and through the research on effective principals. Their analysis of the research over the last half century led them to capture the knowledge base of leadership for learning under eight major dimensions including: (a) vision for learning, (b) instructional program, (c) curricular program, (d) assessment program, (e) communities of learning, (f) resource acquisition and use, (g) organizational culture, and (h) advocacy. Murphy et al. (2007) placed instructional programs under the leadership for learning model. Whereas traditional models placed instructional leadership as the sole function of effective principals, recent research places instructional leadership within a collaborative learning-focused leadership model. Research shows that instructionally centered leaders devote time to support teachers by strengthening teaching and learning across classrooms (Murphy et al.). Learning-focused leaders understand the teacher is a learner and desires feedback on performance, which is essential to the learning process. When supplying performance feedback, the learning-focused principal makes student learning the target of the conversation (Murphy et al.). As Murphy et al. expanded instructional leadership under the leadership for learning model, Knapp, Copland, Honig, Plecki, and Portin (2010) also clearly noted that instructional leadership is an activity for the learning-focused leader.

Knapp et al. (2010) expanded upon their previous work, investigating leadership in urban school and districts that were seeking to improve both learning and leadership. The study involved qualitative inquiry strategies conducted over a year and a half through multiple visits to seven moderate- to large-sized urban districts and to a selected set of 15 schools within them. The investigation was focused on school-level events, including classroom observations, observation of the interaction between school-level leaders and others, and interviews with a multiple stakeholders throughout the districts. A central finding from this analysis indicated that learning-focused leaders used various forms of data as a main medium of leadership work and a continual conversational point in their interaction with teachers, each other, and stakeholders (Knapp et al.).

School leaders who focus on learning predominantly use test scores provided by the state and district accountability systems but also go beyond student achievement data to develop a much deeper form of evidence-informed practice (Knapp et al., 2010). Knapp et al. (2010) observed the leaders who encouraged a data-rich culture invested greatly in data infrastructure, data literacy, and new forms of data and evidence. The data infrastructure in some schools was as simple as procuring a Scantron machine to score formative and summative classroom assessments in order to provide immediate feedback to students and teachers. Data literacy improved through the focused effort of school-level positions to help users learn how to use and understand data analysis. The multiple forms of evidence learning leaders used was as simple as brief questionnaires to capture feedback from multiple sources, the creation of student and teacher-level protocols to provide feedback, and other data-centered tools to help modify instruction to maximize student learning.

If the goal for educators is to develop highly effective teaching and learning practices, holistic information must be gathered from multiple sources. Bowers (2010) asserted that leaders leverage multiple forms of data; however, much of the research to date focuses primarily on standardized test scores. The following sections provide a review of literature indicating the need for data-informed decision making and how the elementary principal influences the establishment of the data-rich culture.

Data-Informed Leadership

Many principals lack leadership skills to influence effective data use in order to make informed decisions to maximize teaching and learning (Dembosky et al., 2005; Earl & Fullan, 2003; Hamilton et al., 2009; Knapp et al., 2006b; Wayman & Stringfield, 2006). This leadership is more than laying out test scores, noting areas of weakness, and mounting remedies that are indicated by patterns in the data. Researchers assert that the term *data-informed leadership* is a more useful concept for considering what is, and might be, involved in this territory (Hamilton et al., 2009; Knapp et al., 2006b). The NCLB Act (2002) requires states to hold schools accountable not only for making building-wide learning progress but also for making directed individual student progress as evidenced by student achievement data. The primary charge placed upon elementary principals is to improve student learning and to close the achievement gap in their schools by ensuring that all students progress in their learning. Schools are public institutions under a form of social contract with their community to certify student growth; therefore, schools should actively provide evidence that their principals are effectively creating a learning-focused culture within their buildings (Stiggins, 2004).

This review follows the Knapp et al. (2006b) anchors for data-informed decision making and centers on elementary principals as learning leaders. The following sections will review literature based on the three anchors established in the Knapp et al. research, including: (a) a data-rich culture that is focused on learning, (b) a focus on learning of individual professionals, and (c) a focus on system learning (Copland, 2003; Knapp et al., 2006b; Lachat & Smith, 2005). Research reveals that even when there is a concerted effort for reforming practices in schools, establishing a data-rich culture is difficult to achieve (Hamilton et al., 2009; Wayman et al., 2009). In this dynamic environment, it requires a transformation in the way elementary principals engage in their work as learning leaders (Copland, 2003; Hamilton et al., 2009; Wayman et al., 2009).

Focus on learning. The significance of the elementary principal position continues as an important element for a school community's holistic connections. Several empirical studies have concluded that there is a strong relationship between principal leadership and instructional practices that leads to an indirect effect on student learning. A case study conducted by Lachat and Smith (2005) centered on data use in five low-performing urban high schools involved in comprehensive school-wide reform. They found leadership to be the primary influence of system-wide data use, yet they discovered that few administrators had formal training or experience in analyzing and interpreting data or using assessment results for program and instructional improvement. The researchers concluded that the ability to successfully connect school improvement to data use is dependent upon the competencies of leadership. Effective principals need to possess these competencies and characteristics that inspire others. Teachers will take pride in serving with an administrator who exhibits competencies and will eagerly

follow their initiatives (Luo, 2008). The data skills of the principal influence teachers' responsiveness to student learning needs.

Data analysis skills related to the principal's educational background and training appears to be a critical element influencing his/her ability to foster a culture of data-informed decision making. In a survey examining Ohio secondary school principals' reliance on data for decision-making and potential predictors of such dependence, McCloskey, Altschuld, and Lawton (1985) found that respondents without a background in research and measurement had difficulty understanding and interpreting the data presented to them. High school principals with higher levels of training in research methods generally relied more on both formal and informal sources of information than those with fewer data analysis skills (McCloskey et al., 1985). Principals with undergraduate mathematics majors had a greater advantage in using data effectively for decision making (Mathews, 2002). Mathews' case study (2002) revealed that adequate skill training for analyzing and using data is essential for principals to carry out data-informed decision making. Luo (2008) also concluded, based on his survey of 183 principals, that skill in data analysis is one of the most influential variables in predicting principals' data use in decision making. The empirical literature indicates an analytical, mathematical, and or research background of the principal affects his/her ability to foster a culture of data-informed decision making.

Effective data practices include efficiency in responding to student learning and increased capacity in data literacy. Stiggins (1991) claimed, "When decision makers at all levels need and want to understand and use outcome data, the cost of our failure to communicate is becoming apparent. Now we must take action to see that the long-standing embarrassment of data illiteracy is corrected" (p. 536). Earl and Katz (2005) provided clarity for the data literacy model:

- Thinking about purpose: The data used are appropriate to the questions being asked and to the phenomena that are trying to be understood, rather than being simply available.
- Recognizing sound and unsound data: It is understood that the activities of data collection, analysis, and summarization are not infallible.
- Possessing knowledge about statistical and measurement concepts: There is a rejection of the common but polar alternatives of statistics as either imbued with a magical quality of “truth” or invoked to distort and manipulate.
- Making interpretation paramount: Data are recognized as important, but not sufficient, elements of a necessary interpretation conversation. It is interpretation that is thinking.
- Paying attention to reporting and to audiences: The identification of intended audiences guides and structures the nature of reports and data summaries. (p. 19)

Regular feedback loops provide the data-literate leaders with information based on effectiveness the implementation strategies.

Finally, an analysis of both quantitative and qualitative studies centered on the influence of school leadership to increase student learning confirms the importance of the principal’s role. Leithwood et al. (2004) developed a conceptual model of how leadership at different levels of the education system (state, district, and other stakeholders) influenced school leadership. They identified two important aspects involving the relationship between principal practices and student learning. First, it validates that principals can have a significant effect on student learning outcomes, and second, these effects are more likely to be facilitated by other school and classroom factors than directly by principal actions. They concluded that school leadership appears to be second only to teaching among school-related factors in its impact on student learning. Research clearly indicates that effective leadership practices are linked to change initiatives and to improved student achievement.

Culture-building capacity. Learning leaders aspire to establish a culture in which everyone learns, continues to learn, and supports the learning of others (Copland, 2003). The

term *culture*, and more specifically *organizational culture*, has been used for many years. Schein (1990) asserted that any organization that has a shared history can have a culture and also noted that the existence of many subcultures can be problematic to sustaining the organization's overall culture. If individuals within an organization holistically have had shared experiences, there also will be a total and coherent organizational culture (Schein). The complexity of organizational culture leads to a conceptual problem because systems contain subsystems and organizations contain groups that have subgroups within them; therefore, it is not clear how they will coexist in any given complex system (Schein). Leading the organizational culture of the school is complex work and appears to be akin to the complexity theory that is used extensively in the field of strategic management and organizational studies, sometimes called complexity strategy (Pfeffer & Sutton, 2006). Leaders must show confidence in a complex future, show humility based on the knowledge of what they know, and become comfortable with being uncomfortable (Pfeffer & Sutton, 2006). An organizational culture is a strong web of rituals and traditions, norms, and values that affects every corner of school life (Peterson & Deal, 2002). The new complexities and the contextual forces placed on principals affect the functioning of the leader.

Wayman and Stringfield (2006) declared that the key to fostering a data-rich culture is to involve the faculty in data conversations. Because teachers are the main users of data, their involvement is crucial for success. Profound changes in the professional culture of the teachers and the principal are essential to moving to a data-informed learning system (McLaughlin & Talbert, 2006). Principals must model inquiry to enable the creation of a data culture. This cultural shift of using evidence to make informed decisions also makes the individual teacher's private practice more public (McLaughlin & Talbert, 2006). This deprivatized practice creates an uncertainty that must be balanced with a supportive and nurturing environment (Wayman &

Stringfield). Similarly, Heritage and Yeagley (2005) defined a data culture as one in which teachers and administrators work together in a community of practice: trusting data, focusing on results, and engaging in using data for systematic reflection and planning. Fostering a culture of data-informed decision making alters the collaboration and practices of all stakeholders.

The distinguished levels in the study of organizational culture display the indicators for leaders to decipher the pertinent climate of the organization. Schein's (1990) first level seeks out and deciphers the taken-for-granted, underlying, and usual assumptions that determine perceptions, thought processes, feelings, and behavior. Once leaders understand some of these assumptions, it becomes much easier to understand the meanings behind the various behaviors. The second level consists of values, which involve what people believe is good, right, or desirable. The values also are translated into norms of behavior and mainly are displayed by the way individuals behave and expect others to behave. The consistency of assumptions is known as homogeneity, which refers to the extent basic norms, values, and cultural artifacts shared by the organizational members (Dumay, 2009). The third level indicates the deepest level reflected in the nature of reality of human relationships, which is mostly unconscious and intangible.

Recent empirical studies highlight the need for systematic culture-building capacity facilitated by the principal. Dumay's (2009) research sample consisted of 2,595 students nested in 52 schools from the French-speaking community of Belgium. All 817 teachers from the 52 schools answered a questionnaire dealing with the principal's leadership, school culture, and teacher collegiality. The results confirmed that leadership and social interactions between group members are important antecedents of the culture homogeneity and key processes in culture formation. Leaders appear to foster structures of exchanges between the teachers, facilitating continuity in teachers' perceptions and interpretations of the organizational life within their

schools (Dumay). Systematic organizational culture formation is not an easy endeavor but is one that is a responsibility of the learning leader.

Leaders not only must be attentive to the school organizational culture but also to the community culture. Getzels, Lipham, and Campbell (1968) discussed the need for educational leaders to be mindful of the community's cultural values. The implication of the connection between community culture and leadership was, however, a major argument made in studies conducted by Hallinger and Leithwood (1996, 1998); they argued that the leadership theory was incomplete because it failed to consider community culture. From their vantage point, adding culture to leadership theory represented an important factor, especially because schools and other organizations were becoming increasingly complex. Howley, Woodrum, Burgess, and Rhodes (2009) studied four diverse districts with large numbers of economically disadvantaged students who were performing at high achievement levels on state assessments. The researchers desired to provide insight into the dynamics of ways principals negotiated school reforms in the context of four different rural cultures. The findings indicated that culturally responsive principals mediate between local cultural expectations and their own educational visions. When leaders come to believe that their schools should provide a culture that creates and sustains a community of student and adult learning, then they will organize their schools, classrooms, and community learning experiences differently (Peterson & Deal, 2002). Learning leaders who constantly examine the school and the community culture transform the environment into one that is hospitable to sustained learning.

Philosophical considerations. Elementary principal leadership practices over the past century lend few conclusive strategies for the modern data-informed leader. Busby, Ernst, and Varnado (2009) noted that information is knowledge attained not only through the senses but

also through various instructional activities, reflective practices, and investigation or systematic inquiry. In the past decade, the computer-information age has evolved into the age of knowledge (Picciano, 2009), but the knowledge base in educational administration assumed that scientific reasoning skills would prevail in the new age of information. Depending on the structural system that is in place, the use of data can either catapult the educational organization forward or bog the users down. The ability to harness information concerning what is happening within the school and converting it into knowledge while simultaneously monitoring external forces is a monumental task for educational practitioners (Picciano, 2009). If the computer-information age has evolved into the age of knowledge over the past decade, why cannot the educational leadership field produce the knowledge base to guide professional practice as medicine has been able to produce (Donmoyer, 1995; Picciano, 2009)? There appears to be two answers to this question: One answer implicates the problem of idiosyncrasy, and the other involves the problem of values (Donmoyer, 1995; Spillane, 2002).

Researchers attempt to stereotype individuals as groups, which is in direct contrast with what educational practitioners experience daily in their schools. Donmoyer (1995) discussed how anthropologists note that there appears to be just as much variation within a culture or group as there is between cultures or groups. Experienced educators consistently will view each child as an idiosyncratic individual. The knowledge school leaders gain through research is difficult to translate into useable structures that they can mandate for their schools, and, consequently, schools cannot be the sort of factory-like entities (Donmoyer). This discussion continues to frustrate educational leaders as they attempt to set structures around a loosely coupled system.

The second answer to the previous question is based on individual value systems. Spillane (2002) investigated the implementation of professional development opportunities and

found three value perspectives based on past research. The first came about from B. F. Skinner's behaviorist perspective, which holds that the mind at work cannot be observed, tested, or understood; thus, behaviorists are concerned with actions (behavior) as the sites of knowing, teaching, and learning (Spillane, 2002). Following Skinner's line of reasoning, Spillane indicated that learning is externally motivated by rewards and requires developing correct reactions to external stimuli. Well-organized routines of activity, clear instructional goals with frequent feedback and reinforcement, and the sequencing of skills from simpler to more complex are important in the design of learning opportunities.

Next, the situative-sociohistoric value perspective views knowledge as distributed in the social, material, and cultural artifacts of the environment (Spillane, 2002; Vygotsky, 1978). The motivation to engage in learning is seen in terms of developing and sustaining learners' identities in the communities in which they participate. Lastly, the cognitive perspective involves active reconstruction of the learners' existing knowledge structures, rather than passive assimilation or rote memorization, with learners using personal resources including their prior knowledge and experiences to construct new knowledge (Piaget, 1970; Spillane, 2002). This assumption led Donmoyer (1995) to conclude that learning is defined based on the person-value perspective. If the researchers value the way Piaget conceptualizes learning, they will select a definition that reflects Piaget's conceptualization. If researchers prefer Skinner's theory, they will define learning accordingly. Whatever definition is selected can have a significant impact on which program is judged more successful and will determine what data will be analyzed (Donmoyer).

Data are vital. Data illiteracy can be professional suicide for current and aspiring school principals. Recent studies of high performing schools have discovered that a widespread use of assessment and other student data pieces was a dominant characteristic of high performing

schools (Bowers, 2010; Ingram et al., 2004; Monpas-Huber, 2010; Young, 2006). Current research also asserts that strong leadership plays a significant role in regard to the effective use of data (Halverson et al., 2007; Hamilton et al., 2009; Knapp et al., 2007; Wayman & Stringfield, 2006). The use of data by teachers signals a culture shift as teachers establish student outcomes and monitor progress using standards-referenced assessment to inform instructional practices.

Monpas-Huber (2010) attempted to address the gap through a correlational analysis of the relationship between organizational factors and motivations on high school teachers' use of state assessment data. Collecting survey data from teachers in 22 high schools in western Washington about their experiences with state assessment data, Monpas-Huber found data assisted in the development and implementation of curriculum and therefore promoted accountability. Monpas-Huber's three findings to assist elementary principals as they encourage the use of data included: develop assessment capacity, encourage data use, and maintain policy pressure. Data use assists with the identification of best practices and ensures effective school reform by identifying successes and gaps of student learning. Waters et al. (2004) advocated for comprehensive use of local data that allows for a systematic approach to whole-school reform. Through their meta-analysis, Waters et al. noted that data use is vital for student achievement growth. There is a sense of urgency to build effective data capacity throughout the school year without waiting until the results of the state assessment to indicate each student's proficiency level.

Unfortunately, state mandates and local taxpayers do not allow for slow and steady school reform that clearly delineates student growth. Elementary principals cannot afford to support ineffective teaching and learning practices. Monpas-Huber (2010) argued that schools need to form new high-yield, strategic decisions based on deep understanding of the school context, student needs, and student performance profile to help maximize learning. Numerous

schools currently are being labeled as low performing and placed under NCLB accountability sanctions, causing many students to be caught in the perpetual ineffective school systems and continually behind in their educational careers (Finnigan & Stewart, 2009). Student achievement growth is complex, and leadership continues to systematically look for solutions (Young, 2006). Data appear to provide concrete substantiation of the quality and worth of teaching and learning, and the results and accomplishments follow.

Elementary principals must break through their existing school norms and cultures to promote effective and continuous data use. Weick (1976) contrasted educational management systems to the management system incorporated in most business environments. Closed classroom doors and multiple teachers for each student naturally “loosen” the direct management by the elementary principal. Weick found certain aspects of education are “tightly coupled,” such as transportation and payroll, but most other facets of the culture are “loosely coupled.” Effective elementary principals challenge the loosely-coupled systems characterized by teacher autonomy, multiplicity in the emerging technology field, and top-down decisions (Young, 2006). Young (2006) conducted a case study of four schools across two districts. Her data collection occurred from 2003 through 2005 and involved observations and interviews with district administrators, elementary school principals, teachers, and instructional coaches. Young found that loosely-coupled systems progress through the realization of value in data use by addressing student achievement and program effectiveness.

A school culture flourishes if there is an availability of data, coupled with the support structures and skills necessary, that empowers educators to be productive and make more effective decisions (Young, 2006). District leaders should also consider building elementary principals’ skills in data interpretation and ability to implement organizational change strategies

consistent with the overall goal of data-based improvement (Young). Effective use of data enables school leaders to influence the culture to improve both school practices and student learning (Hord, 2009). Creating a culture of continuous learning benefits a school community as elementary principals and teachers adjust to meet the learning needs of each student.

If leaders are closely monitoring student learning and teachers are modifying their instructional methods accordingly, narrowing the achievement gap is a natural outcome. Describing the classroom as the “black box” because teachers’ instructional practices often are ignored by policymakers, Black and Wiliam (1998) asserted that the classroom is the most important piece in the school reform puzzle. Policies are designed and decisions are made without even considering what is happening inside the black box (Black & Wiliam). Black and Wiliam declared that if schools improve formative assessments in their classrooms, student achievement will be positively affected. Black and Wiliam defined assessment in general to include all activities that teachers and students undertake to obtain information that can be used diagnostically to modify instruction and improve student learning. Halverson and Clifford (2006) indicated summative is contrasted with formative assessment in that summative is concerned with summing up or summarizing the achievement status of a student and are focused on reporting at the end of a unit of study. Formative assessments are concerned about the quality of student work and clarify any gaps that exist between a desired goal and the students’ current knowledge (Halverson & Clifford). Formative assessments stand in contrast to a summative assessment, which generally takes place after a unit concludes or at the end of course requiring teachers to make a judgment about the learning that has occurred.

Leaders should focus on teachers’ and students’ needs to meet the high demands of accountability. Bowers’ (2010) research of a longitudinal grading study from 2006 to 2009 for

two districts found that student grades could also be a major source of data and provide evidence for decision making. He concluded, “Much like a medical x-ray, the grading history provides a unique way to ‘look inside’ each student’s entire history of achievement, and examine that history in context with other students who have performed in a similar manner through pattern analysis” (p. 14). There are multiple opportunities for principals to improve data-informed leadership. Leadership could increase student achievement growth by developing assessment capacity, and data awareness of triangulation opportunities.

Cautions with data. The imbalanced weight of data can cause devastating effects on individuals and educational systems. On September 28, 2010, the body of a 39-year-old fifth-grade teacher was discovered at the foot of a remote bridge in a California forest in an apparent suicide (Zavis & Barboza, 2010). The motive for the teacher to take his life was far from clear, but it was assumed he was distraught because he and his class performance scores were publicly ranked as “less effective.” In other news, a superintendent of a large urban school district resigned from her position in the wake of discovered widespread cheating on achievement tests in 12 schools (Strauss, 2010). This urban school district had an aggressive accountability system that was closely connected to test score improvements. Bracey (2009) indicated, “The current federal educational administration approach would only exacerbate the problems: national academic standards and a national test, merit pay for higher test scores, more math, and more science; this is an industrial command-and-control model on steroids” (p. 19). The current accountability system places extreme pressure on educational leaders to perform without fail and, as a result, can be abused.

Data may be enticing, but leaders must be careful not to fall into a deterministic mindset based on information. Heck (2006) studied achievement estimates compiled over a 4-year period

from continuous and longitudinal cohorts in a multilevel sample of 123 elementary schools including thousands of students. He concluded, “Decisions about schools are too often made on the basis of poor data and questionable evaluation techniques” (p. 693). He noted the current method of assessing Annual Yearly Progress (AYP) provides only a marginally reliable view of a school’s proficiency, whereas it should be based on reliable and valid data that go beyond student achievement scores. Diamond and Spillane (2004) interviewed and observed four urban elementary principals, with two principals from high-performing and two from failing schools. Diamond and Spillane noted that proponents of external testing suggest three key outcomes from the administration of an assessment: (a) the creation of new incentives for schools, (b) the provision of objective information for school decision making, and (c) the increase of academic press. Diamond and Spillane actually found that the higher performing principals designed policies in ways that increased their expectations while the lower performing principals had the opposite effect, focusing primarily on responding to external threats. The use of data is complex and should be used with caution by educational leaders.

The use of test data for accountability affects not only schools and districts in terms of rewards and punishments but also the student. Research conducted by Diamond and Spillane (2004) determined that African-American students were retained at a much higher rate than their White or Latino/a counterparts because they tended to score lower on state assessments, thus creating an increase in stratification. Scores on a one-day test can diminish students’ academic opportunities and possibly restrict their future course selections. Ingram et al. (2004) found in their longitudinal research on nine high schools in Michigan that educational leaders need to be guided by ethics as they use data in their decision making. Elementary principals should consider an ethical responsibility when it comes to expectations for all and provide multiple opportunities

for all students, no matter what their data point indicates. The caution is for educational professionals to institute fair and unbiased policies that allow each child equal access to learning opportunities within the school regardless of what the data recommends. Taking ethical responsibility into consideration allows educational leaders to make informed decisions rather than letting data drive the decision-making process without carefully considering of the whole child.

Focus on learning of individual professionals. A critical aspect to influence a data-rich culture is the principal's ability to support and sustain an environment that encourages staff and other leaders to turn to data, ask questions of data, reflect on the data's meaning, and take action that references the data (Knapp et al., 2006b). This section will review the literature pertaining to the principal's influence to build leadership capacity and build collaborative teams that value learning, and how trust, mindfulness, and ethical capacity are considered to move teaching and learning.

Building leadership capacity. Research has explored the importance of building a learning culture through distributed leadership practice in the school. The distributed leadership model enables the empowerment of stakeholders to increase problem solving, innovation, and collaboration (Adler & Borys, 1996; Hoy & Sweetland, 2001; Spillane, 2006; Spillane et al., 2001). Furthermore, an enabling model, rather than a coercive model, allows for the development of more autonomy leading to increased motivation (Copland, 2003; McGregor, 1960). Katz, Sutherland, and Earl (2005) also argued that organizational accomplishments through school reforms have less to do with size, stability, finances, and reputation than they do with the enthusiasm that staff brings to the task and how well that enthusiasm is conveyed to

other staff members. Distributed leadership takes a methodical understanding of the culture and ontological patterns disseminated from the principal.

Building leadership capacity is a significant characteristic of a learning leader. First, Copland (2003) found that distributed leadership is based on the collective knowledge focused on a common target, spanning tasks, and follows what French and Raven (1959) called expert power rather than relying on hierarchical authority. Researchers recommend that school leaders should consider creating learning communities in which teachers share effective instructional practices based on data as a form of distributed leadership (Halverson et al., 2007; Spillane et al., 2001). They found that leaders who engage in distributed practices incorporate three phases: (a) treading cautiously through the establishment of a vision and selection of participants, (b) widening the scope of leadership through capacity building, and (c) standing back to empower the group. The culture of distributed leadership relies not upon an individual but on the school unit as the most appropriate structure for leadership expertise (Spillane et al., 2001). Distributed leadership recognizes that the knowledge and skills necessary to exercise data-informed leadership may be situated within learning communities.

The concept of “loose-tight coupling” considered in much of educational research over the past several decades is an important model to advance as distributed models are instituted (Meyer & Rowan, 1978; Weick, 1976). Powers and Fernandez (2009) examined protocols adopted by a department over a 15-year period. They found patterns of loose coupling to be effective but argued that they must follow a demanding set of procedures, a set of norms, sustainable work based on long-term objectives, and work that is relevant to the participants. Young’s (2006) case study of four schools determined that school cultures are not solely loosely-coupled institutions but become more tightly coupled through state and federal mandates in

certain core subject areas. She identified language arts as the most tightly-coupled discipline, with mathematics closely following. Interestingly, but not surprisingly, the loosely-coupled systems surrounding the science and social studies curriculum conversations was due to the fact that achievement testing was not mandated for these two disciplines. Since they are not subjected to achievement testing, these teachers had more freedom to incorporate multiple curricular objectives and assessments, thereby creating a loose-coupling effect.

Copland's (2003) research in four high schools, 11 elementary schools, and one K-8 school in the California Bay Area revealed that in schools in which principals focused on building leadership capacity, the organizations continued to learn after their principals left to assume other professional responsibilities. Turnover in key leadership positions can be challenging for schools engaged in reform work. Copland's case study revealed a methodical approach the school faculties took as their searches began for new leaders. They were careful to ensure that the principal's vision matched the current momentum. Sustained school reform movements occur in schools in which leadership is shared among a much broader group of school community members, rather than owned primarily by formal leaders at the top of the organizational chart (Copland). In the schools Copland studied, "the distribution of leadership involved increasing participation of new faces that tackle new functions and work from different vantage points in the school" (p. 390). Robinson et al. (2008) also concluded that building leadership capacity encourages the development of sustainable supports for not only pedagogical dialogue but also the use of data to make informed decisions. Supovitz et al. (2010) discovered that the principals who implement distributed leadership practices in their schools also were more likely to find the time to increase their role in instructional improvement and to implement reform successfully. Distributed leadership opens doors for sustainable, organizational, and

cooperative learning, which also calls for data conversations among faculty members, thus freeing the principal to be a learning leader.

Focus on collaborative teams that value learning. The concept of professional learning communities is a relatively recent practice in schools, and research is beginning to confirm its effectiveness. Goddard et al. (2007) studied 47 elementary schools involving 452 teachers and found a positive influence of learning communities on student learning. After controlling for the effects of student characteristics and school context, they found that teacher collaboration for school improvement was positively related to variances among schools in both mathematics and reading achievement (Goddard et al.). Giles and Hargreaves (2006) studied three innovative schools in a longitudinal study, finding that teachers working in learning communities collaborate around a common vision centered on student learning and hold each other accountable toward attainment. A principal's use of internal accountability through collaborative teams encourages a focus on data inquiry (Giles & Hargreaves, 2006; Lachat & Smith, 2005; Young, 2006). Copland (2003) asserted that the use of collaborative teams assists in problem solving to improve student learning.

The social interactions of educators committed to high quality intellectual work for their students motivate the team to obtain effectiveness. Crawford, Schlager, Penuel, and Toyama (2008) found in their research that professional interactions facilitate the exchange of resources and expertise teachers need to enact curricular reforms. Crawford et al. found that social network examination can be an analysis of different kinds of ties (e.g., professional, friendship), and an awareness of social capital can consider different types of resources and expertise that are accessed through the ties (e.g., curriculum, teaching strategies, technical skills). The network analyses assist leadership, specifically distributive leaders, when identifying individuals who

could advance particular reform goals (Crawford et al.; Spillane et al., 2001). This social networking accomplishes several goals through structural support.

Teachers should be provided with opportunities to work collaboratively in order to build their collective capacity to use data. Teams can use data to make meaningful decisions, experiment with instructional methods, and document results for systematic changes (Thornton & Perreault, 2002). Learning communities use the data to cycle through a body of questions, problems, and information to develop action plans to sustain continuous student growth (Halverson et al. 2007; Katz et al., 2005; Knapp et al., 2007; Murnane, Sharkey, & Boudett, 2005). Leadership does not need to be superhuman to support teacher data capacity; it can grow from a strong, simple commitment to learning communities as they focus on student learning (Copland, 2003). Spillane and Miele (2007) found in their case study that if leadership integrates new organizational routines within learning communities, they would increase overall data capacity. Spillane and Miele described one school:

At Baxter School, however, the school principal redesigned the student assessment data as it was received from the school district and built a system of integrated organizational routines designed to support discussion about these data as well as generate additional data. Baxter School had no need to worry about student achievement because the school had met national standards in core subject areas year after year. Still, the principal took the assessment data and performed longitudinal analyses of student achievement. In doing so, he identified grade- and cohort-level trends, which showed that Baxter was not doing as well as suggested by the district averages. The principal then shared graphs of these trends with his staff; the graphs helped focus and frame their discussions about whether there was a problem at Baxter, what the nature of this problem was, and how it might be addressed. (p. 64)

An organizational system provided throughout the learning communities increases dialogical opportunities for informed decisions. Data are not necessarily going to provide the answers, but it will provide information for learning.

Educators in learning communities cycle through a body of questions, problems, and information to develop action plans to sustain continuous student growth. There are several

cycles presented throughout literature (Murnane et al., 2005; Halverson et al. 2007; Katz et al., 2005), and most cycles appear to be systematic as one step follows the other in a logical order and concentrated dialogue (Copland, 2003). Researchers delineated effective data leadership policies, protocols, and habits that principals should establish to guide their practice of data use. The systemic vision Knapp et al. (2006b) propose is centered on the cycles of inquiry and the policies, protocols, and habits surrounding its use. Murnane et al. (2005) described their cyclical vision as a data-wise improvement process, whereas Halverson et al. (2007) called their cyclical system a data-driven instructional system. All cycles have three common themes that characterize effective data use. First, they all indicate an obvious acquisition of clean data, followed by the reflective practices in which stakeholders engage to form an action plan, and conclude with an implementation of new practices based on the data.

Trust, mindfulness, and ethical capacity. A leader without a compassionate heart, a moral compass, and a genuine commitment to the students and their families will have detrimental effects on the school culture and community. Trust is a key ingredient in the development of social capital, which then promotes the development of human capital (Coleman, 1988; Daly, 2009; Sergiovanni, 2006). Trust also builds organizational capacity, is associated with improved student achievement, improves morale in today's stressful accountability age, and provides openness for risk taking as teachers experiment with new instructional practices (Cosner, 2009; Daly, 2009; Goddard, Salloum, & Berebitsky, 2009). It seems clear that trust is essential if the principal and school culture is focusing on student performance to provide an open environment for engaging in successful problem solving (Goddard et al., 2009). The significance of trust in schools is undeniable as data-rich cultures are established.

