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An Examination of Improvement Paths Taken by Two Previously  
Underperforming Schools to Improve Student Outcomes

A Dissertation submitted in partial satisfaction of the  
requirements for the degree Doctor of Education

in

Educational Leadership

by

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The Dissertation of Eileen E. Dial is approved and it is acceptable in quality and form  
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Chair

University of California, San Diego 2011  
Cal State University, San Marcos 2011

## DEDICATION

This dissertation is dedicated to my husband Lindy Dial. I cannot thank you enough for your constant emotional support as I have journeyed through this adventure. Your belief in me gave me the strength to continue the fight even when the obstacles have seemed insurmountable. I love you and thank God every day that you are in my life. I am a better person and educator because of you.

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## ABSTRACT OF THE DISSERTATION

An Examination of Improvement Paths Taken by Two Previously  
Underperforming Schools to Improve Student Outcomes

by

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Effectiveness in education has become a national focus and reform efforts continue with the hope of increasing student achievement and more effectively meet the needs of all students. This need to focus on the achievement of all students has been driven by the sanctions school face if they do not make gains for all identified subgroups.

This study investigated two schools restructured under NCLB sanctions. The primary concern was the pathways developed by each school that contributed to the distribution of leadership and the development of the characteristics of a high reliability

organization. In addition, the role of data driven decision making as a part of that move to high reliability was explored. Both schools received additional state funding from the Quality Education Investment Act (QEIA).

A comparative case study methodology was used with data drawn from three sources, a survey, assessing distributed leadership practices and high reliability organizational characteristics, interviews, and document analysis. The purpose of the data collection was to determine the perception of leadership distribution and the role of data driven decision-making in increasing student achievement. Teachers and administrators at both schools participated in the survey and members of the leadership team were interviewed individually.

The data analysis revealed that both schools achieved considerable gains in student achievement during the process of restructuring, and they varied considerably in their pattern of distributing leadership practices. In one school, leadership practices, especially data analysis and improvement strategizing, were widely distributed to teacher leaders and whole grade level teams. The other school's pattern of distributed leadership practice remained primarily in the hands of key administrators and two coaches. The study showed there are advantages and drawbacks to each approach. While a pattern of widely distributing leadership practice served to increase accountability and led to a more collaborative culture, by the third year practices faltered when key teacher leader positions shifted within grade levels or they left the school entirely. The findings indicate that maintaining the effectiveness of the distribution of leadership practice may require more careful consideration of hiring practices and placement of teachers on grade level teams.

The more concentrated approach to distributed leadership practice had the benefit of increasing the consistency of implementation of reform initiatives, which led to gradual but consistent gains over a three-year period. This more limited distribution of leadership practices, however, provided few opportunities or structures for teachers to own the change effort. The data revealed a lower sense of teacher efficacy and feelings of responsibility for the change effort. This lack of collective responsibility, which is critical in the development of high reliability organizations, may have long-term consequences of reform sustainability.

Examination of data at both a school and team level seemed to be a critical component of student improvement at both schools. Assisting teachers in both data analysis and use to change classroom practice was undertaken in both patterns of leadership distribution. This formative use of the data can result in dramatic effects in student outcomes as evidenced by one of the fifth grade teams using their data to design a program that enabled 98% of students to become proficient or advanced in math.

Educational leaders must be cognizant of the multiple components involved developing high reliability and in the distribution of leadership to turn around schools. This study showed that enhancing collective responsibility and engaging in building the capacity of a staff to use data were critical leadership practices in the improvement process regardless of the pattern of leadership distribution. Multiple factors must be considered when deciding which leadership structures and practices if distributed will enable the school to move forward and sustain the progress.

## CHAPTER1: INTRODUCTION

### Background of the Study

We face extraordinary challenges in education today. With heightened public scrutiny of schools and standardized test results published in the newspaper, there is growing pressure on schools to perform. Penalties are imposed if children fail to make the progress deemed appropriate by the state. Parents are given options to leave schools that are low performing. They can also seek tutoring support for their children at the district's expense, which, in the current fiscal situation, could have adverse impacts on districts and individual schools. States are employing sanctions that raise the pressure on districts, schools, and teachers to achieve results.

Since the passage of the No Child Left Behind Act (NCLB) in 2001, schools have a renewed sense of urgency to eradicate the achievement gap, one of the major goals of the legislation. While every school espouses the theory that all children can achieve at high levels, the persistent achievement gap is proof that the espoused theory and the reality are in conflict. Attention has been focused on schools labeled as low performing. Schools receive this label if they fail to make adequate yearly progress (AYP). Most of these schools, with the support of their districts, are attempting to change the way they operate in order to improve student achievement (Harris, 2004; Harris & Spillane, 2008; Leithwood, Day, Sammons, Harris & Hopkins, 2006). Many are attempting to make organizational changes at the district and school levels (Marzano, Waters & McNulty, 2005). Nevertheless, the number of schools labeled as low performing steadily increases year after year due to the proficiency level being raised incrementally. These results

suggest the need to more clearly understand how some schools have been able to exit from program improvement and reverse the downward trend.

Most of the current research in the field addresses this dilemma from the district or whole school perspective (Harris 2004; Marzano et al., 2005; Rossi & Stringfield, 1995). Researchers have looked at the elements that make districts and schools effective, but have not honed in specifically on the individual teachers and teams achieving that success. How is the leadership distributed in a successful school? How do the interactions between staff contribute to higher student achievement? How are they using data to drive decisions about teaching in the classroom? Are conversations about data resulting in changes in practice? How are those changes in practice directly tied to increased student achievement? These are some of the questions left unanswered by the current literature.

One avenue for elevating teaching and learning comes from the literature regarding the development of high reliability organizations (HRO) in schools (Bellamy, Crawford, Marshall, & Coulter, 2005; Taylor & Angelle, 2000). High reliability organizations are those operating without catastrophic failures in spite of the complexity of the organization or the potential of hazard. Two organizations of this type are the U.S. military and the nuclear power industry (Taylor & Angelle, 2000). The military offers an example of organizational complexity. Although school districts are not as vast as the military, they represent a complex, multi-layered organization, which makes the use of this model applicable to the setting. High reliability organizations prevent failure by concentrating on developing systems that ensure successful operations and build redundancies into the system aimed at the prevention of failures. With the goal of 100% proficiency by 2014, schools are faced with the need to prevent children from failing.

Bellamy et al. (2005) argue that high reliability organizational concepts could be utilized to develop a model for use in schools. Stringfield, Reynolds, and Schaffer (2007) have tested such a model in Wales at the secondary level and shown positive, sustainable results. The organizational concepts of high reliability have not been explored in schools in the U.S. especially at the elementary level. This study addresses the gap in the existing literature by investigating how distributed leadership practices and data driven decision-making in two elementary schools may be enhancing the development of HROs. This examination adds to the body of knowledge regarding data driven decision-making by examining the role of this practice in the achievement of high reliability in teams of educators.

One aspect of HROs is that all in the organization feel responsible and play a role in ensuring “no failures”. This suggests that for this study the concepts of distributed leadership and organizational learning may be critical areas for investigation. Recognizing principals can no longer do this job alone, practitioners have implemented a more distributed approach to school leadership and researchers have begun investigating this approach (Harris, 2004; Marzano et al., 2005; Leithwood, Seashore, Anderson & Wahlstrom, 2004; Spillane, 2006). This concept of leadership as practice moves beyond the idea of a central leader and encompasses leadership as a joint operation. It is dependent upon the interactions of individuals. A distributed perspective of leadership practice involves the active construction of interpretations of school improvement that fosters educator and student learning (Park & Datnow, 2009). The supports necessary for such reflection must be in place and the school must adopt a culture of constant improvement.



Distributed leadership is a transformational approach, and it has been associated with successful school restructuring efforts (Leithwood et al., 2004). Thus, this study examines how the distribution of leadership practice at each school is impacting the creation of high reliability. Additionally, the reported interactions between leaders and followers are examined for their impact on teaching and learning, which leads to increased student achievement. Both survey and interview data are used to understand the different interactions. According to Spillane (2006), it is essential to examine the interactions between leaders and followers because it is in these interactions that leadership occurs. The interactions among the collective groups of the leadership teams and the leadership of the individual team leaders with their respective grade level teams are explored as a part of this study. The reported interactions are analyzed for evidence of the three types of distribution: collaborated, collective, and coordinated distribution (Spillane, Diamond, & Jita, 2003).

Because much of the research seems to suggest that promoting and nurturing teacher leadership is a critical element if we are going to develop a culture of high reliability in the school setting (Danielson, 2006; Darling-Hammond, 2004; Harris, 2004; Lambert, 1998; Leithwood & Jantzi, 1998; Murphy, 2007), this study incorporates an examination of what that distribution of leadership practice looks like in successful schools. It also examines the site leadership and teacher leadership roles in the implementation of data driven decision-making (DDDM). This contributes to the growing body of literature related to the use of data tools to support decision making at the school level (Mandinach, Honey & Light, 2006).

If the intent of the interaction between teachers is to improve student achievement, it qualifies as leadership practice as defined by Spillane (2006). How are those interactions helping to achieve improved student outcomes? What are the structures in place that contribute to the development of these interactions? How do those structures and interactions impact the development of high reliability in the school? These are some of the questions that guide the examination of the distribution of leadership practice at each of the sites in the study.

Organizational learning theory is applicable to the creation of high reliability and was used as a lens to analyze both interview and survey data. In order to adapt and solve problems, an organization must have the capacity to learn and create new solutions to problems. Argyis and Schon (1974, 1978) and Senge (2006) have argued that individuals have mental maps that govern how they act in situations. These maps include not only the action, but the way they plan and review their actions as well. Awareness of mental maps is a beginning point for becoming an organization that learns (Senge, Cambron-McCabe, Lucas, Smith, Dutton, & Kleiner, 2000). This awareness can lead to the development of double-loop learning (Argyis & Schon, 1974, 1978) and personal mastery (Senge, 2006). This is the desired effect because this cyclical, reflective thought process changes organizations. In double-loop learning errors are detected and solved in ways that modify an organization's underlying norms. Double-loop learning can lead to sustainable change and is directly tied to the achievement of high reliability. The two school sites in this study were assessed for how their structure is supporting or impeding the development of personal mastery and if increased teacher mastery is playing a part in their success with students.

## Problem Statement

Schools are facing sanctions as they fall into the low performance classification. Since this is a reality that many schools will face, it behooves us to carefully examine schools demonstrating success reversing their low performance designation. It is important in this examination to thoroughly assess how these efforts support and elevate the learning of those who have been under achieving. Any examination of successful restructuring should include a lens that examines success of minority students and English learners. These are disaggregated groups whose lack of growth can adversely impact the school and lead to it falling into low-performing status. Schools falling into Program Improvement are required to make changes aimed at increasing student success. In order to do this, schools use a variety of approaches. Some hire coaches to provide on site professional development. Others create alternate leadership structures (Marzano et al., 2005). Still others opt for charter school status or choose a researched curriculum for their restructuring efforts (Stringfield et al., 2007). If a school does not make adequate progress, they may face stricter sanctions.

Reconstitution is one of the sanctions faced by schools when they become designated as low performing and remain there for an extended period of time. Many schools will face this reality. Some schools have made it through this process and emerged as examples for others to follow. By examining schools that have raised student achievement successfully, we could possibly derive models for other schools to utilize as they approach this challenge (Bellamy et al., 2005; Taylor & Angelle, 2000).

Reconstitution would represent the most extreme of the reform strategies to turn around failing schools. One of the schools in this study has been completely

reconstituted. Teachers who wanted to stay were asked to interview and many were not selected to remain at the site. The second school allowed people to voluntarily leave but did not require those staying to interview for the position. By examining different models of reform for success, it creates a wider array of possible solutions for struggling schools. There will be no “one size fits all” reform (Reeves, 2003). Every school context is different, and there are a variety of approaches that could yield the high performance educators are seeking. By examining schools that have been reconstituted for commonalities, educators can adapt the models to fit their schools and increase the possibility of success for all students.

#### Purpose of the Study

The purpose of this study is to explore the improvement paths being pursued by two previously under-performing elementary schools. Each of these schools has received Quality Education Investment Act (QEIA) funding and they have instituted some type of reform aimed at improving student outcomes and sustaining progress. To address this purpose, the following specific research questions have guided this investigation.

1.0 What is the evidence of improved student outcomes in these schools since receiving QEIA funds?

1.1 How does teacher professional development support teacher learning?

2.0 In what ways is leadership distributed in these schools?

2.1 What leadership role does the Instructional Leadership Team play in the improvement process?

2.2 What leadership roles do teachers play in these schools?

2.3 What leadership role do coaches and support staff play in the improvement process?

2.4 In what ways do the Instructional Leadership Team and grade level teams collaborate?

3.0 In what ways do teams use data to inform their work?

3.1 How is data analyzed at the site and team level to ensure student success?

3.2 How does data driven decision-making connect to improved student outcomes?

4.0 Is there evidence of the characteristics of high reliability organizations present at the school?

In this study, two previously designated low-performing schools in one school district were examined in respect to their leadership structures and use of data driven decision-making. Both of these schools are currently receiving Quality Education Investment Act (QEIA) funding and have instituted some type of reform aimed at improving student outcomes and sustaining progress. QEIA is state funding resulting from litigation between the California Teacher's Association (CTA) and the governor. The grant provides almost 3 billion in extra resources over seven years to 487 K-12 schools demonstrating the greatest need (California Department of Education, 2006). In the district in this study, four schools were chosen by lottery to receive these funds. Initially all four were invited to participate in the study, but two schools were dropped due to incomplete data sets. This change is fully explained in subsequent chapters. All of the schools receiving the funds have used the money differently, but have managed to make improvements in learning.

This study considers both the differences in leadership structure and how it supports student achievement. It encompasses an analysis of the current leadership structure for the evidence of distributed leadership practice and organizational learning at both sites. The change in California Standards Test (CST) scores has been used to

document the improvement in student outcomes. Data covering the years of 2006-2010 has been gathered and analyzed as a part of this study in order to ascertain if there is a pattern of improvement. Each leadership structure was examined for its role in supporting this improvement.

This study is founded on three core propositions. The first is that high reliability organizations have certain characteristics that promote success and sustainability of achievement. The literature cited in the introduction and in the literature review support this core proposition (Bellamy et al., 2005; Taylor & Angelle, 2000). The second core proposition is that collaboration and distributed leadership practice leads to higher levels of student success. Much of the research done in the areas of teacher leadership and distributed leadership support this proposition (Danielson, 2006; Darling-Hammond, 2004; Harris, 2004; Lambert, 1998; Leithwood & Jantzi, 1998; Murphy, 2007; Spillane, 2006; Marzano et al., 2005). Lastly, teams and schools that have structured themselves to become organizations that learn are more apt to change mental models that interfere with the development of high reliability. The work of Senge (2000, 2006) in the area of organizational learning supports this proposition as a theoretical framework for this study.

#### Overview of Study Design and Methods

This study utilized an explanatory embedded case study approach due to the fact that it sought to explain a real life phenomenon in its context (Yin, 2009). The researcher utilized an analytical approach derived from a classical ethnographic stance in trying to understand the daily practices of leader's interactions with grade level teams. According to Gribich (2007), the purpose of this analytical approach is to provide a more holistic

view of the context being studied. In order to accomplish that, data that encompasses the views of the teachers, both in leadership and outside of it, as well as the administration was gathered and examined.

One of the strengths of case study design is the use of multiple data sources, including both qualitative and quantitative, in order to answer the research questions. A mixed-method approach using a survey as well as interview and document analysis has been utilized in this study. This approach is valid for this type of examination (Yin, 2009). As a part of the mixed methods, a survey and several interviews have been conducted at each of the sites. The survey was administered to all staff members at the two schools and analyzed with SPSS using descriptive statistics. The survey encompassed all the constructs being studied and was developed using several existing instruments. In addition, several questions covering the areas of high reliability organizations, data driven decision-making, and organizational learning were formulated by the researcher and Dr. Janet Chrispeels, the chair of the dissertation committee. A Professional Learning Community (PLC) Survey developed by Dr. Janet Chrispeels was used as a part of this study. The portion utilized incorporates the following areas: teacher collective actions, teacher beliefs, grade level meetings, school leadership teams, and shared supportive leadership. An instrument developed by Spillane and his colleagues was also incorporated into the final instrument. Distributed leadership, organizational learning, data driven decision-making, and high reliability were used as codes for the analysis of the survey data.

An interview with the chief administrator in each school was conducted as a part of the study. At one site the assistant principal was also interviewed. Four teachers from

the Instructional Leadership Team volunteered to be interviewed at each school. The teachers represented both primary and upper grade levels.

As a part of this study, multiple documents have been analyzed. The documents aided in the development of a more complete picture of the leadership structure of each site. Document analysis enabled the researcher to chronicle changes in student performance over time and attempt to connect that to the change in leadership structure. Each school site plan and California Standards Test (CST) scores have been examined. Data collected encompasses the 2005-2006, 2006-2007, 2007-2008, and 2008-2009 and 2009-2010 school years. This covers the entire time period Quality Education Improvement Act (QEIA) funding has been impacting the school district. The two years previous to the funding were used as a baseline to determine growth of student achievement.

In order to determine success for the reform model at each site, the researcher considered the increase in scores for all students. This included an analysis of data to determine the success of district selected target groups of English learners, Hispanic and Latino, and socio-economically disadvantaged students. Comparative analysis was conducted by examining grade levels at individual sites as well as between sites. This examination includes a description of how each of these teams used data in order to achieve gains in student achievement.

### Theoretical Frameworks

The guiding theories for this study were distributed leadership practice and organizational learning theory. Distributed leadership practice is “a product of the joint interactions of school leaders, followers, and aspects of their situation such as tools and



routines (Spillane, 2006, pg 3). Distributed leadership played a large role in the examination of the success of teams of teachers at each grade level. Through the examination of interview transcripts and survey data, the researcher sought to understand the complex interactions of team members that contributed to both their success with students and their ability to sustain results over time.

Organizational learning theory was used to explain the impact of the school structure on the success of the teams and of the students as well. This was based on the ideas of organizational learning set forth by Senge (2006). Learning organizations seek to develop and nurture ways to expand thinking and people learn together to expand the collective wisdom of the organization (Wenger, McDermott, & Snyder, 2002). The researcher looked for evidence of interactions that supported team member's ability to increase their personal mastery.

#### Significance of the Study

Leadership in schools is an ever-changing construct. Historically it has looked very different from the approach observed in schools today. Educators are recognizing that the difficult challenges facing them today need a new approach. The idea of a distributed leadership practice that embraces leadership at all levels demonstrates the possibility for success (Marzano et al, 2005; Spillane & Thompson, 1998; York-Barr & Duke, 2004). Studies suggest that more collaborative and collective leadership could enable all students to achieve at higher levels and could possibly have dramatic impact on narrowing or eliminating the achievement gap which persists between white and minority students (Vandevoort, Beardsley, & Berliner, 2004). Supports and constraints to the development of this new leadership model need to be examined in order to give it the best

chance for success. By documenting actions and interactions at schools that are operating at high levels of reliability, we could develop a clearer understanding of how to replicate this organizational model. Each school setting is different and that must be taken into account. However, by developing leadership capacity at multiple levels of an organization we can possibly move toward developing reliable schools that can promise and deliver sustainable results for students (Katzenmeyer & Moller, 2001; Koppich, Humphrey, & Hough, 2006; Leithwood & Jantzi, 2000; York-Barr & Duke, 2004).

This study provides evidence that data driven decision-making (DDDM) has a direct effect on student outcomes. Since most of the literature on the subject of DDDM is largely descriptive or theoretical, this study has addressed the gap in the literature by concentrating on positive changes in student outcomes tied to the analysis of data (Mandich et al. 2006; Marsh, Pane & Hamilton, 2006).