The principal's capacity to foster a trusting culture includes the ability to be mindful. The elements of mindfulness frequently are identified as a global concept with at least five facets: benevolence, predictability, competence, honesty, and openness (Hoy & Tschannen-Moran, 1999; Tschannen-Moran & Hoy, 2000). Trust takes into consideration that if one is taking risks and making oneself vulnerable to another in confidence, others will respond in ways that are not detrimental, but mindful to the trusting party (Hoy, Gage, & Tarter, 2006). Hoy et al. (2006) researched a racially diverse sample of 75 Ohio middle schools to apply the constructs of mindfulness and to determine if trust is a condition that fosters mindful actions in schools. Mindfulness, in contrast to mindlessness, focuses on organizational preoccupation with mistakes, a reluctance to simplify, sensitivity to day-to-day operations, and resiliency (Hoy et al.). Hoy et al. also found the principal's mindfulness is important in this current age of accountability. The principal's mindful data leadership encourages faculty to play with ideas, create novelty in their classrooms, feel safe to take reasonable risks, to experiment, and be resilient. With the recent growth of high-stakes tests, unfunded mandates from both state and federal legislatures, and a shrinking pool of resources, the five elements of mindfulness should aid administrators in their quest to improve teaching and learning (Hoy et al.). The principal can have profound effects on the school faculty's mindfulness and the establishment of trust as they use data to make informed decisions.

Data-informed principals also must work through legal and ethical issues in their schools. They ultimately must obey the legal mandates associated with proper handling of confidential student information. The Family Educational Rights and Privacy Act (FERPA) provides numerous safeguards regarding students' and parents' rights related to student records. This act provides parents access to their children's educational records while restricting the school from

divulging student information to a third party, with the exception of teachers and school officials who possess legitimate educational interests. Student data allows principals, teachers, and counselors to make informed decisions, but federal and state laws require ethical awareness based on confidentiality (Stefkovich & Torres, 2003). Principals must approach the ethics of data leadership from a legal perspective and ensure that the rights and privacy of students and families are protected.

Focus on systems learning. The implementation of a data-rich culture demands that leadership take a systems learning approach within the organization including the acquisition of data, reflective practices based on the information, and an action-oriented implementation. Copland (2003) and Knapp et al. (2006b) found data-informed leadership is guided by what has been called “system learning,” which provides a picture of the system’s functioning as a whole, documenting accomplishments and helping to spot problems that need to be improved. Systems learning relies on continuous acquisition of data, reflective practices to monitor progress, and implementing a strong action plan founded in data. This holistic accountability system must be student centered—based not only on assessment scores and academic achievement but also on curriculum, instructional strategies, and leadership practices (Reeves, 2004). Reeves (2004) further noted the data collection system should focus on the progress of individual students and should not rely exclusively on averaging the scores of large groups of students. It does not exclude test scores but places the traditional accountability system in context. O’Shea (2005) also indicated that system learning toward data acquisition should explore relationships and connections among different types of data to inform effective decision making.

The following sections review the practices previously noted in the literature that focus on exemplary data-informed leadership strategies and provides the framework used for this

study. Cycles of inquiry can be categorized into three subcategories of data use: (a) initiate data acquisition steps by leaders to focus attention on problems, (b) make sense of the data through reflective practices, and (c) take action and implement practices in different arenas of data use (Knapp et al., 2006b). The framework described above offers a practical application to depict exemplary steps data-informed leaders take in the system learning approach of a data-rich culture.

Data acquisition. The collection of the data is not the problem for today's school; it is the overabundance of data that leads to analysis paralysis rather than genuine data analysis. Educators are hunting for data that clearly display proficiency levels per disciplinary content strand and ways to monitor academic progress as instruction progresses for each student. Margaret Spellings, U.S. Secretary of Education, commented in a January 2009 interview, "Without quality data and sound science to guide us, we risk making decisions based not on facts but assumptions" (p. 22). Heck (2006) strongly proclaimed that the understanding of how to acquire data through systematic training workshops is an absolute prerequisite to establishing a data-informed culture. Teachers need to see correlations between real-time student performance on curriculum assessment data and performance on the high-stakes state testing (Heck, 2006). Comprehensive data acquisition will focus on a goal or focus on an area of need. Good, clean data are difficult to manifest, but if properly delivered to the teachers and decision makers, reforms can move forward based on evidence rather than feelings.

Data-informed cultures use the cycle of inquiry to support the framing or reframing of problems facing student learning. Knapp et al. (2007) declared this emphasis on framing and reframing means that leaders continuously engage in and struggle with how to identify and understand what counts as problems of practice that should ground the work of data use. Knapp

et al. discovered data informed leaders establish a culture that builds on the problem-framing capacity of learning communities in order to set in motion and give context to the use of data. Knapp et al. proposed a hypothetical example of this leadership in an opening day whole-school learning opportunity. The principal asks the instructional communities to discuss what this graph might represent. After a short time of focused dialogue, the principal asks for possible solutions to the unmarked graphical representation. The graph represents the discrepancy between males' and females' proficiency levels on the state reading assessment. The school functioning in the mode of inquiry would consider now a deeper knowledge of the problem and move to the next cycle of inquiry—accessing or searching for data and evidence.

Leaders have access to internal, external, and other student-level information and must decide how the acquisition is systematically used efficiently. Knapp et al. (2007) found data-informed leaders and their collaborators would generate and search for data using available inquiry tools, sources, and strategies modeled by exemplary learning organizations. Today educators are not asking themselves whether they need a database. Instead, they are asking, what can a database can do for them? Bernhardt (2003) discussed six features of an effective database: (a) accessibility at different levels, (b) automatic graph builder, (c) disaggregated on the fly, (d) intuitive point-and-click or drop-and-drag technology, (e) the ability to follow individual and group student achievement, and (f) fast and easy creation of standard reports. Many school district officials hope to find one interconnected system that provides a student information system (SIS), a data warehouse, and an instructional management system all in one. Bernhardt (2005) observed, “Without data tools, our vision of data-smart schools is merely a dream” (p. 66). With these tools, continuing with the hypothetical example of girls' and boys' reading

scores, principals can help data teams more easily reframe the problem through further disaggregation of the data by student demographics, grade level, and the individual classroom.

The important step in formative data acquisition for a data-rich culture is a holistic knowledge base of methodical usage of assessments to improve student learning. McBride (2004) noted, “The landscape regarding assessment tests, formative test-scoring data, and the use of that data to modify lesson plans have been forever altered by No Child Left Behind Act requirements” (p. 34). Just to state that school systems administer student testing and that educators change their instructional methods based on the test scores does not systemically reform a district. New policies based on NCLB standards cause districts to re-examine their assessments delivered to students. Research depicts a lack of knowledge about effective assessments and evaluation of those assessments by both inexperienced and experienced teachers, which distorts the data (Johnston & Lawrence, 2004). Although some educators have decried that the current emphasis on student achievement data forces teachers to “teach to the test,” Johnston and Lawrence (2004) proclaimed that “all teachers, in order to evaluate their instructional effectiveness and students’ learning, should test to the teach” (p. 29). This policy shift helps educators consider what curriculum content is delivered in the class and how it is assessed to promote student learning gains.

Reflective practices. Systems learning changes the conversations within the school, as collaborative teams participate in reflective practices surrounding the information. Rudy Castruita, former superintendent of the San Diego Unified School District in California, stated, “In order to close the achievement gaps in public education, you must first change the conversation and should be at the center of the school structure” (as cited in Blink, 2005, p. 22). Systematic reflective practices require thoughtful direction from learning leaders, and eventually

distributed leadership practices will provide effective systemic strategies. Less conversation should be spent criticizing the legislation that is in place for public education and more time should be spent systematically ensuring student learning improvement (Blink, 2005). A systems approach to reflective practices meets the students' individual needs rather than the group needs.

The cycle of inquiry requires teams to make sense of data and reflect on the implications for the next steps. Knapp et al. (2007) asserted data-informed leaders create opportunities for making collective sense of the data and probing the data for possible action implications.

Scholarship notes that data use is often ambiguous, and its perceived usefulness is not actualized as the theoretical approach is displayed. In a study of Wyoming principals, Deike (2009) found that there was little evidence that principals developed a plan for data use or that there was an expectation from the district level to do so. Deike noted that all principals in her sample were aware of their schools' performance data on state and district assessments, but the extent of the randomness of reflective practices in most of the schools suggested that data use was optional. Heck (2006) asserted that effective discussions and inquiry generated from data use are not as easy as it sounds. Heck recommended that principals create time that allows for regular collaborative work and planning for productive collaborative meetings.

Time for teacher collaboration is facilitated when master schedules are built with common plan times for teachers to meet together during the school day. Reeves (2004) found that common planning time was one aspect effective schools had in common. Schmoker (2004) also asserted that the most effective strategy for schools is to provide a team of teachers with time to collaborate during the school day. Educators can be very creative when they set time as their goal. Collaboration time could be established in multiple ways: a common plan time during the day, late start days, early release days, or once a month teacher-only work days. The least

effective use of time is to require teachers to meet during their lunch periods or to force them to meet before and/or after school.

Productive reciprocal questioning is often a result of careful planning and preparation. Collaborative teams need necessary structures, strategies, and support to help them sharpen their inquiry craft (Supovitz & Christman, 2005). Just because teachers are given time to collaborate, it does not mean that student achievement will improve because the collaboration might not be focused. Collaboration involves a team of teachers working in groups studying short-term cycles of teaching and learning (Goddard et al., 2007). Productive teams focus their conversations on improving teaching and learning practices, put them into practice, and review results of student achievement based on periodic common assessments. These teams find themselves examining instructional practices based on informed evidence that only improve student learning. Farrell and Weitman (2007) indicated, “As the team of teachers engage in ongoing reflection, they are forced (through metacognition) to consider their teaching practices and the impact of chosen practices on student learning” (p. 38). Focused and productive environments ensure opportunities for student achievement growth.

The collaborative practice of using common assessment data to reflect on student learning allows best practice instructional strategies to surface most often to maximize student engagement. History reveals how educators continually have searched for the “silver bullet” to help all learners become successful. However, several scholars endorse the simple collaboration of discipline-specific teachers to discuss instructional practices based on common assessments in order to improve student learning (DuFour, DuFour, Eaker, & Karhanek, 2004; Giles & Hargreaves, 2006; Goddard et al., 2007). When assessment data are used for inquiry-focused discussions, these conversations appear to be beneficial in improving instructional practices

(Wayman & Stringfield, 2006; Yeh, 2006). However, for effective teacher collaboration to work, a culture shift needs to occur in various departments (Eaker & Keating, 2008). There must be a shift in teachers' understanding of the fundamental purpose of teaching to learning through the use of standards. To receive feedback on student learning, common assessments are used to view current students' progress. Administrators assist teachers in assuring the establishment of the assessment process by giving the teachers constructive feedback about their instructional endeavors (Supovitz & Christman, 2005).

Learning communities can be a helpful tool to assist teachers in collaboratively establishing clear goals for students to master. These goals, or essential learnings, create an environment of high expectations and measurable targets. Stiggins (2005) found that students are successful if there are finely defined objectives for students to master. The state and national standards will drive what the students need to know within a unit of study, and the team of teachers will determine the proper pedagogical and pacing guides for all students to master the standards. Therefore, a plan equipped with objectives (standards) to know, key vocabulary terms for the unit, resources available to assist students, activities used by instructors to help students attain mastery, assessments to measure progress toward goals, and timeline for the unit focuses collaborative teams on student growth.

Returning to the hypothetical problem of the achievement gap between boys and girls on a reading assessment, reflective practices that surround the disaggregated data serve to create strong dialogue. The data-rich informed faculty would avoid adopting quick solutions based on superficial data; rather, they would devote time to discern the root causes of the gap. They would reflect on a variety of alternative databases, such as what the boys said about the reading material used in the classroom or how their families support independent reading at home. Teachers

might dialogue concerning their instructional strategies and ideological biases in regard to gender learning styles. Knapp et al. (2007) reminded leaders to not leave out the critical account of what programs the school already implemented that tried to help solve the problem and what can be gleaned from the previous practice. A systematic approach to reflect on data involves group norms, collaborative protocols, and clear rationale to improve the data-informed process.

Assessments used to monitor progress of student learning are opportunities for students to deepen their knowledge through reflection on their feedback. Teachers can provide feedback to students in multiple ways. Individual homework assignments, classroom warm-up exercises, reciprocal dialogue, cooperative work, and the use of rubrics to verify learning criteria are avenues for teachers to promote student reflection of learning. Hamilton et al. (2009) found through their meta-analysis that students learn best from their own assessment data, and teachers should provide opportunities for regular use. Hamilton et al. also specified that educators with clear expectations and criteria comprising of specific, constructive, and timely feedback enhance student learning. With proper training from the teachers, the students can effectively use the cycles of inquiry as an opportunity to improve learning.

Clymer and Wiliam (2007) reviewed the body of literature found from Kluger and DeNisi's (1996) meta-analysis of five rigorous studies that claimed student learning decreased based on teacher feedback. The researchers continued to ask questions and found the feedback creating a decline in student achievement was based on feedback centered on the person rather than on the task. The analysis conducted by Clymer and Wiliam discovered when teachers utilized focused data-reflective practices on what students needed to improve and provided them with specifics on how they could make the improvements, student learning improved. Just as the effective data-informed principal continues to lead teachers through the cycles of inquiry,

teachers need to effectively lead students through these cycles and provide them with tools to clearly improve their learning.

Implementing coherent action. Obviously, the most important systematic approach is the implementation of effective strategies to improve to area of focus. Knapp et al. (2007) indicated there was a systems methodology to use data for the support of comprehensive improvement. Copland (2003), in his study of the San Francisco Bay Area schools, indicated the power of the cycle of inquiry was evident as systematic implementation practices promulgated throughout the culture of the schools. He cautioned leaders to think about the scope of the action plan while being aware of the possible tensions surrounding the instructional conversations. Reeves and Burt (2006) confirmed the cycle of inquiry: “Principals in the information age see the importance of systematic collection, analysis, and interpretation of multiple data sources. Principals need to be information driven, committed to shared leadership, and relentless about continuous improvement” (p. 65).

Deep systematic implementation of data use to improve student learning is dependent on the principal. Wayman et al. (2009), in their research of data usage in three highly effective schools, found that school district offices lacked a methodical support system for sustained implementation, thus forcing the principals to establish diverse visions even within a school district. Knapp et al. (2007) also found in their case study research that principals were positioned to define the focus of the data acquired and reflected upon to develop action plans to improve student achievement. Knapp et al. asserted that if principals are the visionary leaders of their schools, they should carefully consider the final steps to the cycle of inquiry, which is to take action and communicate it in different arenas. Within the system of implementation, a

coherent culture of inquiry and the development of data literacy are two areas of focus principals must provide.

Empirical research is beginning to offer a number of examples of educational organizations in which participants desire data as they plan and implement new practices based on data. Research confirms that teachers support data initiatives if they are methodical and centered on the learning needs of the students (Copland, 2003; Lachat & Smith, 2005; Wayman et al., 2009; Young, 2006). Lachat and Smith (2005) suggested efficient data use shifts the educational culture toward a more professional and collaborative orientation. The U.S. Department of Education (2010) recently published recommendations for a data leader cyclical practice: (a) set clear expectations around the use of student data as the basis for decisions, (b) integrate collaborative exploration of data into existing structures for joint teacher planning and reflection on teaching, (c) provide a safe environment for teacher examination of their students' performance, and (d) support teachers in making the link between data and alternate instructional strategies. Although this linkage of data to the cycle of inquiry appears simple in theory, Wayman et al. (2009) find inconsistency in the applications of the cycle. They concluded that accessing and examining data are one thing, but deciding on the action steps and establishing feedback loops is much more difficult task (Wayman et al.).

Teachers implement data initiatives when principals effectively introduce them and support teachers' work through professional learning opportunities. Wayman et al. (2009), through their observations and interviews, discovered most teachers are leery of data initiatives but are much more likely to support them when they are properly introduced and are focused on needs of the students. Sound, systematic leadership in a collaborative environment facilitates faculty involvement (Copland, 2003; Knapp et al., 2007). Youngs and King (2002) studied how

principal leadership improved the coherent implementation practices due to professional development opportunities. Three areas of focus improve implementation: (a) teachers' knowledge, skills, and dispositions; (b) program coherence; and (c) collaborative opportunities (Youngs & King).

Building teacher knowledge, skills, and dispositions toward program coherence in professional learning communities involves a systematic professional learning approach on the part of the school principal. Findings from research by Youngs and King (2002) suggest it is sustainable with regard to the practice of school leadership by establishing trust, creating structures that promote teacher learning, and connecting teachers to external expertise or assisting them to generate learning internally. Wayman et al. (2009) also found in their study of highly reliable schools regarding data use that principals established formal structures that fit into their context. All principals in their study used professional learning opportunities for their teachers to learn protocols that examine student data. Systems learning within the school setting is dependent on the professional learning opportunities to build capacity under strong principal leadership.

Research also suggests that school reforms, such as the cycle of inquiry, depend on a heuristic professional learning approach to build sustainability. The classical management model ruled professional learning by enlisting design teams to make plans in a top-down fashion while educators were relegated to carry out the goals and objectives (Mehan, Hubbard, & Datnow, 2010). The problem is that educators are not merely compliant participants who immediately respond to mandated directives; instead, they are active players who can either advance or overtly resist the reform efforts (Mehan et al., 2010). Building capacity through collaborative professional learning opportunities is cyclical, dialogical, and a long-term process. It is not a

one-time and short-term dictated mandate. Data-informed principals who establish the importance for setting clear expectations around the use of student data as the basis for decisions develop cyclical practices in which teachers are using data to guide their decisions and ensure learning from the action through feedback and further inquiry.

Summary

Empirical research in this chapter first established the importance of the school leader in relation to student learning. A strong challenge to effective principals lies in understanding how to connect leadership practice with student learning, and then engaging the staff energies and commitment accordingly. Numerous empirical studies over the last 30 years have concluded that leadership can make a difference in student learning (Bossert et al., 1982; Bridges, 1982; Hallinger et al., 1996; Hallinger & Heck, 1998; Heck et al., 1990; Leithwood, Patten, & Jantzi, 2010; Robinson et al., 2008; Waters et al., 2004). Several theoretical models were developed over that timeframe relative to leadership behaviors of the principal. Most researchers concluded that principal leadership provided an indirect effect on the academic success of students rather than a direct effect. Researchers encourage policymakers to reconceptualize leadership preparation programs, so they could more effectively prepare aspiring principals to become effective leaders who positively affect student learning. The new focus on learning provides leadership with a model that could be used to inform school-wide practice.

The empirical research on the leadership for learning model as a conceptual framework examined how the principalship has transformed from managerial and instructional practices, which focused on operations and teacher behavior, to learning-centered leadership that centers on student learning (Copland, 2003; Hallinger, 2011; Knapp et al. 2006b; Knapp et al., 2010;

Murphy et al., 2007). This model moves away from the traditional model of leaders solely centering on instructional leadership, which emphasized supervising, guiding, and monitoring instruction and instructional practices. Qualitative researchers found that instruction-centered leaders devote time to support teachers by strengthening teaching and learning across classrooms, whereas learning-focused leaders use various forms of data as a main medium of their leadership work and a continual conversational point in their interaction with teachers, each other, and various stakeholders (Boyd & Crowson, 2002; Elmore, 2000; Hallinger, 2005; Lambert, 2002; Spillane et al., 2004).

Next, data-informed leadership was reviewed through empirical studies within the framework of leadership for learning. This review of literature focused on the principal and the need to establish a data-rich culture to ensure all stakeholders focus on learning. Qualitative investigations observed the leaders who encouraged a data-rich culture and invested greatly in data infrastructure, data literacy, and new forms of data and evidence (Dembosky et al., 2005; Earl & Fullan, 2003; Hamilton et al., 2009; Knapp et al., 2006b; Wayman & Stringfield, 2006).

Effective data use is imperative in today's age of accountability. The principal's role is central to the use of data in order to monitor student learning gains. Elementary principals who implement the use of data, establish learning as the central focus and fulfill the social contract to the community they serve (Halverson et al., 2007; Hamilton et al., 2009; Mehan et al., 2010; Murnane et al., 2005; Senge, 1990). The scalability of the data leadership practices indicates there is a focus on the leader's ability to influence a data-rich culture. Learning leaders create structures that include participation in decision making around data (Hamilton et al., 2009). Prior to the current accountability era, administrators made instructional decisions based merely upon

intuition or informed guesses and failed to utilize data that was readily available to them in their schools (Murphy et al., 2010).

The practice of data-informed decision making can be met with resistance because it contradicts traditional intuitional methods. Data helps teachers to identify the need to differentiate instruction within their classrooms, and the feedback generated by data also helps teachers and leaders determine whether students are progressing toward learning targets (Breiter & Light, 2006). It is clear from the review of literature that sound leadership practices support effective schools in data-informed decision making to improve student learning (Lachat & Smith, 2005; Wayman & Stringfield, 2006; Young, 2006).

This chapter provided a review of literature related to the evolution of school leadership practices and the necessity for data-informed leadership due to the current era of accountability. Chapter Three contains information on the research design and methodology including research questions, design of the study, population and sampling procedures, data collection, and data analysis.

Chapter Three

Methodology

This multi-case study examined the influence of elementary principals in the establishment of data-informed decision-making. The purpose of this chapter was to describe the research design employed in this study. The chapter contains the research questions and the rationale for a comparative case study research design, followed by a description of the study's methodology, the population, sample selection, data collection methods, and data analysis procedures employed.

Research Questions

This study addressed the following research questions:

1. In what leadership behaviors and activities do data-savvy elementary principals engage as they establish a data-informed decision making culture in their schools?
2. How do elementary principals build capacity to enrich the data-informed decision making culture?
3. How do principals evaluate the effectiveness of the data-informed systems in their schools?
4. What obstacles have elementary principals encountered when establishing a focus on data-informed decision making, and how have they negotiated through these obstacles?

Research Design

The research problem and the philosophical consideration of this study were important to consider as the research design was chosen for this study. Burrell and Morgan (1979) noted that different ontologies, epistemologies, and beliefs about human nature naturally lead researchers to consider different methodologies. The perspective a researcher holds generally falls into an objective versus subjective argument or a more deterministic or voluntaristic view of the world.

Burrell and Morgan suggested that subjectivists believe in the individual's power to produce a social reality that explains how individuals create, modify, and interpret the world in which they find themselves.

Creswell (2009) suggested that qualitative research generally is used as a method for expanding the subjectivist view of social construction and the ways in which an individual interacts with a human problem. Qualitative researchers believe that meaning is embedded in people's experiences and the investigator mediates this experience through his/her own perceptions (Merriam, 2009). Krathwohl (2009) also noted that social construction plays a critical role in qualitative research that intends to understand how the world looks to the people being studied and how they act on that information. As research questions noted above suggest, this study intends to understand how individuals (school principals) experience and understand a process rather than an outcome. For this reason, a qualitative approach represents the ideal method of investigation and the approach that this study applied.

A comparative case study methodology was used to develop a deeper understanding of data-informed decision making used by learning leaders in selected elementary schools (Borman, Clarke, Cotner, & Lee, 2006; Merriam, 2009). This research design involves the analysis of data from multiple cases, as opposed to a single case, to address the research questions (Merriam, 2009). Multiple case studies can be helpful in strengthening the findings of a study, because they can "confirm and validate generalizations derived from a prior site (and therefore may develop considerable external validity)" (Krathwohl, 2009, p. 343). Merriam (2009) suggested that having a variety of cases in a comparative study provides a more persuasive analysis of the findings.

I judiciously examined the leadership practices, attitudes, and beliefs in action of school principals in a specific context of three elementary school sites. Three cases were studied in

order to be able to spend prolonged time in each site, allowing me to inquire into and understand the culture of data use that was developed at each site. Case study is an appealing design for applied fields of study such as education because the processes, problems, and programs can be examined to bring about an understanding that might affect and perhaps improve practices (Merriam, 2009). Given that much of the literature about effective leadership practices in data-informed decision making is theoretical in nature, this study sought to understand the actual behaviors of educational leadership within their school settings.

Population, Site Selection, and Participants

Qualitative researchers often use purposeful sampling when selecting a school site and specific participants within that school site to capitalize on what can be learned about a central topic (Stake, 1995). Purposeful sampling is based on the assumption that the researcher wants to gain significant insights; therefore, an effective site is important to document effective practices (Merriam, 2009). Bogdan and Biklen (2007) asserted that participants selected purposefully will help the researcher understand the central issue and assist in answering the research questions. The selection of the sites and participants for this study were determined by a combination of referral and snowball, or chain-referral, sampling (Krathwohl, 2009).

The population for this study included public elementary school principals in the State of Illinois. For the purpose of this study, elementary schools were defined as those schools designed specifically housing grades between kindergarten and grade five. Out of the 2,070 Illinois public elementary schools, 435 fit this profile. This study identified a sample of elementary principals who demonstrated effectiveness in their roles as learning leaders, through the use of data-informed leadership practices in their buildings. The criteria for an effective data-savvy principal

included the following: establishment by the principal of a data-rich school culture that is focused on learning, a focus on learning of individual professionals, and a focus on system learning (Copland, 2003; Knapp et al., 2006b; Lachat & Smith, 2005). Diversity was sought in the sample, in student demographics and principal gender.

The potential school sites and their principals were reviewed against Illinois Standards Achievement Test (ISAT) student achievement trend data for their schools to determine if they qualified as an academically successful school. Only those schools that had shown continuous progress in the last four years toward meeting and exceeding State standards for meeting Adequate Yearly Progress (AYP) were included in the pool of nominees.

To determine an initial pool of participants who fit the aforementioned characteristics, nominations or referrals were sought from regional and statewide organizations and entities that were familiar with local school leaders and school performance. Representatives from the 21 regions of the Illinois Principals Association (IPA) and the 10 Regional Service Provider System of Support (RESPRO) offices were contacted through email (Appendix A). These individuals were asked to provide recommendations of elementary principals who had demonstrated effectiveness for improving student learning in their schools and who had a reputation of engaging their faculty in data analysis and use in a variety of ways. The criteria of data-informed leadership were provided to nominating groups to clarify the types of faculty engagement desired. The overall number who were nominated was 21. After reviewing the ISAT Data, 6 were chosen to participate in the initial phone interview.

After the potential school sites and the principals were identified, the school principals were informed via email notification that they were nominated to participate in the study (Appendix B). Each nominated principal was asked about her/his willingness to participate and,

if so, to participate in a brief, 10-15 minute structured telephone interview (Appendix C). The purposes of this initial phone interview were twofold. First, potential subjects were asked to provide additional demographic and sorting information, as well as confirmation of data-informed leadership practices, and to indicate a desire to participate in the study. Obtaining additional information was important, because some individuals and schools may have been nominated because they had the reputation within their regions for engaging in these practices, when in reality they did not. The second purpose was to seek additional recommendations of potential participants from those who had been nominated—a snowball sampling technique. Additional nominees who met the criteria of the study were asked to participate in the telephone interview, and they also were asked for referrals of their peers. The interviews ultimately revealed the three elementary school sites selected for the study.

Ethical Considerations and Validity

Merriam (2009) connected ethical considerations and validity by suggesting that validation of the study involves ensuring that the researcher himself or herself is trustworthy in carrying out the study in as ethical a manner as possible. As in any research study, ethical issues regarding the safety and well-being of participants must be considered and addressed thoroughly and thoughtfully before undertaking the study, and issues such as the welfare of vulnerable populations, anonymity, and accuracy of data interpretation must all be considered (Krathwohl, 2009).

Approval to conduct this research investigation was obtained from the University of Illinois Institutional Review Board (Appendix D). Each participant was provided with a statement of informed consent in advance of interviews and observations and was notified of

his/her rights as human subjects (Appendix E). Individuals who agreed to participate signed an informed consent form, in which they noted that their voluntary participation in the study. I conducted interviews and observations at each elementary school and at the district offices for the district representatives (Appendix F). All names of the schools and the participants are pseudonyms. In all cases, I took great care to ensure that participant identity was protected. When interview data were transcribed, respondents were assigned code numbers to ensure confidentiality.

Validity lends strength to a qualitative study; therefore, I used multiple approaches, including triangulation, member-checking, and rich and thick descriptions (Creswell, 2009). Creswell (2009) noted that triangulation is the most frequently used validity strategy and suggested that when themes arise from several sources of data, triangulation adds to the validity of the study. Multiple procedures were used as a means to verify the data in this study. Data were gathered from teachers, principals, and the central office supervisor through interviews, observation, and document analysis. Member checking was utilized during the interview portion of the study, with each interview transcript being shared with the respective interviewees to check for accuracy and help ensure that my documentation represented the true perspectives of the participants (Krauthwohl, 2009).

Data Collection Procedures

Interviewing was the primary data collection system used in this research study and occurred in the natural setting of each participant's environment. Researchers agree that interviewing is an effective technique to use when conducting intensive case studies (Bogdan & Biklen, 2007; Creswell, 2009; Merriam, 2009). In this study, I conducted semi-structured, open-

ended interviews of the principals, focus groups including the faculty data team members, and interviews of central office administrators. The use of a semi-structured interview protocol allowed me to acquire necessary data about data-informed leadership practices while allowing for unintended and unsolicited ideas to emerge during the interviews (Merriam, 2009).

Strengths and limitations exist for conducting interviews. Creswell (2009) suggested that interviews allow the researcher to gain insight into historical perspectives and to have control over the interview questions. Merriam (2009) noted, “Interviewing is necessary when we cannot observe behaviors, feelings, or how people interpret the world around them. It is also necessary to interview when we are interested in past events that are impossible to replicate” (p. 88). Interviewing does have limitations, as well. Interviewees might respond to the questions based on their biases due to the presence of the researcher; in addition, not all individuals may be completely candid and fully articulate and perceptive during an interview process (Creswell, 2009). Nonetheless, Merriam (2009) affirmed that “interviewing is often the major source of the qualitative data needed for understanding the phenomenon under study” (p. 114).

Face-to-face interviews were conducted with the principals. Semi-structured interviews took place in their respective offices within their schools and audiotaped and transcribed. Participants could request to stop the interviews at any time. Copies of the transcribed interviews were returned via email attachment for member checking, and the principals were contacted by email for clarification of interview responses. The face-to-face interviews took place between the months of December 2011 and April 2012. The initial interviews lasted approximately 60 minutes, with three subsequent interviews of approximately 45 minutes in duration.

I also conducted faculty data team focus group interviews. As faculty members, they were asked about their building-level and classroom practices to determine whether they pushed

data-informed decision making to their classrooms. In addition, the three faculty data teams were asked about their principals' data practices. Additional data collection procedures were employed, supplementing the data gathered through qualitative interviews. Site observations also were conducted, including observations of data team meetings to obtain data on inclusive school practices. By gathering data from site observations, I was able to analyze the connections and gaps from the interview data.

Qualitative observations of focus groups present both strengths and limitations. For example, as an observer, I was able to discern nuances in the school that have become routine to school insiders (Merriam, 2009). Additionally, observations of the focus groups allowed me to use an additional data source in conjunction with the interviews, as a means to triangulate the data. A final strength of including observations of focus groups was to visualize what was not uncovered during the interviews because participants may have had reservations during the interview process and may not have provided complete responses (Creswell, 2009). Merriam (2009) stated, "Observation is the best technique to use when an activity, event, or situation can be observed firsthand, when a fresh perspective is desired, or when participants are not able or willing to discuss the topic under study" (p. 119). Yet, some concerns also exist regarding focus group data collection methods. Critics argue that focus group observations limit the data collection process because participants do not openly speak during the group session, and subjectivity might be evident by the researcher casing the data to be unreliable (Krathwohl, 2009).

Observations of the buildings faculty data team meetings also were conducted. Field notes from these meetings captured examples of data-informed decision-making practices in action at each of the participants' buildings. A laptop computer was used to gather notes during

the meeting sessions at each site. Prior to any observation, informed consent was obtained from all meeting participants. Participants who declined consent did not have their information or comments included in field notes or transcriptions. Field notes from the observation of data meetings were focused specifically on the participants' access to data, representation of data, reflective dialogue centered on the data, and the implementation of improved practices with formative progress monitoring steps clearly identified based on the data. Only the interactions related to the use of data-informed decision making were described in field notes. Observation notes were transcribed, removing all personally identifying information, and were emailed to the faculty data team members for member checking.

Thirdly, documentation and written materials gathered during each visit and voluntarily provided by the principals or faculty members also was analyzed for this study. The documents included agendas and minutes from data team meetings, information about student achievement, data analysis protocols, professional learning opportunities, newspaper articles, newsletters, demographic information, data tables, graphs, timelines, and policies. These resources were used to triangulate claims discovered through the interviews and observations.

Data Analysis Procedures

The purpose of data analysis is to make sense of the data collected that pertains to the research questions (Merriam, 2009). Merriam (2009) indicated that “making sense out of data involves consolidating, reducing, and interpreting what people have said and what the researcher has seen and read—it is the process of making meaning” (p. 176). Data analysis was ongoing. As an example, after each interview was concluded, I read and transcribed my notes to begin to

make sense of the data. As I read the texts, notes were written out of ideas that emerged. Stake (1995) noted:

There is no particular moment when data analysis begins. Analysis is a matter of giving meaning to first impressions as well as to final compilations. Analysis essentially means taking something apart. We take our impressions, our observations, apart. . . . Analysis goes on and on. There may be a period in which we concentrate more on analysis than anything else. We may mark “Analysis” for those two weeks on our calendar. But even for the quantitative researcher, analysis should not be seen as separate from everlasting efforts to make sense of things. (pp. 71-72)

I made the data analysis interactive, and it occurred throughout the data collection process.

Since this study is a comparative case study, two stages of analysis, single-case and cross-case, occurred (Merriam, 2009). The single-case analysis treated each case individually, while the cross-case analysis occurred across cases. Using multiple cases in a study provided a greater variation across the cases, therefore allowing a more compelling interpretation (Merriam, 2009). Patton (2002) suggested “the first task is to do a careful job independently writing up the separate cases. Once that is done, cross-case analysis can begin in search of patterns and themes” (p. 57). In this study, I analyzed each case individually and then cross-analyzed themes and patterns aligned to the three cases. This inclusion of comparative themes across single-case studies enhanced the validity and generalizability of the study’s findings (Merriam).

I developed themes and categories as they emerged through the data analysis process. Creswell (2009) noted that “[coding] involves taking text data or pictures gathered during data collection, segmenting sentences (or paragraphs) or images into categories, and labeling those categories with a term, often a term based in the actual language of the participant” (p. 186). As an example, if principals consistently mentioned systems in their interviews, “systems” was created as a theme. However, if only one participant mentioned the need for a system when creating a data-rich culture, I indicated that information as an isolated theme that was not

mentioned by most participants, but one that still could be relevant to the study. In other words, I built on the themes from the bottom up, by organizing data into increasingly more abstract units of information (Creswell, 2009). I utilized the themes developed from the literature review in organization using the interview dialogue as the central focus.

Using inductive data analysis, I derived a tentative scheme of themes, patterns, or categories, which emerged from the collected data. In order to organize the data together, I constructed an electronic file folder system labeled with a thematic name, which allowed me to locate specific data during analysis (Merriam, 2009; Patton, 2002). Each unit of data categorized according to a particular theme then was cut and placed into the file folder. Each unit of data in the file folders included the original identifying category such as the respondent's pseudonym, line number, or other examples (Merriam, 2009). The data analysis then was moved from inductive to deductive when the themes within the files became saturated, meaning no new information is discovered. At this point, I moved to ensure the evidence derived "held up" as the data was further analyzed (Merriam, 2009, p. 183).

The final step in the analysis phase included an interpretation of the data. The challenge of qualitative analysis lies in making sense of massive amounts of data (Patton, 2002). Applicable interpretation involves reducing the volume of collected data, sifting insignificant data from significant data, identifying relevant patterns, and constructing a framework for communicating the essence of what the data revealed (Patton). I included an interpretation from my own perspective; however, I also included the perspective as it related to the literature or theories established in the literature review.

Summary

This chapter described the research methodology for this study. This research incorporated a comparative case-study approach to assist future stakeholders in ways to enhance effective elementary principal practices that influence the establishment of data-informed decision making. Several data collection procedures, including interviews, observations, and document analysis, were utilized on the selected school sites. The interviews included a semi-structured interview protocol that was used consistently throughout the data collection procedure. Chapter Four examines each of the three cases in detail, recounting the environment and idiosyncrasies of each site.

Chapter Four

The Cases

The purpose of this comparative case study was to identify effective learning leadership practices of data-informed elementary principals and to link the systematic practices through comparative analysis. This chapter provides detailed descriptions of the cases, as well as themes that emerged from the data analysis. Three high-performing elementary schools that involved educators who had the ability to use data and convert it into knowledge while monitoring state and federal mandates were identified. Using case study methodology, this study investigated three schools in Illinois suburban districts to provide a thorough understanding of data-informed leadership practices. Three focus group meetings were observed and nine interviews were conducted between January and April, 2012, along with three follow-up telephone interviews of the principals in late April, 2012. Pseudonyms were used to identify the names of participants, school sites, and districts. The participants included three principals in each school, each interviewed on three different occasions; four central office supervisors; and 16 teachers including reading, math, and data specialists. Triangulation involved a variety of data sources, including interviews of building principals and other formal and informal site supervisors, observations of data-informed leadership events, and document analysis.

This section presents the three individual cases, each subdivided by themes that emerged from the data analysis. Table 1 provides a context of the case schools, with Tables 2-3 highlighting the context of all interview respondents. Tables 4-6 highlight the academic performance of the case schools as measured by performance on the Illinois Standards Achievement Test (ISAT).

Table 1

Context of the Three Cases

School data	Case A Lakewood Elementary School	Case B Costa Mesa Elementary School	Case C Brea Elementary School	State Average
Grade Levels	K-5	K-5	K-5	
Per Pupil Operating Expenditure ^a	\$10,426	\$11,990	\$8,886	\$11,537
Per Pupil Instructional Expenditure ^b	\$6,637	\$7,271	\$4,838	\$6,773
Proportion of Local Property Tax Revenue	78%	80%	66.1%	58.9%
Student Enrollment	500	415	549	325 ^c
White Students	41%	60%	81%	51%
African-American Students	13%	8%	3%	18%
Latino Students	21%	23%	9%	23%
Asian/Pacific Islander Students	19%	4%	3%	4%
Multi-Racial Students	6%	5%	4%	4%
Low Income Students	29%	33%	10%	48%
2007-08 Overall ISAT Performance ^d	85%	91%	94%	79%
2008-09 Overall ISAT Performance	85%	88%	93%	80%
2009-10 Overall ISAT Performance	85%	90%	93%	81%
2010-11 Overall ISAT Performance	90%	88%	91%	82%

^a Operating expenditure per pupil includes the gross operating cost of a school district excluding summer school, adult education, bond principal retired, and capital expenditures.

^b Instructional expenditure per pupil includes the direct costs of teaching pupils or the interaction between teachers and pupils.

^c Enrollment average of the 463 schools meeting sample criteria.

^d Overall ISAT Performance indicates the percentage of students meeting or exceeding State standards as measure by the Illinois Standards Achievement Test.

Table 2

Profile of Principals in Case Sites

Principal	Gender	Years at current assignment	Years of administrative experience	Total years experience	Degree
AP - Ryan	Male	3	16	19	Ed.D.
BP - Brendan	Male	13	16	21	Ed.M.
CP - Lindsay	Female	4	7	18	Ed.D.

Table 3

Profile of Other Participants

Participants	Gender	Position	Grade level teaching	Years experience
A1 – Sally	Female	Teacher	3 rd	8
A2 – John	Male	Teacher	3 rd	6
A3 – Jill	Female	Teacher	3 rd	3
A4 – Joan	Female	Teacher	3 rd	15
A5 – Nancy	Female	Reading Specialist	Elementary	8
B1 – Jean	Female	Teacher	5 th	12
B2 – Sue	Female	Teacher	1 st	6
B3 – Joe	Male	Teacher	2 nd	7
B4 – Laura	Female	LRC Director	Elementary	14
B5 – Cathy	Female	Reading Specialist	Elementary	5
B6 – Mary	Female	ELL Director	Elementary	8
C1 – Karen	Female	Teacher	5 th	6
C2 – Ellen	Female	Teacher	5 th	8
C3 – Katie	Female	Teacher	5 th	1

(continued)

Table 3 (continued)

Participants	Gender	Position	Grade level teaching	Years experience
C4 – Jim	Male	Teacher	5 th	9
ACO – Ann	Female	Assistant Superintendent of Elementary Teaching and Learning	Elementary	28
BCO1 -Brenda	Female	Assistant Superintendent Educational Services	Elementary	25
BCO2 -Tammy	Female	Director of School Improvement	Middle School	20
CCO1 – Zach	Male	Executive Director Teaching and Learning	Elementary	15
CCO2 - Danielle	Female	Student Services Coordinator	Elementary	8

Note. Participant identification labels utilize the letters A, B, and C, which correspond to Cases A, B, and C (ex: Teacher A1 is from Case A, Lakewood Elementary). Years experience is the individual's total number of years in education and may not reflect the length of time in his/her current assignment.

Table 4

ISAT Scores for Case A: Lakewood Elementary School

Year	All students	White	African American	Hispanic	Asian	Bi/Multiracial	Low income
Percentage of students meeting or exceeding standards in reading							
2008	81	93	52	65	94	67	52
2009	79	84	60	71	90	93	59
2010	82	89	51	75	100	75	63
2011	87	90	68	82	96	100	82
Percentage of students meeting or exceeding standards in math							
2008	88	95	66	78	100	80	60
2009	90	93	76	86	100	100	81
2010	88	94	61	81	98	92	75
2011	93	92	82	95	100	100	91

Table 5

ISAT Scores for Case B: Costa Mesa Elementary School

Year	All students	White	African American	Hispanic	Asian	Bi/Multiracial	Low income
Percentage of students meeting or exceeding standards in reading							
2008	87	93	No data	56	No data	86	61
2009	82	89	72	50	No data	75	59
2010	84	90	89	61	No data	79	74
2011	82	87	82	67	No data	85	70
Percentage of students meeting or exceeding standards in math							
2008	95	97	No data	83	No data	93	80
2009	94	96	78	92	No data	92	84
2010	95	97	83	95	No data	93	93
2011	93	97	76	87	No data	92	88

Table 6

ISAT Scores for Case C: Brea Elementary School

Year	Composite	White	African American	Hispanic	Asian	Bi/Multiracial	Low income
Percentage of students meeting or exceeding standards in reading							
2008	88	89	No data	75	No data	90	91
2009	90	91	No data	86	No data	92	84
2010	91	92	64	92	No data	90	79
2011	88	90	82	76	No data	91	63
Percentage of students meeting or exceeding standards in math							
2008	98	98	No data	100	No data	90	100
2009	96	96	No data	95	No data	100	96
2010	96	96	100	92	No data	100	97
2011	96	98	91	85	No data	95	76

Case A: Lakewood Elementary School

Lakewood Elementary School is a K-5 school in Samantha School District 121, which is situated in a Chicago suburb. District 121 enrolls approximately 30,000 K-12 students in five high schools, seven middle schools, and 21 elementary schools. The school is centered in a large city that was once a quint farming town but has evolved into a diverse city with numerous centers of operations for corporations. The racial composition of the city according to the 2010 census report is 51% White, 19% African American, 3% Asian, 2% from two or more races, 0.4% Native American, 15% multiracial, and Hispanic or Latino of any race is 47%. Recent growth has allowed the school to maintain its progressive educational vision: To prepare all students to succeed in an ever-changing world through comprehensive programs and experiences in collaboration with family and community.

Lakewood Elementary has a long history within its neighborhood and is fortunate to have excellent facilities. The school is relatively new, having been built in 2003. Student work displayed in the front hallways and throughout the building promotes an environment that encourages student pride. The classrooms are well equipped for diverse learning. The school includes a large Learning Media Center (LMC) located in the center of the school, where the students have access to extensive technology and several resource teachers. Grades K-2 are housed on the second floor, to allow students and teachers an isolated space to work and learn. The primary classrooms are adjacent to one another, although each classroom is contained to separate the grade levels and individual sections. Grades 3-5 are housed on the first floor, along with the administrative offices.

Ryan, the Lakewood principal, began his leadership career as assistant principal at Black Hawk Elementary and subsequently held the same position at Glenwood Elementary for a total

of 2 years. He then became a speech pathologist for 3 years, and then District 121 student services coordinator for 3 years. After the 3 years, he returned to the building level as principal of a new school, Douglas Elementary. He remained as principal for 8 years. For the last 3 years, Ryan has served as the principal of Lakewood Elementary. Ryan has functioned a total of 16 years in an administrative position: 11 years as a principal, 2 as an assistant principal, and 3 as a student services coordinator. Throughout Ryan's educational career, he has served on a variety of district-level committees, including legislative committees and student-involved assessment committees. Also, in his previous district he coordinated an administrators' academy to help develop professional learning teams.

The Lakewood staff consists of 24 teachers, 10 teacher assistants, 12 student support staff members, a school psychologist, a student services coordinator, and a principal. The staff states that their greatest asset is their incredible and diverse student body, and they encourage their students to come together with a curiosity and excitement for learning. Their students represent many nations and languages. Lakewood's enrollment is approximately 500 students and is comprised of 41% White students, while the other 59% is made up of Hispanic (21%), African-American (19%), Asian (13%), and Bi/multiracial (6%). The proportion of low-income students at Lakewood is 29%, which has risen over the years. The Lakewood faculty builds upon their student diversity as a positive aspect of their school, providing learning opportunities for students to share and experience their cultures and traditions.

According to the Illinois State Achievement Test (ISAT) results, 90% of Lakewood students made Adequate Yearly Progress (AYP) in school year 2010-2011. Overall ISAT performance for 2007-2008 was 85% of students meeting and exceeding standards and also was

85% in 2008-2009 and 2009-2010. Figures 2-5 illustrate the percentage of Lakewood students who met and exceeded state standards based on ethnicity and socioeconomic status.

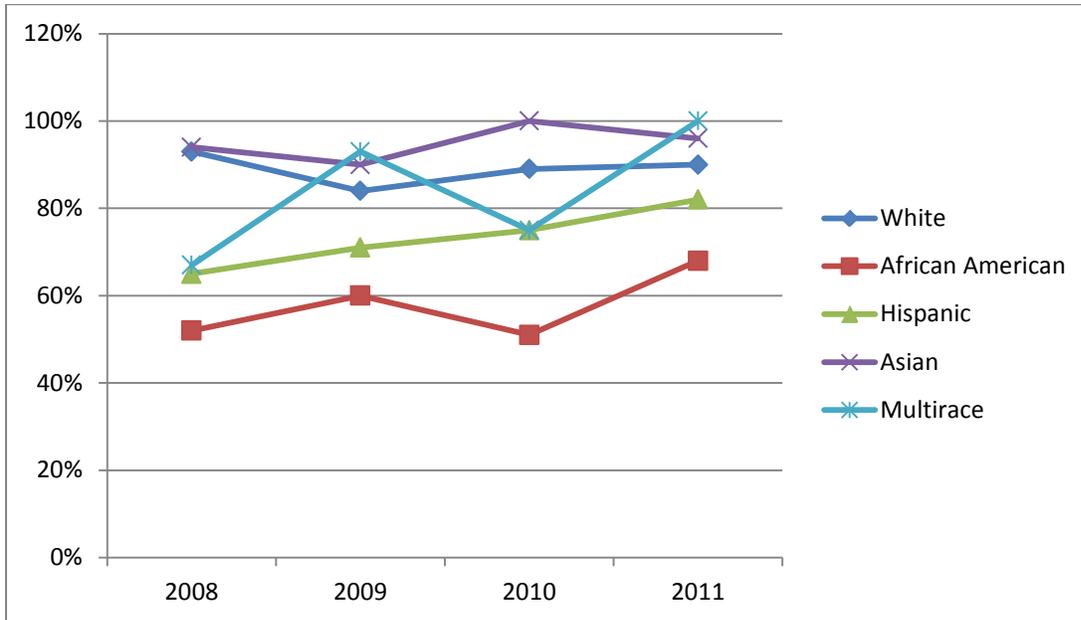


Figure 2. Percentage of Lakewood students meeting or exceeding standards in reading, by student race/ethnicity.

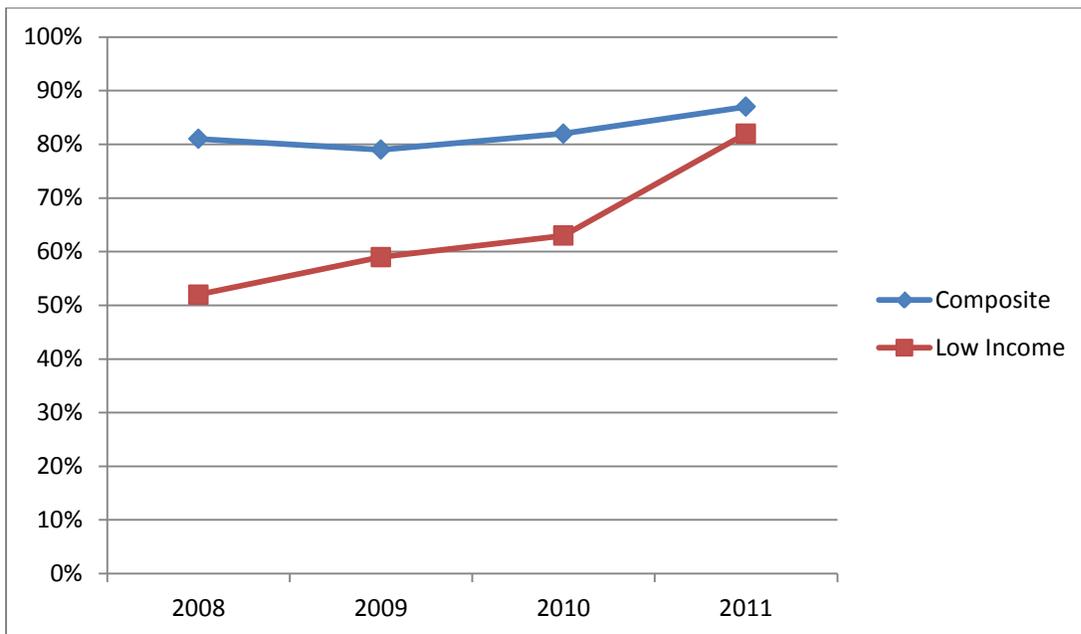


Figure 3. Percentage of Lakewood students meeting or exceeding standards in reading, by socioeconomic status.

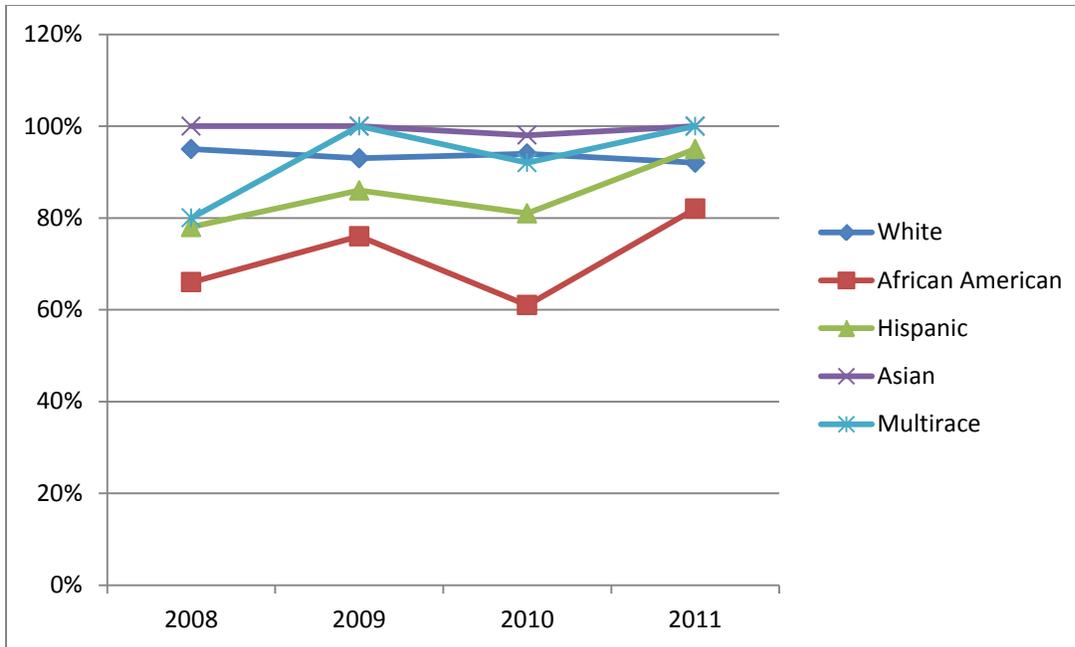


Figure 4. Percentage of Lakewood students meeting or exceeding standards in math, by student race/ethnicity.

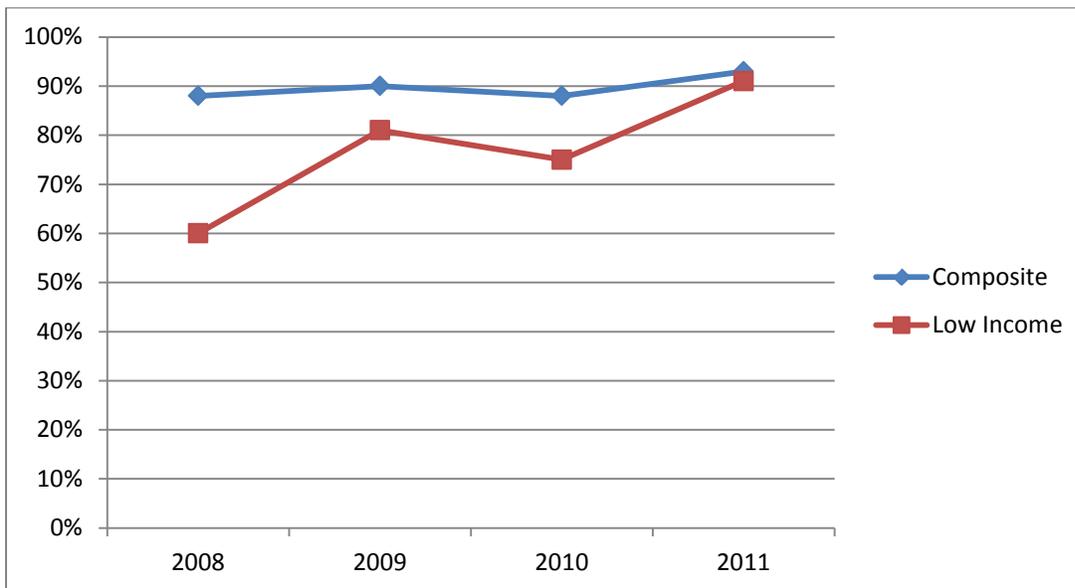


Figure 5. Percentage of Lakewood students meeting or exceeding standards in math, by socioeconomic status.

There is a 3:1 female-to-male teacher ratio at Lakewood Elementary. The average class size ranges from 21.0 to 24.7 students. Ninety-one percent of the teachers are White, with the

remaining 9% comprised of African-American, Hispanic, and Asian ethnicities. The average teaching experience in District 121 is 12.2 years, and 72.4% of teachers have attained a Master's degree or higher. Teachers in District 121 earn on average \$69,011 annually, compared to an average teacher's salary of \$64,978 for the state of Illinois.

Teachers are assigned to various teams at Lakewood to drill down on student learning based on their focus. First, the teachers naturally are placed in grade-level groups, which meet informally daily through their proximity and common lunch hour. Next, the teachers are grouped into professional learning teams (PLTs). The grade-level teachers choose a topic on which to focus and meet weekly to collaborate about student learning, assessments, modifiable instructional practices, and other student achievement items. The math PLT, literacy PLT, writing PLT, and a few other PLTs align their work with the school improvement goals, which are established by the Instructional Leadership Team (ILT). The ILT includes one representative from each grade level team, one from special education, and one from the fine arts area. The school improvement goals usually include a reading and math goal; an additional affective goal typically is included for social, behavioral, or emotional development.

The ILT and PLTs do not meet in isolation from the other teams. There is a sharing environment as the teachers take on leadership roles to train each other. Additionally, the school incorporates a pupil personnel services (PPS) team comprised of the principal, school psychologist, social worker, and student services coordinator, which provides an intensive support system for at-risk students. This team will meet with a PLT to help facilitate the data review. Last year, data analysis was a fairly new practice, so the PPS team acted as facilitators to teach the PLTs what data-analysis conversations should look like and how to interpret the data.

The following sections describe the practices found at Lakewood through onsite interviews, observations, and document collection. The themes in this section include focusing attention on learning, guiding the learning of individual professionals, and providing a systems approach.

Focus attention on learning. When Ryan assumed the Lakewood principalship 3 years ago, he desired to break through the school's existing school norms and cultures to promote effective and continuous data use. He determined that the 79% of all students meeting and exceeding standards was not sufficient and felt the students could be supported more fully. In the last two years, through Ryan's emphasis on learning, the proportion rose from 79% total students meeting and exceeding standards in reading to 87% meeting and exceeding in 2011. He resolved that establishing a collaborative environment and providing multiple supports around the students would directly impact student learning. Ryan continued to reflect on building the culture:

I can think back around 10 years ago, we still had our favorite project units. We still had our favorite books we wanted to teach depending on different levels. We would use those and kind of back track and go, "Okay, which state standards can I fit into my favorite projects, my favorite unit, and my favorite lessons?" (interview, January 27, 2012)

According to Ryan, his previous administrative experience as student services coordinator helped him to learn how to continuously rely upon data to inform student Individualized Educational Plan (IEP) goals. Ryan also pointed to his undergraduate and graduate training in speech pathology as a model:

Whether it was hospital-based clinic or school-based, you're constantly taking data with every session you have with a student. So you are addressing two or three specific learning targets each time, and you are literally taking hash marks or whichever system you have for yourself. My background with individualized education plans for students have forever been driven by percentage goals, percentage increased goals, and so that was just second nature to what I did. I wasn't a classroom teacher, so I was in an environment where it was data driven from the beginning. That is probably a big part of

my predisposition to model data-informed decision making. And through the use of data we can really zero in on exactly what our learning objectives are and keep us on target. (interview, January 27, 2012)

Ryan believed that a culture shift of using evidence to make informed decisions also makes the individual teacher's private practice more public. Ryan and his staff not only use test scores provided by the state and district accountability systems but also go beyond student achievement data to develop a much deeper form of evidence-informed practice.

Ryan has encouraged his teachers to go beyond one single data set to wrap around a child's strengths and weakness, as one teacher remarked:

Supporting all students has really focused us general education teachers on what we are looking at through data. We have had ISAT and IGAP that we have looked at. Different standardized measures the districts have used from the CAT or the ITBS, but some of those have not been enough information for us teachers. (Joan, interview, January 27, 2012)

The teachers also are analyzing further as one piece of data shares one concern but multiple data sets diagnose more accurately. Jill explains:

And the data only tells you so much. We have moved further in our building. We used to look at these scores and solely base our intervention decisions on those numbers, and now we are more of looking at the bigger picture. A student like Joey (a pseudonym) for example, whose fluency is really showing that he is doing fine, we know that that is not necessarily showing what he can do with his comprehension. So, although there is a strong correlation we know between the fluency and the comprehension, we need to make sure that we look through multiple angles. (interview, February 29, 2012)

Ryan's learning-focused leadership encourages various forms of data as a main medium of leadership work and a continual conversational point in their interactions with teachers, each other, and stakeholders.

Guide the learning of individual professionals. This section reviews the data collected during school site interviews and observations. Specifically, this section concentrates on how the principal influences teacher leadership capacity, builds collaborative team capacity that value

learning, and how trust is considered as the school moves forward in teaching and learning to realize student achievement growth.

Ryan has worked to establish a learning culture through distributed leadership practices in the school, with an emphasis on empowering his faculty. As one teacher stated, “When Ryan was meeting with us earlier, we were telling him we are going to design an intervention for some students. He supported us as we designed the intervention options to support the student.” Ryan’s supervisor, Ann Elizabeth, described how he developed leadership capacity:

I think Ryan has really empowered his building so that teachers can direct their own learning, and we are using him for other buildings. I think that’s probably the biggest area that he has distributed his leadership. He is teaching them about learning communities and giving them the support and the guidance to do that. (interview, February 15, 2012)

The culture of distributed leadership at Lakewood relies not upon an individual but on the entire school unit. Ryan has established numerous teams that are empowered to drill down into the data based on their focus. Ryan discovered that as he implements distributed leadership practices in his school he finds more time to increase his role in instructional improvements and to implement reform successfully: “I think it has been really important for the teachers to be empowered. But what we’ve done is really initial steps. If I am sharing leadership right, I’m empowering people, and you’re sharing leadership” (interview, January 27, 2012). He found that distributing leadership functions among his faculty opens doors for sustainable, organizational, and cooperative learning, which also calls for data conversations among his faculty members, thus freeing himself to be a learning leader.

Common planning time for teacher collaboration was observed during the site visits. The teachers were meeting on Wednesday mornings for 60 minutes during the school day (observation, February 29, 2012). Collaboration time was established in multiple ways: a common plan time during the day, late start days, early release days, and bi-monthly teacher-

only work days. Teachers rarely were required to meet during their lunch periods, before, or after school, because these short timeframes were found to be ineffective for the deep conversations that were necessary. Lakewood teachers are able to meet weekly for discipline-specific collaboration, monthly for grade-level collaboration, bi-monthly for whole-faculty collaboration, and quarterly for school improvement collaboration. Although it was not required, Ryan and the teachers also found their daily informal lunchtime conversations are continuously centered on some part of the cycle of inquiry.

Trust is essential if the principal and school culture is focusing on student performance to provide an open environment for engaging in successful problem solving. The significance of trust in Lakewood is undeniable as the data-rich culture is established. Ryan continues to encourage the teachers to trust each other and not worry personally about the data. He promotes a philosophy of “I trust you and you can make decisions as a professional team.” During a data team meeting, it was observed that the teachers were freely asking for ideas from each other that would help support particular unsuccessful students. This trusting relationship validates what the teachers want to do and must do to improve student learning. Ann Elizabeth, the district supervisor, understands the importance of trust in central office support:

The teachers need to trust that we are really turning the data back to them and that it is giving them what they want. So I think that’s important, really one of the most important pieces needed. (interview, February 15, 2012)

Ann explained how new principals need to establish a trusting environment:

The other thing for new principals to focus on as they attempt to build a culture of data-informed decision making is to listen to their teachers. The teachers know, and I’ve learned so much from the teachers in my building. They will sit and look at some things and be able to say, “No, that’s not right for this kid. Here’s what I know about this student,” and then you look at the data and you look to see, does that substantiate, does it not, and why is that. I would stress for principals to be effective they must listen to their teachers. (interview, February 15, 2012)

Ryan's mindful data leadership encourages the faculty to play with ideas, create novelty in their classrooms, feel safe to take reasonable risks, experiment, and be resilient. While observing a conversation between Ryan and his teachers about a new support the teachers desired to implement based on the data they received, I noted several promptings that sought further analysis, a clear display of progress monitoring steps, and set a time to be resilient through the intervention (observation, February 29, 2012). Ryan appears to have a profound influence on the school faculty's mindfulness and the establishment of trust as they use data to make informed decisions.