In this era of accountability, educators are seeking to create learning organizations upon which they can rely for sustainable results in student achievement. The literature and studies pertaining to the development of high reliability organizations could be used to structure a leadership model for schools to achieve that goal. Distributed leadership practice plays a critical role in the development of that type of organization because it directly relates to the interactions between members that promote growth of knowledge and practice. Combining distributed leadership and high reliability organization research with the use of data analysis contributes to the current understanding of how these elements work together to ensure student success. The current literature presents these elements in isolation rather than looking at them collectively. This study has begun the process of examining how these elements operate interactively in ways that may create

schools that operate in a way that promotes and sustains student achievement at a high level.

The following chapter presents four bodies of literature that informed the design of the data collection as well as the analysis. Chapter three provides a detailed explanation of the methods used to collect and analyze the data for this study. Chapter four is structured to provide a comparison of the leadership practices at the two schools. The schools are examined for evidence of data driven decision-making, characteristics of high reliability, and the distribution of leadership practices evident at the school. Chapter five provides a discussion of the findings that includes implications for practice and future research.

## Definition of Terms

**Academic Performance Index (API):** The cornerstone of California Public Schools Act 1999. It measures the academic performance and growth of schools on a variety of academic measures.

**Annual Yearly Progress (AYP):** A statewide accountability system mandated by No Child Left Behind which requires each state to ensure all schools and districts make adequate yearly progress.

**Data Driven Decision Making (DDDM):** Teachers, principals, and district administration systematically collecting and analyzing data to guide a range of decisions to improve student success and schools.

**Distributed Leadership:** A perspective on leadership that defines school leadership as practice that is distributed in the interactions of school leaders, followers, and their situations.

**Double Loop Learning:** A thought process used when it is necessary to change a mental model. It includes a shift of understanding from simple to more dynamic and inclusive thinking.

**High Reliability Organization (HRO):** Highly complex organizations with high success rates in spite of the potential for problems to occur: Air traffic control systems are an example of this type of organization.

**Organizational Learning:** An area of knowledge within organizational theory that studies the models and theories about the way an organization learns and adapts.

**No Child Left Behind (NCLB):** Federal legislation implemented in order to make schools accountable for the learning of all students, especially those in special education, minority students, and those learning English as a second language.

**Quality Education Investment Act (QEIA):** SB1133 established this act to implement Prop 98 settlement between the California Teacher's Association and the governor. It provides three billion dollars over seven years to 488 low performing schools in California. All schools receiving the funding have high percentages of low-income, minority, and English learners.

## CHAPTER 2: REVIEW OF THE LITERATURE

Since the impetus of “No Child Left Behind” (NCLB), schools have a renewed focus on creating sustainable achievement for all students. The lens has been focused on groups of students generally underserved by the educational system. Attention has been drawn to students of color, English learners, and those who receive special education services. Schools must address the achievement gap or they could fall into a low performing category. This designation brings with it many sanctions that can ultimately result in the reconstitution of a school site, which could result in the entire staff and administration being changed. In order to avoid this situation, many school districts have tried focused interventions aimed at turning a school around before this step is mandated.

The problem facing educators is how to both create and sustain a school that is capable of delivering a high quality program enabling all children to learn at high levels. How can reliable results be achieved in a setting serving high-poverty students? What types of structures best support the development of high reliability schools? What roles do teachers and administrators play in the creation of this type of school? How is data use connected to successful outcomes and the achievement of high reliability? These are some of the questions that have not been addressed by current research. The answers could help schools build cultures that promote and sustain results for at risk students.

Several school reform models are currently in use across the country. Some are built around an adopted curriculum and strict adherence to the curriculum is at the center of the reform (Borman et al., 2000). Others restructure the leadership to develop a more distributed leadership practice (Marzano et al, 2005). This takes time and is dependent on building the capacity of the staff (Spillane, 2006). It is the interactions between

individuals that can make or break a reform effort (Senge, Cambron, Lucas, & Smith, 2000). The interactions are dependent upon each individual's mental models and it is in the challenging of those that breakthrough and change can happen.

This chapter examines the research relevant to answer the questions posed in Chapter 1. First, the research on school reform is considered. Literature regarding reform is vast and many studies are not applicable to this work. The studies reviewed as a part of this study have been limited to those that include reform models used in low-performing, high minority, elementary schools. This limitation ensures the applicability of the reviewed studies to this study.

Research regarding the development of high reliability organizations (HRO) as it relates to schools is included in this review as well. Studies examining the structures necessary and the sustainability of outcomes have been considered. Since the ultimate goal is to sustain positive results, it is important to look at studies indicating that the adoption of these characteristics can lead to sustainable results.

Because most schools have adopted some form of distributed leadership practice, literature in the area of distributed practice is reviewed as it relates to the structures of leadership currently practiced and necessary for the development of high reliability (Taylor & Angelle, 2000, Spillane, 2006). It is imperative to look beyond shared leadership where leadership tasks are delegated to others. The studies and work reviewed here include the perspective that distributed leadership is situational and occurs in the interactions of leaders and followers (Spillane, 2006).

In addition, relevant literature on data driven decision-making (DDDM) and the connection of this practice with the development of high reliability is explored as well.

Again, most schools have begun to look at data with the aim of using it to improve teaching and learning. In some schools, this practice is well developed, while others are in their infancy with the practice. Much of the research in this area is theoretical or descriptive and does not address the effects of DDDM on student outcomes (March, Pane, & Hamilton, 2006). This study will attempt to tie the use of data by teams to increased student achievement thereby taking it from theory to practice.

All of the components mentioned above are examined through the theoretical lens of organizational learning. The research suggests that organizations that learn have the potential to grow and change to ensure sustainable results (Senge, 1990, 2006). The interactions between leaders and followers have the potential to change thought, actions, shift mental models, and increase personal mastery. This process is at the center of organizational learning. High reliability organizations learn from their mistakes and create plans to prevent and recover from problems. They are clearly organizations that learn. The research in the areas of school reform, high reliability organizations, distributed leadership practice, and organizational learning provide a firm base of knowledge for this study.

### School Reforms

School reform is hardly a new idea. In fact, there have been federal efforts aimed at bringing reform to high-poverty schools since the 1960's (Borman, 2009). The roots of school reform can be traced back to the Elementary and Secondary Education Act (ESEA) of 1965 (Title I). This act was a component of President Lyndon B. Johnson's War on Poverty. It was designed to close the achievement gap that existed between poor

minority children and their advantaged peers. Its ultimate goal was to break the cycle of poverty.

According to Borman (2009), there were several problems with the implementation of this act. First, there was not a clear understanding of the law and it manifested in a myriad of interpretations. Those interpretations guided the use of the federal funds, but there was no uniform use of funding. Borman also feels there was a dearth of research in the area of developing effective teacher preparatory programs. Another confounding issue was the insufficiency of evidence regarding replicable programs that could be used in the large-scale applications.

During the 1970s more federal control was exercised and the implementation of Title I became more bureaucratic. This change created additional administrative demands on districts, but it resulted in funding reaching the students targeted by the law. While the money was reaching the students, there was still no agreed upon concept of effective practice. This model led to the “pull-out” program where students eligible for services were removed from their regular classrooms for remedial instruction in both reading and math. The model persisted for decades and is still in use at many schools.

Reauthorization of Title I resulted in a variety of reform efforts including grass roots solutions, site-based management, and external restructuring efforts such as Comer School Development and Success for All. Some research supported that the use of external models was likely to have positive impacts on student achievement when compared to grass roots or traditional “pull-out” models (Borman et al., 2000; Mac Iver, Kemper, and Stringfield, 2003).



Since 1998, the U.S. Congress has encouraged the use of scientifically based school reforms. The Comprehensive School Reform Program (CSRP) encouraged the development of comprehensive plans for the implementation of “*scientific-based*” strategies in reform of schools. This reform resulted in a dramatic increase in the number of externally developed reforms being implemented in schools across the country (Borman, 2009). However, this type of reform is not dependent on increasing the capacity of individuals necessarily, and it does not seem to promote the challenging of mental models and current practices necessary for organizational learning to occur (Senge, Cambron, Lucas, & Smith, 2000). Schools become rigidly focused on a program and when teachers voice problems with implementation they can be met with resistance from the program developers (Borman et al., 2000). This could serve as a barrier to the collaborative dialogue necessary for organizational learning and distributed practice. It could also interfere with the likelihood of teachers “buying in” and therefore potentially derail the improvement efforts.

The ESEA of 1965 was reauthorized as the No Child Left Behind Act (NCLB) of 2001. The act requires that practices be based on high-quality research and there is a focus on using randomized experiments in the development and assessment of new and innovate practices. It expands accountability mandates, increases testing requirements, and has set high accountability standards for all schools. According to Borman (2009), the current focus on research-proven programs is regarded as the key to improving the effectiveness of high-poverty elementary schools (17). There have been both top-down centralized movements and decentralized movements school based models competing in the reform efforts. The external reform models, such as Success For All, would be seen as

top-down because of the supports and mandates inherent in the program. Although 80% of the faculty is to vote to implement the model, this does not always happen. Once begun, the school is bound by the implementation procedures of the program. It can be troublesome if there is not a consensus about the chosen intervention. Teachers and administrators who are not committed to an adopted program can derail the implementation and compromise results (Borman et al., 2000; Mac Iver et al., 2003).

Schools are complex entities, and schools with large populations of students traditionally under served by education might require different approaches in order to attain the high levels of proficiency required by NCLB. It is important to remember there is not a one size fits all system for school reform (Reeves, 2003). While there are challenges in any reform, some have shown promise in the reforming of high-poverty, low-performing schools (Borman, et al, 2000). The authors evaluated the following four reform models used in nine Title I schools: grassroots site-based models, locally mandated reconstitution, whole school reform, and schools partnered with an external partner. While none of the models were a complete failure, they also could not be described as complete successes either. Success was highly determined by the teachers and was adversely impacted when teachers did not buy-in to the reform. This study examined the student achievement gains, classroom instruction, and teacher professional climate to determine the most effective reform. However, the sustainability of the reform and its connection to the development of a high reliability school were not addressed.

There have been many reform efforts aimed at improving results in public school for some time. They are too numerous to explore in detail in this review, but it is important to examine a few as they relate to this study. The schools included in this study

have approached reform in varying ways. One of the schools was completely restructured and that requires an examination of studies that included schools of that nature in order to evaluate the validity of this approach. Under reconstitution, the faculty and administration at the school are replaced. The incoming staff must be committed to the goal of improved student achievement. Teachers and administrators are free to reapply for their jobs in the new school. In these cases, some of the staff is rehired and others are not. Those who are not rehired are placed in other district schools according to the union agreements.

In their study of nine Title I schools, Borman et al. (2000) included three schools involved in reconstitution. One of the schools was under threat of reconstitution while the others had been reconstituted. They found the reconstitution efforts resulted mostly in new inexperienced staffs and that necessitated a strong focus on professional development. It was difficult to attract veteran teachers to these schools due to their record of low performance and students with many challenges. The overrepresentation of novice teachers could limit the development of collective wisdom and organizational learning opportunities because of the lack of experience of the staff. Newer teachers might be reticent to challenge current practice because they are attempting to gain tenure and do not want to be seen as a troublemaker. If mental models are not challenged and refined, the possibility of organizational learning is compromised (Argyris & Schon, 1974, 1978; Senge, 1990, 2006)

Two of the reconstituted schools in the Borman et al. (2000) study implemented “Success for All”, a nationally recognized reading program. One of the schools voted in favor of this change, while the other had it thrust upon it. The school where the teachers

were allowed to vote had an easier, and more successful, implementation of the program. The third school adopted the Optimal Learning Environment program to replace Reading Recovery as their primary reading program. The success of the schools was mixed, but it was mostly due to teacher buy-in rather than the program adopted. The authors concluded if teachers were not on board, they derailed the improvement efforts.

Mac Iver et al. (2003) examined the implementation of the Baltimore Curriculum Project (BCP) in six public schools. The BCP built the reform around a combination of Direct Instruction and Core Knowledge, which are both external programs. This mixed-method study followed two cohorts of students for four years. The students included in the study were in kindergarten or grade 2 in the 1996-97 school year. Each of the six schools had adopted the Direct Instruction (DI) program. Each school was demographically matched with a school within the district in order to make outcome comparisons. A combination of standardized test scores and curriculum-based measures were utilized as outcome measures. The results were focused on implementation issues of the reform and its impact on student achievement. Again, there were mixed results depending on grade level, subject, and school. Most of the improvement occurred in math, but there was also some improvement in reading comprehension. Strict adherence to the DI model did not occur at all sites. Some teachers felt limited by the “robotic” nature of the program and deviated from the prescribed text when they felt it was necessary for children to learn a concept. This represents a variable that could possibly impact the results of the study. Was it the inclusion of alternate approaches that helped children achieve higher results? The researchers concluded that DI is a viable reform model, but they also caution that the capacity and preferences of the staff must be

considered before implementation. This conclusion seems to support the findings that teachers can derail a reform model based on an adoption of a specific program.

It seems that much of the literature involving the reconstitution of schools includes the adoption of some type of nationally recognized program (Borman, 2009; Borman et al., 2000; Mac Iver et al., 2003). It leaves one to wonder what would happen if these schools did not adopt a specific curriculum but in contrast were encouraged to collaboratively examine their student data and develop sound instructional techniques to meet student needs. Would there be greater teacher support and student outcomes equal to or surpassing those previously studied? With the current fiscal situation, is it practical to link school restructuring with expensive programs requiring an enormous outlay of capital every year? While there have been some success with programs such as Success For All, Direct Instruction, and Core Knowledge, there are a significant number of documented failures suggesting the need to question the fiscal prudence of such an adoption. One must also consider the element of teacher buy-in since it seems to be critical for success. The tying of student outcome data to sound instructional practices rather than adherence to a packaged school reform model, could alleviate the possibility of sabotage by teachers and administrators who fail to support or fully implement a prescribed program. The inclusion of data analysis also could promote a culture where collaboration and discussion of practice become the prevailing norm. Senge et al. (2000) would see that type of culture as one conducive to the development of a school that learns.

Furthermore, research suggests external programs do not always increase the capacity of teachers at the site. Most of these programs require teachers strictly adhere to

guidelines (Borman et al., 2000). This required adherence does not support the development of collaborative teams that utilize data to drive instructional choices. The development of high reliability is dependent on the distribution of leadership and the collaborative interactions around solving problems (Taylor & Angelle, 2000). It would seem the adoption of an external program, such as those in the previously discussed studies, would limit the possibility of that type of interaction because it could possibly limit instructional strategy choices available to teachers. They might not have the freedom to modify the instruction because they have to adhere to the prescribed program. It could limit the creation of new mental models and team learning. Dialogue and the ability to talk safely and benefit from collective thinking are at the heart of creating an organization that learns (Senge et al., 2000).

#### High Reliability Organizations

Certainly a major goal driving reform over the last few decades, and that intensified with the passage of NCLB, is eliminating the achievement gap between racial and economic groups of students. In addition, the goal to have all students achieve mastery of standards requires that educational systems minimize and eventually eliminate student failure. High reliability organizations are those that function with reliable results in the most complex of situations (Bellamy et al., 2005; Rossi & Stringfield, 1995; Stringfield et al., 2007; Taylor & Angelle, 2000). The failure of these organizations would cause catastrophic consequences. The study of HROs developed out of the empirical study of disasters and efforts to avoid them in the future (Stringfield et al., 2007). It is a relatively new application of the research to apply it to school settings. However, applying these ideas to a school could result in a new paradigm where success

is focused on so intently that failure becomes less of a possibility (Taylor & Angelle, 2000). In their longitudinal analysis of 12 Welsh schools, Stringfield et al. (2007), found that schools committed to utilizing high reliability principles were able to sustain results four years after the reform was initiated. The findings support the implementation of this model as one that will provide sustainable results. That sustained effect is critical because the goals for students and schools are not short term. Although this study encompassed secondary schools, it is likely that elementary level schools could also have this success provided the structure and commitment were present.

High reliability organizations have certain characteristics. First of all, they are preoccupied with preventing failure. Everyone in the organization is alert to a problem in the system. They also have a redundancy as a part of normal operations. A system of checks and balances is in place to prevent problems (Taylor & Angelle, 2000). There is a clear commitment to resilience apparent throughout the organization. Plans are made in order to deal with the problems that arise before they become insurmountable. Decisions are made at all levels of the organization as well. The ability to make a decision is not based in a hierarchical structure. People on the “front-line” can make critical decisions to prevent failure. Senge, Cambron, Lucas, and Smith (2000) would see this type of structure as conducive to the creation of schools that learn. It promotes the conversation around current practice and enables members to challenge long held beliefs about what is best. That type of interaction is likely to promote learning that changes the organization rather than promotes the status quo. The attention to structures that facilitate decision-making at any level to prevent failure could also aide in the development of distributed leadership practice as Spillane (2006) envisions the practice. This open communication

allows for the interactions between leaders and followers to occur. If there are routines established at the school that allow the interactions to occur on a regular basis, leaders and followers will interact in a way that could increase the efficacy of the individuals at the school or refine the current practice.

This perspective of high reliability organization suggests that studies in teacher leadership and distributed leadership concepts are relevant for understanding how to increase organizational reliability. Developing leadership in this way would enable the creation of a multi-layered system that would encourage decisions being made by those closest to the student. The ability to make decisions at every level of the organization could create a climate that would encourage teachers and support staff to work together in order to develop interventions aimed at helping struggling students. That approach would lessen the chance that a student would “fall through the cracks”. The Institute for Educational Leadership’s 2001 report calls for utilizing the untapped abilities of teachers to improve student performance from the ground level. This organization is one of the voices calling for the development of professional learning communities in order to raise student achievement. Much of the literature promotes a shared leadership model that enables teachers to be reflective in their practice and engage in collaboration in order to raise the level of both teaching and learning in schools (Danielson, 2006; Marzano et al, 2005). Beachum and Denith (2004) agree that teacher leadership could result in dynamic changes in student performance and it is currently underutilized. This is further supported by the work of Alma Harris (2005). She asserts that teachers offer the greatest untapped leadership resource in schools, and “school development and growth are most likely where teachers are seen as leaders (8). This could be due to the wider sphere of influence



of the teachers. In some cases, they have built relationships with others and could utilize those connections to have a greater influence on teaching practices.

The political atmosphere is such that the public is demanding fail-safe operations in a school setting. The achievement gap is well publicized due to the publication of results by subgroups required by NCLB. While there is considerable debate about the mandate, it has brought a new focus to serving those students that have been historically marginalized. Rossi and Stringfield's (1995) study regarding reforms and their impact on students at risk, found support for the HRO construct in schools. This model resulted in positive changes. The researchers found a climate of interdependence at the sites they studied. It was especially true in times of heavy workloads and stress. The model resulted in a strong sense of community. This interdependence ensures a system of checks and balances that fully supports the needs of struggling students.

Bellamy, Marshall and Coulter (2005) applied high reliability organization research in order to develop a framework for a "fail-safe school". The framework highlights three critical functions: "improving normal operations, detecting potential problems, and recovering from those problems" (p. 390). Each of the elements has a critical part to play in the development of a school as a high reliability organization.

According to the authors, improving normal operations would require a shift in the structure of schools and the creation of tightly coupled systems focused on increasing the effectiveness of teaching (Bellamy et al., 2005). A leadership model focused on teaching and learning would include support for collaboration among teachers. Taylor and Angelle (2000) and others found this collaboration and sharing of ideas among teachers led to a higher feeling of efficacy (Bellamy et al., 2005). According to Rossi and

Stringfield (1995), the exemplary schools they studied participated in high levels of ongoing staff development supported by lead staff members. This collaboration led to the development of teams focused on student improvement. Teachers and support staff worked together to create a full support for learning. No one was left to flounder on his or her own. This structure would enhance the probability of developing system thinking that would lead to sustainable change. Senge et al. (2000) suggest that through the interactions members of the organizations can come to better understand the interdependency and deal effectively with the forces that impact teaching and learning.

Goal setting is a part of the change in normal operations as well. Stringfield, Reynolds, and Schaffer (2007) found there might be resistance to this idea at first. This resistance could be a result of the fear surrounding accountability. This HRO reform encourages the re-benchmarking of goals through collaboration and creates a climate of continuous growth necessary for sustainable improvement. The examination and refinement of current practice becomes a part of the culture (Bellamy et al., 2005; Marzano, Pickering, & Pollock, 2001). Once the achievement begins to rise, the staff will begin to see the new initiatives in a more positive light (Stringfield et al. 2007).