Systems approach. Lakewood is applying a systems approach, utilizing multiple mechanisms to analyze data to inform decisions. In the beginning of the year the faculty engages in a data review, which Ryan indicates is very important. From that point forward, the grade-level teams meet weekly to discuss the students and their progress. The math, reading, social studies, and science teams assemble once a month to analyze data vertically through grade levels. The implementation of a data-rich culture demands that Ryan take a systems learning approach within the organization, including the acquisition of data, reflective practices based on the information, and an action-oriented implementation. This holistic accountability system at Lakewood is student centered based not only on assessment scores and academic achievement but also on curriculum, instructional strategies, and leadership practices.

The school now considers a deeper knowledge of problem solving and moves to search for data and evidence. Emphasizing the beginning-of-the-year data review, Ryan exclaimed, "The data review is key" (interview, February 29, 2012). As the year begins, they follow up on specific students who were monitored closely during the previous year. During that review they are looking at anything new that may have occurred with the students. They use their fall and

winter benchmarking data, examining how the students are progressing based on the assessment data. They have identified students who should be receiving more supports based on the information from the fall meetings. In each successive meeting, the teachers carefully examine how student learning is progressing and make instructional changes based upon these data (document analysis, February 29, 2012).

Systems learning changes the conversations within the school, as collaborative teams participate in reflective practices and implementation plans surrounding the information. Ryan has a clear vision of what data to examine and when to review it. When the faculty engages in the benchmarking data analysis, they are looking at every student in each grade level by reviewing how they have scored and noting how their scores align with their performance in the classroom. They consider if they need to make major revisions, for example, in a guided reading group (document analysis, February 29, 2012). The school improvement meetings are held three times a year. Ryan has been able to help the teachers be comfortable with local student data so that they conduct their own data reviews and do not wait for a regularly scheduled district meeting time.

The collaborative practice of using common assessment data to reflect on student learning allows best practice instructional strategies to surface, most often to maximize student engagement in the classrooms. When assessment data are used for inquiry-focused discussions, these conversations appear to have been beneficial in improving instructional practices. A

Lakewood teacher, John, explains how they reflect on a common assessment:

We have regular conversations about how our kids did on a common assessment, so lots of data type of conversations. We all gave this common assessment, we meet this week, and two classes did really well, the third really didn't, so now we are going to have more conversation on what kind of instruction happened in the two classes that didn't happen in the third class. How can I alter my practice, those kind of conversations. We have these conversations in our content specific meeting. (interview, February 29, 2012)

Productive teams focus their conversations on improving teaching and learning practices, put them in practice, and review results of student achievement based on periodic common assessments. These teams find themselves examining instructional practices based on informed evidence that only improve student learning.

Summary. Lakewood Elementary School is a highly successful school with a focus on learning, development of the individual professionals, and a systematic approach to affect student learning. Ryan believes that the school should provide a culture that creates and sustains a community of student and adult learning, and he has organized the school, classrooms, and the environment strategically. Ryan's data-informed background helps him to continuously be reliant upon data to monitor student learning.

The use of data by teachers signals a culture shift in teacher development at Lakewood. As a result of their focus on data, teachers now have the knowledge to establish student outcomes and monitor progress using standards-referenced assessment to inform instructional practices. Ryan empowers his faculty so that they can direct their own learning, encourages all staff members in the use of effective data-informed decision making, and maintains a collaborative team structure. Data use assists with the identification of best practices and ensures effective school reform by identifying successes and gaps in student learning. He mentors the teachers about learning communities and gives them the support and guidance to be efficient and effective. The collaborative practice established at Lakewood of using common assessment data to reflect on student learning allows best practice instructional strategies to surface most often to maximize student engagement. Lakewood endorses the collaboration of discipline-specific teachers to discuss instructional practices based on common assessments in order to improve student learning. When assessment data are used for inquiry-focused discussions, these

conversations appear to be beneficial in improving instructional practices and, most importantly, improving student learning.

Case B: Costa Mesa Elementary School

Costa Mesa Elementary School, District 124, is located in the western suburbs of Chicago, Illinois, in a community that is recognized for its strong commercial, residential, and educational facilities. District 124 is a consolidated unit district, K-12, with over 13,000 students and houses 13 elementary schools, four middle schools, and two high schools. The city has received several honors for its financial stability and family friendliness. They are now landlocked, making expansion nonexistent, but the city and the school district have been able to renovate to stay current with the changing times. The racial composition of the city compared to Costa Mesa Elementary School displays a contrast in percentages. The racial makeup of the city, according to the 2010 census report, is 88.0% White, Hispanic or Latino of any race is 5.1%, 4.3% Asian, 4.6% African-American, 1.31% from two or more races, 0.2% Native American, and 0.8% from other races. In contrast, the school demographics include 60% White, Hispanic or Latino of any race is 22%, 4% Asian, 8% African-American, and 5% from other races. The district has 26% of their students in the low-income range, whereas the school contains 33% of their students in the low-income range.

Costa Mesa was opened in 1968, expanded in 1997, and then again in 2000. Costa Mesa offers extended-day kindergarten; a Before and After School Program (BASP); classes in art, music, technology, and physical education; and after-school programs, including Battle of the Books, band, and orchestra. They currently serve 415 K-5 students, with a stable population over the last six years. The district is projecting a slight decline in enrollment over the next few years.

Brendan Matthews is the principal of Costa Mesa Elementary School. Brendan has been a consistent figure in the school, having served as principal the last 13 years. It was not his teaching background as much as it was his previous administrative position that made him a data-informed leader. When Brendan transitioned from the elementary classroom to an elementary assistant principalship, he was influenced by many research articles and dialogue about formative assessments and the use of data to improve student learning. He joined the Illinois Association for Supervision and Curriculum Development and participated in various professional learning opportunities centered on data at the administrative level. He frequently is called upon as a professional learning expert for the district, facilitating collaborative efforts in other schools to improve student learning.

Ninety-four percent of the Costa Mesa teachers are White, and the remaining 6% are comprised of African-American, Hispanic, and Asian ethnicities. There is a 3:1 female-to-male teacher ratio, and average class size ranges from 13.8 in kindergarten to 26.0 in fifth grade. The school has 17 regular classroom teachers; 3 ELL teachers; 2 teachers each in physical education, reading, speech therapy, resource, and ELL; 1 teacher each in art, band, orchestra, vocal music; and a Library Learning Center Director, reading specialist, social worker, psychologist, physical therapist, and occupational therapist. The average teaching experience is 14.6 years, and 85.1% of teachers have attained a Master's degree or higher. Teachers at District 124 earn some of the highest salaries in the state, averaging \$77,407 annually compared to an average teacher salary of \$64,978 in the state of Illinois.

Costa Mesa maintained Annual Yearly Progress (AYP) from 2002 to 2010 but failed to make AYP in 2011 for the first time since NCLB was initiated. The school has not had a subpopulation according the enrollment criteria set by the state of Illinois. This last year, the

number of Hispanic students surpassed the 45-student minimum for the subpopulation criterion; therefore, the Hispanic students' scores must exceed a set percentage of meeting and exceeding standards. Only 67% of Hispanic students met or exceeded standards in Reading, placing Costa Mesa on the "Failed to make AYP for Reading" list. Figures 6-9 illustrate the percentage of Costa Mesa students who meet and exceed standards based on their ethnicity and socioeconomic status.

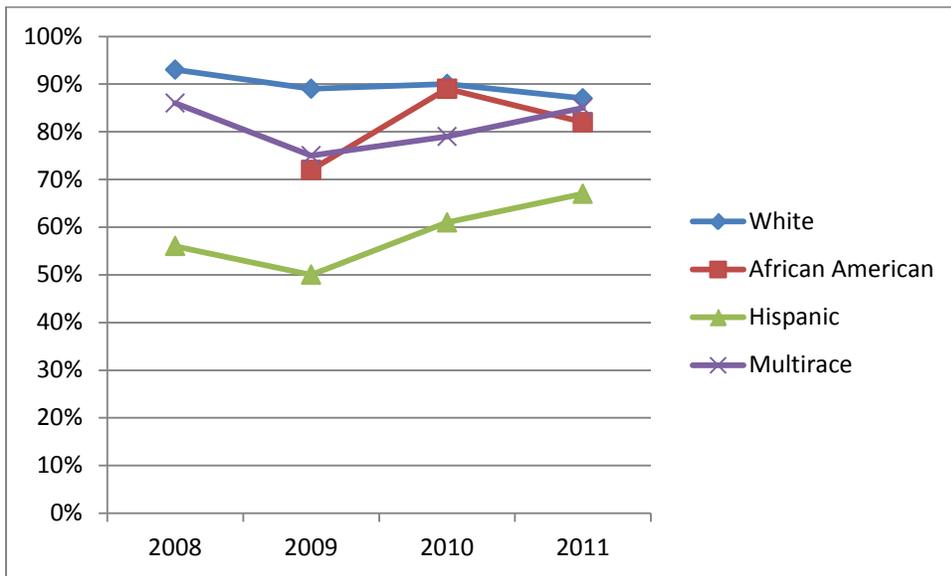


Figure 6. Percentage of Costa Mesa students meeting or exceeding standards in reading, by student race/ethnicity.

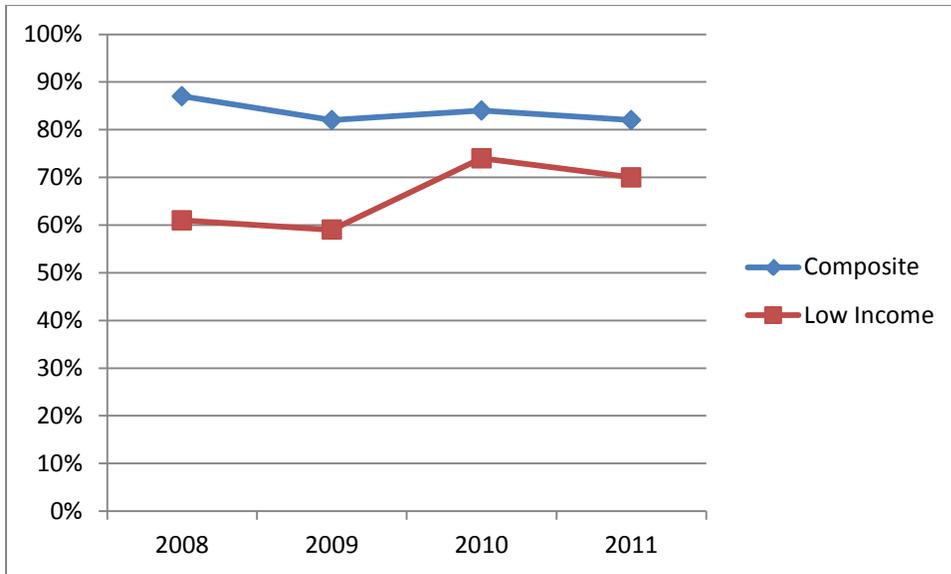


Figure 7. Percentage of Costa Mesa students meeting or exceeding standards in reading, by socioeconomic status.

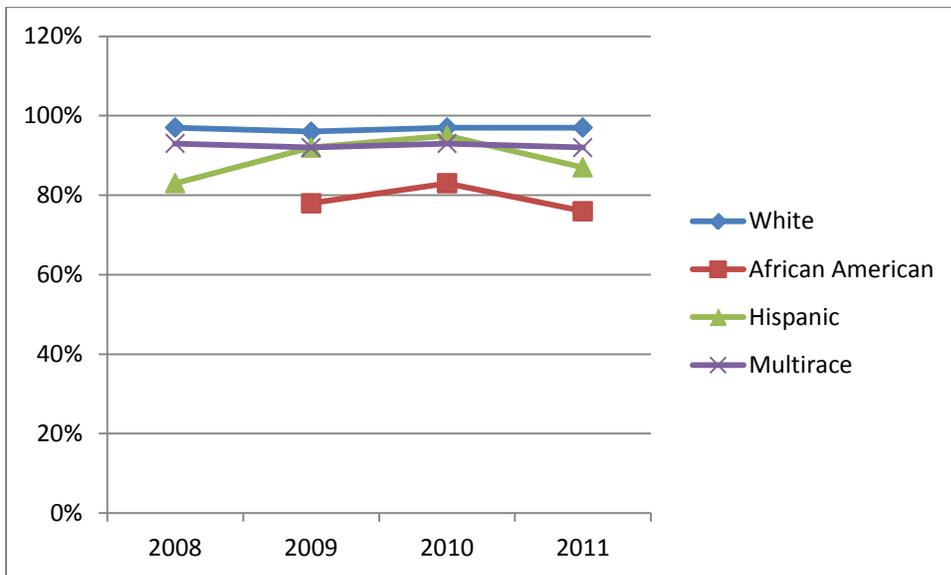


Figure 8. Percentage of Costa Mesa students meeting or exceeding standards in math, by student race/ethnicity.

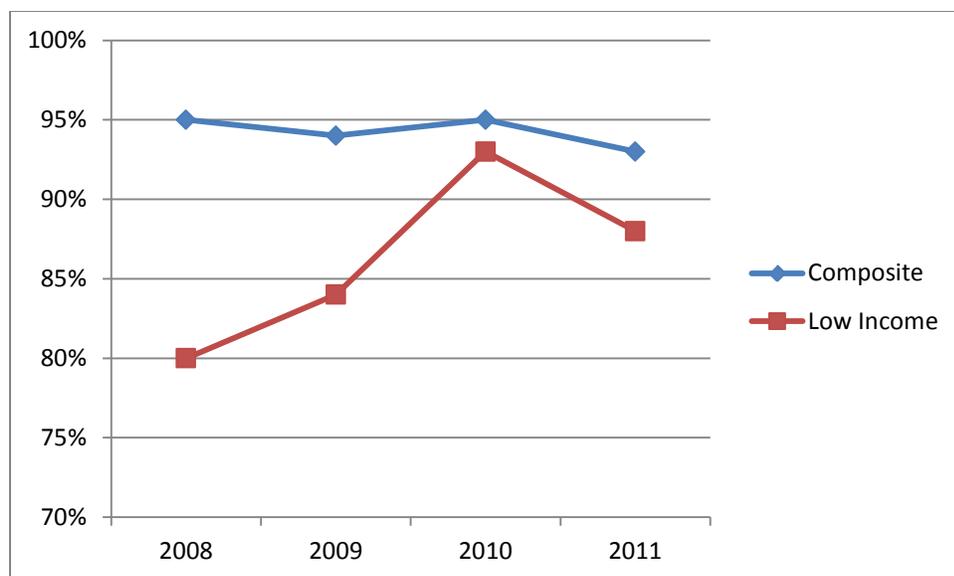


Figure 9. Percentage of Costa Mesa students meeting or exceeding standards in math, by socioeconomic status.

The teachers are systematically teamed to analyze student learning based on their focus. First, there is the traditional School Improvement Team (SIT) that looks at macro-level student state assessment data before the school starts in the fall and sets overall student learning goals for the building. Brendan does not assemble this group often after the first of the year. The grade-level teachers meet informally daily due to their proximity and common lunch hour. There is not a set meeting time established due to the constraints of the daily union-negotiated schedule (document analysis, February 6, 2012). Brendan expressed a desire to find creative ways to increase the number of meeting times so that the teachers could collaborate regularly.

Brendan is excited about a newly established team simply called a Professional Learning Community (PLC). He asked for volunteers to join a whole-school team to drill down into student learning using district and collaborative supports. This PLC includes one teacher from each grade level, as well as the school psychologist, reading specialist, ELL director, library technologist, district assessment director, and principal. The PLC team does not meet in isolation of the grade-level teams. There is a sharing environment as the teachers take on leadership roles

to train each other (observation, January, 12, 2012). For example, a math team selected a goal regarding student learning. They spent some of their time learning about how to teach equations and developed some new instructional best practices. The team then facilitated a school-wide staff development session to assist the professional learning of all teachers (document analysis, January 12, 2012). The following sections report on themes identified from the case study.

Focus attention on learning. A few years ago after attending training on professional learning communities, Brendan dismantled the school's traditional school improvement planning teams and developed a different kind of leadership that focused on learning. Brendan remembered when the new superintendent informed him to be prepared to answer the question, "How do you use data to inform your decisions?" Consequently, Brendan attempts to learn as much as he can about data-informed leadership and respond to what they are doing in the district. As an experienced principal, he feels he is in a completely different place than where he was 10 years ago in the area of focusing on student learning.

Brendan advocates for comprehensive use of local data that allows for a systemic approach to whole-school reform. Through his collaboration with the PLC and district supervisor, the staff noted that data use is vital for student achievement growth. There is a sense of urgency to build effective data capacity throughout the school year without waiting until the results of the state assessment to indicate each student's proficiency level. Brendan discussed the validity of data:

It's making decisions based on data and not on what is in your gut or which seems like the best direction to go. It's looking at whatever data you have, formal and informal, and then making good decisions based on kids. (interview, February 6, 2012)

The faculty also understands that data are important to analyze what students know and where the gaps lie. This belief was apparent as a teacher exclaimed, "A particular student is making the

growth according to the assessments. Her growth is more substantial than the other students. I also notice most students are making progress on the district assessments” (observation, Jan 12, 2012).

District 124 has an outstanding Director of School Improvement, Tammy, with whom Brendan consults to help him build the culture of data-informed decision making. About six years ago, Tammy developed a data file that she calls “The Beast” (document analysis, February 24, 2012). The district at that time was not even looking at the ISAT results on Excel spreadsheets; they were always waiting for the paper approval. The Beast was initiated by entering ISAT data into an Excel spreadsheet and then adding other data to validate student learning. The idea came to Tammy as she met with each building’s school improvement teams. In The Beast they wanted to include local tests, district assessments, and state assessments that would triangulate actual student learning. The Beast now can be used to produce data trends for math and language arts:

People started saying it would be nice to have all of the information in one place because when we would do deep data dives trying to find factors, we would have to pull up multiple files, and so the beast sort of grew based on needs that were articulated by schools. More formally, we have had some articulations meetings where all the principals come in, and I show them some data trends. (Tammy, interview, February 24, 2012)

Brendan seeks to build data capacity throughout the school. He really wants to reach the point where it just happens naturally—where the teachers are looking specifically at student learning growth. That is ultimately his goal—not just for his school but for the entire district.

Student learning is a focus at Costa Mesa. In every subject, teachers are talking about how they can divide the learning standards into learning targets that are student friendly and measurable. Teachers share the targets with the students on a daily basis and then give a classroom formative assessment periodically to know which of their students have mastered each

of the targets, as Jean indicated: “We’re making some growth where we are really looking at the data and answering the question, ‘What do you do when students don’t learn?’” (interview, January 12, 2012). Using The Beast is helping the teachers drill down and see correlations to future student learning targets:

There are definitely correlations between the ISAT and the Prairie State Exam. What we did is we have been using a different cut score for ISAT. They asked way back in the 06-07 school year what is the connection between Prairie State and ISAT; that’s how the correlation studies started. And then they said why we have 95% meeting or exceeding in our elementary. And so we did the correlations study and found that the top half of the meets scale score range is really the safest place for students to be. (Tammy, interview, February 24, 2012)

Guide the learning of individual professionals. Brendan has developed the leadership capacity within his school to involve teachers in leadership roles beyond the boundaries of their classrooms. Brendan reflects on empowering his teachers as they work toward transforming the school culture from a workplace into a learning place:

That’s what I aim for; I think you would have to ask the teachers. My understanding from knowing them pretty well is that they feel empowered. They sort of need to because it would be impossible for me to be able to look at all the data and make all those decisions myself. If the teachers are not able to do that on their own, then we are not going to make that much progress. (interview, February 6, 2012)

Brendan brings teams of teachers together to work with the district data person, Tammy.

Brendan also works alongside his teachers, asking such questions as, “Show me how you’re using this data” (observation, January 12, 2012). Brendan is an active participant as he also is learning alongside his teachers and being part of that process. A positive outcome of building teacher leadership capacity is that the teachers are taking the initiative to analyze data without prompting from the principal. Brendan said, “They are developing as leaders. So they really have to be empowered; if they don’t feel empowered, then it’s not going happen the way that we really want it to happen” (interview, February 6, 2012).

The teachers are leading professional learning opportunities that Brendan establishes throughout the school year. Brendan brought Tammy, the director of school improvement (data guru), over to his school-based PLC team. She trained the team members on how to look at “The Beast” first. The school-based PLC includes one teacher from each grade level. Upon completing this training, each teacher was expected to provide this training to their grade-level meetings. As a result, instead of being responsible for data analysis, Brendan was able to simply go around the building to visit with each team and assist if they were stuck on a problem or were implementing modified practices (observation, February 24, 2012). Tammy talked about a meeting with the Costa Mesa PLC: “When I ask them some key questions, they provided further input and a lot of the color coding, and the way things are formatted came out of those meetings” (interview, February 24, 2012).

The Costa Mesa teachers do not have structured meeting times built into their schedules. Brendan sees the need to build systematic daily or weekly collaborative times for grade-level teachers. The school PLC team meets monthly, but he feels the progress seems slow at this point. Brendan and the school culture have always had the expectation that teachers would meet regularly as grade-level teams or as teams with similar jobs:

For example, we have three teachers in a reading support program, and they would meet together. They have three teachers in the ELL program, they would meet together, and they do a great job meeting together. They get along well, high level of collegiality in a building. They plan great activities and great learning opportunities for their kids, a lot of communication but not many opportunities to meet. (interview February 6, 2012)

In order to establish quality daily or weekly collaborative meeting times, Costa Mesa would need modifications in their master schedule and the teacher-negotiated contract.

Systems approach. Costa Mesa is applying a systems approach, utilizing multiple mechanisms as they analyze data to make informed decisions. One document received during an

observation was a PowerPoint presentation the multi-grade math teachers would be delivering to the staff in a future faculty meeting (document analysis, January 12, 2012). The math teachers collected data for over a month centered on various math skills. The data were collected through classroom assessments and revealed a skill deficiency. This collection of data was intended to assist the faculty in developing a school-wide goal to improve student learning. Educators are hunting for data that clearly displays proficiency levels per disciplinary content strand and ways to monitor growth as instruction progresses for each student.

The most powerful collection of data that helps Costa Mesa teachers make informed decisions is completed by the district staff member Director of School Improvement, Tammy. Using The Beast, she is able to determine a projected ACT composite score of 24-25 and backwards plan to the kindergarten level. For example, if a student exits kindergarten able to read “Book A,” which is a simple, decodable book, knows 14 high frequency words and at least 25 letter sounds, he/she has a very high probability of earning an ACT Reading score of at least 24 in high school. Brendan reported Tammy provides his teachers with a Math Beast, which includes a triangulation of data from classroom assessments to district assessments to high stakes longitudinal data to assist in identifying students who are in need of further supports. Brendan said, “We’re learning how to look at that math data and make decisions” (interview, February 6, 2012). Teacher Joan indicated,

We can sort it by subgroups; for example, I wanted to see how our English Language Learners were doing in math. So she [Tammy] was able to give us that sort. She was able to sort by questions that they did so we were able to identify and actually help with staff development based on the information. (interview, January 12, 2012)

Teachers, through the Costa Mesa teams, are examining instructional practices based on informed evidence that only improve student learning. These productive teams review student achievement results based on periodic common assessments and focus their reflective

conversations on improving teaching and learning practices. Costa Mesa's reflective data growth is encouraged by the district supervisor, Brenda. Twice a year she conducts data reviews with principals and sometimes with school teams. She provides the questions in advance to help guide the conversation. A typical starting question asks, "According to the data in The Beast, what are the strengths and weaknesses you saw in reading and in math?" She then will have a conversation about individual teachers, both teachers who are above average and teachers who are far below efficiency levels. She then asks how the principal would use the data with their staff: grade-level meetings, whole staff, and/or individual meetings. She concludes the conversation with the principals with the question, "So, how are you going make this process to be user friendly?" (Brenda, interview, February 28, 2012). Brendan is proud of his teachers implementing a specific math instructional practice based on the data.

Summary. Brendan restructured Costa Mesa's traditional improvement planning teams and developed a different kind of leadership focused on learning. As Brendan's supervisor holds him accountable for using data to show how student learning is progressing, he too encourages his teachers to use data to inform the effectiveness of their instructional practices. With Brendan's encouragement, this type of personal professional development has trickled down to the teachers at Costa Mesa Elementary School. Student learning is a focus at Costa Mesa. Teachers continually are examining how they can break down the learning standards into learning targets that are student friendly and measurable. The teachers not only are looking at local assessment data to make informed decisions but also are assisted in making triangulated data decisions.

Using a data tool, "The Beast," provides the principal and teachers with extensive data to strategically analyze individual students and their specific needs. Brendan has established an

environment that permits the district school improvement specialist, Tammy, to build teacher capacity in data-informed decision making. Teachers are improving in their acquisition of multiple data sources, reflection of the data representations, and implementation of instructional practices based on triangulated data. The teachers not only are implementing data-based reforms within their grade levels but also are articulating vertically from kindergarten to fifth grade. This articulation establishes a common language, develops mutual trust, and creates a shared understanding that instructional modifications must be implemented based not on intuitions but on student achievement data.

Case C: Brea Elementary School

Brea Elementary School is part of District 118, a large unit school district in a Chicago suburb. District 118 houses 15 elementary schools, four middle schools, and two high schools. Student enrollment in District 118 currently sits at approximately 16,000, and there is a very low annual mobility rate of 5.5%. The district has experienced rapid population growth: cities within the district have doubled in size over the last 10 years. The racial composition of the community, according to the 2010 census report, is 94% White, 5% Hispanic, 1% Asian, 2% African-American, 1% from two or more races, 0.2% Native American, and 2% from other races. The district has built 14 new schools in the past decade, which has placed a financial strain on the district budget, especially during the most recent four years as state funding levels have declined significantly. The school board accepted the resignation of the superintendent and three assistant superintendents during the fall and spring of school year 2011-2012, and this turnover is a source of concern for the Brea Elementary School staff.

Brea Elementary School opened in 2005. The Brea staff is comprised of 23 teachers. A special service team consists of three ELL teachers, a social worker, two reading specialists, a speech pathologist, a psychologist, a deaf and hard of hearing specialist, and an administrative team consisting of the principal and an assistant principal. Brea currently serves 550 students from kindergarten to fifth grade and offers several extracurricular activities: Honors Choir, Student Government, Art, Math Club, and Spanish. Brea's student enrollment of 550 would not be classified as diverse. White students constitute 82% of the population, with Hispanic students making up only 9% and the African-American, Asian, and multi-racial students making up the other 9%. In contrast, the district serves 63.2% White students, 17.6% Hispanic, 7.8% African-American, 5.9% Asian, and 5.2% multi-racial students. Students qualifying for special education service constitute only 8.9% of the population, and Brea has a low-income rate of 10.4%. Brea serves a higher socioeconomic class compared to the overall district.

Lindsay has been the Brea Elementary School principal for the last four years. Previously, she was a middle level teacher and assistant principal. According to Lindsay, her experiences with student discipline led her to see the importance of data-informed leadership. As an assistant principal, she had an interesting group of staff members who had various philosophies on student behavior and how they should support student achievement. She recalled her teachers stating such facts as, "The student is absent ALL the time, and this one has been in your office 12 times this year." She would show the teachers where the data was pointing to the students' learning problems and then involved them in the process of identifying solutions to those problems. Lindsay found that focusing on data was helpful because teachers put their personal emotions into student behavior issues and the data puts emotional feelings in check. The

use of data allows Lindsay to break criteria down by grade level, and sometimes by teams, to identify supports that are necessary for the individual student.

Ninety-two percent of the Brea teachers are White, while 4% are Hispanic, and the other 4% is comprised of African-American, Asian, and unknown racial/ethnic identity. There is a 3:1 female-to-male teacher ratio at Brea elementary school, and average class sizes range from 20.2 to 32.0. The students spend 120 minutes in English/language arts and 60 minutes in math compared to 25 minutes in science and social studies daily. Because the district has grown significantly in the last 10 years, the average teaching experience is four years below the state average of 13.2 years. The teachers' average annual salary also reflects a youthful tenure, \$59,903 compared to the state average of \$64,978.

Brea Elementary School continues to excel according to the state assessment performance data, being one of 438 schools in the state of Illinois recognized for Academic Excellence. To earn the Academic Excellence Award a school must have made Adequate Yearly Progress in 2010 and 2011 according to the NCLB criteria. Elementary schools must have 90% of their students meeting or exceeding state standards in both reading and mathematics for the last three years. Figure 10-13 show Brea's consistently high state assessment test scores.

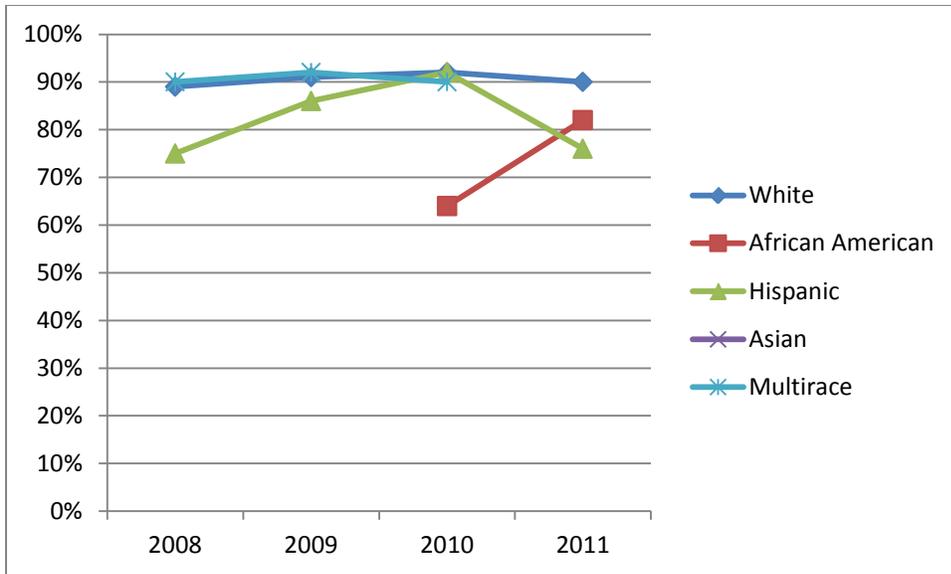


Figure 10. Percentage of Brea students meeting or exceeding standards in reading, by student race/ethnicity.