Datnow et al. (2008) found six key strategies of performance-driven school systems. The first of these was building a foundation for the practice. This included developing specific measurable goals. The creation of goals ties this process into the high reliability research. The practice of using data to improve decision-making is a promising reform strategy. In their study of four school systems, Datnow, Park, and Kennedy (2008), found there is no one way to approach data driven decision-making. All of the schools in the study approached this process differently, but all achieved success with the

process. Taking the time to develop specific goals was a key aspect of using the data purposefully. This process of goal setting was a critical step in the process of continual improvement for the district.

Detecting potential problems and having a system in place to recover from the problems is an important part of developing reliability (Bellamy et al., 2005; Taylor & Angelle, 2000). Examination of data is the first step to identifying struggling students who are in need of interventions. Staff must be trained to use data for this purpose. However, there must also be an effective plan of intervention in place. Data must be continually examined in order to document that progress is being made and the interventions have worked. If they do not, there must be a system in place that continues the process until an agreeable outcome is achieved (Marzano et al. 2005). Quick attention to potential problems ensures that students are fully supported and they are able to continue to grow academically.

A variety of research studies (Bellamy et al., 2005; Stringfield et al., 2007; Marzano et al. 2005; Taylor & Angelle, 2000) have shown that the collaborative analysis of student work is necessary for this model to be effective. They also argue that assessment must be ongoing and student progress toward goals must be consistently monitored. These collaborative groups enable teachers to detect learning difficulties and receive peer assistance in order to resolve the problems (Taylor & Angelle, 2000). This diligence prevents lapses from developing into larger problems (Rossi & Stringfield, 1995). The collaboration model enables teachers to identify students and give them support until they are able to master grade level work. Reeves (2003) found that “the most effective schools made time for collaboration very frequently and in some cases

every day” (p.9). His work regarding 90-90-90 schools supports the use of a collaborative model in low-income schools. It corroborates the idea that this level of commitment can result in high achievement even in the most challenging settings where most children are living in poverty.

This interaction around student work could also enable teams to become united around a shared vision and create mental models that enable the work to be focused. The collaboration between teachers and support staff nourishes a sense of common purpose. Senge et al. (2000) have suggested that regular collaboration also helps to create the trust necessary to have conversations that help to clearly define, and possibly challenge, the mental models held by staff. This need for trust is corroborated in research being conducted on the impact of school leadership on pupil outcomes. In their interim report Day et al. (2007) found one “factor that appeared to account for part of their success was a high level of trust (3)”. In addition, the school cultures fostered mutual support and openness among staff members.

It would seem that a high reliability organization is possible in the public school setting if the leadership at the school or in the district is supportive of its development and has the capacity to foster the learning of teachers and others in the organization (Spillane & Thompson, 1998). One key element is the administration providing time for collaboration among teachers (Bellamy et al., 2005; Stringfield et al., 2007; Taylor & Angelle, 2000). The focus for improvement encompasses careful examination of normal operations, setting clear goals, and developing a process to detect and prevent problems (Bellamy et al., 2005; Reeves, 2003). The organizational learning necessary for success will require a culture that supports and sustains deep and substantive interactions between

teachers and leaders (Spillane & Thompson, 1998). The focus remains always on student success. The system ideally operates so that all children are provided the best opportunity for success through the examination and refinement of practice. Some researchers are examining the role of data in this refinement process.

The findings from the research on high reliability organizations indicate the responsibility of leadership should be disbursed throughout the organization, and those with the greatest responsibility for ensuring success may need to be more involved with decisions. This is supported by several studies that demonstrate the building of leadership capacity of teachers and others in the organization has a positive impact on both teaching and learning (Chrispeels, 2004; Harris, 2004; Leithwood & Jantzi, 1998; Leithwood & Jantzi, 2000).

Much of the research seems to suggest that promoting and nurturing teacher leadership is a critical element if we are going to develop a culture of high reliability in the school setting (Danielson, 2006; Darling-Hammond, 2004; Harris, 2004; Lambert, 1998; Leithwood & Jantzi, 1998; Murphy, 2007). Every level of leadership in the system ultimately impacts the development of a high reliability organization (Bellamy et al., 2005; Taylor & Angelle, 2000). The Institute for Educational Leadership's 2001 report calls for utilizing the varied abilities of teachers to improve student outcomes at a ground level. Teachers working collaboratively in order to have positive effects on student learning is critical to developing a pervasive culture of success. Beachum and Denith (2004) agree that teacher leadership could result in positive changes and it was not currently being used to its fullest potential. Harris (2005) would concur as she sees the leadership potential of teachers as one of the untapped resources available to schools.

What is missing in the literature is an understanding of how different patterns of leadership distribution might support or hinder high reliability. Another gap this study intends to address is the documentation of the characteristics of HROs found in turnaround schools.

### Distributed Leadership

According to Marzano et al. (2005) and Spillane (2006) most of the current practice of leadership in school encompasses some form of distribution of leadership. At the center of the concept of distributed leadership is the idea that leadership is not static. It is changing and evolving and remaining fluid rather than fixed and rigid (Harris, 2008; Spillane, 2006). The concept of distributed leadership has been around for some time. It was initially developed as a term to describe the patterns of influence in groups of individuals. The influences were considered either “focused” or distributed (Harris, 2008). It now encompasses the concept of shared leadership with multiple leaders (Dean, 2008). Senge (2006) supports this idea of distributed leadership because the world is increasingly complex and dynamic. This distribution leads to the need of developing the capacity of individuals to engage in reflection and problem solving in order to deal with challenges that face the organization. As Harris (2008) recently pointed out, distributed leadership does not negate the formal structure, but it recognizes the “vertical and lateral leadership processes” at work in the organization as well (p.174). There is an underlying assumption that each member possesses some leadership abilities that will be needed by the group at some time. This leadership concept can threaten long held management ideas. Since schools have traditionally had a structure based on a hierarchy of positions, mental models held by many may need to change in order to fully implement a shared

structure seeking collective inquiry. This collective inquiry model can threaten those who feel attached to their job and position in the organization (Senge, 2006).

The concept of distributed leadership, especially to teams, takes many forms in education. Two of the most common are Professional Learning Communities (PLC) and Communities of Practice (Wenger, McDermott, & Snyder, 2002). Both of these models incorporate the idea of collaborative teams working on problems facing the organization and move beyond the concept of leadership as the responsibility of those in formal authoritarian roles. Professional Learning Communities stress accountability for outcomes while Communities of Practice focus in on the learning and building a shared understanding of knowledge for the members of the organization. They are more concerned with the deepening of the collective wisdom of the organization rather than in specific outcomes. While these models have a different focus, they support distributing the leadership across levels of the organization. It recognizes there is expertise and knowledge at multiple levels in the organization and provides a structure for that knowledge to be shared to benefit the collective. The models also support the collaboration between individuals, which is a critical component of the creation of high reliability (Bellamy et al., 2005; Stringfield et al., 2007; Taylor & Angelle, 2000).

Spillane (2006) would identify this type of distributed practice as a “leadership plus” model. He would argue that it is only a part of the whole picture of distributed practice. Since he does not see distributed practice as role dependent, any model that supports a leadership team with designated leadership roles as a replacement for a single leader is not encompassing his entire idea of distributed practice. In practice, and many of the research studies have confirmed, it seems that the this idea of an expansion of

leadership roles and responsibilities is how distributed practice is currently manifested in schools (Harris, 2004; Leithwood & Jantzi, 1998; Marzano et al., 2005; Waters, Marzano, & McNulty, 2003)

The concept of distributed leadership is complex and not always clearly understood. Spillane (2006) cautions that distributed leadership is more than leader plus. In practice it is often manifesting as Instructional Leadership Teams or Professional Learning Communities. Both of these utilize the leadership plus construct as a basis for the development of teams that are focused on improving teaching and learning. The models simply expand the numbers of leaders and distribute leadership tasks among many individuals. This is more a delegation of leadership rather than distribution. As Spillane (2006) points out, it is important to remember, “distributed leadership isn’t just delegated leadership” (13). The form currently in use at many sites would represent only one part of the distributed practice put forth by Spillane. Senge (1990, 2006) would caution that this form of distributed practice is like that of a management team. These teams do not generally promote learning. In fact, many of them fall into blaming if there is a disagreement. This structure can actually prevent learning from occurring in an organization.

Leadership occurs in the interaction of staff members (Harris & Spillane, 2008; Spillane 2006). The leader and the follower are both impacted by the interaction. The interaction does not always result in a tangible outcome. However, an individual’s thinking, personal confidence, or practice can be impacted as a result of the interaction. Leadership practice is generated in the interactions of leaders and followers, but it is impacted by the context as well. The context, according to Spillane (2006), both defines



the leadership practice and is defined through the leadership practice. While many see leadership as something that is done to followers, Spillane would argue that followers are actually co-producers of leadership practice when they are interacting with leaders in various situations. Leadership practice is not then an independent activity but an interdependent one. This concept of leadership practice moves away from the long held idea of leadership as an inherent property of a formal leader. The focus is not on the individual as leader but the complex social interactions taking place within the organization (Park & Datnow, 2009).

Researchers have identified three types of distribution when analyzing interactions of leaders in the co-performance of leadership practice (Spillane, Diamond, & Jita, 2003; Spillane, Diamond, Sherer, & Coldren, 2004). The first of these types is collaborated distribution. This type of distribution occurs when leadership practice is stretched over the work of two or more leaders working together in place and time to perform the same leadership routine. It involves a reciprocal interdependency because the actions of leaders involve input from others while co-performing. Situations where the actions of one leader can enhance or constrain the actions of another are apt to manifest this type of distribution. Spillane (2006) uses the analogy of a square dance when illustrating this distribution. The interactions of the players effect the actions of the next. In a school, a faculty or grade level meeting would be likely situations for this type of distribution. One leader might add to the contributions of another when discussing a potential change for the school. The collective actions are dependent on the individual contributions of the leaders gathered for the meeting. They are expanded or modified based on input from all members. There does not have to be agreement in order to have

what Spillane (2006) refers to as heedful interrelating. All that is required is attentiveness and responsiveness to another person's action.

Collective distribution is another type of distribution identified by Spillane et al. (2000,2004,2006). In contrast to collaborative distribution, leadership practice here is performed separately but interdependently. Leaders are co-performing a routine, but they are not in the same place or performing it at the same time. The interdependence of the leaders is not limited to the moment. A principal and assistant principal performing teacher evaluations separately and then meeting to pool information in order to evaluate teaching practices in the school would be an example of this type of leadership.

Lastly, there is coordinated distribution of leadership. This requires that leaders work separately or together on sequential tasks. When schools have adopted an assessment cycle this leadership can come into play. There are several interdependent steps involved in the creation and analysis of the assessment cycle. According to Spillane (2006) the leadership practice is stretched over the multiple individual activities performed in the particular sequence. The tools and routines established provide the structure for the interactions of leaders and followers around the core work of the school. Each of the routines is dependent upon resources gained from a prior activity.

Leaders can pull together to achieve a common purpose or seek different, even conflicting results. Having a distributed leadership structure does not necessarily mean all are working toward the same end. Collective or coordinated distribution are more likely to have leaders co-performing routines while ultimately striving to achieve different ends (Spillane, 2006). This can be exhibited when teachers are working together to maintain the status quo when administration is seeking to change the current practice.

The practice of leadership can occur at many levels in the organization and an individual's leadership is not dependent upon a specific role in the school. Leaders change depending on the context (Spillane, 2006). One staff member might be a leader in one area and a follower in another. According to Spillane and Thompson (1997), that interaction enriches the human and social capital of the organization. In their study of nine Michigan school district that were engaged in reforms in the areas of math and science, they found that the success of reforms was dependent on the level of human and social capital and the ability to utilize it to improve teaching and learning. The challenge is to create a climate where both the human and social capital is tapped in order to improve student learning. That climate is dependent on both the district administration and teacher leaders having the ability to create the right learning environment to support the depth of interaction that is required to meet that challenge (Spillane & Thompson, 1998).

Historically, the structure of schools was based on a "top-down" model and much of the interaction between members of different levels has been limited. In the traditional model of management, one generally learns to stay quiet and avoid blame (Senge, Camron-McCabe, Lucas, Smith, Dutton & Kleiner, 2000). This dynamic can lead to the repression of ideas rather than the collective wisdom of the organization being developed. The hierarchical structure historically practiced in schools breeds a silence rather than a climate that challenges current mental models and seeks to deepen system thinking.

With all of the challenges facing us today, " expecting one person to single-handedly lead efforts to improve instruction in a complex organization such as a school is impractical" (Spillane, 2006 p.26). That is an idea of industrial age thinking and the new

demands of schools will, most likely, demand structural changes in that historical leadership structure. By developing the capacity of others to lead, the transformational work of leadership can happen even if the designated leader is not present. The kind of leadership framework Spillane (2006) offers is aimed at developing the individual's capacity for reflection and growth. It is supported as well by the organizational theory work of Senge et al. (2000), who label this reflection as a component of personal mastery. It encompasses the assessment of current reality and creating a personal vision for the future. According to the authors, this practice can increase one's capacity to make better choices and increase achievement of results. This is supported by the research in the field of teacher leadership. Reflection and growth is an important component of the development of that level of leadership as well (Danielson, 2006; Katzenmeyer & Moller, 2005).

A significant difference between Spillane's (2006) conceptualization and the others discussed is that he does not address the success of distributed leadership practice through outcomes alone. He does not focus on the worth of distributed leadership but on understanding the practice of leadership. There may be no tangible outcomes to demonstrate leadership, but it can still be present. There may be no way to measure the changes that take place because of the interactions between leaders and followers, but confidence and practice might be greatly impacted by the interaction. The distribution of leadership is dependent upon the structures and routines used to support the core work of the organization. Leadership, as Spillane sees it, is in the activities tied to the core work, which are designed to influence motivation, knowledge, or affect practice. The activities do not need to lead to tangible positive outcomes in order to be considered leadership.

Influences on motivation or practice might not be measurable, but they can result from interactions, which Spillane would categorize as leadership.

Professional Learning Communities are focused on using data and student work to yield outcomes (Marzano, Waters, & McNulty, 2005). They are preoccupied with the analyzing of data and the ensuring of progress toward agreed upon goals. The reliance on outcomes represents one variation in the implementation of distributed practice.

Researchers and practitioners more concerned with the normative aspect of distributed leadership (Harris, 2008) recognize there are challenges in implementing a distributed form of leadership practice. This form of leadership requires a change in the current culture and is aimed at creating systemic and lasting change that impacts student engagement and achievement (Dean, 2008). In addition, some of the traditional forms of leadership embrace autonomy and individuality among teaching staff and that can work against the ideas of distributed leadership (Danielson, 2006). The teacher's unions can also stand in the way of this leadership form. They are invested in creating a climate where all teachers are seen and treated as equal. If one or more take on leadership roles, they are sometimes seen as traitors and this can create an adversarial situation among colleagues (Darling Hammond, 2004). Changing long held ideas about the roles of teachers and administrators in a system is difficult, but the potential benefit for students must be considered because that is the espoused common ground.

Many authors now argue leadership is a complex system rather than one reliant on an individual is necessary in order to fully develop the distributed practice (Dean, 2008, Harris, 2005, 2008). This would require those currently in formal leadership roles to relinquish power and be willing to be vulnerable in the sense that they will lack some

control over certain activities (Danielson, 2006; Harris, 2004). It is an organic form of leadership and its spontaneous nature makes it more difficult to control in the traditional sense. Harris (2008) points out the challenge for schools is in seeing leadership as a resource that is “maximised through interactions between individuals and teams that leads to problem solving and new developments.” (183).

Aside from the traditional practices and formal leaders’ disposition to share leadership, Harris (2008) also cites structure and distance as obstacles to the full implementation of distributed practice. In order for distributed leadership to be realized, the departmental structure in use in most districts would have to change. Dean (2008) sees the artificial barriers as impediments to the learning of the organization. This impedes the ability for teachers and administrators to collaborate across boundaries. Since collaboration is a cornerstone of the distributed practice model used in most schools, anything that impedes the ability to interact in this way compromises the success of such leadership. The challenge, as seen by Harris (2008), is “to break the barriers through alternate forms of communication” (p.183). Technology resources could be leveraged to enable conversations between professionals without the prescribed time limits. This could present one solution to the dilemma of contract hours limiting the time available for collaboration among teachers. It would also enable teachers from multiple sites to create teams and extend collaboration beyond the boundaries of one school.

Another challenge is the current financial structure in districts. This is a multi-level problem because it involves unions and might only be resolved with the complete restructuring of the system (Danielson, 2006). Formal leadership roles receive financial compensation. Principals and others in formal roles are generally paid on a different scale

from teachers. If teachers are taking on leadership roles, there must be some form of incentive for them (Harris, 2004). Financial resources must be allocated in a manner that supports the development of both human and social capital (Spillane & Thompson, 1998). In their study of nine Michigan school districts, they found that the more successful districts utilized materials in a way that promoted substantive learning about instruction. The careful allocation of funds increased the district's capacity for reform. This supports the examination of every aspect of the organization in order to prevent obstacles that interfere with reform aimed at creating high reliability in the schools. These are not simple issues to deal with and will require many individuals coming to the table to reach agreements that work for all parties and support the development of this leadership design.

According to Spillane (2006), teachers, even without official leadership roles, play an important role in distributed practice. They are responsible for the delivery and monitoring of curriculum. Many times they are taking on roles individually or collectively in order to fill leadership gaps at schools. Spillane (2006) found that distributed practice in schools resulted in the formal designation of "three to seven" leaders (p.50). The power of this model lies in the interaction and the interdependence developed as a part of that interaction. In this way, the team is developing the checks and balances that are a component of high reliability organizations. This practice enables the community to develop to a point where any member can challenge what is happening and becomes responsible for the results. It has the potential to dramatically transform the culture of the school and increase reliability for results. Even when leadership practices are distributed across multiple actors in a system, most organizations, including schools,

have a designated formal leader. The next section explores the concept of transformational leadership as one approach that seems to align with and support distributed leadership practices and also foster high reliability.

### Transformational Leadership

Two leadership paradigms have dominated the study and the rhetoric of school leadership in the last 30 years. One has centered on instructional leadership (Andrews & Soder, 1987; Hallinger & Murphy, 1986; O'Day, 1983) and the role of the designated leaders to play an active role in coordination and control of the instructional program. The other perspective that emerged in the early 1990s focused on the concept of transformational leadership (Leithwood & Jantzi, 2000; Silins, 1994). Hallinger (2003) has argued that this shift in the study of leadership evolved to be more consistent with educational reforms such as empowerment, shared leadership, and organizational learning, as discussed above. Such shifts often require second order changes (Leithwood, 1994) as they are aimed primarily at changing the organization's normative structure. Although the definitions of transformational leadership vary, there is general agreement that such leadership focuses on fostering the capacity of the organization's members to grow and innovate by articulating and sharing elevating goals that build member commitment (Leithwood et al., 1998). Transformational leaders look for permanent solutions that prevent organizational problems from reoccurring; they attend to values and practices that support or may be blocking goal attainment.

Several authors have argued that transformational leadership is necessary to combat the ambiguities in many of the restructuring programs currently in use in schools (Leithwood, Seashore, Anderson, & Wahlstrom, 2004). Transformational leadership



impacts every level of the organization by increasing the efficacy and personal commitment of all members of the school community (Leithwood & Jantzi, 2000), thus suggesting a link between concepts of transformational and distributed leadership and high reliability that were explored in his study. For example, Taylor and Angelle (2000) examined school improvement plans and conducted school visits to determine if there was a link between high reliability and transformational leadership. They studied an elementary school that had a student body of 329 and 72% of the students were on free/reduced lunches. They found that there was a strong association between transformational leadership and the development of a high reliability school.

The first step for a transformational leader is to identify and clearly articulate a goal and purpose. This can be a vision that is promoted by the leader or one that is created in a collaborative fashion by the staff; however, in a transformational paradigm, the goal becomes pervasive in the culture of the school. It is focused on intently and espoused through communication with all stakeholders (Leithwood & Jantzi, 2000).

Building consensus is another component of transformational leadership. Bringing the majority of stakeholders in line with the goals is critical to success. According to Hallinger (2003), transformational leadership differs from instructional leadership by starting from “somewhat different motivational assumptions. Behavioral components such as individualized support, intellectual stimulation, and personal vision suggest that the model is grounded in understanding the needs of the individual staff...In this sense the model seeks to influence people by building from the bottom-up rather than the top down” (p.337). Developing consistency of the program, and creating personal and

organizational goals are hallmarks of a transformational approach. The goals must be monitored and they need to be the basis for future decision-making.

Transformational leaders offer individual support for staff members. Support must be linked to the realization of the agreed upon goal (Leithwood, Day, Sammons, Harris, & Hopkins, 2006). Through this individualized approach, leaders promote individual and school improvement. The cycle of plan, teach, reflect, and apply that serves as the base for beginning teacher support works for all teachers. These steps are aimed directly at improving teaching to improve learning outcomes. This work suggests that while the transformational leader needs to provide individual support, that support to improve student achievement must be related to instruction.

Collaboration is another key element in the transformational approach. Teachers have to be able to have conversations about student work and question practices that are not yielding results. This is at the heart of organizational learning in schools. The questioning and refining of practice to yield better results is evidence of a school whose structure supports organizational learning (Senge et al., 2000). Administrators must create a climate that does not penalize teachers for making mistakes as a part of their effort of improving practice (Leithwood et al, 2006). Without this climate, teachers will be reticent to take the risks involved in examining practice. Transformational leaders must model good practice and hold high expectations for performance. This creates a climate that encourages innovation. Teachers utilize feedback to make changes in their practice. They work together and the level of professionalism is raised at the site. This feedback and reflection on practice is evidence of personal mastery and double loop learning (Senge et al, 2000).

According to Leithwood and Jantzi (2000), the drawback of implementation of this model lies in the underestimating of the transactional practices. In order to keep the organization running smoothly, attention must be paid to the transactional tasks especially those required to coordinate the instructional program. It is essential to maintain the stability of the organization. The transactional elements considered by Leithwood and Jantzi (2000) included: staffing, instructional support, monitoring school activities, and community focus.

There are several variables that determine the level of effectiveness of this form of leadership. The purpose and the goals set by the school are crucial to success. Leithwood and Jantzi (2000) caution that every staff member must understand the “explicit and implicit purposes and directions of the school” (115). If that is not the case, the achievement of the goal is compromised. This is congruent with creating a shared vision as a key component of organizational learning (Senge et al, 2000) and the clear goal focus that must be established if an organization is to be highly reliable.

The culture has an impact on the effectiveness as well. The norms, values, beliefs and assumptions of staff members make up the culture of the organization. The culture has a critical effect on the success of any leadership construct. All stakeholders must embrace the culture and there must be support for a collaborative environment (Leithwood & Jantzi, 2000). The culture as defined here is analogous to the mental models in Senge’s (2006) work. Mental models are constructed through the experiences of each individual. The models are tightly held on to and govern how people interact, plan, and execute innovations. A first step to creating a culture that embraces

collaboration might be to ensure that individuals have attained the personal mastery needed to reflect and honestly evaluate their own mental maps.

Another variable that must be considered is classroom conditions. Leithwood and Jantzi (2000) considered two conditions of utmost importance. They focused on instructional strategies and policies and procedures. Instructional strategies were considered to be the interventions that teachers utilized in order to advance academic growth in students. Policies and practices involved the planning and setting of appropriate goals for students. This element also consisted of decisions regarding content and the use of instructional time.

The decisions regarding classroom instructional choices should be based on the review of data and help to bridge the gaps identified in the learning (Marzano, Pickering, & Pollock, 2001). In their study of four school systems, Datnow, Park, and Kennedy (2008), found that the use of a tool such as a discussion template helped teachers to structure their meetings and create an inquiry cycle. The schools in their study had implemented some form of monitoring toward goals and the data from that monitoring was regularly discussed in teacher meetings or between teachers and the administrator. The schools in their study were also involving students in data to improve their learning. Students set goals and monitor their progress toward those goals. When all levels of the school are involved, data analysis for learning becomes a part of the culture.

In order to accomplish transformational leadership in schools, there must be an avenue to develop leaders at every level in the organization. In this construct, staff members take control and responsibility for their own growth. The type of growth necessary requires cooperative interaction. Teachers need to be working in a

collaborative fashion to achieve the goals set by the school. The interaction must be structured and focused (Marzano et al., 2005). Developing teacher leaders as a part of an overall distributed leadership model would impact the examination and refinement of practice. It has the potential to raise teacher efficacy and student achievement. This comprehensive leadership construct would be one way of accomplishing true transformational leadership.

### Organizational Learning

High reliability, distributed and transformational leadership to be successfully implemented all require organizational learning (Senge et al. 2000). The communication and interconnectedness of a high reliability organization demonstrates the structure necessary to ensure the creation of an organization that learns. This type of organization builds awareness and develops capacities of individual members. The five learning disciplines, as outlined by Senge (1990, 2000), are applicable to the creation of a highly reliable school with leadership practices distributed throughout the school as necessary to minimize failure.

Personal mastery is the first of the disciplines. It is the practice of clearly articulating an image of your personal vision. According to Senge, cultivating personal mastery expands ones capacity to make better choices and achieve results. The interconnectedness of the high reliability organization is reliant on the individuals in the organization achieving proficiency of personal mastery. One way to create a climate of continuous improvement is to build a culture of data driven decision-making (Datnow, Park, & Kennedy, 2008).

The second discipline is that of creating a shared vision, which as discussed previously, is essential to transformational leadership and high reliability. This discipline is widely utilized at some level in many districts. One only has to open a web site to be immediately greeted by a label professing a school's shared vision. However, it is only a shared vision if it is nourished by the organization. The group or organization develops shared images and creates guiding practices that will enable them to achieve their goals.

The creation of mental models is the discipline connected to reflection and inquiry skills. When an individual's capacity has been increased through the practice of distributed leadership, they are more able to create mental models that are connected to the current reality. This allows them to assess the reality of the school and then create a plan to tackle the perceived problems. This is critical in the development of high reliability because it creates a sense of accountability required in that type of organization.

Team learning is critical in order to develop a learning school according to Senge et al. (2000). Skillful discussion and collective thinking creates higher energy and enables an organization to solve problems as they arise. This is supported by the work regarding the development of a collaborative culture that examines practice in an on-going fashion in order to ensure the development of high reliability (Bellamy et al, 2005; Marzano et al, 2001).

System thinking is the last of Senge's (1990, 2006) disciplines. In this discipline people in the organization are more able to understand the interdependency of the levels in the organization. It is based on a growing body of theory about behavior of feedback. The feedback loop creates the necessary leverage to bring about constructive change in

the organization. In the work of schools, this thinking incorporates both the district and individual sites. Each have their unique systems at play, but there is an overlap. It is in that overlap that the leverage to bring about constructive change is mostly likely to manifest.

Table 2.1 presents a summary of the key components of the literature review. There are many components that overlap. While goal setting plays a part in high reliability organizations, the practice of data driven decision-making (DDDM), and organizational learning, it varies in its application in all of these settings. Goals in a high reliability organization or a learning organization are not tied necessarily to specific performance outcomes as in a data driven decision-making model.

*Table 2.1: Summary and Comparison of Key Components of Literature Review*

High Reliability	Distributed Leadership		Data Driven Decision Making	Organizational Learning
Goal Setting (manageable number)	DL as Practice	DL as Normative	Using data to set goals	Shared goals/vision
Focus on detecting problems	Leader/follower/situation using tools and artifacts to address problems		Identifying gaps and needs	Collective thinking, reflection and inquiry
Recovering from problems/resiliency	Addressing problems		Creating plans to address gaps/needs	Aligning mental models through skillful discussion
Systems of checks and balances/redundancy and interdependence	Attending to leadership structure and leadership situations		Assessment loops	System thinking
Collective responsibility	Leader + concept (collective, collaborative, coordinated)	Collective responsibility for leadership (principal can't do it all)	Collective responsibility for results	Team learning
Empowered employees who can individually raise and address problems	Developing leadership capacity to assume leadership roles	Develop capacity	Develop capacity to use data	Personal mastery
	Structures for leadership practice	Structures for distributed leadership		

While all of the constructs do, in some way, discuss the idea of focusing on problems, they vary in their structure to do so. The distributed leadership model and organizations that learn and more reliant on the interaction of members as a means for inquiry and determining needs. The interaction is implied in high reliability organizations because it is generally expected that the members of the organization have a collective



responsibility for success. DDDM can include that interaction, but it is not a necessary component.

One area where all of these concepts come together is in the focus of developing the capacity of the members of the organization. Most are focused on developing the capacity of the individual. In distributed leadership the focus on the individual's capacity to assume leadership roles. The roles will vary based on the context of the interaction, but each member should increase in their ability to engage in the interaction in a meaningful manner. An administrator must provide structures for individuals to develop the capacity to use data in a manner that results in improved student outcomes. The development of an individual's capacity is ultimately aimed at impacting the collective responsibility and efficacy of the organization through the interaction of leaders and followers engaged in the core work of the school.

It would seem that without the components present in organizations that learn, the development of a HRO is unlikely. The collective thinking leads to the interdependence necessary for the systems of checks and balances. The development of personal mastery empowers employees to address problems they encounter in the workplace. The reflection and inquiry necessary for learning also would help in the detection of problems and the resiliency to recover from those problems. In previous studies these concepts have not been collectively examined in this way. This study may begin to build a conceptual framework that expands the current understanding of how schools can build high reliability through interactions of team members. By examining teams who are obtaining reliable results for the presence of organizational learning elements, the

practice of data driven decision-making, and the distribution of leadership a new conceptual framework could result.

### Conclusion

Leadership in schools is an ever-changing construct. Historically it has looked very different than the approach taking hold today. We are recognizing that the difficult challenges facing us today need a new approach. The idea of a distributed practice that embraces leadership at all levels demonstrates the possibility for success. Constraints to the development of this new leadership model need to be examined, and possibly changed, in order to give it the best chance for success. As Spillane and Thompson (1998) suggest, this examination should begin with the district's capacity to support and sustain the reform by allocating financial resources that promote the development of both human and social capital through the collaboration of educators and experts. By examining schools that are working in this fashion, we could develop a clearer understanding of how to replicate this model. There will be no one model to fit all (Reeves, 2003). That idea has historical precedent. Each school setting is different and that must be taken into account. However, by developing leadership capacity at multiple levels of an organization we can possibly move toward developing reliable schools that can promise and deliver results for students.

The literature reviewed in this paper supports the development of leadership at all levels of the organization. While there has been movement towards distributing leadership in schools, it is mainly manifesting as a leader plus model. The management tasks have been delegated and spread over a larger number of people. What is missing in many of the models is attention to the collaboration necessary to change practice. This

might be due to the focus of schools to meet outcomes set by the state in order to avoid sanctions. That focus can create a pressure that results in rigidity and limits the opportunity for growth. When choosing a model for leadership it is imperative to consider the support for that model from the district as well as the site level. Both financial and structural support is necessary to implement lasting change in leadership.

The literature from high reliability organizations could provide a model that will compliment the distributed practice in schools. This construct provides a framework on which to build accountability and the redundancy necessary to ensure reliability. Developing teacher leaders could be a critical element in the development of schools as high reliability organizations. Since teachers are closest to the students and have the most interaction and potential for impact, enhancing their capacity for leadership and reflective practice could greatly benefit student achievement. The current structure does not always support the complex interactions necessary to examine and change practice. Teachers working collaboratively to develop and refine practice based on data hold promise for closing the achievement gap. The interactions raise the level of engagement of teachers, and encourage the development of a culture of accountability (Lambert, 1998). By developing the capacity for leadership at all levels and utilizing the framework for “failure-safe” schools, educators can begin the process of eradicating the achievement gap once and for all (Bellamy et al., 2005).

Since many of the schools labeled as low performing serve minority populations, creating high reliability schools is an idea that relates to many social justice issues. The achievement gap is well publicized and much of our energy is aimed at trying to

eradicate the disparity of achievement between minorities and their white counterparts. The social relevance makes this work a moral imperative.

Further research is needed in the area of high reliability as it is applied to school settings. Empirical data that demonstrates the effectiveness of the model at all levels is necessary to build support for the implementation of this idea in settings beyond the secondary setting where there has been some success. Therefore, this study explores the ways in which data are used in making decisions and the types of distributed practices that exist to understand how each of the case study schools may or may not be developing as highly reliable organizations. The next chapter presents the methods used to explore these issues.

There are many questions relevant to further study in this area. What structural changes need to take place at schools sites or in districts to make high reliability a certainty? Does the current manifestation of distributed practice enhance or hinder the development of high reliability? How can we develop the capacity of all stakeholders in order to develop high reliability and sustain it over time?

Conducting quantitative studies of teams that are currently operating as “fail-safe” could result in a deeper understanding of the complexities involved in the creation of these teams. Schools are complex systems with many variables at play. Community, culture, teacher effectiveness, and leadership models are just a few of the variables that impact the effectiveness of a school. Each of these could be considered separately when examining what impedes or promotes developing high reliability in school settings. The development of high reliability schools could result in “no child left behind” being a reality rather than a slogan.

## CHAPTER 3: METHODS

Studies instrumental in the development of the concept and necessary components of HROs in school settings were examined in the previous chapter. As the research showed, there is support for this concept in both secondary and elementary settings. The literature supports that in order to fully develop into a reliable school the leadership structure must be conducive to its development. Research studies suggest that a school system that is embracing teacher leadership and distributed leadership as an avenue to transform current practice is proceeding in the right direction. This literature is concentrated on district and whole school structure as a means of achieving high reliability. However, much of the every day work occurs in the grade level team, which is the smallest leadership unit of the organization. Senge (2006) sees the working team as one of the most important levels in an organization and Leithwood (2004) argues that it is through teams that organizations learn.

The purpose of this multiple case study was to explore the various pathways being used by each of the schools to improve student outcomes. Additionally, the leadership and instructional practices of each school were examined to determine how they reflected the characteristics of high reliability in their respective schools. It addresses a gap in the current literature by including an examination of the impact of the teacher led teams in the development of characteristics of a high reliability organization. Previous studies, discussed in the literature review, have concentrated on the district and site leadership but have not looked at the teams and teacher leaders specifically. There is also little research available on the practice of data driven decision-making at the teacher level. This study

will begin to address that gap by examining specific instances of data use by teachers and teams to change practice.

The theoretical framework used to examine the schools contends that to develop into a highly reliable school, the structures and leadership that support distribution of leadership, organizational learning, and data driven decision-making should be in place. It is through those practices that highly reliable results for student achievement can occur.

A mixed method approach has been utilized for conducting the research. A multiple case study was used to fully examine the culture of each of the school sites in the Sunset Glen School District<sup>1</sup>. This chapter will fully explain the methods used in conducting this study. It will be divided in the following sections: research design, context, researcher's role and ethical considerations, data collection, data management, data analysis, and limitations. The interview protocols, participant consent forms, and case study protocol are located in the appendices.

### Research Design

A case study examines a phenomenon within a bounded context (Miles & Huberman, 1994; Stake, 1995, Yin, 2009). The phenomena in this study consisted of two elementary schools receiving Quality Education Improvement Act (QEIA) funding as a result of their designation as low performing schools. This designation was achieved due to the school's inability to meet growth targets set by the state.

Initially this study was a mixed method multiple case study of four schools in the Sunset Glen School District. However, two of the four schools invited to participate in

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<sup>1</sup> Sunset Glen School District is a pseudonym for the district in this study. It is used to protect the participants involved.

the study did not choose to participate and were removed. At one site, Overlook Elementary, the teachers were asked multiple times to consider being interviewed. There were no responses. Several emails were sent to teachers and the resource teacher was contacted to help with recruitment. In addition, site administration could not provide a staff meeting for the survey administration. The surveys were sent through district mail with a cover letter explaining the study. Thirty surveys were sent and ten were received back. Due to lack of interest in both the survey and the teacher interviews this school was dropped from the study. The administrator was interviewed, but this was not sufficient to provide a clear understanding of the complete leadership structure at the school.

The second site, Sunset Glen Elementary, was dropped due to a lack of interest in the survey. Again, the administration could not provide a staff meeting for administration of the survey so it was administered through district mail. A survey was placed in the boxes of all teachers and support staff at the school. A cover letter was attached explaining the survey and how the information would be used. Staff members were asked to send the completed survey to the researcher via district mail. Five weeks were given for collection and reminder emails were sent twice to possibly increase the return rate. Twenty-eight surveys were given out and five were returned. Interviews were conducted with both the administration and teacher leaders at the school. However, this presents a limited view of the school due to the fact that teachers and support staff do not have a voice represented. The survey would have enabled that perspective to be shared. Due to the incomplete data set, this school was also dropped from the final study. Two schools remained and were examined individually and then compared to determine similarities

and differences in how the leadership structure is playing a role in the development of high reliability.

The use of multiple cases increases the opportunity for deeper understanding of the processes and outcomes being studied (Miles & Huberman, 1994). Since each of these schools use a different leadership model, the use of this design enabled the researcher to examine each model and how it contributed to the development of a highly reliable school. This case study sought to explain how the leadership structure contributed to the development of high reliability rather than provide evidence of a causal relationship between leadership and a specific outcome (Stake, 1995).

According to Yin (2009), this design is appropriate when one is studying the impact of a common program in schools. Both of the schools receive QEIA funding, but there was not consistency in usage of the funding, thus the study will not be a literal replication but a theoretical replication of the concepts of HRO. Each school was individually examined to determine how their leadership structure impacted student outcomes and contributed to the creation of a high reliability setting. More specifically, it examined how the structure supported the collaboration in grade level teams, and how the teams used the collaboration and data driven decision-making to raise student achievement.

In a multiple case study, there are often two stages of analysis. The first stage consisted of analyzing data within a case to clearly convey a holistic understanding of the case. A second stage of analysis occurred when sites were compared in order to attempt to “build a general explanation that fits each of the individual cases, even though the cases will vary in their details” (Yin, 2009, p.112). In addition to the looking at each of



the sites as a case, a cross case analysis was conducted to determine if there were theoretical commonalities among the sites. This analysis was conducted in an attempt to see how the local conditions at each school impacted the processes of reform, the outcomes for students, and the theoretical constructs of HRO. According to Miles and Huberman (1994), this can enable a more sophisticated and detailed explanation. The inclusion of this analysis further supports the use of a case study method for this research.

A significant strength of case study research is that the researcher has the opportunity to use a multiple sources of evidence. Inclusion of multiple sources allows the researcher to consider a broader array of issues (Yin, 2009). Gathering data from a variety of sources is important because every data collection method has some weaknesses. For example, observations are limited by the researcher's lens and personal bias. According to Stake (1995) recognizing this fault and having a routine for triangulation of results is imperative. The subjectivity of the researcher should not be eliminated, but it is important to thoroughly examine results from observations in order to "purge misconceptions" (Stake, 1995 p.45). The data collected from interviews and surveys are limited by participants' personal perceptions and biases as well as their positionality. Participants do not always have the same background information and that greatly impacts how they interpret situations and information. Lastly, documents can be inaccurate and they vary in quality although they do provide an opportunity to include activity not directly observed as a part of this study. For example, the School Improvement Plans were written prior to this study, but they can potentially offer a wealth of information relating to the leadership structure of the school site. Due to the limitations of the methods described above, this study includes both qualitative and

quantitative methods in order to present a more fully developed description of each of the sites.

Triangulation of multiple data sources increases both the validity and reliability of results (Yin, 2009). The use of “converging lines of inquiry” increases the accuracy of results, as they were based on several different sources of corroboratory information (Yin, 2009, p. 98). For the purposes of this study, data was collected from different sources: school administrators, Instructional Leadership (ILT) members, grade level team members, and various documents from the school.