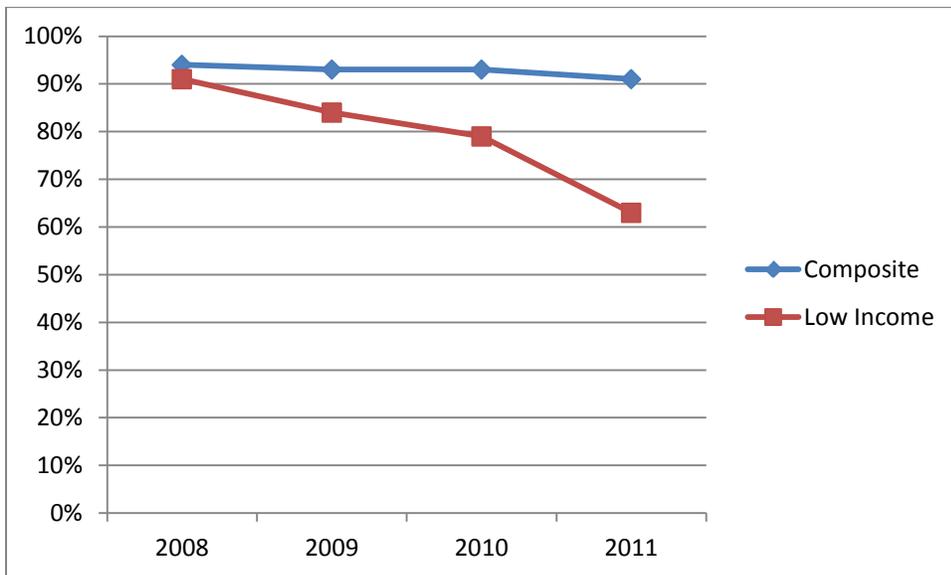


Figure 11. Percentage of Brea students meeting or exceeding standards in reading, socioeconomic status.

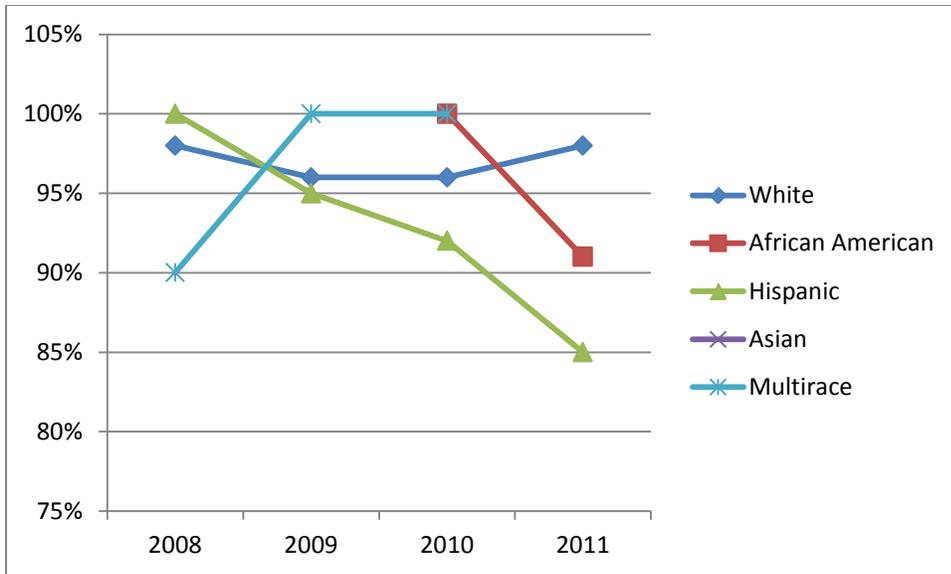


Figure 12. Percentage of Brea students meeting or exceeding standards in math, by student race/ethnicity.

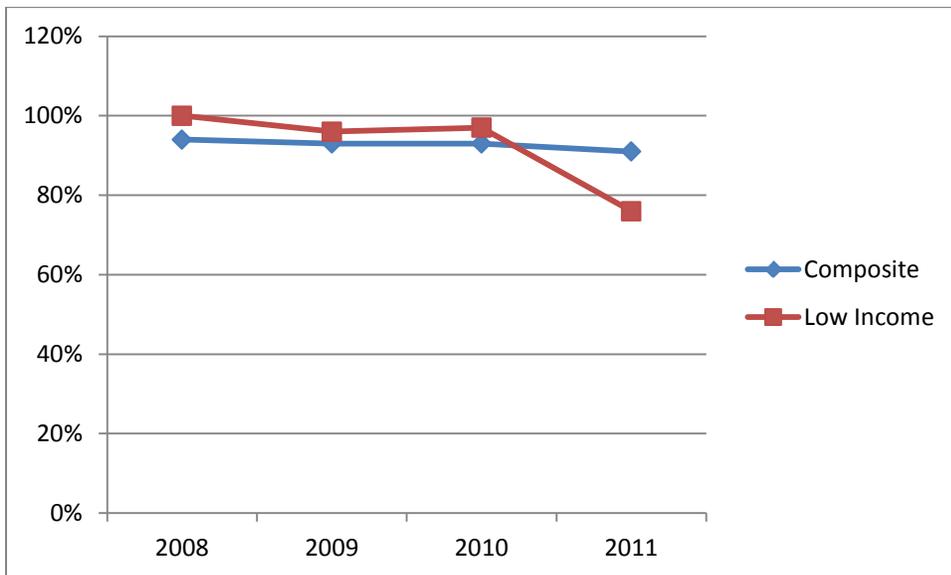


Figure 13. Percentage of Brea students meeting or exceeding standards in math, by socioeconomic status.

The Brea Elementary School data teams lack a systematic structure, because Lindsay is hindered by the contractual day that is established throughout the district. She has established bimonthly faculty meetings that are centered on curriculum revisions the state of Illinois recently implemented. Common grade-level planning time is not built within the schedule because it is

identified as contractual free time in the union-negotiated agreement, but it periodically occurs informally in several grade levels because some teachers elect to use this time to collaborate on student learning. Other collaborative meetings take place quarterly, arranged by Lindsay through the use of “sub-out” time when the district helps pay for the substitute teachers to allow the classroom teachers to meet during the school day. The district funding for substitute teachers is not guaranteed every year. Teacher in-service days also occur three times a year but are not used systematically to drill down into student achievement data. Lindsay explained, “I try to make the most I can out of our staff meetings, our released days, and our school improvement days to get more collaboration. The teachers are now asking me for more time, which is a good sign” (interview, March 9, 2012).

Focus on learning. Lindsay’s effective data practices include efficiency in responding to student learning and increased capacity in data literacy. She encourages the teachers to become informed data users who measure student learning gains. Lindsay is not simply going around basing school improvement plans on opinion but instead makes decisions based upon actual student data. Data-informed leadership has allowed Lindsay to ask questions and use this knowledge to collaboratively design a rich school improvement plan. Focusing on learning is important for Lindsay because Brea is a highly achieving building, and all stakeholders certainly want to keep it that way.

The school’s focus on learning is realized by the way Brea acquires data about student learning. Lindsay encourages teachers to look at the data in terms of the classroom assessments correlated to the district and state assessment data. Increasing the data capacity and the understanding of how to analyze data, can confirm or negate the assumptions teachers make concerning student learning. Lindsay observed:

We have taken a couple different assessments and triangulated the data. We are doing some training with our staff on comprehension strategies and word study and really using those programs to show student learning through multiple assessments. You follow the kids and so they are getting comfortable with those instructional strategies, and so now what will be this coming year. I really want to spend time talking about classroom assessment and common district assessments and looking at and analyzing those together. I have a team inventory that I want to give them at our next data meeting: to talk about some really good best practices that they use in their core instruction and how they feel they are with those, how they feel they use them on a rating scale. (interview, March 9, 2012)

Lindsay and her teachers want to see how the data support their intuitive hunches about student learning. They have the perspective, “Is the data really saying what is happening in reality or am I using the data conveniently?” (Ellen, interview, March 19, 2012). Understanding what the data means, including the use of qualitative data, is how Lindsay focuses on learning. While observing the fifth-grade data team meeting, the team reflected on the data and used the information to identify individual student needs as they approach problem solving (observation, March 19, 2012).

Lindsay’s leadership for learning merits investigation as elementary principals attempt to create schools in which all students reach ambitious targets of performance. Documentation of assessments and an observation revealed a continual building capacity toward assessments. Jim, a fifth-grade teacher, explained how he focused on the learning needs of individual students:

I guess I always use the winter MAP testing for those kids that were the ones we wanted to watch for state assessment. And then we would put the names of the kids that we were concerned for fall MAP results. And then I would kind of gauge where they were, and how well those interventions had been working up to that point. I was scared for my ISAT, because of the drop that we had. My first four on this spreadsheet are all that have accommodations or modifications going on. And I am pretty pleased with the third student going up, even if it is one point in the winter, but how valid is that? Whereas I look at the MAP results and I am really proud of that. Look at his fluency grow, but his comprehension is still something that we are concerned about. (interview, March 19, 2012)

The current age of accountability requires Lindsay and her staff to be involved in the leading of student learning efforts, which involves the development of effective common assessments in the classroom (document analysis, March 19, 2012). This responsibility is not an easy task as the conversations turn from external assessments to classroom assessments.

Teachers at Brea have the knowledge to establish student outcomes and monitor progress using standards-referenced assessment to inform instructional practices, but aligning the classroom assessments is a level yet to be developed to the exemplar level. Ellen remarked on the next steps in monitoring student learning:

I think where the challenge lies is the lack of a common assessment besides our MAP testing. I feel like that is driving everything right now and with all the different strategies and all the different ways we are approaching reading, I would love to have a classroom tool to compare to it. I would love to have a conversation with my peers about how the class assessments compare and is another data tool right in front of us and it is something we can dissect and think about, and how we are approaching it. It is a hard struggle to not have anything besides MAP scores. (interview, March 19, 2012)

Learning-focused leaders understand the teacher is a learner and desires feedback on performance, which is essential to the learning process.

Lindsay would like her teachers to look at their students' classroom common assessments reports and then design interventions as a team. She encourages them to start thinking about the data a little differently. At the midpoint of the school year, she focused their thinking on how their students were growing. She moved them to ask the questions: How are the students similar to each other, and how are they different? Once they have talked about those types of patterns, she encouraged them to talk about what the data was telling them about their interventions.

Guide the learning of individual professionals. A critical aspect Lindsay influences is a data-rich culture to support and sustain an environment that encourages her staff and other teacher leaders to turn to data, ask questions of data, reflect on the data's meaning, and take

action that references the data. Lindsay practices effective leadership as she involves her teachers in leadership roles beyond the boundaries of their classrooms as they work toward transforming the school culture from a workplace into a learning place. One teacher stated, “I definitely feel I am supported. I have had a lot of students in fifth grade that have gotten to fifth grade and they have had these consistent gaps and I am able to make interventions supported by Lindsay” (Karen, interview, March 19, 2012). Lindsay’s supervisor, Zach, discussed her capacity to empower her staff:

Lindsay is excellent at empowering her staff. She has—within grade levels—leaders that will work with other teachers to improve the instructional practices. They work on how they actually look at the strength of their students, what is the data in our building tell us about areas that we need to improve on. I will tell you one thing; we had a consultant come in and look at the district data. We found some data about Brea that in one area where there was some deficiency. And Lindsay immediately went back, and she and her building leadership team went back and scanned the data to find exactly where the issues were. She found that her ELL population was showing some weakness, so immediately they put some plan in action. So that tells you that she empowers her staff to say, “Okay, where are we and what can we do as a fifth grade group, and as a fourth grade group?” Those teachers then address that, so she empowers them to take ownership of the data and to work it from there. She understands one principal can’t do it all and if the teachers don’t own the issue, they’re not going to be able to work on it as effectively, and she understands that fact. (interview, March 26, 2012)

The culture of distributed leadership at Brea relies not upon an individual but on multiple stakeholders, which is the most appropriate structure for school efficiency. The distributed leadership observed at Brea displayed the knowledge and skills necessary to exercise data-informed decision making found within learning communities. Lindsay discovered that as she implements distributed leadership practices in her building, it opens doors for sustainable, organizational, and cooperative learning, which also calls for data conversations among her faculty members. The byproduct thus provides her with opportunities to be a learning leader, as Lindsay explains:

I hope they would say they are empowered. And I always try to encourage them by asking more questions. What do you think about that, what do we need to do about this,

and what are your thoughts on how that student is performing? I always try to bring them back to, what is the data showing and what do their MAP scores says? So I am trying to reframe their thinking in terms of going back to the data to make decision. (interview, March 9, 2012)

Lindsay has established various collaborative teams that she is attempting to empower.

Collaboration is occurring in varying degrees. Lindsay feels that collaboration is something discussed, but some staff members seem to implement it their own way. The teachers have received professional development in effective collaborative practices, but Lindsay desires to take the teams to the next level of productivity. In her team meetings she is focusing on not just talking about logistics, at which some teachers already are effective, but steering those professional conversations to making decisions.

Systems approach. Brea has limited systems to use data to inform decisions. In the beginning of the year they have a data review, which Lindsay indicates is very important (document analysis, March 9, 2012). From there, some grade levels teams meet daily to discuss the students and their progress, but this is not assigned or regulated by Lindsay. The faculty meets bimonthly to discuss more curriculum issues with grade levels and intergrade levels. Once per quarter the students are administered a reading and math MAP assessment that is analyzed by grade-level teachers.

The school functions in the mode of inquiry and considers a deeper knowledge of the problem and moves to search for data and evidence. Brea performs a data review at the beginning of the year. They look to follow up on students for which they established learning targets during the previous year. During the review, they are also looking at any anomalies. They use their fall MAP and winter MAP benchmarking data to triangulate students' learning progression correlated to the external assessment data. Finally they identify students who should be receiving more supports based on student ISAT data (document analysis, March 19, 2012).

The data collection system focuses on the progress of individual students and does not rely exclusively on averaging the scores of large groups of students. They do not exclude test scores but place the traditional accountability system in context. There are district benchmarking assessments that are administered three times each year. All students were given reading and math curriculum-based measures, MAP Testing. The student scores are entered into a data spreadsheet and presented at the grade-level meeting. The student MAP scores are used along with the classroom assessments to implement individual student intervention supports (observation, March 19, 2012). But the struggle between the use of classroom assessment data and external assessment data continues to weigh on the minds of the teachers:

There are so many components to look at with reading, but literally district-wide the MAP and AIMS Web is the only data I have to use to determine reading deficiencies. And then I come to you all and we have those discussions, but really to have classroom assessment like MAP assessments, which was something that was a little more closely aligned with what we are teaching and how we are teaching. And I think that is why looking at other types of assessments that can give us classroom like data would be beneficial. Tests that are assessing the strategies that we are teaching and assessing the thinking that we are asking students to do, I think that would be a very valuable piece for our discussions, for our selections, and I think it would drive instruction. (Ellen interview, March 19, 2012)

Good, clean data are difficult to acquire, but Lindsay properly delivers data to the teachers and decision makers, and they work toward reforms based on evidence rather than feelings.

Lindsay continues to work on identifying appropriate data to analyze and to determine when these data should be reviewed. When the faculty conducts the benchmarking data analysis, the teachers are not examining the progress of every student in the grade level but those only who are at risk. Lindsay admits the analysis of data is a difficult task for her teachers:

It seems like when we reflect on the data is a point where we always get stuck. It is when we are talking about individual kids, which are usually centered on the individual goal. It is here that with all the data and all that we know about the child, we are unsure what we are going to do about it. This seems to be where we seem to sometimes stall a little bit. (interview, March 9, 2012)

Here is where the lack of common classroom assessment data hinders the collaborative practice of reflection on student learning; however, Lindsay endorses the simple collaboration of grade-level teachers to discuss instructional practices based on common assessments in order to improve student learning. When assessment data are used for inquiry-focused discussions, these conversations appear to be beneficial in improving instructional practices.

Summary. Brea Elementary School is a highly successful school, according to the ISAT testing standards, with a focus on student learning and development of the individual professionals. However, Brea is limited in a systematic approach in their use of data to affect student learning. Lindsay's focus on learning is realized by the way Brea acquires data about student learning. She encourages all stakeholders to look at the data in terms of the classroom assessments correlated to the district and state assessment data. Increasing the data capacity and the understanding of how to analyze data can reinforce or refute the assumptions teachers make concerning student learning. Student learning is a continual focus as administration and teachers dialog. Brea appears to form new high-yield, strategic decisions based on deep understanding of the school context, student needs, and student performance profile as they help maximize learning.

Guiding the learning of the individual professional, which involves distributed leadership practices, building collaborative teams that value learning, and the development of trust is an area Lindsay and her staff is developing. Lindsay desires for her staff to make decisions, but she does not feel they always do so. Building leadership capacity is encouraged by Lindsay as they review student achievement data. Collaboration is occurring in varying degrees at Brea. Lindsay feels that collaboration is something that is discussed, but then each teacher reverts back to their individual practices. The teachers have received professional learning opportunities in effective

collaborative practices, but Lindsay desires to take the teams to deeper understanding. Brea has limited systematic common small group learning opportunities. The culture at Brea promotes a philosophy of trust with each other and they do not take data personally. The trusting culture validates what the teachers want to do and must do to improve student learning.

Summary

This chapter provided detailed descriptions of the cases in this comparative case study as well as themes that emerged from the data analysis. Though the schools varied demographically, socioeconomically, and geographically, they all utilized the framework for effective data-informed leadership to focus on student learning. The three academically successful elementary schools visibly displayed the ability to use data and convert it into knowledge while monitoring state and federal mandates set before them.

The educators in the case schools explicitly centered their attention on student learning. All interviews of central office supervisors, principals, and teachers, the observations of the data teams, and the visual documentation clearly focused on learning. The deep value placed on learning had overlying similarities in each case, but the systems used varied approaches. The determined use of student achievement data continued to be the sole resource used by teachers, principals, and central office supervisors to reach instructional decisions. The more diverse the data, the deeper the conversations developed during the case study observations. The interviews with each central office supervisor and principal revealed a common focus on building teacher data capacity. This learning-focused mission was obviously a common theme in each case.

In addition to a focus on learning, each case school guided the learning of the individual professional by distributing leadership practices, developing collaborative teams, and creating a

safe, trusting environment. Teachers were encouraged to be leaders within their grade-level teams, discipline-specific teams, whole staff development opportunities, and district teams. Not all cases were uniformly similar in their distribution of leadership, but all central office supervisors and principals desired their school faculties to embrace the practice in every collaborative group. Trust was apparent in each case, and the teachers confirmed overwhelmingly that data were not used to evaluate their individual performance but instead were used to support each student and to modify instructional practices based on the student's individual needs.

The case schools used a systems approach as they made data-informed decisions. Although developed at different levels, the demand for data acquisition, reflection, and implementation was evident. Some schools incorporated several systems through creative design and others remained simple along with irregular meeting times. The more structured data analysis system at the macro and micro levels, the more focused support the student obtained based on their achievement scores. Some schools used a variety of data points and some used dual data points as they drew conclusions. One school obtained significant central office assistance to build a data matrix for each individual student. A deep systems' learning approach changes the conversations within the school as collaborative teams acquire data, participate in reflective practices, and implement plans surrounding the information to ultimately improve student learning.

This chapter examined each of the three cases in detail, recounting the environment and idiosyncrasies of each site. Chapter Five reports each of the research questions in a cross-case analysis, providing findings for each question and a comparison across the cases.

Chapter Five

Cross-Case Analysis and Findings

This chapter expands to a cross-case analysis of the three case schools in this study, noting themes that emerged from the data analysis and comparing findings across the sites. This chapter also evaluates in detail the comparisons and differences between the cases when discussing the overarching research question: *How do elementary principals influence the establishment of data-informed decision making?* To support analysis of the overarching research question, four ancillary questions were addressed:

1. In what leadership behaviors and activities do data-savvy elementary principals engage as they establish a data-informed decision making culture in their schools?
2. How do elementary principals build capacity to enrich the data-informed decision making culture?
3. How do principals evaluate the effectiveness of the data-informed systems in their schools?
4. What obstacles have elementary principals encountered when establishing a focus on data-informed decision making, and how have they negotiated through these obstacles?

Collectively the four ancillary research questions address the overarching question. As such, they include themes and issues that cut across all questions; therefore, the themes and content described in these findings may address multiple research questions in some of the narratives. For example, the fourth question addresses the obstacles encountered when establishing a focus on data-informed decision making, but additional obstacles also are noted in question two, describing actions or activities that obstruct building leadership capacity. Similarly, elements of evaluating the effectiveness of data-informed systems are incorporated into items addressed in the first research question. The collective nature of the research findings may be best understood by reading all sections and not limiting reading to the individual narratives of each research question.

Research Question One: Establishing a Data-Informed Decision-Making Culture

Research Question 1 stated: *In what leadership behaviors and activities do data-savvy elementary principals engage as they establish a data-informed decision making culture in their schools?* Data analysis disclosed the following four themes when considering the leadership behaviors and activities: (a) principals make decisions and guide discussions based and anchored in data, not just perspective; (b) data are a primary measure of student learning; (c) principals establish a system surrounding data-informed decision making; and (d) principals expect teachers to build supports for students to improve learning based on data analysis.

Principals make decisions and guide discussions based on data. Data-informed leadership behaviors of the three principals involved more than simply laying out test scores, noting areas of weakness, and mounting remedies that are indicated by patterns in the data. The three principals each are strong advocates for the use of data to reach decisions about school practices. In addition, they have extensive personal experiences using data to guide their data-informed decisions. Lindsay, principal at Brea Elementary, explained that her background helped her value data to make informed decisions:

It was really my background with discipline data. It was an interesting group of staff members who had had a very different philosophy on different kids' behavior[s] and how they should come to school. And where again the teachers were kind of inflating things, like "the student is absent ALL the time and this one has been in your office 12 times this year." And you show them, "Well, here is the data of where our biggest problems are occurring," and then getting them to the point where they were part of the solution to those problems. It was really the data that was helpful because everybody puts all their emotion into it. Being a middle school teacher myself, I know there is a lot of emotion when you are dealing with middle school kids. And with that data we were able to take the emotion out and look at things over time and break things down by grade level and sometimes by teams and saying, "Well, hey this team sent this many kids to the office, this team sent that many, what's the difference?" (interview, March 9, 2012)

Data analysis skills related to the principal's educational background and experience appears to be a critical element influencing each administrator's effectiveness in fostering a

culture of data-informed decision making. Ryan, Lakewood Elementary School principal, found that his special education background assisted him to naturally lead a school in data-informed decision making:

My training, undergrad and graduate levels, for speech pathology, whether it was hospital-based, clinic-based, or school-based. I was constantly taking data with every session I had with a kid. So you are addressing two or three specific learning targets each time, and you are literally taking hash marks or whichever system you have for yourself. IEPs have forever been driven by percentage goals, percentage increased goals, and so that was just second nature to what I did. I wasn't a classroom teacher, so I was in an environment where it was data driven from the beginning. (interview, January 27, 2012)

Brendan, principal of Costa Mesa, also remarked about his data-informed decision making influences:

I would say early on as an administrator I was influenced by a lot of people talking about formative assessments and using them to monitor student learning. And then, just because of the kind of district that we are in, we have a lot of support in our own district through a lot of the administrators or the professional development that they would bring in. I remember the first question our new superintendent asked us: How do you use data to inform decisions in your own school? We had to be prepared to answer that. (interview, February 6, 2012)

All three principals pointed to analytical, mathematical, and/or research backgrounds that influenced their ability to foster a culture of data-informed decision making.

The principals in these cases found that the key to fostering a data-rich culture is to involve the faculty extensively in data conversations. Because teachers are the main users of data, their involvement is crucial for success. Profound changes in the professional norms of the teachers and the principals were essential to moving to data-driven learning systems. The principals modeled inquiry to enable the creation of a data culture. This cultural shift of using evidence to make informed decisions also made the individual teachers' private practices more public. This deprivatized practice created an uncertainty that was balanced with a supportive and

nurturing environment (Lakewood observation, February 29, 2012). Ryan described his involvement in the dialogue and strategizing for student support:

We may also have one or two individual problem-solving sessions that are scheduled. Parents are usually invited to that, or at least by conference call. A quick review of everything that has been done at the grade level, through small groups and things like that, we review what kind of data we have on those interventions so far, what we are seeing with our reading assessment. After all that help, and the student is still flat lining or maybe made a little bit of progress, and what do we need to do next? (interview, January 27, 2012)

Culture-building capacity is something that Lindsay (Brea Elementary) and her assistant principal have been discussing a lot this past year. In terms of where they wanted the culture of data-informed decision making to be, they looked at some surveys to gauge and assess the teachers' perceptions and feelings about data usage. Lindsay found the teachers were analyzing data and naturally incorporating their findings into their daily instructional practices. For example, I overheard a conversation Ellen was having with Lindsay, which revealed the culture of modifications based on student achievement data:

And according to the data, the bottom three students, they are receiving interventions with me. We are doing Read Naturally so we have the writing component, the comprehension component, and the fluency component. We are going to transition to doing more literature circle work with them, where they are working with a novel study, but we have chosen a novel that is at their level so their intervention, I think, can more closely match what is occurring in the classroom and what they are being expected of in the classroom. (observation, March 19, 2012)

Lindsay encourages her teachers to look at multiple forms of data to inform and modify their own instructional practices. Not only is she using data to inform her decisions in the building but she also is promoting data use for her teachers. By making data transparent and modeling its effective uses, she is displaying the practices of an effective learning leader. Using data to inform building-wide decisions also helps teachers to replicate its usage in their

classrooms. Once she receives her district data, Lindsay immediately gives it to the teachers to analyze the information and translate their findings into classroom instruction.

Making informed decisions and differentiating instruction in the classroom based on that data are some of the things that Lindsay (Brea) does to create a culture of data-informed decision making. In similar ways, Ryan (Lakewood) and Brendan (Costa Mesa) also promoted data usage in their schools. The case studies promoted a data culture as one in which teachers and administrators work together in a community of practice: trusting data, focusing on results, and engaging in using data for systematic reflection and planning. Fostering this type of culture of data-informed decision making alters the collaboration and practices of all stakeholders.

Data are primary source of information. In each of the three case sites, strong central office support from the principal's supervisor was readily apparent. Each principal has individual meetings with his/her central office supervisor specifically centered on school-level student performance data. Information attained not only through the senses but also through various instructional activities, reflective practices, and investigation or systematic inquiry was observed at these three case sites. The dialogue between the principal and his/her site supervisor provides evidence that a structural system is in place. The depth of the data dialogue can either catapult the educational organization forward or bog the users down. Brenda (site supervisor) explained her data dialogue with Brendan (Costa Mesa):

The first question is, as you are looking at mid-year data for kindergarten through fifth grade at each level, "What are the strengths and weaknesses you saw in reading and then the same thing in math?" And then I ask about teacher comparisons, either a teacher that is just so above or a teacher that is way below where the other efficiency levels would be. And then I ask how he would use their data with their staff. Was it grade level meetings, was it whole staffed, did they have individual meetings? And then I always end with, so how do we make this complex process to be user friendly? (interview, February 28, 2012)

The ability to successfully connect school improvement activities to data use is dependent upon the leadership skills of the building administrators. These effective principals possess the competencies and characteristics that inspire others. My observations across the three school sites confirmed that teachers take pride in working with these administrators and eagerly support their initiatives. The emphasis on data usage as the primary source centers on the principal's influence to move the teachers' responsiveness to student learning. Brendan discussed his insistence in data use:

So, from my perspective as a principal I'm not the one who is in the classroom with the kids. I'm not the one who is always giving them a classroom-based assessment, but we do have a number of assessments in our district. We have our own local assessments, and we certainly have some mandate of assessments we need to give. It's being able to get those results as quickly as possible, analyzing them, and then making decisions based on what the teachers need to do. (interview, February 6, 2012)

The three learning leaders aspire to establish a culture in which everyone learns, continues to learn, and supports the learning of others through the use of data. The emphasis placed on data as the primary source of information assists with the identification of best instructional practices and ensures the implementation of effective school reforms by identifying successes and gaps in student learning. The principals advocated for comprehensive use of local data that allows for a systematic approach to whole-school reform. Lindsay (Brea) demands that data use is vital for student achievement growth. There is a sense of urgency to build effective data capacity throughout the school year without waiting until the results of the state assessment to indicate each student's proficiency level as observed in a data focus group teacher meeting:

Reviewing the data displayed on the board in front of you, I want you to think are your students growing, or are you seeing growth that you are expecting, or are you seeing some things that you want to talk about in the data that might indicate some topics or holes. How the students are maybe similar to each other, how are they different? And then once we have talked about those types of patterns, let's talk about what this is telling us about our interventions. (Lindsay, interview, March 19, 2012)

The three elementary principals have successfully broken through the existing teacher norms and school cultures to promote effective and continuous data use. They have moved away from a closed classroom system and to an open display of learning. These effective principals promote systems characterized by focusing on learning, teacher collaboration, and building leadership capacity.

Systems are established surrounding data-informed decision making. Within each school, systems and tools were put into place to support the collection and analysis of data. The most powerful data tool that helps teachers make informed decisions was displayed in Costa Mesa Elementary school. The Director of School Improvement, Tammy, developed “The Beast” data system several years ago to help principals make informed decisions based on high-stakes testing (document analysis, February 6, 2012). The two other schools amass student achievement data at the building level, but they do not have a triangulated spreadsheet comparable to the one developed by Tammy. Brendan, the Costa Mesa principal, stated that Tammy provides his teachers with a Math Beast. The spreadsheet will include a triangulation of data from classroom assessments to district assessments to high stakes longitudinal data to focus on the students who are in need of further supports. Brendan said, “We’re learning how to look at that math data and make decisions” (interview, February 6, 2012). One teacher, Joan, indicated:

We can sort it by subgroups. For example, I wanted to see how our English Language Learners were doing in math. So she [Tammy] was able to give us that sort. She was able to sort by questions that they did so we were able to identify and actually help with staff development based on the information. (interview, January 12, 2012)

The teams at Costa Mesa find themselves examining instructional practices based on informed evidence that can only improve student learning.

Through my observations at Costa Mesa, I found that knowledge is attained not only through the senses but also through various instructional activities, reflective practices, and

systematic inquiry. The ability to harness information concerning what is happening within the school and converting it into knowledge while simultaneously monitoring external forces is a monumental task for Brendan and his staff. He shared:

So I guess it was more of just jumping in and trying to learn as much as I could about it and then responding to what we are doing in the district and I now have been principal for 12 years here at Sandburg and I just think the experience of where I am now is a completely different place than where I was 10 years ago in that whole area. (interview, February 6, 2012)

Lakewood Elementary School functions in the mode of inquiry and considers now a deeper knowledge of the problem and move to search for data and evidence. Their data collection system focuses on the progress of individual students and does not rely exclusively on averaging the scores of large groups of students. While not excluding test scores, they have elected to place the traditional accountability system in context. There are district benchmarking assessments, which are administered and scored a few times each year. The student scores are entered into a data spreadsheet and presented in a table to identify the various student supports necessary (Lakewood observation, February 29, 2012). Teachers saw correlations between real-time student performance on in-class curriculum assessment data and performance on the district testing, as Katie explained: “Or be able to use other assessments that we know that would give a better picture of what the students can understand or what they know in math” (interview, February 29, 2012). Good, clean data are difficult to manifest, but if properly delivered to the teachers and decision makers, reforms can move forward based on evidence rather than hunches.

Brea educators conduct data review as the school year begins, following up on students who experienced learning difficulties the previous year. They also use their fall and winter MAP benchmarking data to determine how students are progressing. They also identify students who should receive additional supports based on ISAT performance. As the school year begins,

students are identified who need initial intervention support and those who need to continue it from the previous year. In subsequent meetings, the teachers continue to analyze student learning data to determine how their students are progressing (document analysis, March 19, 2012).