The following methods for collection of the data were used: interviews, document evidence, and surveys. Use of multiple methods in this study strengthen the findings and create a comprehensive picture of each of the sites while enabling cross-case analysis in order to determine commonalties among the sites.

The following questions and hypotheses have guided the inquiry in this study:

- 1.0 What is the evidence of improved student outcomes in these schools since receiving QEIA funds?
- 1.1 How does teacher professional development support teacher learning?
- 2.0 In what ways is leadership distributed in these schools?
  - 2.1 What leadership role does the Instructional Leadership Team play in the improvement process?
  - 2.2 What leadership roles do teachers play in these schools?
  - 2.3 What leadership role do coaches and support staff play in the improvement process?
  - 2.4 In what ways do the Instructional Leadership Team and grade level teams collaborate?
- 3.0 In what ways do teams use data to inform their work?

3.1 How is data analyzed at the site and team level to ensure student success?

3.2 How does data driven decision-making connect to improved student outcomes?

4.0 Is there evidence of the characteristics of high reliability organizations present at the school?

#### Context of Study

Schools across the nation are being labeled as low performing if they fail to meet growth levels determined under the NCLB legislation. More and more schools are facing this reality. While more and more is being expected of schools, the funding is being drastically cut. It can create adversarial relationships between the state, districts, and local teacher's unions that can lead to litigation in an attempt to restore funding.

QEIA funding is a repayment of money that was owed under California's Proposition 98 which required that 40% of the general fund be used for education. It resulted from a lawsuit filed by the California Teacher's Union in 2005. This funding is specifically designated for schools serving low-income minority students and English learners in order to close the achievement gap (CTA, 2006). QEIA provides almost 3 billion in extra resources over seven years to 487 K-12 schools that demonstrated the greatest need (CDE, 2006). The funding is used, in part, to maintain class size maximums of 20 in the primary grades (K-3) and an average of 25 in grades 4-12. It also established a teacher quality index to ensure that the average teaching experience in the schools receiving funding is equal to or exceeds the district average. This prevents the overrepresentation of novice teachers. Studies have shown that schools servicing low-income students often have a preponderance of novice teachers (Borman, 2009; Darling-

Hammond, 2004; Rotherham, 2004). This overrepresentation of novice teachers can require a significant commitment of financial resources to professional development.

To be eligible for this funding the school had to be designated as low performing and be serving high percentages of students living in poverty or learning English as a second language. Districts across the state applied for the funding and schools were chosen randomly by lottery to receive monies. Four elementary schools in the Sunset Glen School District were chosen to receive funding, but only two are examined in this study. Table 3.1 provides demographic information from the 2007-2008 school year for each of the two schools. This year was chosen because it is the first year of QEIA implementation.

*Table 3.1: Demographics of the Case Study Schools*

<b>Lightfoot Elementary Demographics:</b> Total Students 741			<b>Harvest Elementary Demographics:</b> Total Students 647		
African		American	African		American
2.7%			3.71%		
American	Indian/Alaska	Native	American	Indian/Alaska	Native
.27%			.31%		
Asian			Asian		
.81%			.31%		
Filipino			Filipino		
3.24%			2.16%		
Hispanic/Latino			Hispanic/Latino		
86.1%			87.48%		
Pacific		Islander	Pacific		Islander
.13%			1.55%		
White			White		
4.18%			3.86%		
Multiple/No		Response	Multiple/No		Response
2.56%			.62%		
English		Learners	English		Learners
66%			61%		
Students	with	Disabilities	Student	with	Disabilities
13%			10%		
Socio-economically Disadvantaged			Socio-economically Disadvantaged		
82%			86%		

This study was carried out with Harvest Elementary and Lightfoot Elementary in the Sunset Glen Elementary School District. The district is located in southern California, and it is a large kindergarten through sixth grade district. It was established in 1892, and it covers an area of 103 square miles. There are 44 schools serving a total of 27,400 students. The student population is diverse. The ethnic composition of the district is as follows: 64.3% Hispanic, 14.3% white, 9.4% Filipino, 4.9% African-American, 2.6% Asian, .8% Pacific Islander, .4% American Indian or Alaskan.

### *Participants*

Administrators, teacher leaders, and classroom teachers made up the participants in this study. Each of the administrators and teacher leaders were asked to participate in a one-on-one interview. All participants were asked to complete a survey.

### *Survey Participants*

Administrators at the sites were solicited to administer the survey during a regularly scheduled staff meeting. This approach was used in order to yield a higher return rate for the survey rather than using an on-line approach. This decision was made due to the results in a pilot done study done by the researcher testing the on-line approach. Administrators and teachers at the schools were asked to voluntarily complete the survey. A brief description of the project was attached to each survey and the researcher was present to answer any questions regarding the study. The survey was completely voluntary and all respondents remained anonymous.

### *Interview Participants*

Administrators at each site were contacted in order to arrange one-on-one interviews. The ILT members were asked to volunteer to be interviewed. In the case of

Lightfoot Elementary, the volunteer teacher interviews were arranged and scheduled by the administrator. At Harvest Elementary, the ILT members were invited by email by the researcher because the administrator chose not to be involved in the process.

In the initial design of the study, two focus groups consisting of randomly selected teachers were planned as well. However, multiple emails were sent out to the whole staff of each school to invite teachers to participate. There was not an interest at either site for this interview. Initially, the focus groups were planned in order to capture the perspectives of the teachers who did not have a designated leadership role at the school. However, since the voice of those teachers is represented in the survey, a decision was made by the researcher and the dissertation chair to drop the focus interviews from the final study.

#### Researcher's Role and Ethical Considerations

The researcher's interest in this study stems from an eleven-year affiliation with low-performing schools in the case study district. The researcher had been employed at one of the sites as a teacher leader for three years. Although no longer teaching at this school, there was a possible conflict of interest that could alter respondent's answers, therefore, an alternate researcher conducted the interviews at that school. This enabled members of the staff to be more candid in their responses.

As a part of this study, the researcher completed all the required steps in order to protect the rights of all participants. The schools have been assigned pseudonyms, and they have been used throughout the study to ensure the anonymity of the all participants. All of the participants signed informed consent forms requesting their consent to participate in the study and to use the data collected from them for this dissertation. They

were informed, prior to their consent, that their participation was completely voluntary. All participants retained the right to stop the interview at any time. All survey data collected, was given a numeric code in order to protect the identity of respondents as well as the name of each school. The interviews were labeled using initials and Roman numerals for the interviewees as recommended by Seidman (2006). This labeling enabled the retracing of excerpts taken from the transcripts in the analysis phase.

### Data Collection

The data for this study came from a variety of sources. In a case study, research evidence can be gathered from documentation, archival records, interviews, direct observation, participant observation, and physical artifacts (Yin, 2009). For the purposes of this study, the researcher gathered evidence from documentation sources, archival records, a survey, and interviews.

#### *Documents*

According to Yin (2009), “documentary information is likely to be relevant to every case study topic” (p. 101). Documents are stable and can be reviewed multiple times in the course of the investigation. They are unobtrusive because they were created independent of the investigation, and they contain exact references and names. The documents helped to corroborate information from other sources such as interviews. In this case, the school plans and the state testing reports were the main documents examined.

Sometimes retrieveability of school plans as a source of evidence can be difficult, but in this case it was not a problem. School plans encompassing the three years of QEIA

funding were gathered from each school for review. Additional sources were gathered from the state website. The researcher reviewed each of the documents.

The state testing reports for the years from 2006-2010 were reviewed to determine the change in student outcomes. The time span includes two years prior to the funding, 2006 & 2007, and the three years of QEIA funding, 2008-2010. Initially, the test scores from 2007 were added to act a baseline for the analysis of student achievement. The additional year, 2006, was included due to the initial review of the scores at Harvest Elementary. There was a significant difference in the fourth grade scores when compared to the overall school scores in 2007. The previous year was examined to determine if that was a pattern at the school. The 2006 scores were significantly lower than in 2007. This indicated the higher scores in fourth grade were not a pattern and likely attributed to other causes. This is further discussed in Chapter 4. The state results have been used to gather quantitative information regarding student progress over time. One of the considerations is that this type of evidence can sometimes be inaccessible due to privacy issues. However, most of the information included is a matter of public record and can be accessed through the state's website.

### *Interviews*

A standardized open-ended format was utilized to gather data from multiple perspectives. Semi-structured interviews were conducted with each of the administrators and members of the ILT. This structure is used for short interviews based on a certain set of questions (Stake, 1995; Yin, 2009). The purpose of the interviews was to more deeply understand the lived experience of each of the interviewees (Seidman, 2006). This semi-



structured format allowed respondents to define their world in a unique way (Merriam, 1998). All interview questions and protocols can be found in the appendices.

All interviews were conducted at the school in order to provide the most comfortable environment for the participants. Each interview began with a brief introduction and explanation of the study to alleviate any uneasy feelings caused by the small invasion on each participant's personal space (Stake, 1995). Participants were then asked to consent to audio recording and sign a release in order to be able to use the transcript of the interview. Audiotaping allowed a record of exact words. The researcher transcribed each recording, and those transcriptions were kept in a locked file. All interviews were coded to further protect the participants. Roman numerals and initials representing the school were used as labels. Only the researcher and the chairperson had access to the interview materials.

All of the teacher interviews were conducted at Lightfoot Elementary on the same day during school hours. The administrator arranged for a roving substitute to cover the classes of the ILT member interviewed. The one-on-one interviews were conducted in the office of the assistant principal to maintain privacy of the interviewee. The teacher interviews lasted approximately 25 minutes each. The interview with the administrator was conducted on a separate day in her office to maintain privacy, and that interview lasted approximately 25 minutes.

A colleague conducted the interviews at Harvest Elementary in order to limit bias as the researcher was previously employed at the site in the role of teacher leader. The administrator interview was conducted in his office to maintain privacy and to provide the most comfortable setting, this interview lasted approximately 35 minutes. Each of the

teacher leaders was interviewed in their respective classrooms both for comfort and privacy. Times for the interviews were mutually agreed upon and conducted over several days. Each of the teacher interviews at this site lasted approximately 45 minutes.

### *Survey*

A survey was administered to all teachers and administrators as a part of this study. It was developed from a variety of existing instruments. Questions covered the topic areas of distributed leadership, high reliability characteristics, data driven decision-making, and organizational learning. Several questions were written to measure more than one construct.

The survey consisted of 43 content questions and seven demographic questions. The design consisted of a Likert scale from 1 (Never) to 5 (Always) for the first 35 questions and asked that participants rate their schools in terms of how frequently each statement is descriptive of the site. The remaining 8 questions used a Likert scale from 1 (Nearly All) to 5 None and asked how many teacher in the school are engaged in behaviors connected to high reliability and organizational learning. It is the same scale used by Katzenmeyer and Katsenmeyer (1998) for their *Teacher Leadership School Survey*. Surveys were identified and modified in order to answer the research questions concerning leadership structure and its impact on team and student success, team use of data for student success, and the extent that teams are exhibiting characteristics found in high reliability organizations. The survey data are meant to provide a linkage with the data derived from interviewing. It provided a more effective means of creating themes that exist within and between sites, while also enabling a whole school perspective to emerge (Miles & Huberman, 1994).

The first nine items dealt with the construct of teacher leadership. They have been adapted from the work of Marilyn and Bill Katzenmeyer. The statements were adapted from their *Teacher Leadership School Survey*. The authors are considered experts in the field of teacher leadership. The survey had been used in many research studies dealing with the subject of teacher leadership. It has been thoroughly tested and this adds validity to the instrument.

The next group of statements on the survey was designed to determine the level of distributed leadership present at the site. The questions were adapted from a PLC and Reading survey by Dr. Janet Chrispeels and an instrument published in a dissertation entitled: *Distributed Leadership and School Performance* by Monique Whittington Davis at George Washington University (2009). Davis adapted the survey from three existing surveys that have all been field tested for internal consistency. Items from *Distributed Leadership Readiness Scale* (Connecticut State Department of Education, 2004), *Teacher Leadership School Survey* (Katzenmeyer & Katzenmeyer, 1998), and *School Leader Questionnaire* (University of Michigan, 2001) were compiled for this survey instrument.

The next section of the survey was adapted from the before mentioned distributed leadership surveys. The statements chosen from the instruments dealt with shared supportive leadership, teacher collective actions regarding student achievement, and behavior at grade level meetings that promote and sustain student achievement. The statements included have been used to measure those individual constructs, but have not been combined in this format previously. All of the constructs are critical in the development of high reliability. The statements have not been previously used to measure the construct of high reliability. This limitation will be noted in the analysis of the results.

The researcher sought permission from the administration at each site to administer the survey as a part of a regular staff meeting. Each member of the teaching and administrative staff was asked to participate in the survey. It took approximately 20 minutes to complete. As with all parts of this study, each participant retained the right to not participate in the survey. The researcher left the room after directions were given to the participants. A staff member was designated to collect the surveys and place them in an envelope.

### *Data Management*

As recommended by Miles and Huberman (1994), attention was given to having high-quality, accessible data, maintaining documentation of analyses, and retention of the data and analyses after the conclusion of the study. An individual box was used for each site to keep all documents related to the study separate.

A formatting protocol was followed as recommended by Miles and Huberman. All notes were structured and labeled with the school's pseudonym, people involved, and date. All interviews were transcribed promptly and filed in the appropriate box. Documents pertaining to the school and survey results were contained in the boxes as well. All information was kept in a locked cabinet or on a password protected computer to ensure confidentiality and the accessibility of information. The only people who had access to the files are the researcher and her chairperson.

### Data Analysis

This section discusses the strategies and steps used to analyze both the qualitative and quantitative data. Though this process meaning was constructed from the data. According to Merriam (1998), data analysis involves three steps: consolidating, reducing,

and interpreting what participants have said. Qualitative data analysis involves many levels. It begins first with a description, which is the first step in reducing. In this step, the researcher is beginning to make decisions about what will be retained and left out from the transcripts and data collected. The next step involves the construction of categories and themes to determine patterns. For this analysis, qualitative researchers commonly use a constant comparative method. This method was developed by Glaser and Strauss in order to develop grounded theory (1967, as cited in Merriam, 1998). In this method, the researcher compares data in order to formulate categories. The categories remain tentative and can be modified during further comparisons until a theory emerges. This is an iterative process that supposes understanding is in flux and can be reformed as data is examined on different levels.

Miles and Huberman (1994) have a similar view of qualitative analysis. They see it as a three-stage process beginning with data reduction, moving to data display, and culminating in conclusion drawing and verification. Just like Merriman, this process includes selecting the data one will focus upon. However, they see this process as ongoing and occurring throughout the project. As themes are tested through the analysis process, more data reduction could occur. For them it is not separate from the analysis, it is an integral part of the analysis. Their second step involves organizing and compressing of information in matrices, graphs, and networks so it is accessible and can be analyzed so the researcher is not overwhelmed by the vast information. The third step would be drawing conclusions. Initial conclusions are drawn early in the process, but should not be held tightly by the researcher. It is only when the data collection is over that true conclusions can be made. According the authors, verification is the testing of conclusions

to ensure validity, “otherwise we are left with interesting stories about what happened, of unknown truth and utility” (p.11).

Although there are diverse approaches to qualitative data analysis, Miles and Huberman (1994) identified sequential analytic moves used in most qualitative research. Affixing codes and noting reflections and remarks in the margins of field notes are the first two steps. The sorting through the data to identify themes, relationships between identified variables, patterns, and distinct sub groups is a common step in qualitative analysis. Elaborating a set of generalizations that explain the consistencies and confronting the derived generalizations by applying constructs and theories is the last step identified by the authors.

Quantitative analysis must also be conducted in a mixed-method approach. According to Creswell (2008), this analysis involves the preparation of data, the running of the analysis, reporting the results, and discussing the results. The preparation involves the scoring of the data. Assigning a numeric code for responses to an instrument and creating a codebook is critical in this step. A statistical program is used to analyze the data. A researcher can employ either descriptive or inferential statistics to answer their research questions. The reporting of results involves summarizing information into tables or figures to make it easier to conceptualize, but it also includes a detailed explanation of the test run and the results from the inferential statistics analyses. In the last stage, researchers summarize the major findings, explain why the results occurred, consider and share limitations, and suggest research that will build upon the study. This process is somewhat more linear than the qualitative process described above.

For the purposes of this study, both qualitative and quantitative analysis have been conducted. The interviews and documents were analyzed using a comparative method. The researcher transcribed each of the interviews and subsequently coded them using the constructs of distributed leadership, organizational learning, high reliability organizations, and data driven decision-making. Each of the constructs had subcomponents as well. Passages pertaining to distributed leadership were further coded as structures and practices. Organizational learning passages were coded with personal mastery and shared vision. High reliability passages were labeled as to whether they supported goal setting, response to problems, or monitoring progress. Finally, data driven decision-making remarks were labeled as to whether they pertained to structures necessary, change in practice, or change in student outcomes.

The survey data was analyzed using SPSS 18 in order to compare schools in relationship to the variables. Reliability of the scale was tested and the result was a Cronbach's Alpha value of .882. According to Pallant (2007), a value above .7 is considered acceptable, but a value above .8 is preferable. The score of .882 suggests very good internal consistency for the scale with this sample. Descriptive statistics were used to determine frequencies. Related items were grouped together to form composite variables for the constructs of high reliability, data driven decision-making, organizational learning, and distributed leadership. This was done in order to run independent sample t-tests to determine if there was a significant difference in the mean scores between the two case study schools.

*Organizing the data and comparative analysis*

The process utilized by the researcher for this analysis is reading and re-reading the transcripts from interviews and focus groups. The purpose of the initial reading was to gain an overall sense of the meaning constructed by respondents to the questions. Each transcript was read separately and notations were made in the margins with the research questions in mind as an interpretive lens. The researcher made pre-analytic remarks in the right margins and leave the left margin free for coding as suggested by Miles and Huberman (1994). The first reading culminated with a brief summary capturing reflections, themes, and hunches (Merriam, 1998). Subsequent readings were done in order to determine if there was evidence of the following identified themes: distributed leadership practice, data driven decision-making, high reliability characteristics, and organizational learning. Each of the constructs was given a color and interviews were coded as follows: blue for distributed leadership practice, plum for data driven decision-making, orange for high reliability, pink for organizational learning. The final read of the transcripts resulted in further coding of responses that encompasses more than one of the constructs. These were coded in red and initials noted the multiple constructs present.

After completing this process for both schools individually, responses were compared and contrasted between schools. This comparison was done to provide evidence to support conclusions regarding leadership structure and data driven decision-making and their contribution to student success. The interviews were used to support findings in the survey data.



### *Coding*

The generation of themes and categories progressed into the development of codes. Codes are labels that assign meaning to the information gathered during the study. They are generally attached to the words, phrases, or entire paragraphs demonstrating connectedness (Miles & Huberman, 1994). They are a method to organize information in order to draw conclusions. The multiple readings of the transcripts allowed for a refinement of the coding in order to aid in the final descriptive analysis.

Once the themes and codes were identified, the researcher reviewed the documents (eg. school plans, state assessment data, and district data) in order to determine if themes identified in interviews are present in documents.

As noted earlier, multiple sources of data were collected (interviewing, document analysis, and survey data) and triangulated. Yin (2009) refers to this as “converging lines of inquiry” to ensure that there are consistencies and patterns among the sources (p. 98). Merriam (1998) explains that if similar patterns and categories emerge from the analysis, the sources strengthen both the reliability and the internal validity of the study.

### Researcher’s Positionality

The researcher was employed as a lead teacher at Harvest Elementary. Employment at the school was severed prior to conducting research. However, this affiliation results in a deeper knowledge of the practices and history of this school. This position could have had an effect on the outcome of interviews because of the relationships forged by the researcher. In an attempt to eliminate the interference, a colleague interviewed all participants at Harvest Elementary. The researcher made a

conscious effort to set aside her bias for Harvest when analyzing the data from both schools in order to present the structures in an impartial manner.