Systems learning promotes changes in the dialogue within the school, which I observed during collaborative team meetings at each site. Teachers participate in reflective conversations and implementation plans surrounding the information. The faculty at all three schools appear to have a collective understanding of what data are important to examine and when they need to analyze it. When they conduct the benchmarking data analysis, they are considering the performance of each student in each grade level: investigating how they have scored and whether their scores align with their performance in the classroom. They determine if they need to make major changes with learning approaches; for example, a student who needs additional support may be placed temporarily into guided reading group (Lakewood document analysis, February 29, 2012). The School Improvement Teams in each school meet throughout the year. The collaborative practice of using common assessment data displayed best practice instructional strategies.

Supports are designed to assist student learning. The faculty in each school not only use test scores provided by the state and district accountability systems but also go beyond student achievement data to develop much deeper forms of evidence-informed practice (observations, February, 2012). Ryan (Lakewood) has encouraged his teachers to go beyond the use of one single data set to gain a more comprehensive understanding of each child's strengths and weaknesses: "Different standardized measures the districts have used from the ISAT to the ITBS, but some of those have not been enough information for my teachers" (interview, January 27, 2012). The teachers are drilling down further as one piece of data shares one concern but

multiple data sets diagnose more accurately. Each principal's learning-focused leadership encourages the use of various forms of data as a main medium of leadership work and a continual conversational point in their interactions with teachers, each other, and stakeholders.

Student learning is an ongoing focus of principal and teacher dialogue. For example, Costa Mesa appears to form new high-yield, strategic decisions based on deep understanding of the school context, student needs, and student performance profiles as they help maximize learning. Furthermore, the learning-focused leaders encouraged teachers, support staff, and specialists to focus on all students, regardless of the challenges they face. Implementation in these highly reliable schools regarding data use established formal structures that were appropriate for their own context. Brendan provides professional learning opportunities for his teachers to learn protocols to implement new practices based on student achievement data. Systems learning within the school setting are dependent on these professional learning opportunities to build capacity under his strong data-informed leadership. Daily Five, which is a warm-up exercise the students perform at the beginning of each class, provides an example of an instructional practice that was implemented at Costa Mesa based on data. Sue explained:

An example of that is what we are using with the Daily Five, and looking at how the classrooms did last year compared to the classes that did not use Daily Five and seeing that they were quite a bit of results there. So then, our team decided well we needed to be all doing that. The teachers with the Daily Five are having ongoing conversations about how that is going and then looking at our data this year to see if those results are still happening again. (interview, February 28, 2012)

Like the Daily Five, Tammy helps teachers analyze data to implement reading strategies for struggling readers. Their fluency data are color coded, based on projected high-needs state assessment scores. She then tags the students in The Beast because, for example, some students may be reading at a slower pace but have acceptable comprehensions scores. She tags students based on low frequency and low comprehension, and a total is provided to the teachers at the

bottom of the spreadsheet of students who are in the low category. Tammy also provides internet links for teachers to access to consider different instructional strategies to support student achievement gains. Brendan (Costa Mesa) is proud of his teachers' decisions to implement specific math instructional practices based on the data. He is asking the teacher teams what additional information they would like to use to reach informed decisions.

A closer look at Costa Mesa's student learning focus centers on a teacher who formerly was the reading specialist at Costa Mesa. When Brendan would enter her class, he would observe quality reading instruction:

She knows how to conference with students. She knows how to lead a solid guided reading group. She has taught her students how to become good, independent readers. They are choosing the right books, and they are engaged with the text. (interview, January 12, 2012)

The student learning data revealed that she also has a group who is performing very well, at or above her school's and district's average (document analysis, January 12, 2012). This drilling down to know which students are progressing faster is an outcome of their culture centered on data-informed decision making.

The three principals in this study came to believe that their schools should develop a culture that sustains a community of student and adult learners, and they must organize their schools, classrooms, and learning environments strategically. The principals and teachers engage in dialogue about student learning. Each school invents new high-yield, strategic supports for struggling students based on deep understanding of the school context, student needs, and student performance profiles as they work to maximize learning. Teachers discuss how they can break the learning standards in each subject into learning targets that are student friendly and measurable. They share these targets with their students on a daily basis and then give an informal assessment almost every day to determine which students have mastered each of the

targets and to identify subsequent learning activities for those students who need additional support.

Research Question Two: Building Capacity to Enrich Data Culture

Research Question 2 stated: *How do elementary principals build capacity to enrich the data-informed decision making culture?* Data analysis revealed the following four themes:

(a) teachers need to be empowered because the task is too large for the principal to accomplish, (b) teams of teachers and resources staff members need time during the day to review student learning data as they make collaborative informed decisions, (c) principals and teachers reflect on data to expose their own practices and encourage some difficult discoveries that promote necessary changes, and (d) teachers and staff need to be provided with professional learning opportunities without the principal forcing their development.

Empowering teachers. The distributed leadership model employed in each school empowers stakeholders to increase problem solving, innovation, and collaboration. The culture of distributed leadership relies not upon an individual but on the entire school unit, which is the most appropriate structure for leadership expertise. Distributed leadership observed in the case studies displayed how the knowledge and skills necessary to exercise data-informed leadership was situated within learning communities. Ryan (Lakewood) has established various teams at Lakewood that are empowered to drill down into their data based on their focus. The instructional leadership team and the PLTs (Professional Learning Teams) do not meet in isolation of the other teams, as one teacher stated, “When Ryan was here earlier, we were telling him we are going to design an intervention for some students. He was able to support us in that

way while also providing us with more options to support the intervention” (John, interview, January 12, 2012).

Brendan (Costa Mesa) has the leadership capacity to involve teachers in leadership roles beyond the boundaries of their classrooms as they work to transform the school culture from a workplace into a learning place. Brendan brings teams of teachers together as they work with the district data person, Tammy. Brendan also works alongside his teachers, asking, “Show me how you’re using this data” (observation, January 12, 2012). Learning alongside his teachers and being part of that process is an attribute that Brendan exhibits. The direct effect of building teacher leadership capacity is that the teachers are taking the initiative to examine data without waiting for prompting from their principal. Brendan said, “They are developing as leaders. So they really have to be empowered; if they don’t feel empowered then it’s not going happen the way that we really want it to happen” (interview, February 6, 2012).

The principals discovered that implementing distributed leadership practices opens doors for sustainable, organizational, and cooperative learning, which subsequently calls for data conversations among their faculty members. Each school leader created learning communities in which teachers share effective instructional practices based on data as a form of distributed leadership. These distributed practices incorporated three phases: (a) treading cautiously through the establishment of a vision and selection of participants, (b) widening the scope of leadership through capacity building, and (c) standing back to empower the group.

Teachers need to time to collaborate. Although each principal provided time for teachers to meet, common planning time for deep collaborative dialogue varied between each of the schools. Whereas within the secondary schools, administrators can build common planning time into the daily school schedule, elementary schools do not have this ability, with the

exception of voluntary teacher lunchtime discussions. Therefore, time for collaboration at each school was creatively designed by the teachers and administrators.

Common planning time for teacher collaboration at Lakewood was one aspect observed during my site visit. The teachers were meeting on a Wednesday morning for 60 minutes before the school day began, on a “late start” day for students. Ryan is creative when establishing collaboration time: late start days, early release days, and bimonthly teacher-only work days. Ryan has found that least effective use of collaboration time is during lunch periods, before school, and after school, so these are infrequently used. Lakewood teachers meet weekly for discipline-specific collaboration, monthly for grade-level collaboration, bimonthly for whole-faculty collaboration, and quarterly for school improvement collaboration. Because of their collaborative culture, Ryan and the teachers also find that their daily lunchtime conversations are continuously centered on some part of the cycle of inquiry.

Brendan and his Costa Mesa staff have not yet established systematic daily or weekly collaborative times for grade level teachers. The school PLC team meets monthly, but he feels the progress is slow at this point. Brendan has helped to create shared school norms with the expectation that teachers meet regularly as grade-level teams or as teams for individuals with similar jobs. One teacher from Costa Mesa said, “I love my team; we know what each other are teaching and testing. We collaborate on students and curriculum” (Sue, interview January 27, 2012). In order to establish quality daily or weekly collaborative meeting times, Costa Mesa would need to build time into the master schedule.

Lindsay and her staff at Brea Elementary School have established various collaborative teams that she is attempting to empower to drill down data based on their focus. Collaboration is occurring in varying degrees. Lindsay feels that collaboration is something talked about a lot, but

then everybody takes divergent paths to meet this goal. The teachers have received professional learning opportunities in effective collaborative practices, but Lindsay desires to take the teams to a deeper level of practice. In her team meetings she focuses on not just talking about logistics, at which some teachers excel, but also steering those professional conversations to become grounded in student learning growth.

The hindrance at Brea Elementary School is the lack of systematic common small-group learning opportunities. Lindsay holds bimonthly faculty meetings throughout the year that address curriculum changes the state of Illinois recently implemented. Although common grade-level planning time is not permitted within the daily schedule due to union agreements, it sometimes emerges organically within several grade level teams. Other collaborative meetings are held each quarter, with Lindsay arranging for substitute teachers paid through district funds. Teacher in-service days occur three times each year, although they are not necessarily used for teachers to examine student achievement data. Lindsay explained, “I try to make the most I can out of our staff meetings, our released days, and our school improvement days to get more collaboration. The teachers are now asking me for more time, which is a good sign” (interview, March 9, 2012).

Exposure of individual practices and hard discoveries. The three principals find that as their teams of teachers engage in ongoing reflection, they are forced to consider their teaching and learning practices and their impact on student learning. These focused and productive conversations ensure opportunities for teachers to facilitate student growth. It appeared clear that trust was essential as the principals focused on student performance and provided an open environment for engaging in strategic problem solving. The significance of trust in Lakewood is undeniable as the data-rich culture is established. When the three staffs came to believe that their

schools provided a culture that creates and sustains a community of student and adult learning, then they organized their schools, classrooms, and trusting environments strategically. Observing a data meeting at Brea, I noticed the teachers openly dialogue about student learning:

I think Sam, the reading resource teacher, was getting Sally before Jimmy. And Shelly said that she wanted to see what Jimmy's Rigby level was because she says that she thinks he's higher because G was too easy for him. So, I don't know if we can do an updated Rigby level to move Jimmy in with Sam before Sally. (observation, February 29, 2012)

The Lakewood faculty and administration appear to form new high-yield, strategic decisions based on deep understanding of the school context, student needs, and student performance profile as they help maximize learning. Furthermore, the learning-focused leadership of the principal encourages all stakeholders to focus on all students, regardless of the difficult decisions and challenges the students may face. Ann Elizabeth, central office supervisor for Lakewood, remarked about the core value of open decision making centered on student learning:

I think that using assessment data is written right in there as part of our core goals. One of the things that we're looking at is a data warehousing system, and that is part of our goal: to be able to combine the data and look at all different pieces because the focus on learning and with the diversity of the learners, we want to make sure that we have got a wide variety of data so that we are not making a decision based on one small piece. (interview, February 15, 2012)

Because teachers are the main users of data, their involvement is crucial for success. Profound changes in the professional norms of the teachers and the principal were essential in order to move to a data-driven learning system in each site. The formation of commitment and trust is an underlying philosophy behind the established culture of Costa Mesa Elementary School. Because Brendan has served as the school's principal for 13 years and has worked to build his relationships with staff, there is a strong level of commitment and trust.

The significance of trust at Brea also is undeniable, based on my observation of a data meeting. Lindsay promotes a philosophy of trusting one other and to not take data personally. This approach of data transparency and objectivity validates what the teachers want to do and must do to improve student learning. During my observation of a fifth-grade data meeting, a student achievement growth measure from their MAP assessment was openly projected on the screen. Displayed next to each student name was the teacher's name. I asked each grade-level teacher how he/she felt about their names being displayed next to student achievement. Their responses follow:

Well, I think trust is the foundation. I think it has taken a long time to get there. I mean we have started with PLCs saying the students are kind of everybody's. And it was a long process of buying in, and there is not this idea of "Oh, they're Karen's kids, but they are all of our kids." So, I think that is where it builds. (Karen, interview, March 19, 2012)

If you look at the students who were at the top of the list, they were mine, but all of us know that there are special needs involved with some of these. We understand that each of us have a different make-up of classes and it is just that that is the way it is and it is okay. (Ellen, interview, March 19, 2012)

I think that we are working on developing trust and even further is this kind of community where, "I am struggling with this student. What else can we do?" And being able to throw it in there and having everybody else assist is great. (Jim, interview, March 19, 2012)

I know as a first-year teacher I have been able to come to all of my fifth-grade colleagues and say that I have no clue, what should I do, and they help. So it is an important piece as we continue to look at student achievement data. (Katie, interview, March 19, 2012)

The formation of a building-wide culture of trust is a critical part of data-informed leadership. Lindsay desires to promote approachability so that teachers can talk about things freely. Lindsay discussed her beliefs about trust:

If they are going to come to me and say, "How can I improve this?" I am going to sit down and help develop a plan with them. Even though I evaluate them, I am thrilled when they come and say, "I want to improve this." That is what they should be doing. They can talk with each other, so I think that building trust means that you show that genuine desire to improve and that desire to improve is an admirable thing. It is not the

idea of coming to someone and there is a tradition of punishment for that, that there is a tradition here of respecting a teacher's desire to improve in an existing situation. (interview, March 9, 2012)

The three principals' mindful data leadership approaches encourage the faculty to play with ideas, create novelty in their classrooms, feel safe to take reasonable risks, experiment, and be resilient. They appear to have profound effects on each school faculty's mindfulness and the establishment of trust as they use data to make informed decisions. Trust is essential if the principal wishes to create a safe, supportive environment for engaging in successful problem solving.

Professional learning opportunities. A critical aspect to establish a data-rich culture is the principal's ability to support and sustain an environment that encourages staff and other leaders to turn to professional learning opportunities to build data capacity, ask questions of data, reflect on the data's meaning, and take action that references the data. These three principals practiced effective leadership as they involved teachers in leadership roles beyond the boundaries of their classrooms and as they worked toward transforming the school culture from a workplace into a learning place. A few years ago after receiving training on professional learning communities, Costa Mesa's staff abandoned their traditional school improvement planning team and developed a different kind of leadership approach focused on learning. Brendan recalled when the newly hired superintendent asked him to be prepared to answer the question, "How do you use data to inform your decisions?" Brendan attempts to learn as much as he can about data-informed leadership and respond to current district initiatives.

As an experienced principal, Brendan feels he is in a completely different place than where he was 10 years ago regarding his skills as a learning leader. The teachers are leading professional learning opportunities that Brendan establishes throughout the school year. Brendan

brought Tammy, the director of school improvement (data guru), to speak with his school-based PLC team. She trained the one teacher from each grade level on the use of her data analysis tool, and then these teachers were expected to provide this training in their grade-level meetings (document analysis, February 24, 2012). Once the teachers were collectively trained in the analysis and use of data, Brendan was able to simply go around and visit with each team as they implemented modified practices.

Lindsay leads the professional learning opportunities for her staff. The faculty meets bimonthly to discuss more curriculum issues with grade levels and intergrade levels. Once each quarter the students are given a reading and math MAP assessment, which is analyzed by the grade level teams. Effective data-informed decisions depend on continuous acquisition of data, reflective practices to monitor progress, and implementing a strong action plan founded in data. The implementation of a data-rich culture demands that each principal take a systems learning approach within the organization including professional learning for teachers to acquire skill-based student achievement data, reflection on the data, and strategically develop an action-oriented plan.

Systematically, Lindsay continues to work on a clear vision of what data analysis should involve and when those conversations should take place. When her faculty are engaged in benchmarking data analysis, they are not looking at every student in the grade level but are targeting those who are at risk. Lindsay admits that reflecting on the data is a difficult task for her teachers. The faculty at Brea reflects on the available student learning data (document analysis, March 19, 2012). During an observation, I overheard Jim talking with another teacher about his use of data:

At the beginning of the year, what I did was to set goals based on the ISAT data. I began to look at all those different areas on the chart, and it gives you these skills. Well, what I

did is when I went through I said, I have to practice number sense ahead of time. And so with number sense, I looked and saw where the students' bold areas were and what their italicized area was. What was each student's strength, what were the areas I can call a weakness, and an area that they should work on? And the student and I looked at both of them because we said we wanted to keep the bold going, but then we just talked about things we were doing in class, and at this point of the year [March]. Now what things have we done and have we been doing this year. And I look at the list to make sure I have an idea, and then I say we are ready for the students to set their goals. I then have the conversation to alleviate some of that stress for them. (observation, March 19, 2012)

The lack of common classroom assessment data hinders the collaborative practice of reflection on student learning, and each principal believed that their data teams could continue to be more effective with collecting and using data. The systematic approach of reflection and implementation on data involves shared group norms, collaborative protocols, and clear rationale to improve the data-informed process. Systematic reflective practices require thoughtful direction from learning leaders, and eventually distributed leadership practices will provide effective systemic strategies. The data-rich informed faculty avoids adopting simple solutions based on superficial data; rather, they devote time to discern the root causes of students' achievement gaps. Visible in the collaborative meetings at each elementary school was less conversation dedicated to criticizing the students and blaming parents and more time spent systematically ensuring student learning improvement.

Principals in this study have empowered their respective faculties in order to direct their own learning. They encourage all staff members in the use of effective data-informed decision making and maintain a collaborative team structure. Data use assists with the identification of best practices and ensures effective school reform by identifying successes and gaps in student learning. They are mentoring teachers about learning communities and giving them the support and guidance to be efficient and effective. The collaborative practice established at each school allows best practice instructional strategies to surface most often to maximize student engagement. Each school endorses the collaboration of grade-level and discipline-specific

teachers to discuss instructional practices based on common assessments in order to improve student learning.

Research Question Three: Evaluating the Effectiveness of the Systems

Research Question 3 stated: *How do principals evaluate the effectiveness of the data-informed systems in their schools?* Data analysis uncovered four themes: (a) at the beginning of the academic year data review is vital, as the staff follows up with students from the previous school year; (b) progress monitoring of student learning through assessment data is systematically developed by teachers and resource personnel; (c) common classroom assessment allows grade-level teachers to engage in dialogue regarding effective teaching and learning practices that may or may not have occurred across their various classrooms; and (d) the leadership team examines student learning data summatively at the end of the year.

Data reviews at the beginning of the year. All three schools have multiple systems to use data to inform decisions. At the beginning of the year they each have a data review, which the principals find very important. Lakewood assembles a school improvement team that meets initially, and grade-level teams subsequently meet weekly to discuss the students and review their progress. The math, reading, social studies, and science teams assemble monthly to analyze data vertically through grade levels. The school functions in the mode of inquiry and considers now a deeper knowledge of the problem and move to search for data and evidence. Lakewood performs a beginning-of-the-year data review and subsequently use fall and winter benchmarking data to determine how students are progressing. They identify students who should be receiving more supports based on the information from the fall meetings (document analysis, February 29, 2012).

Costa Mesa teachers gather at the end of the summer, just before the start of the new school year to develop school-wide goals to improve student learning (document analysis, February 6, 2012). The staff members hunt for data that clearly displays proficiency levels per disciplinary content strand and ways to monitor growth as instruction progresses for each student. Brendan confirms the collection of data: “We do have a number of assessments in our district. We have our own local assessments, and we certainly have some mandate of assessments we need to give” (interview, February 6, 2012).

Monitor the progress of student learning. At Brea, teachers examine multiple forms of data to assist them with modifying their instructional practices. Lindsay and her teachers use this data to test their assumptions about student achievement growth. Helping teachers to understand what the data means, including both quantitative and qualitative elements, is how Lindsay facilitates the monitoring of student achievement growth. The faculty appears to implement data-informed decision making, using school-wide processes to strategize about building problems and drilling down to the individual student level to make instructional decisions.

Teachers at Brea have the knowledge to establish student outcomes and monitor progress using standards-referenced assessment to inform instructional practices, but aligning the classroom assessments is a level yet to be developed to the exemplar level (document analysis, March 19, 2012). Ellen remarked on the next steps in monitoring student learning:

I think where the challenge lies is the lack of a common assessment besides our MAP testing. I feel like that is driving everything right now, and with all the different strategies and all the different ways we are approaching reading, I would love to have a classroom tool to compare to it. I would love to have a conversation with my peers about how the class assessments compare and is another data tool right in front of us and it is something we can dissect and think about, and how we are approaching it. It is a hard struggle to not have anything besides MAP scores. (interview, March 19, 2012)

These three learning-focused leaders understand each teacher is a learner who desires feedback on performance, which is essential to the learning process. Lindsay provides substitute

teachers for her teachers so they may meet and improve instructional practices based on student learning outcomes. For example, Danielle, the student services coordinator at Brea Elementary school, opened a faculty meeting with a conversation about student learning:

First, we are going to start with an activity to continue the discussion we started at our fall data day about the differences between interventions, accommodations, and modifications. And then what we are going to do is start creating a list of what your practices are in each of those areas, because one thing that we had talked about at the fall data day was that you wanted to start creating a menu of interventions based on the student data. So, the place to start is to talk with each grade level about what are you doing for interventions, what typical accommodations do you do in the classroom, and what modifications do you do to move student learning. (observation, March 19, 2012)

Ryan's focus on learning is demonstrated through Lakewood's analysis of classroom assessment data. He encourages his teachers to review their data on classroom assessments and to correlate the data with the district and state assessment data. Increasing teachers' data analysis skills and deepening their levels of understanding of how to analyze data can assist them with examining the assumptions they make concerning student learning. Ryan noted his realizations about developing a culture of data analysis:

As leaders we have ideas and we have thoughts and our gut tells us things about what needs to happen. Basically what the data does for the teachers is that it helps them validate and tell them which way is and isn't the way to go. As leaders we need to, in order to think effectively, we have to have proof at times, that the direction we're headed is the right direction. We want to know that what we are doing for kids is the best that we can do and the best that we have to offer. (interview, January 27, 2012)

The use of common classroom assessments. The current age of accountability demands high test performance in schools, which requires Lindsay and her staff to be involved in the leading of student learning efforts. This obligation involves the development of effective common classroom assessments, which is not an easy task, as the conversations shift from external assessments to classroom assessments. Lindsay explained that her staff members still need to enhance their assessment skills:

We are trying to draw classroom assessment discussions to the point where they can be really valid to determine if the student is making gains or making progress. My reading specialists here have been really good at that because they have different assessments to talk about: where our kids are performing and what interventions are effective or not effective. And what do we need to do in the case that it wasn't? But there is still a lot of times where I feel that all the heads in the room are foggy, and I get that it's a confidence level and a systems issue. (interview, March 9, 2012)

Lindsay leads her teachers to analyze their students' classroom common assessment reports in teams and to design interventions based on the data. Teacher learning was apparent as they drew conclusions based on what they were seeing throughout a grade level (observation, March 19, 2012). Past the midpoint of the year, Lindsay encouraged them to start thinking about the data a little differently; she wanted them to think about the level of student learning. Were they seeing growth that is expected, or were they seeing some holes in the data that they wanted to discuss? She prompted them to ask questions such as: How are the students similar to each other, and how are they different? Once they examined the patterns, she encouraged the teachers to strategize how they could establish several student-level interventions.

At Lakewood, Ryan's leadership for learning approach also reveals a focus on common assessments to evaluate the instructional practices as students reach ambitious targets of performance. Documentation of assessments and an observation revealed continual building capacity toward assessments:

And the teachers have the other tools; they have daily assessments and chapter assessments. They just need to look at how they are going to use those. Instead of just using for whose getting an A or B or a check or check plus, what is it telling the teacher about the kids that didn't get there? It might take a little more time than they are accustomed to but the teacher is going to have to go back and look at a student and see where the student has gaps. (Lakewood observation, February 29, 2012).

Leading the student learning effort involves the development of effective common assessments.

Ryan indicated:

They're going to have common assessments, and they will be looking at that data together. And, if I'm looking at those two classrooms, and their kids are achieving equally well, my bias towards maybe having more structure or less structure is kind of taken out of the equation. So, I can be more flexible with instructional practices. (interview, January 27, 2012)

Leadership team summation of year's student learning effectiveness. The original intent of the standards-based reform policies was to improve the quality of learning for all students, but interpreted too literally, these reforms easily can push these principals to become preoccupied with achievement scores rather than with a broader concept of learning and learning improvement. Brendan candidly stated, "A couple teams were not comfortable reflecting on the data yet, but they at least knew how to open it up, and they knew how to identify some things they were looking at" (interview, February 6, 2012). Brendan feels his Costa Mesa teachers could still be more effective with reflective practices:

By kind of forcing the data, in other words, "Today is a day where we are going to look at math. Let's make some decisions about your next unit," I believe it certainly helped in that unit but it is also helping teachers in terms of developing the skill of looking at data. I just met with a teacher, for example, and she has as part of her own professional growth plan some literacy goals. She said that her students are really responding well and learning well. She didn't give me any data, although we have something called the achievement series, so I can go onto a website and I can look at the achievement series and we also put our local assessments data in there, and the students just took local assessments in January, in language arts, writing, and in math. (interview, February 6, 2012)

At the macro level, Ann, the central office supervisor of Lakewood Elementary, said, "The overall effectiveness is in our student achievements." At the more micro level, however, a teacher at Lakewood balanced the perspective:

We need to see if the kids are getting what they're supposed to: Did they learn it, and can they demonstrate it? One particular student looks like he is very proficient, but he doesn't understand anything that he is reading. I gave him an assessment just to see and his frustration level was at high for comprehension. One thing that is consistent with all of his comprehension passages is that his vocabulary is really weak, so that is where we focus for him. (Jill interview, February 29, 2012)

Productive teams review results of student achievement based on periodic common assessments and focus their reflective conversations on improving teaching and learning practices. The teams at each site examined instructional practices based on informed evidence that can only improve student learning. Faculty members at all three elementary schools established systematic uses of data to inform decisions. Teachers at each site have the knowledge to establish student outcomes and monitor progress using standards-referenced assessments to inform student learning and validate effective instructional practices.

The principals initiated a focused improvement plan to evaluate the effectiveness of the data-informed systems in their schools. The principals and their staff members developed a focus on learning. As the principals' supervisors held them accountable for using data to show how student learning is progressing, they too encouraged their teachers to use data to inform the effectiveness of their instructional practices. With each principal's encouragement, teachers continually examine how they can break down the learning standards into learning targets that are student friendly and measurable.

Research Question Four: Obstacles Encountered

Research Question 4 stated: *What obstacles have elementary principals encountered when establishing a focus on data-informed decision making, and how have they negotiated through these obstacles?* Data analysis disclosed the following two themes: (a) principals will have staff members who innately resist the notion of being data driven because they feel student learning is not quantified by a number, and (b) there will be difficulties designing solutions to the revealed deficit when working with limited time and resources.

Staff who innately resist the notion of being data driven. Principals must be careful not to fall into a deterministic mindset based on data. The three principals felt the current accountability system places extreme pressure on teachers to perform without failure. ISAT data may be enticing, but the current method of assessing Annual Yearly Progress (AYP) provides only a marginally reliable view of a school's overall proficiency because it is only a one day snapshot. Ryan and his staff validate student learning by going beyond a single assessment of student achievement scores, as Ryan reflects:

I would say with both faculties that I've worked with data-informed decision making, the one challenge that principals should be aware is that you will have people that innately resist the idea of being data driven. "Kids aren't numbers;" you'll get that sort of response from some people that "that's just not how I work. That's not how I think. I was never good at math. I'm not good at statistics; I can't do that." But it's like I said, it's really not about statistics. If you can read a graph and chart your own kids' progress that's really what it's all about, and you don't have to go beyond that. But it does take some convincing; it does take some walk-and-talk with people and showing them how and what you are really talking about. (interview, January 27, 2012)

The use of data is complex and should be used with caution by educational leaders.

Lindsay found her teachers sometimes do not always believe in the data. She stated, "They have made decisions based on other things. They know their kids, and they're right; they do know their kids" (interview, March 9, 2012). The teachers at Brea Elementary School discuss some of the challenges with using data:

Well, it could have been acquired on a bad day, and it may not be all that accurate. We aren't quite sure how these winter's scores were normed, so you can't just take the number for what it is. You have to temper it with what they are doing in the classroom and what they are doing in other areas, but I think it is a good way to look at data all the time. (Karen, interview, March 19, 2012)

We are just being handed a particular set of data where we can't say one way or what is going on with these scores, so we have to watch it and make sure that this isn't a trend one way or another that is going to be taking place over time. But, then you have to take it back to the individual student. This is a piece. This might be a red flag; let's see if it really is a red flag. (Katie, interview, March 19, 2012)

To overcome the challenge, Lindsay desires to add more protocols to prompt data conversations and to attend more data collaboration meetings. She is seeking additional ways to have staff collaborate both at the grade-level and the intergrade-level team meetings. At that time, the teachers can discuss student performance data and, more importantly, show how student learning is progressing.

These principals consider data-informed leadership an ethical responsibility when it comes to expectations for all, and they expect their teachers to provide multiple learning opportunities for all students, no matter what their data points indicate. The caution observed was to institute fair and unbiased policies that allow each child equal access to learning opportunities within the school, regardless of what the data recommends. Ann, the district supervisor of Lakewood, cautioned users of data:

We have to look to make sure our community members who are not in education can understand our data. First of all, our teachers need to understand it, our Board of Education needs to understand it, and then our community needs to understand it as well. So, it has to be something that is not too intricate or that we can easily translate so that everybody understands our levels of priority placed on the student achievement data and what our next steps might be. (interview, February 15, 2012)

The use of test data for accountability affects not only schools and districts, in terms of rewards and punishments, but also the community. Scores on a one-day test can diminish students' academic opportunities and possibly restrict their future course selections and career choices. Taking ethical responsibility into consideration allows educational leaders to make informed decisions rather than letting data drive the decision-making process without carefully considering the whole child.

Resources limit the best solutions from data analysis. With the recent focus on high-stakes tests, unfunded mandates from both state and federal legislatures, and a shrinking pool of resources, it is essentially meaningless to study principal leadership practices without

consideration of the local school context. Contextual variables of interest to principals include student background, community type, organizational structure, school culture, teacher experience and competence, fiscal resources, school size, and bureaucratic and labor features of the school organization.

The school context is complex, and resources can restrict data-informed leaders from offering effective supports. Sally, a Lakewood Elementary School teacher, shares her frustration about providing more supports based on the student performance data: “Sometimes you just don’t know what to do next. Like, what do you do when you have exhausted all of your resources?” (interview, February 29, 2012). Observing teacher collaboration during a data meeting at Brea Elementary School, I noted that they continually voiced their desire to create occasions for regular interaction with parents about learning issues, form partnerships with relevant neighborhood groups, and seek out external resource groups that can offer relevant expertise. Jim remarked to another teacher:

I think that more resources to support the students in sustained gains are something that is important to focus on and bring up, especially with Response to Intervention. Because we are doing so much of that, and we are naturally fitting that into our daily curriculum, that we document that here at Brea. We have those discussions about how to support their child with the limited resources, and we know what we are doing with kids, but we need more help. Even if I communicate that with parents, can we continue the supports as the district continues to cut back? (observation, March 19, 2012)

Time is a valuable resource that also remains as an obstacle for leaders to overcome. These professional interactions facilitate the exchange of expertise and encourage the redistribution of resources that teachers need to enact curricular reforms. Teachers must be provided with opportunities to work collaboratively in order to build their collective capacity to use data. Time is a resource that limits a team’s data capacity to make meaningful decisions, experiment with instructional methods, and document results for systematic changes. Learning

communities use the data to cycle through a body of questions, problems, and information to develop action plans to sustain continuous student growth. Costa Mesa principal Brendan displays his frustration with insufficient time: “I think one of the challenges that we will always be faced with is time. We know how much time we have with students, and I know how much time the teachers are available; we are limited by time” (interview, February 6, 2012).

Leadership does not need to be superhuman to support teacher data capacity; it can grow from a strong, simple commitment to an allocation of time for learning communities to meet as they focus on student learning. Lindsay found her teachers do not have the most ideal circumstances:

They do have time built into their schedule, but there has been pushback in terms of telling teachers you must use one of your plan times a week to meet as a team. I’d say three out of my five teams meet regularly. And they will invite me to come in and talk, but that time kind of winds up to be theirs. So, I try to make the most I can out of our staff meetings and our released days and our school improvement days to get them to meet and collaborate. And I like it because they are always asking for more time, which is a good sign. (interview, March 9, 2012)

Learning communities obviously are a helpful tool to assist teachers in collaboratively establishing clear goals for students to master, but resources limit the principals’ abilities to utilize them to their fullest extent.

Summary of Findings

The overarching research question for this study addressed how elementary principals influence the establishment of data-informed decision making. This study illustrates the interwoven nature of schools and educational leadership, with themes from each of the ancillary questions blending among them, becoming factors in more than one area. This cross-case analysis noted themes that emerged from the data analysis and compared findings across the

three cases. The principals in this study each demonstrated how, over time, they have influenced a culture of data-informed decision making in highly integrated systems of collaboration where the overall school mission of instruction, modification, and student learning was at the forefront of the educators' collective practices. The principals model and work alongside their entire staff through a series of data focus groups to engage all stakeholders with multiple opportunities for data-informed decision making. The groups included the use of administrators, grade-level teachers, and intergrade-level teams, with various participants contributing as significant members in each of the case schools. All staff members engaged extensively in a highly collaborative environment by offering supports to students based on the data presented.

The purpose of this comparative case study was to identify effective learning leadership practices of data-informed elementary principals and to link the systematic practices through comparative analysis. Data analysis of the first research question revealed four themes when considering the establishment of a data-informed culture: (a) principals make decisions and guide discussions, (b) data are primary source of information, (c) systems are established surrounding data-informed decision making, and (d) supports are designed to assist student learning. Data analysis of the second research question uncovered four themes when considering how elementary principals build capacity to enrich a data culture, and included the following themes: (a) teachers need to be empowered because the task is too large for the principal to accomplish, (b) teams of teachers and resources staff members need time during the day to review student learning data as they make collaborative informed decisions, (c) principals and teachers need to reflect on data in order to expose their own practices and encourage some difficult discoveries that promote necessary changes, and (d) teachers and staff must be provided with professional learning opportunities without the principal forcing their development.

The third research question considered how elementary principals evaluate the effectiveness of the data-informed systems in their schools. The data analysis and disclosed four themes: (a) at the beginning of the academic year data review is essential, as the staff follows up on students they were monitoring the previous year, (b) progress monitoring of student learning through assessment data is systematically developed by teachers and resource personnel, (c) common classroom assessments allow grade-level teachers to engage in dialogue regarding effective teaching and learning that may or may not have occurred across their various classrooms, and (d) the leadership team examines student learning data in a summative fashion at the end of the year and evaluates what the data reveals by each of the focus data groups.

The fourth research question centered on how principals negotiated through the barriers and obstacles to influence the establishment of a data-informed culture. The data analysis disclosed the following three themes: (a) principals will have staff who innately resist the notion of being data driven, because they feel student learning is not quantified by a number; and (b) difficulties existed when designing solutions to the revealed deficit when working with limited time and resources.

This chapter reported each of the research questions in a cross-case analysis, providing findings for each question and a comparison across the cases. Chapter Six, the final chapter, offers a summary of the research study, which includes the statement of the problem, a description of the methodology, and the major findings. Additionally, the research questions are explored, which provide a context to interpret the results. A discussion of the results allows for further explanations for the findings, as well as implications of the study. The chapter concludes with recommendations for further research.

Chapter Six

Summary, Discussion, Implications, and Recommendations

This chapter offers a summary of the research study, which includes the statement of the problem, a description of the methodology, and the major findings. Additionally, the research questions are explored, which provide a context to interpret the results. A discussion of the results allows for further explanations for the findings, as well as implications of the study. The chapter concludes with recommendations for further research.

Summary of the Problem Statement and Methodology

The purpose of this study was to identify effective learning leadership practices of data-informed elementary school principals and to link the systematic practices through a comparative case study. The ability to harness information concerning what is happening within schools and convert it into knowledge while monitoring state and federal mandates is representative of elementary principals who are effective in promoting a culture of data-informed leadership. Therefore, this multi-case study examined the influence of elementary principals in the establishment of data-informed decision making.

A comparative case study methodology was used to develop a deeper understanding of data-informed decision making used by learning leaders in selected elementary schools. The selection of the sites and participants for this study were determined by a combination of referral and snowball, or chain-referral, sampling. The population for this study included public school elementary principals in the State of Illinois. This study identified a sample of elementary principals who demonstrated effectiveness in their roles as learning leaders through the use of data-informed leadership practices in their buildings. The criteria for an effective data-savvy

principal included the following: establishment by the principal of a data-rich school culture that is focused on learning, a focus on learning of individual professionals, and a focus on systems learning. Schools in the sample were considered academically successful, determined by an examination of trend data of student performance on the Illinois Standards Achievement Test (ISAT). Only those schools that had shown continuous progress toward meeting and exceeding State standards for attaining Adequate Yearly Progress (AYP) were included in the pool of nominees.

The three case study sites were K-5 elementary schools located in the suburbs of Chicago, Illinois. The enrollments ranged from 415 students in Costa Mesa Elementary, 500 students in Lakewood Elementary, and 549 students in Brea Elementary School. At the time of this study, Lakewood's principal was in his third year, Brea's principal was in her fourth year, and Costa Mesa's principal was in his 13th year serving in their respective positions. All three school sites were consistently high performers and score significantly higher in all categories than the state average on the Illinois State Assessment Test (ISAT).

Across the three case sites, three meetings were observed and nine interviews were conducted between January and April 2012, with three follow-up telephone interviews in April 2012. Pseudonyms were used to identify the names of individual participants, school sites, and districts. The participants included three principals; each interviewed on three different occasions; four central office supervisors; and 16 teachers, including reading, math, and data specialists. Triangulation was achieved by utilizing a variety of data sources, including interviews of building principals, teachers, and other formal and informal site supervisors, observations of data-informed leadership events in each school, and document analysis.

This study examined the following overarching research question: *How do elementary principals influence the establishment of data-informed decision making?* To support the overarching research question, four ancillary questions were addressed:

1. In what leadership behaviors and activities do data-savvy elementary principals engage as they establish a data-informed decision-making culture in their schools?
2. How do elementary principals build capacity to enrich the data-informed decision-making culture?
3. How do principals evaluate the effectiveness of the data-informed systems in their schools?
4. What obstacles have elementary principals encountered when establishing a focus on data-informed decision making, and how have they negotiated through these obstacles?

Findings

The findings from this study are detailed in this section.

Research Question 1: In what leadership behaviors and activities do data-savvy elementary principals engage as they establish a data-informed decision making culture in their schools? Principals and teachers in the three schools make decisions and guide discussions based and anchored on data, not just intuition. This case study revealed that the three principals demonstrated analytical, mathematical, and/or research backgrounds that influenced their ability to foster a culture of data-informed decision making. The principals found the key to fostering a data-rich culture is to involve the faculty in data conversations. Because teachers are the main users of data, their involvement is crucial for success.

Profound changes in the professional culture in the sites studied were essential to moving to the data-informed learning system. The principals modeled inquiry that enabled the creation of a data culture. This cultural shift of using evidence to make informed decisions also made the individual teacher's private practice more public. The principals functioning as learning leaders

aspire to establish a culture in which everyone learns, continues to learn, and supports the learning of others through the use of data. The emphasis placed on data as the primary source of information assisted with the identification of best practices and ensured effective school reform by identifying successes and gaps of student learning.

Research Question 2: How do elementary principals build capacity to enrich the data-informed decision making culture? In each school, the principals were effective in implementing a distributed leadership model, empowering the faculty to participate fully in problem solving, innovation, and collaboration. The culture of distributed leadership at each school relies not upon an individual but on the school unit, which is the most appropriate structure for leadership expertise. Distributed leadership recognizes that the knowledge and skills necessary to exercise data-informed leadership may be situated within learning communities. The principals discovered that as they implement distributed leadership practices in their buildings, they find it opens doors for sustainable, organizational, and cooperative learning, which also calls for data conversations among their faculty members, thus providing opportunities for the principals to function as learning leaders.

Common planning time for deep collaborative dialogue varied between each of the schools, and collaboration time at each school was creatively designed by the teachers and administration. The three principals found that as their teams of teachers engaged in ongoing reflection, they were forced to consider their instructional practices and the impact of the implemented practices on student learning. The focused and productive environments ensured the opportunities for student achievement growth. It was clear that trust was essential as the school cultures were focusing on student performance, in order to provide an open environment for engaging in successful problem solving.

Research Question 3: How do principals evaluate the effectiveness of the data-informed systems in their schools? The three schools have multiple systems to use data to inform decisions. At the beginning of the year each school conducts a data review, which the principals find is essential for facilitating student learning. Productive teams review results of student achievement based on periodic common assessments and focus their reflective conversations on improving teaching and learning practices. The various teams found themselves examining instructional practices based on informed evidence that were focused on the improvement of student learning. Each school's reflective data growth is supported by administration and the teachers. All schools participate in data review meetings as the year progresses, reviewing fall and winter benchmarking data to identify significant student learning gains or regressions.

Research Question 4: What obstacles have elementary principals encountered when establishing a focus on data-informed decision making, and how have they negotiated through these obstacles? Principals must be careful not to fall into a deterministic mindset based on data. The current accountability system places extreme pressure on educational leaders to perform without fail and, as a result, can be abused. Data may be enticing, but the current method of assessing Annual Yearly Progress (AYP) provides only a marginally reliable view of a school's proficiency, whereas it should be based on reliable and valid data that go beyond a single assessment of student achievement scores.

The principals sometimes find their teachers do not always acknowledge the validity and accuracy of the data. As one principal stated, "They have made decisions based on other things. They know their kids, and they're right; they do know their kids" (interview, March 9, 2012). To overcome the challenge, the principals add more protocols and more observations during data

collaboration meetings. They are searching for ways to articulate both at grade-level and cross-grade-level team meetings to discuss student performance data and, more importantly, show how student learning is progressing.

Each school context was complex, and lack of resources sometimes inhibited these data-informed leaders to offer more effective supports. Time is a valuable resource that remains as an obstacle for leaders to overcome. The social interactions of each observed staff displayed a commitment to high quality intellectual work to obtain effectiveness. The professional interactions facilitated the exchange of resources and expertise teachers needed to enact the new curricular reforms—Common Core State Standards. Learning communities were a helpful tool that assisted teachers collaboratively as they established clear goals for students to master.

Limitations

Many factors can influence the findings from a qualitative study. The small sample size as well as short duration period to conduct this study was considered as a limitation. Due to the nature of the case-study approach, the findings from this study may affect its generalizability to the activities and behaviors of all Illinois public elementary school principals. Case study sites were identified through recommendations made by representatives of multiple statewide organizations familiar with leaders of elementary schools and subsequent review of state reports on the academic performance trends of the individual schools. These methods may not have comprehensively identified all elementary principals within the state of Illinois who exercise the most extensive levels of data-informed leadership.

Another limitation was the possibility that I did not obtain truthful responses from the participants at each case site. Although I attempted to establish trust with interviewees, not all

participants may have been forthright in sharing information and expressing their opinions. If the practices were perceived by the participants to reflect badly on the school or its students and staff, they may have elected to modify the substance of their responses.

Discussion

This study has identified several themes that help to address the question of how elementary principals influence the establishment of data-informed decision making. The principals at each site are in a unique position to foster a data-rich culture to focus on improving student learning. Each principal fostered a culture that involved developing leadership capacity to guide the learning of individual professionals. The establishment of collaborative teams that value learning was also a central practice for each principal as they developed the data skills of individual professionals. Certainly, the demand for data-informed decisions revealed a systems approach to learning. Consistent with prior research, this study revealed that strong leadership in each site played a significant role in regard to the effective use of data (Halverson et al., 2007; Hamilton et al., 2009; Knapp et al., 2007; Wayman & Stringfield, 2006). The ability of the principals to harness information and convert it into knowledge while monitoring state and federal mandates as they promote improved student learning was representative of each elementary school studied.

Learning-centered leadership. The first finding identified in this study as being supportive in the establishment of a data-savvy culture emphasized a focus on learning-centered leadership. It is necessary for someone within the school to initiate the vision for data use, and that responsibility rightly falls on the principal as the school's formally appointed leader. Observations in this multi-case study of principals modeling data-informed decision-making

strategies revealed that each faculty member gained an enhanced understanding of its importance and benefits in promoting organizational learning and improved student learning. Learning is the central focus in nearly every empirical research study on school data use and the importance of principal leadership (Knapp et al., 2006b; Lachat & Smith, 2005; Wayman & Stringfield, 2006; Young, 2006).

When these leaders came to the realization that their schools should evidence a culture that creates and sustains a community of student and adult learning, then they strategically organized their schools, classrooms, and environments. Because teachers are the primary users of student data, their involvement is crucial for success. Profound changes in the professional culture of the schools were essential to moving to a data-informed learning system. Because of the principals' focus on training teachers to be effective data consumers, teachers in each site possessed the knowledge and skills to establish student outcomes and monitor progress using standards-referenced assessment to inform instructional practices. In each of the schools, I found that data assisted in the development and implementation of curriculum and therefore promoted accountability. Research on principals who focus on student learning confirms that they look beyond the exclusive use of one-shot, state-mandated tests to continuously assess how students are progressing through the school year (Hallinger & Heck, 1998; Knapp et al., 2006b). The data-informed principals in this study initiated multiple mechanisms within their school organizations for their teachers to assess learning and improve their teaching and learning practices.

Supporting distributed leadership. A second critical finding to influence a data-rich culture was detected by the principals' abilities to support and sustain an environment that encourages developing teacher capacity toward leadership roles beyond the boundaries of their

classrooms. Distributed leadership observed in the case studies displayed how the knowledge and skills necessary to exercise data-informed leadership was situated within learning communities. Each principal established various teams that were empowered to drill down into their student achievement data. Each principal displayed a commitment to involving teachers in leadership roles as they worked to transform the school culture from a workplace into a learning place. Learning alongside their teachers and being part of that process is an attribute that each exhibited. The direct benefit of building teacher leadership capacity is that the teachers are empowered to take the initiative to examine data without waiting for permission or prompting from their principals. The principals discovered that implementing distributed leadership practices opens doors for sustainable, organizational, and collaborative learning, which subsequently calls for data conversations among their faculty members.

An aspect to influence a data-rich culture is the principal's ability to support and sustain an environment that encourages staff and other leaders to turn to data, ask questions of data, reflect on the data's meaning, and take action that references the data (Knapp et al., 2006b). Research has explored the importance of building a learning culture through distributed leadership activities in the school. The distributed leadership model enables the empowerment of stakeholders to increase problem solving, innovation, and collaboration. Facilitating the development of leadership capacity is a significant characteristic of a learning leader. Copland (2003) found that distributed leadership is based on the collective knowledge focused on a common target, spanning tasks, and relying on what French and Raven (1959) termed *expert power* rather than relying on hierarchical authority.

Recent studies of distributed leadership highlight the effectiveness of this leadership practice (Copland, 2003; Spillane & Healey, 2010). Copland (2003) proposed that a culture of

distributed leadership is created through shared inquiry into improving student learning. Multiple stakeholders often become co-leaders, over time developing shared norms and expertise in data-informed problem solving (Knapp et al., 2006b). Such activities emphasize expertise over the traditional hierarchical authority, an essential attribute of distributed leadership arrangements (Copland).

Robinson et al. (2008) also concluded that the development of leadership capacity within the school encourages the development of sustainable supports for not only pedagogical dialogue but also the use of data to make informed decisions. Supovitz et al. (2010) discovered that principals who implement distributed leadership practices in their schools also were more likely to find the time within their professional work schedules to expand their focus on instructional improvement and to implement reform successfully.

Use of collaborative teams. A third critical finding to influencing a data-rich culture was evidenced by the principals' abilities to develop effective collaborative teams that contributed to an increase in motivation and commitment to use the data. Observations revealed that the collaborative teams understood how data are applicable to school improvement initiatives. This process is a supportive condition that helps school staff recognize the benefits of basing decisions on objective data (Lachat & Smith, 2005). In innovative schools, teachers working in learning communities collaborate around a common vision centered on student learning and hold each other accountable for continued student growth. Each principal's use of internal accountability through collaborative teams encourages a focus on data inquiry. Several observations in the case schools of ongoing dialogue among teachers that was centered on specific student needs reinforced this common vision.

It was interesting to note that the focus of the data analysis and data conversations was limited solely to students' attainment of literacy standards and mathematical standards, because these areas are assessed and reported under NCLB mandates. The collaborative dialogue did not include science, social studies, or any other problem-based or team-building capacity assessment data. Thus, although educators in the three schools had become very proficient in using data for school improvement, they had narrowed their focus only to those content areas for which they were publicly accountable. Heck (2006) indicated school officials often make poor decisions based on questionable evaluation techniques. He noted the current method of assessing Annual Yearly Progress (AYP) provides only a marginally reliable view of a school's proficiency, whereas it should be based on reliable and valid data that go beyond student achievement scores.

The provision of common planning time to support teacher collaboration was one feature that these effective schools did not have in common. Schmoker (2004) asserted that the most effective strategy for school improvement is to provide a team of teachers with time to collaborate during the school day. School administrators can be very creative when they explore opportunities for teachers to work together. Collaboration time could be established in multiple ways: a common plan time during the day, late start days, early release days, or monthly teacher-only work days. The least effective use of time is to require teachers to meet during their lunch periods or to force them to meet before and/or after school (Reeves 2004).

Trust was a key ingredient revealed in each site as they developed social capital, which in turn promoted the development of human capital (Coleman, 1988; Daly, 2009; Sergiovanni, 2006). Trust overwhelmingly helped build collaborative capacity in the three sites. It was associated with improved student achievement, improved morale in today's stressful accountability age, and provided openness for risk taking as teachers experimented with new

instructional practices. Trust is essential when principals and school cultures focus on student performance to provide an open environment for engaging in successful problem solving (Goddard et al., 2009).

Implementing a systems learning approach. Finally, the findings revealed the effectiveness of a systematic cycle of inquiry. Knapp et al. (2006b) found that a systems learning approach provides a picture of the school functioning as a whole organizational unit, documenting accomplishments and helping to spot problems that need improvement. As the principals focused on data-informed leadership practices, their effectiveness rested on a foundation of strategic thinking that guided each staff's analysis of data, engagement in inquiry, meaning-making, and formation of action steps. In three case sites in this study, the principals and teachers profoundly used data as a reflective source to inform their decisions. The principals were deliberate in their formation of learning communities, where the collective staffs perceived the collection and analysis of data as systemic approach to teaching and learning. Knapp et al. (2007) asserted that data-informed leaders create opportunities for their staff members to make collective sense of the data and probe the data for possible actions. Unfortunately, thoughtful analysis of data is not part of the culture of many schools. For example, in a study of Wyoming principals, Deike (2009) found that there was little evidence that principals developed a plan for data use or that there was an expectation from the district level to do so. Deike noted that all principals in her sample were aware of schools' performance data on state and district assessments, but the randomness of reflective practices in most schools suggested that data use was optional.

Data-rich cultures can be understood as a structural system akin to that found in the literature on systems thinking (Senge, 1990). The principals helped their staffs by answering

their questions about how individual school goals connected with state, district, and community expectations. The creation of a systems-learning culture enabled and motivated others in their use of data to make informed decisions. This systems approach of a data-rich culture demands that leadership take methodical steps that include the acquisition of data, reflective practices based on the information, and an action-oriented implementation (Knapp et al., 2006b). Holistic accountability systems were visible and student centered in the three schools, based not only on assessment scores and academic achievement but also on curriculum, instructional strategies, and leadership practices. Each school had multiple systems to use data to continuously inform decisions. In the beginning of the year they conducted data reviews, which each principal highlighted as very important to focusing their efforts for the upcoming year.

Data-informed systems use a cycle of inquiry as they acquire data to support the framing or reframing of problems facing student learning. Knapp et al. (2007) explained that this emphasis on framing and reframing means that leaders continuously engage in and struggle with how to identify and understand what counts as problems of practice, and that should ground the work of data use. Knapp et al. asserted that data informed leaders establish a culture that builds on the problem-framing capacity of learning communities in order to establish context. Research further indicates that the data collection system should focus on the progress of individual students and should not rely exclusively on averaging the scores of large groups of students. It does not exclude test scores but places the traditional accountability system within the overall context of student learning and the unique needs of the school. O'Shea (2005) also indicated that systems-learning approach explores relationships and connections across different types of data to inform decision making. A school culture flourishes if there is an availability of data, coupled

with the support structures and skills necessary, that empowers educators to be productive and make more effective decisions (Young, 2006).

Implications

This study of leadership practices in three elementary schools provides several insights about how elementary principals can leverage the structures within their schools to develop and support a data-informed decision-making framework in their schools. The study thematically oriented a number of common attributes found among the case schools that assisted leaders in facilitating learning leadership practices and also identified several barriers and challenges to those practices. The findings from this study raise several implications for those who wish to encourage or support data-informed decision making practices in their schools and in elementary level schools in particular. This study has the potential to be useful to groups responsible for the development of leadership preparation programs for principals and district superintendents. As the requirements of the Performance Evaluation Reform Act are implemented within all Illinois school districts, establishing a data-informed culture is essential because the professional careers of teachers and principals will be dependent on measuring and ensuring students are progressing in their learning. In addition, this study has the potential to inform elementary educators about specific strategies that may positively influence the implementation of data-informed decision-making practices within their organizations. This section presents four implications that arise from this study.

Implications for elementary school principals. First, the findings from this study indicate that data-informed decision making appears to be significantly strengthened by a school's unrelenting adherence to a carefully articulated vision of learning. Yet, this vision of

student learning must extend beyond merely the areas that are assessed on state achievement tests. Learning-focused elementary principals should seek to understand how they influence teaching and learning practices throughout all school classrooms and their critical responsibility to build data capacity within all of their teacher teams. Learning-focused schools encourage all stakeholders to focus on each individual student, ensure that teachers are dedicated to individual student success regardless of the challenges students may face, provide students with the means to master challenging content and skills across subject areas, develop habits of mind for further learning, and prepare students for fulfilling future careers and citizenship in a democracy. Learning from these findings, it may be helpful for elementary principals to systematically focus on learning, moving data gathering beyond the literacy and math standards, and by emphasizing collaborative work among all professionals that is centered on student learning.

Implications for school districts. An important component that was implemented by the three schools in this study to strengthen a data-informed framework was the facilitation of small, faculty-led groups to discuss and debate issues and concerns, with structures in place that enabled multi-way communication. School principals must create opportunities for this dialogue to occur, but structuring time for regular collaboration with grade-level teachers is not a simple task. School district officials who have elementary school oversight should work closely with their principals and teacher unions to incorporate time within the school day and academic calendar to provide sufficient time for collaboration. The school schedule established by the district should accommodate a common built-in planning time for teacher teams to meet, analyze, and discuss student learning data. The school culture flourishes when the principal encourages sustained collaboration with availability of data, coupled with the support structures

by the district supervisors and skills necessary that empower educators to be productive and make more effective decisions.

Implications for state education policymakers. The state of Illinois recently adopted the Common Core State Standards in math and language arts from kindergarten through high school. National science standards soon will be finalized and adopted in 2013-2014. The revision in student outcomes forces teachers to realign their formative and summative assessments, creating a disarrayed data source that takes several modifications in order to provide valid current real-time classroom data. The new curricula initially will inhibit the teachers' abilities to provide students with feedback. Individual homework assignments, classroom warm-up exercises, reciprocal dialogue, cooperative work, and the use of rubrics to verify learning criteria are in need of development for teachers to promote student reflection of learning. Therefore, a plan equipped with objectives (standards) to know, key vocabulary terms for the unit, resources available to assist students, activities used by instructors to help students attain mastery, assessments to measure progress toward goals, and timeline for the unit focuses collaborative teams on student growth. The essential key is the assessments to measure progress toward the goals. Specifically, the elementary schools need help in the development of rigorous content and grade-level assessments in this time of change to progress monitor student learning. The state of Illinois is yet to develop clear scope and sequence maps for teachers to progress through units of study. Students will be more likely to be successful if they have clearly defined objectives to master.

Implications for leadership preparation programs. Principal preparation programs must ensure that aspiring school leaders are trained in data-informed decision making practices (Wayman, Brewer, & Stringfield, 2009). The three principals in this study engaged in high levels

of data-informed decision making, and they reported learning these skills through their undergraduate preparation and/or their professional experiences. However, none of the principals reported learning data-analysis skills through their university-based principal preparation curriculum. As student learning accountability is now a common expectation of building leaders and increasingly is becoming a significant portion of their annual performance evaluations, it is important for aspiring school leaders to be provided with this training in their administrator preparation programs. Thus, educational leadership faculty members who are responsible for the development of principal preparation curricula may find it helpful to review the findings from this study and to incorporate the effective uses of data into their programming.

Recommendations for Practice and Policy

Based upon the findings from this study, several recommendations are presented for practice and policy for principals and principal preparation programs. First, learning-focused elementary principals should seek to expand the teachers' focus on student learning. Because of NCLB mandates, as was observed in this study, there is a danger that elementary principals and teachers will limit their focus to student attainment of literacy and math standards, while neglecting the traditional core disciplines of science and social studies, as well as other content areas within the school. Additionally, the faculty's collective vision of student learning may become so narrowly focused on literacy and mathematics, that they neglect to develop other important areas for the student, such as citizenship, work ethic, honesty, the ability to work as a productive member of a group, etc. Principals influence teaching and learning practices within the school, as well as the faculty's collective vision of learning, and it is their critical responsibility to maintain a broad view of student academic and developmental growth while

also building data capacity within their teacher teams. The collection and analysis of student data should reflect a balanced approach, that should include evidence of student performance across all subject areas. Not only should learning-focused principals encourage all stakeholders to focus on each individual student, ensuring that teachers are dedicated to individual student success regardless of the challenges students may face, but they also must provide students with the means to master challenging content and skills in multiple subject areas, develop habits of mind for further diverse learning, and prepare for fulfilling future careers and citizenship within a democracy. Learning from these findings, it may be helpful for elementary principals to systematically focus on learning, moving data gather further than the literacy and math standards, by emphasizing collaborative work among professionals that is centered on student learning.

Second, principal preparation programs must ensure that aspiring school leaders are trained in data-informed decision-making practices, expanding their focus not only on literacy and math standards but also to include holistic student learning. The three principals in this study engaged in high levels of data-informed decision making, and they reported learning some skills through their undergraduate preparation, which were focused primarily on analysis of student learning data within their individual classrooms, and/or their professional experiences. However, none of the principals reported learning data-analysis skills that involved the use of school-wide data through their university-based principal preparation curriculum. Further, not one of the principals discussed the need to expand their collection of student learning data to include science, social studies, student discipline, attendance, or problem-based learning. As student learning accountability is now a common expectation of building leaders and increasingly is becoming a significant portion of their annual performance evaluations, it is important for

aspiring school leaders to be provided with this training in their administrator preparation programs. Thus, educational leadership faculty members who are responsible for the development of principal preparation curricula should incorporate the effective uses of data into their course activities and field-based experiences.

Recommendations for Further Research

The following recommendations are presented for further research.

1. *Research could be conducted at the school level that comprehensively investigates the relationship of data-informed decision-making practices to improved student achievement.* The U.S. Department of Education (2010) recently published a report focused on the use of data at the school level due to state accountability systems and to simply improve instructional practices. The report provides a framework for using student achievement data that supports informed decision making, including: (a) adapt lessons or assignments in response to students' needs, (b) alter classroom goals or objectives, (c) modify student-grouping arrangements, and recommendations for creating the organizational and technological conditions that foster effective data use. This report concluded that research does not yet provide conclusive evidence that data system uses are effective in promoting student achievement gains. Thus, additional research is needed to identify effective data-informed decision-making strategies that result in improved student learning.

2. *Research on teachers' uses of classroom assessment data could be conducted, to discern how teachers induce significant learning gains within their classrooms as they engage students to examine their own data and set learning goals.* Black and Wiliam (1998) conducted research on teachers' uses of in-class assessments, to understand how teachers produce

significant student learning gains due to students examining their own data and establishing personal learning goals. Teacher instructional time is limited, but just as this study displayed the principals' abilities to build teacher data capacity, the teachers also should understand the necessity of building student data capacity to demonstrate visible learning progression.

Integrating classroom time for students to analyze teacher feedback can help students to use the results from informal classroom assessments, thus helping them to become more responsible for their own learning.

3. Research could be conducted on the development and utilization of district-wide longitudinal student achievement data systems that are effective in promoting student learning gains. Advances in technological tools appear to have greatly increased school capacity to capture data and involve faculty members at the elementary, middle, and high school levels in data analysis. Future studies could investigate how supports can be provided by the school district and the principal, in particular, to promote faculty involvement in the analysis of longitudinal student data sets that are developed in all content areas so that educators can gain deeper levels of understanding of the learning progress of individual students and student cohorts.

4. Research could be conducted on teacher preparation programs' effectiveness in training teachers to utilize data to improve student learning. If teachers are paying attention to student learning and are modifying their teaching and learning practices accordingly, narrowing the achievement gap should be a natural outcome. The classroom is the most important piece in the school reform puzzle, yet policies are designed and decisions are made sometimes without even considering what is happening inside the classroom (Black & Wiliam, 1998). When educators implement formative assessments in their classrooms and subsequently analyze the

evidence from student assessments, this information can be used diagnostically to modify instruction to positively affect student learning.

5. Research could be conducted to investigate the extent of training with data analysis methods that aspiring principals receive in their principal preparation programs. Data-informed decision making appears to be significantly strengthened when principals effectively lead and are committed to collecting and analyzing multiple forms of student learning data, both real-time and over time. Principals who are effective learning leaders focus on student academic performance, not only using test scores provided by the state and district accountability systems but also going beyond this student achievement data to develop much deeper forms of evidence-informed practice for all content areas. If the goal for educators is to develop highly effective teaching and learning practices, holistic information must be gathered from multiple sources, and an effective principal preparation program can assist in preparing aspiring principals who possess effective data analysis skills.

Conclusion

The ramification of this comparative case study is that it could provide teachers, principals, and superintendents with an understanding of the necessary practices effective principals implement to foster a data-rich culture within their schools. Because of the increasing political and community accountability pressures on our current educational leaders, there is no better time for a clear delineation of the practices that data-savvy principals implement to foster a data-rich culture within their organizations. As the formal leaders of their buildings, principals are responsible for creating data-savvy cultures, assisting their faculties with analyzing evidence of student learning and promoting effective data-informed decision making. The stakes are

becoming increasingly high for educators, as a growing number of states have enacted legislation that requires student-learning data to be incorporated into teacher and administrator performance evaluations.

Data-informed leaders are not driven by bottom-line numbers but instead use this information to understand the whole child, decipher complicated educational situations, identify potential solutions, and reach decisions to adjust teaching and learning strategies based upon careful analysis of this information. The findings from this study demonstrated that several factors acted in concert with one another, and several conditions can be linked to the principal's ability to foster a data-rich culture. A productive culture focuses attention and effort on improving student learning, guides the learning of individual professionals, and employs a systems-learning approach.