### Limitations

There were four major limitations to this study. First of all, the schools were all contained in one district. The district involved has a specific demographic make-up, and therefore the conclusions are not generalizable. However, this study has the potential to increase the theoretical knowledge in the area of school reform. Since the application of high reliability concepts in relatively new, this study has the potential to add to the collective knowledge. There is a potential for this study to inform the larger field of education and provide alternative approaches to reform schools serving high numbers of low-income minority students by showing different paths to reform and some of the consequences of each path in terms of affects on school staff, organization, level of learning, and distributed leadership.

A second limitation concerns the potential for bias since the researcher played an integral leadership role at one of the sites. This could have interfered with responses from interviewees. Arranging for a colleague to conduct the interviews at the site in question mitigated this bias. There were no conflicts with the other site.

A third limitation of this proposed study arose from the nature of qualitative research. This method of research can present significant problems in terms of validity and reliability due to the fact that it depends on the interviewing and interpretive skills of the researcher. Trustworthiness in research involves producing valid and reliable results in an ethical manner (Merriam, 1998). The use of multiple sources of evidence and having colleagues review the analysis will help to enhance both the construct validity and

trustworthiness of the study (Yin, 2009). The researcher's objective is to make sure that all procedures used are well documented to ensure if the same case were to be done over again, the investigator would arrive at the same conclusions and that if other researchers reviewing the data with similar theoretical lenses could come to the same conclusions.

Lastly, this study is limited in its scope because it has only considered the first three years of a seven-year grant. Further study is necessary to see if the changes are sustainable throughout the life of the grant. More importantly, it would be important to examine if the changes are sustained after the grant expires, as it is important to develop sustainability in any restructuring effort.

## CHAPTER 4: RESULTS

In this chapter a comparative analysis of the two case schools will be conducted. Both quantitative and qualitative data are used to present the findings. A brief overview of the schools precedes the analysis of results. Findings are organized to answer each of the research questions, and the guiding themes of distributed leadership practice and data driven decision-making are used to interpret the findings. Interviews, document analysis, and a survey were used to gather data. To answer the research questions, an analysis of descriptive statistics was completed along with an independent sample t-test for each of the constructs. Each survey item was examined in isolation to determine the mean value of that construct's presence at the school. Questions were then grouped together in constructs and analyzed to determine if there was a significant difference in the means between the two schools. Findings in the survey were cross-referenced with interview data to determine if there was support for the conclusions. The chapter concludes with a summary of the key findings from each of the schools.

The purpose of this study was to examine the improvement paths of two previously underperforming schools to improve student outcomes. Both schools received QEIA (Quality Education Investment Act) funds to assist them exiting from program improvement status. In addition, this study explores if greater distributed leadership practices enable the organization to develop the characteristics of a high reliability organization. It also examines the role of data driven decision-making in improving student outcomes. Since much of the research in the area of data driven decision-making is theoretical in nature and concentrated on the administration's role, this study informs the educational community by examining the practice at the level of the teacher and

teacher teams (Park & Datnow, 2009). The following questions guided the analysis of interviews, document analysis, and survey results:

- 1.0 What is the evidence of improved student outcomes in these schools since receiving QEIA funds?
  - 1.1 What is the evidence of improved student outcomes in these schools since reconstitution and receiving QEIA funds?
  - 1.2 How does teacher professional development support teacher learning?
- 2.0 In what ways is leadership distributed in these schools?
  - 2.1 What leadership role does the Instructional Leadership Team play in the improvement process?
  - 2.2 What leadership roles do teachers play in these schools?
  - 2.3 What leadership role do coaches and support staff play in the improvement process?
  - 2.4 In what ways do the Instructional Leadership Team and grade level teams collaborate?
- 3.0 In what ways do teams use data to inform their work?
  - 3.1 How is data analyzed at the site and team level to ensure student success?
  - 3.2 How does data driven decision-making connect to improved student outcomes?
- 4.0 Is there evidence of the characteristics of high reliability organizations present at the school?

Since the passing of NCLB (2001), schools have been working to ensure all students are succeeding. While there have been some controversies with the law, it is undeniable that it has resulted in a deeper focus on students who have been traditionally underserved in the past. Students with disabilities, English learners, and students from low-income families have not always received the attention they require. Even though they are now receiving attention, many schools are still failing to make adequate progress

and are being labeled as program improvement schools. These schools are facing possible sanctions that include reconstitution. Both of the schools in this study reached the reconstitution level. Each approached reconstitution differently, and their approaches are reviewed as a part of the findings.

### Interviews and Survey Data

In order to capture staff members' perception of distributed leadership, data-driven decision-making, principles of high reliability, organizational learning, and the ILT's role in the improvement process, interviews were conducted with the administrator and four ILT members at each school. In addition, a survey was conducted with the whole staff. Each staff member at both schools was given the opportunity to participate in completing the survey. Both surveys were administered as a part of a regularly scheduled staff meeting. The researcher gave a brief overview of the project and answered any questions. The completion of the survey was completely voluntary and respondents were informed they could opt out of any question they were not comfortable answering.

### *Interview Analysis*

Interviews at Lightfoot were conducted and transcribed by the researcher. A colleague conducted the interviews at Harvest to prevent possible bias as the researcher was formerly employed as a lead teacher at the school. The researcher transcribed all of the interviews from Harvest. During the transcription, the interview questions were highlighted to clearly define where one question ended and another began. Complete headers were used to denote the respondent, but all identifying information was coded with initials denoting the school and the number assigned to the interviewee.

After the initial transcription, the tapes were listened to while reviewing the transcript in order to ensure all comments had been transcribed. As recommended by Creswell (2008), this was followed by a reading of the transcript to obtain a general sense of the data.

Each transcript was then coded and identified by using color in the word processing program. The transcripts were coded using 13 codes that encompassed all of the elements of the constructs of distributed leadership, high reliability, organizational learning, and data driven decision-making. Structure, tools, and interactions were coded for responses pertaining to the distribution of leadership. Responses indicating goal setting, monitoring progress, response to problems, and recovery from problems were highlighted to indicate they were principles of high reliability. Personal mastery, mental models, shared vision, and team learning were used as codes for organizational learning, and data driven decision-making was used as a code if the response gave explicit evidence of data being used to change practice or have a result on student outcomes.

Interview results and findings from the survey were triangulated to check for areas of convergence or divergence in the two data sets. This was done because the survey captures perceptions of the entire staff, while the interviews only contain perceptions of staff members who hold positions on the Instructional Leadership Team. The quantitative survey instrument consisted of 43 statements covering the constructs of distributed leadership, high reliability, data driven decision-making, and organizational learning. In addition, there are seven demographic questions dealing with age, gender, ethnicity, years teaching, years at current school, grade level, and primary job description. A copy of the survey is located in Appendix G.

Using SPSS version 18.0, the quantitative data was prepared for analysis through the screening and cleansing process (Pallant, 2007) in order to ensure accurate analysis. First, the survey data was analyzed through the descriptive statistical process to check for missing data. If individual surveys were missing one or two values the mean imputation was used to fill in the missing values (Fowler, 2009). Surveys with more than two missing values were excluded from the study. Originally, 72 surveys were collected with 3 surveys excluded due to missing more than two values leaving 69 complete cases for analysis.

#### *Outliers and Violations of Assumptions*

Prior to conducting statistical analysis, the quantitative data were checked for accuracy and assurances in order to look for any possible outliers and violations of assumptions. A box plot was used to examine the distribution of each variable's score in order to determine the presence of any outlier. From the data set, it appears that there were only a few outliers in each of the box plots.

Normality tests were conducted to assess the mean values using the 5% Trimmed Mean feature to ascertain whether the outliers would have a strong influence on the mean scores. The normality test revealed the data used in the analysis for each composite variable did not appear to have a strong influence on the true mean scores when reviewing the outlier scores.

In order to prevent response bias, the scales contained eight negatively written items, which were reversed for purposes of statistical analysis. The first 35 items on the survey used a Likert Scale ranging from 1-Never to 5-Always. A response of 5 would have been a positive response to the item. The last eight items were prepared using a



Likert Scale ranging from 1-Nearly All to 5 None. This scale would have produced a negative response when the respondent chooses a 5. The scale was reversed in order for a response of 5 to be considered a positive response to all of the survey items.

Reliability analysis revealed the scale used for the survey has good internal consistency. The results from the reliability statistics yielded a Cronbach's alpha coefficient of .882. According to Pallant (2007), values above .7 are acceptable, but values above .8 are preferable. The Corrected-Item Total Correlation values for all four constructs are all above .8. This gives further assurance of the internal consistency of the scale.

Individual responses to items were evaluated for each school by determining the mean values. After the analysis of each individual response, items were grouped together to form a composite variable for the following four constructs: high reliability, distributed leadership, organizational learning, and data driven decision-making.

Independent sample t-tests were run in order to compare the mean score on the four constructs to determine if the differences were statistically significant. This test was indicated because the information was collected on only one occasion and it is being used to compare two groups, in this case schools. Schools were coded with the categorical variable of 1 and 2. The composite variables referred to above constitute the continuous variables. The results from each of the tests are presented in the following sections.

### School Backgrounds

Harvest Elementary is one of 45 schools in a large southern California school district. The school was opened in November of 1953. At that time it was surrounded by small farms and land utilized for growing crops. The school grew incrementally in size

for the next 45 years adding additional buildings in 1958, 1996, and 1998. The surroundings today consist of mixed single and multiple family residences adjacent to industrial and commercial enterprises. The enrollment is 650 and comes from a variety of social, cultural, and economic environments. At this time, 82% of the students qualify for free and reduced price breakfast and lunch.

The staff at the school includes the following: principal, associate principal, 34 classroom teachers, a preschool teacher, 3 specialty teachers (Art, Music, and P.E.), 1 bilingual language arts coach, 6 full-time instructional assistants, 1 library clerk, 3 office/attendance staff, 2 preschool aides, 4 support staff (psychologist, RSP teacher, Speech, and Library Media Technician), nurse, and 12 part-time and full-time cafeteria/custodians/playground duty employees. The QEIA funds are used to pay the salaries and benefits for the three specialty teachers (Art, Music, P.E.), 3 class size reduction teachers in the upper grades, and the assistant principal position.

The school offers a variety of support programs. Even Start is a program targeting education for families with children ages 0-5. In addition, they have a Toyota Family Literacy Program for parents of children in kindergarten through third grade who are learning English. The school also offers access to community, school, and governmental resources through the Open Door Family Resource Center. An after school program run by the city and a local YMCA is offered free of charge, and students are involved in structured activities until 6 p.m. Lastly, the Mobile Health Clinic is on site weekly for free health care for sick children. The clinic is available at other neighboring schools on the remaining four days of the week. The programs are funded through a variety of sources, but none are funded through the QEIA monies.

Harvest Elementary was reconstituted under the NCLB guidelines preceding the 2007-2008 school year. The administrative staff was changed and the teaching staff was asked to interview if they were interested in remaining at the school after the restructuring. The incoming principal conducted the interviews and determined if the staff members were able to remain or if they would be asked to transfer. As a result of those interviews, 11 classroom teachers out of 30 were selected to become part of the new staff. All other teachers were reassigned and the positions were posted and filled by teachers from various schools within the district. The reconstitution also included the hiring of 8 mentor teachers. Three of the eight teachers had been at the site prior to the reconstitution. The mentors are full-time classroom teachers at the school, but they are given a stipend of \$6,000 per year to assume leadership responsibilities in their respective grade levels. The stipend was paid from a Mentor Teacher Grant and not the QEIA funds. The restructuring and the mentor teacher positions had full support from the teacher's union.

Lightfoot Elementary is another of the 44 schools in this southern California district. It is located between two of the busiest streets in the city. A line of mini-malls and individual retail businesses are in close proximity to the school. The attendance area is filled with apartment complexes and single-family dwellings priced well below the median market value. The enrollment at the school is approximately 755 and is comprised of students from a variety of social, cultural, and economic environments. Roughly 82% of the students are considered socio-economically disadvantaged.

Lightfoot Elementary has been newly restructured under the NCLB (2001) mandate. Teachers at the school prior to the restructuring were not required to interview

to remain at the school. If they expressed a desire to stay, they were able to do so. If they elected to leave, they were placed at other schools within the district through a post and bid process. Approximately 50% of the staff remained at the site.

The staff and the school includes the following: principal, associate principal, 45 classroom teachers, a preschool teacher, 2 curriculum support coaches, a full time psychologist, 1 library clerk, 3 office/attendance staff, nurse, and part-time and full-time cafeteria /custodians /play-ground duty employees. The two curriculum support coaches and part of the psychologist pay are paid out of monies received from the QEIA grant. The administrator expressed that the coaching positions have had a positive effect on both teaching and learning. Most schools have only one or two days of service from a psychologist, but this school has chosen to add time to support special education services as well as GATE (Gifted and Talented Education). The school also has an after school program run by the city and the local YMCA. This free program offers structured activities after school for students until 6 p.m.

The leadership structure includes an ILT made up of a teacher representative from each grade level. Teachers volunteered to be on the ILT. They are not paid a stipend for the position. The leadership team meets on a regular basis and participates in cohort meetings with four other schools. District personnel or consultants from Targeted Leadership facilitate the cohort meetings.

It is important to note that the reconstitution of both of these schools did not lead to an over representation of new teachers as found in previous studies of reconstituted schools (Borman, Rachuba, Datnow, Alberg, Mac Iver, Stringfield, & Ross, 2000). To be in compliance with the QEIA grant, the average level of teacher experience at the schools

needed to be representative of the district as a whole. In order to accomplish this, there had to be a mix of veteran and novice teachers at each school.

### State Test Results

State test results as well as API and AYP reports were used to determine the evidence of improved student outcomes since receiving QEIA funds. This analysis seeks to answer research question 1.0: What is the evidence of improved student outcomes since receiving QEIA funds?

All schools are concerned with state mandated tests, but the schools in this study are especially focused upon them because they need to make the progress to move out of program improvement status. Both of the schools became eligible for QEIA funding prior to the 2007-2008 school year. Test scores from 2006 and 2007 were used to establish a base for the comparison of scores pre and post QEIA funding. QEIA funding has been in place for the 2007/08-2009/10 school years.

Each of the schools has shown progress in student achievement since their restructuring. The schools were compared in language arts, science, and math achievement. For comparison the following groups were used: all students, English learners, economically disadvantaged, and Hispanic and Latino students. The groups were chosen because they are considered their high stakes groups. It is necessary for each of the groups to make adequate progress in order for the school to move out of program improvement. There is considerable overlap of the disaggregated groups. Several students fall into one or more categories.

All states have set target goals for schools. They are raised incrementally year by year as part of the plan to have 100% of student proficient by the year 2014. In 2007-8

school year in California that goal was 35.2% if students in language arts and 37% in math. Under NCLB, that level increases by approximately 10% per year until 2014.

Schools where at least 35 percent of the students are from low-income families are considered Title I schools. This is measured by the percentage of students eligible to receive free and reduced lunches. Both of the schools in the study are Title I schools. This designation requires that the state measure the “adequate yearly progress” (AYP) for the school. Schools receive both an AYP and an API (Academic Performance Index) score at the end of the year. It is the lack of growth in the AYP score that can result in schools being labeled as low performing.

The API is used to meet part of the federal AYP requirements. Schools must have a minimum score of 680 or have at least one point growth in the API in addition to meeting other federal AYP requirements such as participation rate and meeting the percent proficient levels set by the state. The Accountability Progress Reports for both schools reveal they have increased their API scores from their beginning levels. The base score for Harvest Elementary was 701 in 2007. In the 2007-08 school year they showed an increase of eighty points. Lightfoot started with a base of 697 and showed a gain of 52 points. The following year, 2008-09 there was an increase of sixty-two points at Harvest Elementary and thirty-seven points at Lightfoot Elementary. The 2009-10 scores showed a decrease of four points at Harvest and an increase of thirty-two points at Lightfoot. These efforts resulted in a three-year gain in API of 138 points for Harvest Elementary and 121 points at Lightfoot Elementary. Harvest attained an API score of 839 and Lightfoot achieved a score of 818. Both schools have reached the goal of becoming an

800 school. In addition, all subgroups have met the API growth targets set by the state each year at both schools.

In addition to meeting the API goals, only Lightfoot Elementary has met its AYP targets for the past three years. Harvest met the requirements for the first two years but failed to do so in the 2009-10 school year. Harvest met participation, API, and percent proficient targets for math but failed to make language targets for the targeted subgroups. The target in language arts was 56.8%. The breakdown for the disaggregated groups at Harvest is as follows: Hispanic/Latino 54.2%, Socio-economically disadvantaged 55.1%, and English Learners 46.6%.

There were changes in the school structure that might have contributed to this decline. Two teams at the school were impacted by leadership change in the 2009/10 school year. First, the fourth grade team leader was moved to third grade along with another teacher who was moved from 2<sup>nd</sup> grade to the team. In addition, a new member was hired from the outside. Two teachers remained from the original third grade team. In October, the team leader left the school entirely. A teacher took over the responsibilities of the team leader, but was not given formal designation as leader.

The fourth grade team was left leaderless by the principal's decision to move the leader to third grade. The team's leadership was assumed by a teacher with three years experience in fourth grade at that school. The previous leader had 13 years experience in multiple grade levels and multiple schools. The achievement results showed a considerable drop for this grade level from 2008/09 to 2009/10. This is significant because this team had performed at high levels and changing it possibly contributed to the school not making AYP for that year. All disaggregated groups at this grade level

showed a significant decline in scores when compared to the previous two years in language arts. This curricular area is the one that prevented the school from making AYP. In 2008/09 74% of all students in the fourth grade were proficient and advanced but only 52% were the following year. The disaggregated groups performed as follows: English learners went from 65% to 43%, Hispanic and Latino students went from 72% to 49%, and economically disadvantaged students went from 70% to 51%. The percent gain the team had experienced over third grade scores was approximately 40% in 2008/09, but in 2009/10 that dropped to about 20%. This result seems to indicate that a substantial change in grade level teams can disrupt the pattern of leadership and might need to be more carefully considered to sustain positive growth in student achievement.

Lightfoot Elementary has seen steady increases in their API scores. They have incrementally increased over the past three years. The survey and interview data seem to indicate less broad distribution of leadership at this school. The administrative team plays a more critical role in establishing the instructional focus for collaboration. Although it was initially hypothesized that wider distribution would result in better growth, it seems the narrower distribution of leadership practices is supporting steady gains at this school. There has been little turn over in the school personnel. The assistant principal has changed, but that did not seem to have any impact on the direction of the school.

Both schools have increased the percentage of students scoring in the proficient and advanced ranges in language arts as measured by the CST from 2006-2010. Tables demonstrating this achievement can be found in the appendices. Every grade level has seen progress with the largest gain being 6<sup>th</sup> grade at Harvest. Their achievement increased by 55% when compared with the 2006 score.



When cohort data are followed from 2006-2010, there is also evidence of growth. At Lightfoot second grade students were scoring 33% proficient and advanced in 2006, but that same cohort in 2010 were 51% proficient and advanced, which is an eighteen percent gain. The cohort from Harvest went from 21% to 70%, which results in a forty percent gain. The upward trend continued at both schools most years except for the year the cohort moved to third grade when achievement dropped by 13% at Lightfoot and 8% at Harvest. This is consistent with the trend seen across the state at the third grade.

English learners seem to be making significant progress in both schools. All grade levels have increased the percentage of English learners scoring in the proficient and advanced ranges. However, when compared as a cohort, the achievement is not consistent. It seems the only grade level transition that continually raises achievement from year to year is third to fourth grade at both schools. In some instances achievement of English learners is decreasing over the previous year. This group consists of students who have been in the school for some time as well as newcomers to the school. This lack of growth may be affected by the length of time students have been in the country. Individual student data would be needed to determine if it is the infusion of new students who are lowering the cohort average, but these data are not available to the researcher.

Many of the English learners fall into the groups of Hispanic and Latino as well as economically disadvantaged. Both groups are showing progress when examined as a cohort. There is significant growth in both schools over time for students who are classified as economically disadvantaged. All grade levels have seen an increase of 16% or higher over their 2006 language scores. The cohort data is again showing consistent gains over time with the exception of the third grade where achievement drops by 8% at

Harvest and 13% at Lightfoot. Hispanic and Latino students have also seen a marked improvement over time. The cohort data shows improvement from year to year with the exception at third grade. There is 16% drop at Lightfoot and 8% at Harvest.

Math scores have significantly improved over time at both schools as well. Scores have continually exceeded the AYP target levels set by the state for the whole school and all of the disaggregated groups. Cohort scores show an increase over time as well. The most significant increase in achievement occurred in the fifth grade at Harvest in the 2009-10 school year. The scores break down as follows: All Students 74%, Hispanic/Latino and English learners 98%, and Economically Disadvantaged 98%. The team leader shared in the interview about how they were focused on math and often discussed strategies and changed instruction based upon those conversations. This is explored further in the analysis of both the survey and interview data.

When examined as a cohort, the math achievement is not consistent for all students. Scores for grades 3, 4, and 5 show a steady increase at both schools. Scores for 4, 5, and 6<sup>th</sup> grade show an increase at Lightfoot going from 37% to 56%, but at Harvest scores go from 76% to 75%. While this does not appear to be a significant loss, the score went from 76% in fourth grade to 85% in fifth grade before dropping to 75% in sixth. This is then a 10% drop in the number of student scoring in the proficient and advanced ranges.

English learners have made gains in all grade levels at both schools over their scores prior to the reconstitution. When examined as a cohort, 2, 3, and 4<sup>th</sup> (2007/08-2009/10) grade levels show an increase from 2<sup>nd</sup> to 3<sup>rd</sup> grade but a decrease in fourth. When examined as a cohort from 3<sup>rd</sup>, 4<sup>th</sup>, and 5<sup>th</sup> grade, there is a steady increase in

achievement at both schools. The 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> grade cohort reveals a steady increase at Lightfoot from 28% to 49%. At Harvest there is an increase from 4<sup>th</sup> to 5<sup>th</sup> from 72% to 85% but there is a decrease to 66% in the sixth grade. The results seem to indicate Lightfoot is more reliable for results in this curricular area. This trend is repeated with both Hispanic and Latino students and socio-economically disadvantaged students.

Most schools are focused heavily on improving in math and language arts and often do not focus on the subjects of science and social studies. However, Harvest has adopted a focus on reading and writing about expository text. Science subjects are used to help students understand how to approach expository text. This was a conscious decision at the beginning because the staff had looked at the CST release questions and determined much of the test was requiring students to comprehend expository material. According to the results reported on the California Department of Education site, this school has demonstrated significant success in increasing the percentage of students scoring in the proficient and advanced ranges on the test. Lightfoot has seen progress in this area as well. However, no interview data indicated this was a focus for the school. Their scores have increased by 31% since 2006. Harvest has increased achievement in science by 73% in four years. In 2007-08, the first year of the reconstitution, there was a twenty-six percent gain. That was followed by a 22% gain the following year when an additional teacher was added at the grade level in order to reduce class size, which is a requirement of the QEIA funding. While this is not one of the focus areas, it is important to note that students are achieving in this discipline at both schools.

## Professional Development

The school site plans for the years 2008, 2009, and 2010 were examined to find evidence of funds being used to support teaching and learning. This examination seeks to answer research question 1.1: How does teacher professional development support student learning? Both schools have allocated funds for student support and teacher professional development.

A portion of the funds was used for teacher professional development at Harvest Elementary in Step Up to Writing and Guided Language Acquisition and Development (GLAD) in the first year of reconstitution. All teachers have received the full five-day GLAD training. Two teachers act as a support for the entire staff when it comes to implementation of strategies. One of the teachers is a fully certificated trainer. The staff has also participated in studying Classroom Instruction That Works by Robert Marzano. The book was purchased for each teacher. The 90-90-90 research conducted by Doug Reeves is consistently referred to at staff meetings and provides a frame for the school's development of a standards based review process carried out in every classroom.

The plan indicates teachers at Lightfoot are focused on improving the use of gradual release of responsibility strategies, a district-wide initiative. Staff is engaged in collaboration about content and language objectives in Friday meetings. Staff members are engaged in unpacking the standards and developing common learning goals for instruction. According to the plan, the school receives coaching support for this model from Dr. Doug Fisher who is affiliated with San Diego State University. He provides training to both the ILT and the staff periodically throughout the year. In addition, the school uses support coaches who are at the school and in the district office. The on site

coaches provide support with Reading First implementation and the district coaches support the focus on reading comprehension strategies.

At Lightfoot Elementary, QEIA monies have been spent on three class size reduction teachers, two full time instructional coaches, a part-time counselor, additional time for a psychologist, the purchase of leveled expository text for classrooms, and extra help from classified personnel. Outside consulting support from Targeted Leadership is also part of the expenditures. The school leadership participates in regular cohort meetings led by the consultants.

According to the professional development plan, site based support teachers are used to demonstrate lessons and provide coaching for teachers. They receive additional coaching from a district support teacher for reading comprehension strategies. The administration and coaches attend Reading First summit and advisory meetings.

With the adoption of the GLAD program, Harvest focused its professional development on helping English learners gain understanding of social studies and science curriculum. According to the administrator, this was a decision made by the ILT based on data. “So we looked at the data and we looked at the needs and said you know what would be great for our kids is linguistic representations of information and we need oral inputs and we need a lot of high level vocabulary so you know GLAD would be great. (HA1)” Having the whole school trained in this strategy, as well as having on site support, seems to demonstrate the commitment to use.

Since science scores at the school have increased in the years of funding, this might indicate this expenditure contributed to increased student achievement. Teachers seem to be focused on improving their ability to reach students who traditionally struggle.

This is supported by both survey and interview data. Teachers expressed using one another as resources to improve practice.

For example if we know that a grade level is good at GLAD strategies and that is an area where we feel that we are lacking and would like more information then we will say then let's go observe second grade we hear they are doing great you know great things with GLAD and that gives us a chance to get to know our grade levels and their forte so that we know who we want to observe." (HT 2)

It seems teachers are trying to improve their implementation of this program through peer mentoring, which demonstrates both distributed leadership and organizational learning. It seems to indicate improvement of practice is a pervasive part of the normal day-to-day operations at Harvest.

The professional development plan at Lightfoot is targeted at providing coaching support for individual teachers and monitoring the implementation of a gradual release model through careful examination of objectives and formative assessments. The gradual release of responsibility, first developed by Pearson & Gallgher in 1983, is an instructional model (Fisher, 2008). It is designed to help students become independent learners by focusing on developing stronger learning skills. In the beginning of the learning cycle, teachers are to model their own metacognitive processes in brief focus lessons. This moves to guided instruction where teachers question, facilitate, or lead students through tasks. The responsibility for learning is gradually released to student in a collaborative learning task. This allows students to discuss and problem solve with others in order to construct knowledge. The model culminates with independent practice, which allows students to apply knowledge in new ways. It is impossible to evaluate the impact of this model because no classroom observations were conducted to determine fidelity of

implementation or connection to the core learning. While achievement has increased, there is no way to correlate it with the gradual release model in this study. There is no interview data clearly demonstrating teachers are engaged in this process during instruction or planning.

Instruction at Lightfoot is monitored through an assessment cycle focused on power standards. The results are discussed in grade level meetings. Administration or literacy coaches lead the discussions around data. “But when it comes to data they present it so we are aware and they are aware.” (LT 3) This seems to indicate a structure of data analysis that is led by the administrative team. Teachers are led through the process rather than working through it themselves.

The instruction is based on pacing guides developed by the district and monitored with district benchmark assessments. As the administrator noted, “we are following the pacing and we ready for the next benchmark assessment and continually having conversations with teachers about where their kids are academically and where are the gaps and the strengths and where do we need to go next.” (LA) It seems there is a formal structure to the routines for monitoring student learning.

Weekly collaboration meetings are a component of the professional development plan at Harvest. Three Fridays per month are dedicated to professional collaboration in addition to meeting once a week for 90 minutes. Support teachers have been hired specifically to break teachers out of their classroom to collaborate. Teachers are engaged in the process of looking at student work, creating and monitoring 8-week plans, and planning interventions for students performing below grade level during their collaboration. While vertical and horizontal planning and collaboration are both part of

the school plan at Lightfoot, it is not labeled as professional development. This seems to indicate teachers at Harvest have the expectation for collaboration to be about instruction and solving problems. It seems they are more in control of their development as individuals and teams. This is supported by the survey data and interviews. Nearly all of the teachers at Harvest felt responsible for improving the school and ensuring students learn, while responses from Lightfoot indicated closer to half of the teachers felt this way.

The interviews revealed when students are having problems the first response from Harvest teachers was to examine practice and further diagnose the problems using data. “First is self-reflection about the way I am teaching it, I need to take a look at how that child learns. So that is me. So that If they are still not making progress then taking it to the team looking at data and some assessments I have (HR4)”. This is evidence of the distribution of the leadership practice of data analysis to teachers who are engaged in activities tied to the core work that are designed to influence knowledge or affect practice. The practice is not directed or overseen by the administration or those in formal leadership roles.

The leadership practice of data monitoring that emerged from the data at Lightfoot presents a different approach. When teachers were asked about the process for addressing the needs of students who are not demonstrating progress, the first response seemed to be to begin the Student Study Team process. This is the process used at the school to determine if students have a learning disability. Unlike Harvest, the teachers at Lightfoot did not indicate that they began by seeing if the changes were needed in their instructional practice. As will be shown by the survey data, the teachers at Harvest indicated they have a greater sense of responsibility and control of student outcomes. One



explanation for this difference may be that the teachers at Harvest have been given the leadership task of analyzing and responding to student data, whereas the data analysis task is the responsibility of the administrative core at Lightfoot.

The ILT at both schools participates in cohort meetings approximately 5 times per year. Personnel from Targeted Leadership, an outside consulting firm, facilitate the meetings. These meetings focus on improving instructional practices for students, improving leadership, and facilitating professional relationships with other high priority schools. Each school is a part of a cohort of five schools. Administrators from the schools within the cohort act as critical friends for one another. This includes the process of walkthroughs and providing feedback to one another on progress toward goals.

Each of the school plans outlines actions to be taken in order to increase student achievement. Both schools have developed SMARTe goals based upon analysis of their performance data. A SMARTe goal is defined as follows: strategic, measurable, attainable, realistic, timely, and for every child. Each plan was examined to determine if the actions taken supported the leadership structure in the school.

In the Harvest plan, actions required to reach goals are broadly written. Teachers are to provide targeted instruction to counter identified weaknesses. The means to achieve this targeted instruction is not pre-determined. It seems it is left up to the individual teacher or grade level. This conclusion is supported through the interview data. Each grade level had the freedom to solicit help from other teams through peer mentoring or group students in a way that enabled them to give more targeted instruction. This included having students from upper grades attend instruction in lower grade classrooms to get the scaffolding necessary to achieve grade level goals. No one plan was used by all

of the grade levels. This seems to indicate an expectation of the teachers to use their data to create plans that result in increased student outcomes.

The mean results of the survey questions relating to responsibility for outcomes reveal that nearly all of the teachers hold themselves and teammates accountable for student progress at Harvest, while results at Lightfoot indicated some teachers hold themselves accountable for student progress. In order to determine if the difference was significant, an independent samples t-test was conducted to compare the high reliability scores for each school. There was a Sig. (2tailed) value of  $p = < .000$  indicating a significant difference in the mean scores for the construct of high reliability. The responses from Lightfoot demonstrate a wider distribution of scores, which could affect the overall mean. To determine if the variance in scores was impacting the result, the normality of the scores was determined by assessing the 5% Trimmed Mean. Because the trimmed mean and the overall mean were nearly identical, the data demonstrated the distribution of scores was not having a strong influence on the mean.

*Table 4.1: Total High Reliability*

	School	Group Statistics			
		N	Mean	Std. Deviation	Std. Error Mean
Total High Reliability	Harvest	32	63.2188	5.21619	.92210
	Lightfoot	33	53.1515	8.70029	1.51453

The school improvement plan at Lightfoot indicates the actions to be taken by teachers are more specific in nature. The plan describes exactly how teachers will be addressing the needs. The teachers are to use materials from Houghton Mifflin, focus on comprehension, use Succesmaker and Imagine Learning daily, and have 45 minutes of

ELD instruction. Focus is on analyzing English Language Development (ELD) standards and providing systematic ELD instruction in their classrooms during collaboration. There is also a requirement that teachers will use data from both summative and formative assessments to develop intervention plans. However, no specific examples of interventions were shared during the interviews. The administrator indicated the development of interventions would occur every six weeks.

Typically after a benchmark assessment we will have the data presented and the teachers will work together to see what areas of weakness you know evolved based on the assessments. Also when we administer the writing prompts we will take a look at the prompts and the writing products shortly after. Once a quarter. (LA).

Each school, according to their plan, has set aside a portion of their funding to provide supplementary assistance to students who are identified as below grade level. Both schools have purchased Imagine Learning and Successmaker software. Imagine Learning is designed to help CELDT level 1's and 2's acquire English. Successmaker programs have both a reading a math component and are used K-6 at both schools. Students have access to the programs in the computer lab and the classroom. Individual teachers use the reports generated by the program to monitor progress of the students. Each of the schools has developed a tutoring program with before and after school options. Both schools focus on the students in the basic ranges for this intervention. These students are sometimes referred to as the "bubble kids". They are close to achieving proficiency and the targeted intervention is aimed at bringing them to the proficient level. Teachers are paid for their time out of summer school funds. Students are invited to participate but attendance is not mandatory.

A review of the plans show that both schools have well developed plans for the collecting and using student data and for providing professional development for the staff to increase their instructional capacities. Although the approaches and programs outlined in the plans vary in each school, each has attained impressive student achievement gains. One component that seems to distinguish the two schools is the distribution of leadership practice, which is explored in more depth in the next section.

### Distributed Leadership

Survey data as well as interviews of teacher leaders and administration were used to determine the perception of the extent of leadership distribution in both schools. This analysis seeks to answer research questions 2.0-2.4.

2.0 In what ways is leadership distributed in these schools?

2.1 What leadership role does the Instructional Leadership Team play in the improvement process?

2.2 What leadership roles do teachers play in these schools?

2.3 What leadership role do coaches and support staff play in the improvement process?

2.4 In what ways do the Instructional Leadership Team and grade level teams collaborate?

The concept of distributed leadership most people have is that it takes more than one individual to run a school. Both administrators and teacher leaders are considered the leadership at a school. However, this is a limited perception of distributed leadership. Leadership is not something that is done to people rather it is co-produced as individuals interact in different contexts. The actions of those involved in the tasks are interdependent, and each individual is impacted by the comments and actions of others in the group. There is a collaborative nature to the work. One approach to examine the

distribution of leadership is to focus on the central leadership routines and practices and who is responsible for these tasks. However, it is also critical to examine how this leadership is distributed over leaders and followers in their interactions (Spillane, 2006). The research sub-questions to 2.0: In what ways is leadership distributed in these schools, will be used to organize and present the data.

When the survey results are analyzed to determine the mean response in the areas of distributed leadership, as can be seen in Table 4.2, both school staff rate themselves as 4.0 or above on a 5-point scale. However, the teachers at Harvest consistently agree that these practices of distributed leadership are in place to a greater degree than do the teachers at Lightfoot. Teachers at Harvest perceive that the leadership is distributed more to the staff and they are freer to make instructional judgments and take the initiative to make changes in their instructional practice as evidenced by the answers to questions 1 and 2. This is supported by all interviews with lead teachers at the school. All talked about making pacing and instructional choices based on their data rather than adhering to a district or school pacing guide. The following quote from the administrator expresses how teams go about making those decisions: “Because that is what they do every week, they look at different assessments and pieces of student work and they talk about what can we do differently, what strategies can we do” (HA1).

The teacher quote below demonstrates that teacher teams are engaged in looking at data and using the information to determine changes in instruction. This is done in the grade level meetings, which are not led or attended by administration. The teaching teams take on the leadership task of data examination.

Well certainly um especially in this school we do a lot of ongoing assessment. So um depending upon what my data is telling me that is how in my groups change all the time. So that is always looks different, every week it might look different. It is definitely focused on what skills that I feel specific kids are not are not being successful with. (HT1).

*Table 4.2: Distributed Leadership Questions*

	Lightfoot	Harvest
1. In my role as a teacher, I make instructional judgments.	4.06	4.60
2. Teachers are encouraged to take the initiative to make academic improvements for students.	4.26	4.83
3. Teachers at my school influence one another's teaching.	3.97	4.66
4. Teachers and administrators work in partnership to improve student success.	3.88	4.66
5. The ILT is developing effective strategies to involve all teachers in carrying out the instructional focus.	3.85	4.29
6. At our school leadership opportunities are nurtured and promoted among staff.	3.35	4.17
7. Teachers plan together to meet the needs of diverse learners including EL and student with special needs.	4.15	4.46

In order to determine if there was a statistically significant difference in the responses for distributed leadership between the two schools, an independent t-test was run for the construct. All of the questions were loaded together to form a composite variable of distributed leadership. There was a statistically significant difference in level of distributed leadership between the two schools Harvest ( $M=53.63$ ,  $SD=4.50$ ) to Lightfoot ( $M=46.48$ ,  $SD=5.72$ ),  $t=5.75$ ,  $p<.005$  (two-tailed). The magnitude of the differences in the means (mean difference = 7.14, 95% CI - 4.66 to 9.63) was significant (eta squared = .327). This indicates there is a clear difference in the perceived level of distributed leadership practice among teachers at the two schools. It supports earlier assertions of a wider distribution of leadership at Harvest.

The complex nature of distributed leadership practice was examined in the literature review. It exists on many levels in the organization and is dependent upon the

interactions occurring between and among members of the organization. To fully examine the leadership practice in the case study schools, the responses to the survey and interviews were analyzed to determine the existence of collective, coordinated, and collaborated distribution (Spillane et al., 2006). These categories represent different types of distributed leadership and help to demonstrate different types of leadership practice that occur in any organization. They also provide a tool for highlighting similarities and differences between the two schools. Table 4.3 shows which routines are being classified in these areas of distribution. Using these categories to examine the leadership practices helps to identify and isolate structures in place that promote interactions among staff members. Each of these areas allows a lens with which to view the work being done by individuals and grade level teams at each school.

*Table 4.3: Collective/Coordinated/Collaborative Distribution Practices*

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Collective	Coordinated	Collaborative
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Influences knowledge	Influences knowledge	Influences knowledge
	Effects practice	Influences motivation
		Effects practice
disseminating information to teams developing agendas	creating assessment cycles implementing assessment cycles	analyzing data determining next steps in instructional plans instructional strategies (free to change) pacing (free to change) peer mentoring developing budget developing agendas (Harvest)

In order to fully examine the levels of leadership distribution, it is important to examine the various pathways open to develop leadership at multiple levels in the school. The pathways open over time due to the interactions among individuals. These interactions, according to Spillane and his colleagues (2006), fall into these three categories.

#### *Collective Distribution*

Collective distribution occurs when tasks are performed separately but interdependently. Members of the staff are co-performing a routine. The interview data indicated two collective routines present at both schools are disseminating information to team members and creating agendas for meetings.



Each of the schools has an Instructional Leadership Team consisting of teachers representing each grade level with assigned leadership roles. This leadership team is tasked with meeting on a regular basis at both the school and district level in order to focus the work of the school. Each school is also a part of a district cohort of five schools. The cohorts meet four to five times a year and serve as critical friends for one another. They engage in walkthroughs and provide feedback to one another in order to facilitate growth toward school achievement goals.

In fulfilling their role, there is evidence of collective distribution of tasks associated with the position. A critical collective routine was aimed at increasing the knowledge of staff members. That knowledge was sometimes knowledge of instructional strategies, but often was knowledge of information about directives and tasks needing to be completed. ILT members are asked to disseminate information to the staff after ILT meetings and district training. These grade level leaders have been tasked to serve as messengers in order to pass the information on in both a formal and informal manner. This is collective role consistent with one aspect of Spillane's (2006) concept of distributed practice. There are certain routines and procedures that lend themselves to delegation and will be performed more or less simultaneously by the different teams leaders with their grade level colleagues. Although ILT members in both schools performed this information dissemination role, a critical difference emerged from the data analysis between the schools: the perceived relevance of this leadership task. Harvest ILT members perceived it as a small part of their 90-minute collaboration time. The team spent most of their collaboration time on discussing student work and analyzing data.