Learning leaders create structures and systems that include participation in decision making around data. Prior to the current accountability era, administrators made instructional decisions based merely upon intuition or informed guesses and failed to fully utilize student learning data that was readily available to them in their schools (Hallinger, 2011). The practice of data-informed decision making can be met with resistance because it contradicts traditional intuitional methods. Data helps teachers to identify the need to differentiate instruction within their classrooms, and the feedback generated by data also helps teachers and leaders determine whether students are progressing toward learning targets.

This study determined that the key to fostering a data-rich culture is to secure an extremely trusting environment as the dialogue is centered on teachers' instructional data. Because teachers are the main users of data, developing trusting relationships among all staff members is crucial for success. Profound changes in the professional culture of the teachers and

the principal are essential to moving to a data-informed learning system. Principals must model this trusting inquiry to enable the creation of a data culture. This cultural shift of using evidence to make informed decisions also makes the individual teacher's private practice more public. This deprivatized practice creates an uncertainty that must be balanced with a supportive and nurturing environment. Ultimately a data-savvy culture as one in which teachers and administrators work together in a community of practice: trusting data, focusing on results and not the person, and engaging in using data for systematic reflection and planning. Fostering a culture of data-informed decision making alters the collaboration, the practices, and the trusting environment for all stakeholders to actively engage to move student learning forward.

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Appendix A

Nominating Groups for Participant Selection

Illinois Principals Association (IPA)

IPA has 21 regions, coterminous with the regions of IASA (Illinois Association of School Administrators), with a member leadership board for each region.

Method: Identify two IPA board members from each region whose school is an elementary level school serving students from kindergarten to grade five. (42)

Each individual was contacted via electronic mail, asking for nominations of principals that fit the provided description.

Illinois Association of School Administrators (IASA)

IASA has 21 regions, with a member president for each region

Method: Identify the president for each IASA president. (21)

Each individual was contacted via electronic mail, asking for nominations of principals that fit the provided description.

Regional Offices of Education (ROEs)

Illinois is divided into 45 regions, excluding the city of Chicago. They are grouped by county or counties throughout the state.

Method: Identify the Regional Superintendent of Schools and Assistant Superintendent for each ROE. (90)

Each individual was contacted via electronic mail, asking for nominations of principals that fit the provided description.

Regional Systems of Support Providers (RESPROs)

Illinois is divided into 10 RESPRO regions and sub-regions, based upon the Illinois Regional Offices of Education and Intermediate Service Centers.

Method: Identify two contacts for each region or sub-region, including the Director (often a Regional Superintendent) and an additional RESPRO coordinator or consultant. (26)

Each individual was contacted via electronic mail, asking for nominations of principals that fit the provided description.

42(IPA)+21(IASA)+90(ROE)+26(RESPRO)=179 individuals were contacted for nominations.

Appendix B

Participant Nomination Communication Protocol

Participant Nominations

You are being asked to identify elementary principals that fit a description listed below, to assist with developing an initial pool of potential candidates for a study on the principals' influence to establish a culture of data-informed decision making at the elementary level. The schools of identified principals will be measured for "success" using systematic criteria, so it is not necessary to determine if a school or a principal is "successful" in your nominations. For this study, we will be including only Illinois public elementary schools that serve from kindergarten to grade five. Please do not exclude a potential nominee. If you are unsure if their school meets this criterion, please add the name and we will check each for selected criteria information. All nominations will be confidential and no nominee will know who provided their nomination for the study.

Please read the descriptions listed below. Identify those elementary level principals that generally reflect the descriptions or ascribe to the philosophies therein.

- Principal has a reputation for engaging faculty and staff in using multiple forms of data to make decisions.
- Data-informed principals initiate multiple ways for faculty members to assess learning and improve teaching and learning practices based on data.
- Principal elicits the importance of a schoolwide focus on learning.
- Principals empowers multiple stakeholders to become co-leaders, over time developing shared norms and expertise in data-informed problem solving
- Principal develops effective collaborative teams that contributed to an increase in data-informed decision making.
- Team members are likely to understand how data are applicable to school improvement initiatives.
- Principal establishes a systems learning approach, which provides a picture of the school functioning as a whole organizational unit, documenting accomplishments and helping to spot problems that need improvement.
- Principal uses strategic thinking that guides the whole school in analysis of data, engagement in inquiry, meaning-making, and the development of new implementation steps.

Please email, willia59@illinois.edu or call, (630) 461-2450, anytime with questions about the study or for clarification on the nomination process. To nominate principals that generally fit the descriptions listed above, please send the nominees' name, school, and city in an email to willia59@illinois.edu

Michael Williams
University of Illinois

Appendix C

Structured Phone Interview Protocol

Introduction/Purpose

I am calling today because you have been nominated as an example of a successful principal who practices a concept called data-informed leadership. We are conducting a study to examine data-informed leadership, focusing on the behaviors and activities of principals that facilitate data-informed decision making practices to improve student learning. In addition to identifying the behaviors and activities that may support data-informed decision making, the barriers and challenges to implementing these practices will also be examined, identifying specifically how principals are able to work through these issues to promote data-informed practices that support student learning.

Specifically, this study will seek to learn how leadership establishes a clear vision for schoolwide data use, study how the school culture makes data part of an ongoing cycle of instructional improvements, understand what supports are systemically provided that foster a data-informed culture, and research how are teachers are helping students examine their own data to set learning goals. This charge to focus on learning and use data to inform educational practices leads to new ways to collaborate and new thinking about student learning. The ability to analyze the complexities in schools and establish systems that are culturally driven defines leaders as courageous learners that are effective data-informed leaders.

If you choose to take part in this study, the data collection for this project will consist of conducting a face-to-face interview with you (principal), observation of data focus group meetings, observation of a classroom data lesson, and interviews with the focus group and classroom teacher participants. The interviews/observations will occur during the 2011-2012 school year. More specifics will be sent in written form if you are one of three final candidates for our study.

Questions

1. Briefly describe your school and how student learning growth has improved over the years.
2. Does your school utilize grade level collaboration? If so, please describe that structure.
3. Please give me a brief background of your professional experience, including the number of years you have served as a principal of this school.
4. Does your school have some form of data groups? Explain
5. Can you describe an example from your leadership practice that may be considered data-informed leadership?
6. Do you have any questions about this study?
7. Are you willing to be a participant in this study of principal leadership?

Snowball Sampling

We are looking for other successful elementary level principals that foster data-informed leadership practices in their buildings. Can you think a principal of an academically successful elementary level school that has a reputation for data-informed leadership in their building? Can you provide contact information?

Appendix D

Institutional Review Board Approval

UNIVERSITY OF ILLINOIS
AT URBANA - CHAMPAIGN

Bureau of Educational Research

College of Education
38 Education Building
1310 South Sixth Street
Champaign, IL 61820



September 29, 2011

Michael Williams
Education Organization, Policy and Leadership Department
College of Education
1310 S. Sixth Street
MC708

Dear Michael,

On behalf of the College of Education Human Subject Committee, I have reviewed and approved your research project entitled “Elementary Principals’ Influence on Data-Informed Decision Making in Their Schools: A Comparative Case Study”. I find that this project meets the exemption criteria for federal regulation 46.101(b)2 for research involving normal interview procedures where the identifying information is protected. It also meets the exemption criteria for federal regulation 46.101(b)1 for research involving normal educational research within an educational context.

No changes may be made to your procedures without prior Committee review and approval. Your project number is 4908 and projects are typically approved for three years with annual reports required. You are also required to promptly notify the Committee of any problems that arise during the course of the research.

Best regards,

Anne S. Robertson
College of Education Human Subjects Review Committee

Cc: Dr. Donald Hackmann

Appendix E

Informed Consent Forms

INFORMED CONSENT – District Superintendent

UNIVERSITY OF ILLINOIS
AT URBANA - CHAMPAIGN

Department of Education Policy and
Organization Leadership

College of Education
333 Education Building
1310 South Sixth Street
Champaign, IL 61820



Elementary Principals' Influence on Data-Informed Decision Making in Their Schools INFORMED CONSENT – District Superintendent

Principal _____ has been selected to participate in a doctoral study that is facilitated by Dr. Donald Hackmann and Mr. Michael Williams from the University of Illinois. The primary goal of this study is to examine data-informed leadership by successful elementary school principals, focusing on the behaviors and activities of principals that facilitate data-informed decision making. In addition to identifying those behaviors and activities that may support data-informed leadership, the barriers and challenges to implementing these practices also will be examined, identifying specifically how principals were able to work through these issues to promote data-informed practices that support student learning.

This study will assist to fill the gap in the literature focused on data-informed leadership in elementary level schools. As data is becoming more accessible, building a culture of data analysis is becoming a more common expectation of building leaders in all schools. This study can help provide some valuable insights into the creation and support of this type of leadership. To assist with our understanding of data-informed leadership practices, it is important for the researchers to engage in some research activities. The data collection for this project will consist of conducting a face-to-face interview with the principal, observation of a data focus group meeting, an interview with the focus group, and an interview with the school site district supervisor.

Allowing the individuals to participation in this research study is completely voluntary. Your decision to participate or not to participate will not affect your professional employment in any way or your relations with the University of Illinois. You may elect to terminate this study if at any time you begin to feel uncomfortable about the experience. Should you choose to participate, the principal will participate in a face-to-face interview, which should last no longer than 60 minutes. The researcher would also like to interview a data focus group, which should last no longer than 60 minutes. Interviews will be audio recorded and transcribed with all identifying information removed to protect confidentiality of the participants. Their responses will be kept secure and they will receive a copy of the transcript by email attachment to double-check the information, and they may be contacted by telephone or email for clarification of their interview responses if necessary. The researcher would also like to quietly and silently observe your schools' data focus group meeting, lasting no longer than 60 minutes. Researcher will take notes related to data activities and decision-making processes. It is anticipated that the observation will be the usual duration of your schools' meetings, but will not exceed one hour. No personally identifying information will be written during the note-taking process, to protect confidentiality of the participants. The field notes will be transcribed, removing any personally identifiable information and using pseudonyms. The notes from any observation will be kept secure and

the results will only be reported in the aggregate. Finally, the researcher would like to interview the central office supervisor of the site principal, which should last no longer than 60 minutes. Interviews will be audio recorded and transcribed with all identifying information removed to protect confidentiality of the participants. Their responses will be kept secure and they will receive a copy of the transcript by email attachment to double-check the information, and they may be contacted by telephone or email for clarification of their interview responses if necessary.

We do not anticipate any risk to this study greater than normal life and we anticipate that the results will increase our understanding of effective leadership practices in elementary level schools. This information will be used as part of a doctoral dissertation and may be shared in a conference presentation or publication. No personally identifying information will be included in any presentation, proposal, or publication.

Please check a box and sign

I have read and understand the description of the research project related to the Elementary Principals' Influence on Data-Informed Decision Making in Their Schools project. I voluntarily agree to participate in the research project.

- I agree to our school site participating in the research study

- I do not agree to our school site participating in the research study

Signature

Date

If you have any questions about your rights as a research participant please contact Anne Robertson, Bureau of Educational Research, 217-333-3023, or arobrtsn@illinois.edu or call the Institutional Review Board collect at 217-333-2670 or irb@uiuc.edu. The responsible project investigator is Don Hackmann at the University of Illinois (217-333-0230, dghack@illinois.edu) with Michael Williams at the University Illinois serving as Co-PI 217-333-2155, willia59@illinois.edu

Please keep a copy of this consent form for your records

INFORMED CONSENT - Initial Phone Interview

UNIVERSITY OF ILLINOIS AT URBANA - CHAMPAIGN

Department of Education Policy and
Organization Leadership

College of Education
333 Education Building
1310 South Sixth Street
Champaign, IL 61820



Elementary Principals' Influence on Data-Informed Decision Making in Their Schools INFORMED CONSENT - Initial Phone Interview

Your school has been selected to participate in a doctoral study that is facilitated by Dr. Donald Hackmann and Mr. Michael Williams from the University of Illinois. The primary goal of this study is to examine data-informed leadership by successful elementary school principals, focusing on the behaviors and activities of principals that facilitate data-informed decision making. In addition to identifying those behaviors and activities that may support data-informed leadership, the barriers and challenges to implementing these practices also will be examined, identifying specifically how principals were able to work through these issues to promote data-informed practices that support student learning.

This study will assist to fill the gap in the literature focused on data-informed leadership in elementary level schools. As data is becoming more accessible, building a culture of data analysis is becoming a more common expectation of building leaders in all schools. This study can help provide some valuable insights into the creation and support of this type of leadership. To assist with our understanding of data-informed leadership practices, it is important for the researchers to engage in some research activities. During this portion of the project, we are conducting initial phone interviews of the principals of participating elementary level schools.

Your participation in this research study is completely voluntary. Your decision to participate or not to participate will not affect your professional employment in any way or your relations with the University of Illinois. You may elect to terminate this activity if at any time you begin to feel uncomfortable about the experience. Should you choose to participate, you will participate in a phone interview, which should last no longer 30 minutes. Detailed notes will be taken during the interview, being transcribed immediately with all identifying information removed to protect confidentiality of the participants. Your responses will be kept secure and the results of the interview will only be reported in the aggregate. You will receive a copy of the transcript by email attachment to double-check the information, and you may be contacted by telephone or email for clarification of your interview responses.

We do not anticipate any risk to this study greater than normal life and we anticipate that the results will increase our understanding of effective leadership practices in elementary level schools. This information will be used as part of a doctoral dissertation and may be shared in a conference presentation or publication. No personally identifying information will be included in any presentation, proposal, or publication.

See Reverse for Signature

Please check a box and sign

I have read and understand the description of the research project related to the Elementary Principals' Influence on Data-Informed Decision Making in Their Schools project. I voluntarily agree to participate in the research project.

- I agree to be interviewed with notes taken for the purpose of transcription.
- I do not agree to be interviewed with notes taken for the purpose of transcription.

Signature

Date

If you have any questions about your rights as a research participant please contact Anne Robertson, Bureau of Educational Research, 217-333-3023, or arobrtsn@illinois.edu or call the Institutional Review Board collect at 217-333-2670 or irb@uiuc.edu. The responsible project investigator is Don Hackmann at the University of Illinois (217-333-0230, dghack@illinois.edu) with Michael Williams at the University Illinois serving as Co-PI 217-333-2155, willia59@illinois.edu
Please keep a copy of this consent form for your records

INFORMED CONSENT - School Site Participation

UNIVERSITY OF ILLINOIS AT URBANA - CHAMPAIGN

Department of Education Policy and
Organization Leadership

College of Education
333 Education Building
1310 South Sixth Street
Champaign, IL 61820



Elementary Principals' Influence on Data-Informed Decision Making in Their Schools INFORMED CONSENT - School Site Participation

Your school has been selected to participate in a doctoral study that is facilitated by Dr. Donald Hackmann and Mr. Michael Williams from the University of Illinois. The primary goal of this study is to examine data-informed leadership by successful elementary school principals, focusing on the behaviors and activities of principals that facilitate data-informed decision making. In addition to identifying those behaviors and activities that may support data-informed leadership, the barriers and challenges to implementing these practices also will be examined, identifying specifically how principals were able to work through these issues to promote data-informed practices that support student learning.

This study will assist to fill the gap in the literature focused on data-informed leadership in elementary level schools. As data is becoming more accessible, building a culture of data analysis is becoming a more common expectation of building leaders in all schools. This study can help provide some valuable insights into the creation and support of this type of leadership. To assist with our understanding of data-informed leadership practices, it is important for the researchers to engage in some research activities. The data collection for this project will consist of conducting a face-to-face interview with the principal, observation of a data focus group meeting, an interview with the focus group, and an interview with the school site district supervisor.

Your participation in this research study is completely voluntary. Your decision to participate or not to participate will not affect your professional employment in any way or your relations with the University of Illinois. You may elect to terminate this study if at any time you begin to feel uncomfortable about the experience. Should you choose to participate, you (the principal) will participate in a face-to-face interview, which should last no longer than 60 minutes. The researcher would also like to interview a data focus group, which should last no longer than 60 minutes. Interviews will be audio recorded and transcribed with all identifying information removed to protect confidentiality of the participants. Their responses will be kept secure and they will receive a copy of the transcript by email attachment to double-check the information, and they may be contacted by telephone or email for clarification of their interview responses if necessary. The researcher would also like to quietly and silently observe your schools' data focus group meeting, lasting no longer than 60 minutes. Researcher will take notes related to data activities and decision-making processes. It is anticipated that the observation will be the usual duration of your schools' meetings, but will not exceed 60 minutes. No personally identifying information will be written during the note-taking process, to protect confidentiality of the participants. The field notes will be transcribed, removing any personally identifiable information and using a pseudonyms. The notes from any observation will be kept secure and the results will only be reported in the aggregate. Finally, the researcher would like to interview the central office supervisor of the site principal, which should last no longer than 60 minutes. Interviews will be audio recorded and transcribed with all identifying information removed to protect confidentiality of the participants. Their responses will be kept secure and they will receive a copy of the transcript by email attachment to double-check the information,

and they may be contacted by telephone or email for clarification of their interview responses if necessary.

We do not anticipate any risk to this study greater than normal life and we anticipate that the results will increase our understanding of effective leadership practices in elementary level schools. This information will be used as part of a doctoral dissertation and may be shared in a conference presentation or publication. No personally identifying information will be included in any presentation, proposal, or publication.

Please check a box and sign

I have read and understand the description of the research project related to the Elementary Principals' Influence on Data-Informed Decision Making in Their Schools project. I voluntarily agree to participate in the research project.

- I agree to our school site participating in the research study

- I do not agree to our school site participating in the research study

Signature

Date

If you have any questions about your rights as a research participant please contact Anne Robertson, Bureau of Educational Research, 217-333-3023, or arobrtsn@illinois.edu or call the Institutional Review Board collect at 217-333-2670 or irb@uiuc.edu. The responsible project investigator is Don Hackmann at the University of Illinois (217-333-0230, dghack@illinois.edu) with Michael Williams at the University Illinois serving as Co-PI 217-333-2155, willia59@illinois.edu
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INFORMED CONSENT - Principal Interview

UNIVERSITY OF ILLINOIS AT URBANA - CHAMPAIGN

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College of Education
333 Education Building
1310 South Sixth Street
Champaign, IL 61820



Elementary Principals' Influence on Data-Informed Decision Making in Their Schools Principal Interview INFORMED CONSENT

Your school has been selected to participate in a doctoral study that is facilitated by Dr. Donald Hackmann and Mr. Michael Williams from the University of Illinois. The primary goal of this study is to examine data-informed leadership by successful elementary school principals, focusing on the behaviors and activities of principals that facilitate data-informed decision making. In addition to identifying those behaviors and activities that may support data-informed leadership, the barriers and challenges to implementing these practices also will be examined, identifying specifically how principals were able to work through these issues to promote data-informed practices that support student learning.

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Your participation in this research study is completely voluntary. Your decision to participate or not to participate will not affect your professional employment in any way or your relations with the University of Illinois. You may elect to terminate this activity if at any time you begin to feel uncomfortable about the experience. Should you choose to participate, you will participate in a face-to-face interview, which should last no longer than 60 minutes. The interview will be audio recorded and transcribed with all identifying information removed to protect confidentiality of the participants. Your responses will be kept secure. You will receive a copy of the transcript by email attachment to double-check the information, and you may be contacted by telephone or email for clarification of your interview responses.

We do not anticipate any risk to this study greater than normal life and we anticipate that the results will increase our understanding of effective leadership practices in elementary level schools. This information will be used as part of a doctoral dissertation and may be shared in a conference presentation or publication. No personally identifying information will be included in any presentation, proposal, or publication.

See Reverse for Signature

Please check a box and sign

I have read and understand the description of the research project related to the Elementary Principals' Influence on Data-Informed Decision Making in Their Schools project. I voluntarily agree to participate in the research project.

- I agree to be interviewed with notes taken for the purpose of transcription.

- I do not agree to be interviewed with notes taken for the purpose of transcription.

Signature

Date

If you have any questions about your rights as a research participant please contact Anne Robertson, Bureau of Educational Research, 217-333-3023, or aobrtn@illinois.edu or call the Institutional Review Board collect at 217-333-2670 or irb@uiuc.edu. The responsible project investigator is Don Hackmann at the University of Illinois (217-333-0230, dghack@illinois.edu) with Michael Williams at the University Illinois serving as Co-PI 217-333-2155, willia59@illinois.edu
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INFORMED CONSENT – Focus Data Group Interview

UNIVERSITY OF ILLINOIS AT URBANA - CHAMPAIGN

Department of Education Policy and
Organization Leadership

College of Education
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Champaign, IL 61820



Elementary Principals' Influence on Data-Informed Decision Making in Their Schools INFORMED CONSENT – Focus Data Group Interview

Your school has been selected to participate in a doctoral study that is facilitated by Dr. Donald Hackmann and Mr. Michael Williams from the University of Illinois. The primary goal of this study is to examine data-informed leadership by successful elementary school principals, focusing on the behaviors and activities of principals that facilitate data-informed decision making. In addition to identifying those behaviors and activities that may support data-informed leadership, the barriers and challenges to implementing these practices also will be examined, identifying specifically how principals were able to work through these issues to promote data-informed practices that support student learning.

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During this portion of the project, we are conducting interviews of the participating focus group members. Your participation in this research study is completely voluntary. Your decision to participate or not to participate will not affect your professional employment in any way or your relations with the University of Illinois. You may elect to terminate this interview if at any time you begin to feel uncomfortable about the experience. Should you choose to participate, you will participate in a focus group interview, which should last no longer than 30 minutes. The interview will be audio recorded and transcribed with all identifying information removed to protect confidentiality of the participants. Your responses will be kept secure. You will receive a copy of the transcript by email attachment to double-check the information, and you may be contacted by telephone or email for clarification of your interview responses if necessary.

We do not anticipate any risk to this study greater than normal life and we anticipate that the results will increase our understanding of effective leadership practices in elementary level schools. This information will be used as part of a doctoral dissertation and may be shared in a conference presentation or publication. No personally identifying information will be included in any presentation, proposal, or publication.

See Reverse for Signature

Please check a box and sign

I have read and understand the description of the research project related to the Elementary Principals’ Influence on Data-Informed Decision Making in Their Schools project. I voluntarily agree to participate in the research project.

- I agree to be audio recorded in a focus group interview for the purpose of transcription.

- I do not agree to be audio recorded in a focus group interview for the purpose of transcription.

Signature

Date

If you have any questions about your rights as a research participant please contact Anne Robertson, Bureau of Educational Research, 217-333-3023, or arobrtsn@illinois.edu or call the Institutional Review Board collect at 217-333-2670 or irb@uiuc.edu. The responsible project investigator is Don Hackmann at the University of Illinois (217-333-0230, dghack@illinois.edu) with Michael Williams at the University Illinois serving as Co-PI 217-333-2155, willia59@illinois.edu
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INFORMED CONSENT – Central Office Supervisor

UNIVERSITY OF ILLINOIS AT URBANA - CHAMPAIGN

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College of Education
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Champaign, IL 61820



Elementary Principals' Influence on Data-Informed Decision Making in Their Schools INFORMED CONSENT – Central Office Supervisor

_____ elementary school has been selected to participate in a doctoral study that is facilitated by Dr. Donald Hackmann and Mr. Michael Williams from the University of Illinois. The primary goal of this study is to examine data-informed leadership by successful elementary school principals, focusing on the behaviors and activities of principals that facilitate data-informed decision making. In addition to identifying those behaviors and activities that may support data-informed leadership, the barriers and challenges to implementing these practices also will be examined, identifying specifically how principals were able to work through these issues to promote data-informed practices that support student learning.

This study will assist to fill the gap in the literature focused on data-informed leadership in elementary level schools. As data is becoming more accessible, building a culture of data analysis is becoming a more common expectation of building leaders in all schools. This study can help provide some valuable insights into the creation and support of this type of leadership. To assist with our understanding of data-informed leadership practices, it is important for the researchers to engage in some research activities.

During this portion of the project, we are conducting interviews of the participating central office supervisors. Your participation in this research study is completely voluntary. Your decision to participate or not to participate will not affect your professional employment in any way or your relations with the University of Illinois. You may elect to terminate this interview if at any time you begin to feel uncomfortable about the experience. Should you choose to participate, you will participate in a face-to-face interview, which should last no longer than 60 minutes. The interview will be audio recorded and transcribed with all identifying information removed to protect confidentiality of the participants. Your responses will be kept secure. You will receive a copy of the transcript by email attachment to double-check the information, and you may be contacted by telephone or email for clarification of your interview responses.

We do not anticipate any risk to this study greater than normal life and we anticipate that the results will increase our understanding of effective leadership practices in elementary level schools. This information will be used as part of a doctoral dissertation and may be shared in a conference presentation or publication. No personally identifying information will be included in any presentation, proposal, or publication.

See Reverse for Signature

Please check a box and sign

I have read and understand the description of the research project related to the Elementary Principals' Influence on Data-Informed Decision Making in Their Schools project. I voluntarily agree to participate in the research project.

- I agree to be interviewed with notes taken for the purpose of transcription.
- I do not agree to be interviewed with notes taken for the purpose of transcription.

Signature

Date

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INFORMED CONSENT - Data Focus Group Observation

UNIVERSITY OF ILLINOIS

AT URBANA - CHAMPAIGN

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Champaign, IL 61820



Elementary Principals' Influence on Data-Informed Decision Making in Their Schools INFORMED CONSENT - Data Focus Group Observation

Your school is participating in a doctoral study that is facilitated by Dr. Donald Hackmann and Mr. Michael Williams from the University of Illinois. The primary goal of this study is to examine data-informed leadership in successful elementary schools, focusing on the behaviors and activities of principals that facilitate data-informed leadership practices. In addition to identifying those behaviors and activities that may support data-informed leadership, the barriers and challenges to implementing these practices also will be examined, identifying specifically how principals were able to work through these issues to promote data-informed practices that support student learning.

This study will assist to fill the gap in the literature focused on data-informed leadership in elementary level schools. As data is becoming more accessible, building a culture of data analysis is becoming a more common expectation of building leaders in all schools. This study can help provide some valuable insights into the creation and support of this type of leadership. To assist with our understanding of data-informed leadership practices, it is important for the researchers to engage in some research activities.

During the study, we will observe data focus group meetings or activities that demonstrate some degree of data informed decision making. These meetings will involve all normally participating members who choose to participate. Individuals who do not elect to participate in this research will be excused from the meeting or activity. Your participation in this research study is completely voluntary. Your decision to participate or not to participate will not affect your professional employment in any way or your relations with the University of Illinois. You may elect to terminate this observation if at any time you begin to feel uncomfortable about the experience. Should you choose to participate, the researcher will quietly and silently observe your schools' data focus group meeting, taking notes related to data activities and decision-making processes. It is anticipated that the observation will be the usual duration of your schools' meetings, but will not exceed 60 minutes. No personally identifying information will be written during the note-taking process, to protect confidentiality of the participants. The field notes will be transcribed, removing any personally identifiable information and using a pseudonyms. You and your principal will receive a copy of the transcript by email attachment to double-check the information and may be contacted by telephone or email for clarification. The notes from any observation will be kept secure and the results will only be reported in the aggregate.

We do not anticipate any risk to this study greater than normal life and we anticipate that the results will increase our understanding of effective leadership practices in elementary level schools. This information will be used as part of a doctoral dissertation and may be shared in a conference presentation or publication. No personally identifying information will be included in any presentation, proposal, or publication.

See Reverse for Signature

I have read and understand the description of the research project related to the Elementary Principals' Influence on Data-Informed Decision Making in Their Schools project. I voluntarily agree to participate in the research project.

- I consent to the observation and note-taking of my participation in the data focus group meeting.
- I do not consent to the observation and note-taking of my participation in the data focus group meeting.

Signature

Date

If you have any questions about your rights as a research participant please contact Anne Robertson, Bureau of Educational Research, 217-333-3023, or arobrtsn@illinois.edu or call the Institutional Review Board collect at 217-333-2670 or irb@uiuc.edu. The responsible project investigator is Don Hackmann at the University of Illinois (217-333-0230, dghack@illinois.edu) with Michael Williams at the University Illinois serving as Co-PI 217-333-2155, willia59@illinois.edu

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Appendix F

Interview Protocol

Semi-Structured Principal Interview Protocol

Questions:

1. Please share your understanding of data-informed leadership and share why you believe it is important for your school.
2. You and your school was selected to participate in this study because you have a reputation of using data to inform decision making, please describe 2-3 leadership practices that influences a culture of data-informed decision making.
3. What previous supports have prepared you to be selected as an effective data-informed leader?
4. How is your leadership influencing an ongoing cycle of instructional improvements through the use of data? Is there a schoolwide vision for data use (written plan that articulates activities, roles, and responsibilities)?
5. Please share how your leadership empowers others to use data to make informed decisions.
6. Please provide examples that data-informed decision making is also used by students to influence their learning.
7. What systemic supports do you insist on that foster a data-informed decision making culture?
8. Please provide examples of how you evaluate the effectiveness of the systems that help establish your culture of data-informed decision making?
9. If you were to explain to other principals how to influence a culture of data-informed decision making that enables administrators, teachers, and students to use data to enhance holistic learning, what are the first few steps should they do and why?
10. If you were to give those same principals an awareness of the challenges they will face as they influence their school in data-informed decision making, what should they consider?

Semi-Structured Data Focus Group Interview Protocol

Questions:

1. Is your group similar or more advanced than the other groups at this school? How and Why?
2. How long have you been meeting together? How often do you meet?
3. Is there a schoolwide vision for data use (written plan that articulates activities, roles, and responsibilities)?
4. What types data do you use and why is that data most helpful?
5. Share how you use data in an ongoing cycle, and how is it improving your learning. How often do you get together what is the majority of your conversation during your time together?
6. What challenges do you face as you desire to move forward in data-informed decision making?
7. Do you have the skills and resources to overcome the challenges to effectively improve whole school learning? What helped you develop your skills?
8. Who helps you use data? What supports do you have?
9. How does the principal model data-informed decision making to improve learning?
10. Please discuss 2 or 3 principal leadership practices that assist in clarifying the vision for schoolwide data use.
11. If using data-informed decision making is systemic, how is data being pushed to the students? Is there specific protocols students use to inform their own learning progress?

Semi-Structured Central Office Supervisor Interview Protocol

Questions:

1. Please share your understanding of data-informed leadership and share why you believe it is important for _____ elementary school.
2. _____ elementary school was selected to participate in this study because they have a reputation of using data to inform decision making, please describe 2-3 leadership practices that influences a culture of data-informed decision making.
3. What previous/current/future supports do you/will you supply for the school and the principal to be selected as an effective data-informed leader?
4. How is the principal's leadership influencing an ongoing cycle of instructional improvements through the use of data? Is there a schoolwide/districtwide vision for data use (written plan that articulates activities, roles, and responsibilities)?
5. Please share how the principal's leadership empowers others to use data to make informed decisions.
6. Please provide examples that data-informed decision making is also used by students to influence their learning.
7. What systemic supports does the principal insist on that foster a data-informed decision making culture?
8. Please provide examples of how the principal evaluates the effectiveness of the systems that help establish their culture of data-informed decision making?
9. If you were to explain to other principals how to influence a culture of data-informed decision making that enables administrators, teachers, and students to use data to enhance holistic learning, what are the first few steps should they do and why?
10. If you were to give those same principals an awareness of the challenges they will face as they influence their school in data-informed decision making, what should they consider?