We found that the most important things to do at collaboration are to look at student work, analyze data, and to plan. Plan based on whatever your looking at student work or data analysis. So we always try to hit the three of them whenever we are choosing what we are going to put on our agenda it is related to those three. I mean because honestly you could bring classroom management issues, you could bring field trip issues, you could bring complaints about your students. There are a zillion things you could talk about. As the lead teacher you have to make sure it is based on looking at student work, data analysis, or planning. (HT3)

In contrast, at Lightfoot the ILT members all spoke of transferring information to the grade level members as their chief responsibility. As one teacher at Lightfoot put it, “I think the main role is that messenger between admin and the teachers.” (LT1) This is supported by another ILT member’s interviews. The teacher’s response to whether they perceived the leadership as distributed is as follows: “Um I mean we have both, we have our principal who is charge of things and our associate principal and then we have grade level teams she comes to us often to the ILT members to talk about anything we need to tell our grade level.” (LT3)

Creating agendas to focus grade level collaboration is another routine found at each school. Grade level leaders at Harvest carry out this collective role, whereas at Lightfoot, support staff or administration performs this routine. The leadership team at Harvest has developed a structured agenda form to promote continuity. Grade level meetings are structured so they are focused on looking at student work, planning, and data analysis. While they do not always address all of the elements in each meeting, it is agreed upon in the school that each meeting will be centered on one or all of these elements. The lead teachers are responsible for creating their agendas based on grade level needs and frequently involve the other teachers in the process. “We decide as a grade level which is important because that’s ownership. If you don’t feel you have

ownership of your team then you are not in it.” (HT3) This is evidence of the interactions occurring in the teams that influence the result of the final agenda. Each grade level member is given the opportunity to give input to the creation of the agenda. This routine is considered collective, but it is being completed in a coordinated fashion at Harvest. They interact in order to prioritize their work. Although the plan is turned into the principal, he does not question the focus chosen by the teams. They have autonomy in this area and are making their own leadership decisions. “I give grade level ILT members a lot of autonomy in so far as they will come up to me as they will say hey we are thinking about what do you think. I say what do you think make you decision and you know that is not like passing the buck but giving them that leadership capacity.” (HA1)

Based on interview data from ILT members, agendas for the grade level meetings are not created or influenced by the ILT or other staff members at Lightfoot. The agendas are created by either the administration directly or the support teachers such as the literacy or math coach. “For the team, for my grade level collaboration it is based on what they give us as an agenda and then they give us time. So basically admin creates and agenda of items they want and then they sometimes they give us time to plan as a grade level.” (LT4). One teacher who had been there many years was unsure of the process of determining the subject of the meetings. When asked how the agenda was created she responded, “Um the reading coach, our reading coach basically um I don’t know how she goes about filling it out but it always something in relation to what is going on at school.” (LT1) These findings indicate the teams are waiting for direction at Lightfoot and not guiding their own development based upon teacher determined needs at the grade level as seems to be more prevalent at Harvest. This difference in leadership practice between the

teams at the schools suggests a more hierarchical structure of leadership at Lightfoot. While there might be interaction occurring about the agenda, it does not go past the administrative level. This supports the survey analysis indicating staff perceives less distribution of leadership.

The survey responses were analyzed to determine the staff members' perception of ILT involvement in improving the school through actively building a positive culture, involving all teachers, and their ability to use data to guide the instruction. Table 4.4 shows the items associated with ILT and the mean value of the scores.

*Table 4.4: ILT Variables*

ILT Variables	ILT Variables Comparison	
	Harvest Mean	Lightfoot Mean
The ILT actively seeks teachers' suggestions and ideas for improving the school	4.29	3.50
The ILT helps to build a strong positive culture in our school	4.43	3.82
The ILT provides support to enable the staff to implement the instructional focus.	4.31	3.91
The ILT is developing effective strategies to involve all teachers in carrying out the instructional focus.	4.29	3.85
The ILT facilitates the use of data to guide instructional practice.	4.57	4.12

The survey seems to reveal the ILT at Harvest is perceived by staff as more of a catalyst for leadership in improving instructional practices than Lightfoot. The minimum score received at Harvest was a 3 corresponding to sometimes, while the minimum at Lightfoot was a 1 corresponding to never. This seems to suggest the staff at Lightfoot is

less reliant on the ILT for leadership in the area of instructional practice. This may be due to the presence of coaches at Lightfoot who are seen as the support for instructional improvement. There are no such coaches at Harvest, but instead lead teachers who were especially recruited to lead grade levels were hired because of their demonstration of effective instructional practices. This difference in distributed leadership practices between the two schools may help to explain why the ILT at Harvest has assumed a stronger instructional leadership practice role at the school.

On question number one it is apparent the teachers at Lightfoot perceive the ILT does not as actively solicit their suggestions for improvement. This may be influenced by the perception of ITL members of themselves as messengers. They may not be interacting in a way that develops a feeling of inclusions because they themselves do not feel they have an impact.

There is less of a feeling of the ILT developing strategies that will enable the staff to carry out the instructional focus at Lightfoot. However, since they are making consistent progress, this does not seem to be having an adverse impact on student outcomes. The elevation in mean score at Harvest might be contributed by the inclusion of grade level team members in the creation of the agenda, which does not occur at Lightfoot. Also, the peer mentoring, which has taken hold at the Harvest site, is completely in the hands of teachers. They seek one another out as experts to improve their practice.

Um well I would say that um to improve my practice I have used my colleagues to learn new ways different ways of teaching specific skills. Vocabulary has been something that I saw someone else doing in a way that I felt would really benefit my kids because it is practically every vocabulary I am giving them is new to them um then putting a movement, a physical movement to them and structuring the vocabulary and giving them a lot more opportunities to talk to each other. Um so I would say that my colleagues have been great tool for me as well. (HT1)

The team leaders support this peer-mentoring model, and that might be contributing the stronger feeling of the ILT supporting the instructional focus at the school. The following quote from a lead teacher expressed her perceived role in the process:

I would say that my role right now is to have a positive attitude about it because some teachers don't feel comfortable. I would say most teachers don't feel comfortable having people come in other teachers come in and observing you. So I have to I feel that my role is to maintain a positive attitude about it and also to have an attitude that we are not perfect and it is okay. Your teaching practice should always be a work in progress that can't happen alone. You can't do it alone and having people help you or having people to go to is going to be beneficial to you and therefore your students and the whole school. (HT3)

Teachers at Harvest seem to perceive the ILT as facilitators when it comes to using data to drive instruction as evidenced in Table 4.4. At Harvest, teachers have assumed the responsibility for data analysis and have expectations for improved student outcomes. This is supported by the results from the last eight questions on the survey (Table 4.8). The questions all relate to teacher actions and responsibility. The questions were grouped together in the construct of high reliability, and there was a significant difference in the perceptions of this construct between schools. As discussed earlier, nearly all of the teachers at Harvest held themselves responsible when students fail. In contrast, only half of the teachers at Lightfoot indicated they felt responsible when

students fail. One possible explanation for these differences may be that the administrative teams leads the data discussions at Lightfoot and guides the staff in next steps to be taken. Also, as indicated previously, teachers at Lightfoot are required to follow the district's pacing guide while teachers at Harvest may diverge from the guide if the team feels it will improve student outcomes.

### *Coordinated Distribution*

Coordinated distribution occurs when similar tasks and routines are performed independently. These are sequential tasks that are reliant on the first task to be completed in order to move to the next. In both schools the leadership practice that seemed to most closely represent coordinated distribution was the implementation of an ongoing cycle of instructional planning and regular assessment to monitor student achievement. Both grade level teams and individual teachers were tasked with this routine at Harvest.

We use those 8, 16 and 24-week assessments. We create them at grade level by standards and highly tested standards on the CST. Um and then within each grade level I know our grade level create their own math assessments (HT2)

The lead teachers at Harvest have taken on this coordinated task to ensure all teachers carry out this routine of instructional planning and assessment. According to the administrator, "They have to do their eight week plan and their assessment pieces" (HA1). This is evidence the school has established a routine where teachers are involved in the creation of the assessments and creating their own instructional pacing guides. They are not utilizing district or publisher generated pacing guides for instruction. "We don't use the ones in the program because we want to use questions that are more problem solving [that] kind of mirror the CST assessments so we create our own

assessments” (HT2). Their plans are based on standards and previous results from assessments given throughout the year indicating a reliance on data to make instructional decisions at this school. This cycle involves multiple interdependent sequential steps. In order to develop plans, teachers analyze state tests to determine areas of need, they examine students test data to establish gaps, and then develop a plan of instruction based on those gaps.

Well certainly um especially in this school we do a lot of on going assessment. So um depending upon what my data is telling me that is how in my groups change all the time. So that is always looks different, every week it might look different. It is definitely focused on what skills that I feel specific kids are not are not being successful with. (HT1)

They work together so they usually come up with a plan without us having to intervene. They if they see that a child has a specific need then they will decide well maybe he should be going I know that you are really good at teaching this so you have a strength in this why don't I start sending my student to you during that time. And they will do a lot of that type of teaming to support children specific needs that they identify. (HA 2)

The interactions between the teachers influence individual classroom practice, which is evidence of the distributed leadership practice as conceptualized by Spillane (2006). The following quote from an administrator at the site details how this process happens:

At this school, teachers use the data and then after they look at the data at the beginning of the year they create their eight-week plan. They assess and then based on that they create the next 8 weeks. And as they are creating those plans they are creating the assessments they will use. So they have a very clear idea of what the end will look like for those eight weeks and that is what they work towards. Um, if the children are not learning as much as they were expected to be learning then we'll take some steps back and in that next eight week plan they will review and continue to teach the standards they have not learned yet (HA2)



A similar assessment cycle has been developed at Lightfoot as well, however, this leadership task has been distributed to the associate principal and not to the grade level teams or individual teachers. The associate principal, drawing on his experience as a former lead teacher at Harvest where he was intimately involved in the creation of assessments at his own grade level, has assumed the leadership task for developing assessments for the whole school. While there is analysis of needs in order to develop the assessments, the teacher teams are not involved in the process. “It was actually developed by the assistant principal. He based it almost like the CST” (HT3). Thus both schools are using data to guide instructional decisions. The contrast is in the degree of distribution of this leadership practice.

#### *Collaborative Distribution*

The collaborative distribution of leadership occurs when two or more people are doing tasks or routines at the same time in a collaborative manner with extensive interaction. An individual’s input contributes to the evolution of the task or routine. This type of leadership is interdependent work. At the schools in this study this kind of leadership was present in grade level meetings, peer mentoring, and ILT meetings.

According to Spillane (2006), “the distribution of leadership among leaders evolves over time” as the trust between individuals grows working relationships develop that positively contribute to the wider distribution of leadership in the organization. This seems to be affirmed at Harvest Elementary by the survey data (Table 4.5). There seems to be a perception among the Harvest teachers that their conversations help to increase the effectiveness of their practice and result in a higher level of achievement for the students. It is clear they feel their interactions with one another influence their practice.

The survey seems to indicate the primary focus in teacher’s meetings is examining student work with the focus being on improving instructional practice. Teachers at Harvest also seem to feel the conversations at grade level meetings provide a means for raising the expectation for student achievement in the grade level as well. As one teacher stated, “You can’t do it alone and having people help you or having people to go to is going to be beneficial to you and therefore your student and the whole school” (HT3). This seems to indicate the culture includes a sense of collective responsibility for teaching and learning.

*Table 4.5: Questions Relating to Teacher Interactions*

	Harvest Mean	Lightfoot Mean
Conversations at GL meeting enable all teachers to increase the number of students achieving grade level proficiency or above.	4.51	4.06
Teachers in meeting regularly review student work to improve instructional practice	4.57	3.88
Expectations for student achievement are raised through teacher collaboration.	4.66	4.18
Teachers at my school influence one another’s practice	4.66	3.97

This collaborative culture at Harvest is supported in the interview data. In the interviews with the teacher leaders, many commented on the development of peer mentoring taking hold at the site. They spoke of the ability to use expertise at another grade level in order to solve a problem at their own. “I actually changed the whole structure of my comprehension in the morning based on what I saw a colleague doing and I have found it to be very successful with my kids” (HT 1) The teachers giving advice

held no formal leadership role at the school, but they were recognized for their strength in an area. The quote below from a lead teacher summarizes how this happens.

Definitely reading comprehension was a weakness on one of our eight-week assessments so we looked at other grade levels that were doing well. Fifth grade is a very strong grade so we went to them and you know it started out as casual after school pop in and what are you doing. You know it started out with just quick questions as to how they are doing it. Then we weren't sure what that was like so we had one member go one morning and see the teacher putting it in place. And then I actually met with her for about three hours on a Sunday and she literally stepped me through the whole process and everything that she does. She lent me one of her old student journals so that I could see every step and so we created, you know we kind of modified it for third grade, um pretty much left the structure of what she was doing in tact and put it into practice. (HT1)

The teacher seeking the information was someone who would be considered a veteran teacher with more than ten years experience. The teacher providing guidance in mastering the new approach would be considered a novice having only two years experience in a classroom. Clearly the structure is in place to enable the interactions to occur both horizontally and vertically among grade level members.

The structure of peer mentoring, which initially came from the administration, has enabled designated leaders to open the pathways necessary for the distribution of the responsibility for leadership.

So we talked about summarizing and note taking we have excellent learning environments, one thing we are not doing really well is we are not modeling and mentoring. We are not. It is a shame because the AP, the literacy coach, and myself get to see excellent teaching all day but peers don't. So we looked at how can we build this structure. So every Tues there is 90 min block where grade levels rotate to peer coaching. (HA1)

Teachers are given time to observe others at the same or different grade levels. The teachers who observe base it on their areas of need. Those needs are determined by assessments, which is further evidence of decisions at this site being driven by the data.

The three quotes from team leaders below give concrete examples of teams seeking out specific information based upon their determined needs.

Um well I would say that um to improve my practice I have used my colleagues to learn new ways different ways of teaching specific skills. Vocabulary has been something that I saw someone else doing in a way that I felt would really benefit my kids because it is practically every vocabulary I am giving them is new to them um then putting a movement, a physical movement to them and structuring the vocabulary and giving them a lot more opportunities to talk to each other. Um so I would say that my colleagues have been great tool for me as well. (HT1)

But as a grade level there is a pattern so we notice that students are struggling with geometry. What can we do as grade level for our students? Or we see there is a teacher that did really well with geometry and the rest of us did not then we will say okay Mrs. So and So what did you do in geometry you students are doing well and we'll share ideas or take ideas from each other. (HT3)

For example if we know that a grade level is good at GLAD strategies and that is an area where we feel that we are lacking and would like more information then we will say then let's go observe second grade we hear they are doing great you know great things with GLAD and that gives us a change to get to know our grade levels and their forte so that we know who we want to observe. (HT2)

All teachers at the school are seemingly seen as competent experts. Each is recognized for his or her strength, and the release time allows others to use the expertise of their colleagues to improve their practice. It is not dependent on the lead teacher to model lessons and have all the answers. By having the structure in place, teachers are able to influence the distribution of leadership by seeking out others with expertise.

It is important to note this expansion of leadership is not dependent on popularity or status. The leaders are context driven which is an important component of Spillane's construct of distribution of leadership. The peer mentoring process shows that leadership can shift depending on the need of the individuals. Another factor that seems to be at play

at Harvest in distributing leadership widely is the respect of the administration for the lead teachers. “They are exemplar teachers so if the teachers have a problem if they need support you can go to your grade level lead or if you want to see a grade level above or below you can go to that grade level so they are expected to be exemplar in everything they do” (HA1).

The culture at Harvest also seems to show that teachers’ abilities are valued and respected. The lead teachers in turn seem willing to turn the leadership over to others, which might be related to their experiences with administration trusting them with leadership. As one teacher so aptly put it, “we have so many people who are excellent that we can go to and get the help and they see the value in that” (HT3). It appears this structure is promoting the culture of constant improvement in teaching. The administrator echoed this sentiment when asked about how QEIA has impacted the day-to-day operations at the school. “It has changed the day to day operation because teachers are truly teaching based on data and we get the data and we collaborate around the data because of the collaborative structure that we have.” This finding suggests the administrator is not leading the improvement cycle: leadership has been disbursed to the teaching staff after they reflected on the needs of their respective grade levels.

At Lightfoot peer mentoring is a new phenomenon and is not yet well established. They are beginning with ILT members providing model lessons for discussion. Some grade levels have started this at their collaboration meetings, “Another thing we started doing was during collaboration one of the teachers would present a lesson and then all the colleagues would observe you and the reading coaches” (LT2). The teachers are given feedback about the lesson and they bring student work samples to demonstrate student

understanding. Not all teachers have shared work and there seems to be the perception that some might react negatively to feedback.

It depends on how you see it because if you take the positive out of it. Like okay I saw how this person was able to transfer the notes to a paragraph now I know how to do it. Some then yeah it is. But if you take it as a way of acting defensively then you are really not going to take it you are real not going to take the purpose out of what we are talking about. (LT2)

Another grade level has incorporated observation in order to help them establish guidelines for the implementation of an adopted reading program. “So we got a chance to observe each other and that was really helpful because we got a chance to see this is how you teach it” (LT1). For this team the observation led to a clearer understanding of teaching this particular skill. This was related to the writing program they had adopted. They were trying to ensure fidelity to the program. This is supported by the previous discussion regarding professional development. It seems the focus is on fidelity of implementation to ensure high quality implementation.

The data show that at Harvest teachers were seeking out peers based on their competencies, but at Lightfoot it does not seem to be extending beyond grade level teams at this point. The teachers being observed are volunteering for the observation or all are observing one another at a grade level to ensure consistency. The ILT member seems to be the one generating the observations rather than teachers seeking it out on their own based upon their reflection of their needs. One possible explanation of this difference could be the length of time the peer-mentoring model has been in use at each site. At Lightfoot it is the first year of the implementation, and at Harvest it has been occurring on some level for two years.

Student achievement is carefully monitored at Harvest in a collaborative manner. “Oh gosh, when we had our 24-week benchmark assessments and we got our data back, we had to make a decision about what we were going to re-teach. We each had, each of our classes were between 65 and 85% proficient on the 24-week benchmark. So we had to decide on which standards we were going to re-teach” (HT3). When there is a group of students not making progress, the needs are addressed through planning for instruction rather than simply moving on. According to one teacher leader, “If the children are not learning as much as they were expected to be learning then we’ll take some steps back and in that next eight week plan they will review and continue to teach the standards they have not learned yet” (HT2). This spiral action seems to promote a level of expectation for student learning and a responsibility for making that happen. Each teacher is accountable for student progress and when it is not met, there are routines and structure in place to address the problems. Rather than a climate of blame, this school has seemingly developed a climate of improvement both in teaching and learning. That improvement comes from the interaction between the teachers over data and teaching strategies. Teachers are encouraged to develop their expertise by using one another as resources and seeking out what they need.

At Lightfoot when a student is not making progress all the teachers spoke of immediately beginning a Student Study Team (SST). “We evaluate that student through SST process student study team and so doing that that student seems to definitely stand out from the rest of the crowd” (LT1). The intervention shared in the interviews was to teach the students in a small group. “For me that’s when we meet with them in small

groups or possible after school. But we try our best to have all the students meet that goal. I mean depending on the student, we can only teach so much” (LT3).

Administration at both schools were asked what teachers do when confronted with data demonstrating students are not learning. The administrator at Harvest echoed the teachers in saying that they evaluate the lessons and see if a different approach would work. He also mentioned that teachers would work together and perhaps students would go to another grade level in order to learn skills they may need. This is not directed by administration, it is something that is done between teachers at grade levels. For instance, “a 4<sup>th</sup> or 5<sup>th</sup> grade teacher may ask a 2<sup>nd</sup> grade teacher are you doing any lessons on sequence of event this child is really struggling and not able to grasp the content in fifth grade can they come in for that 30 min block?” It is further evidence that teachers in this school take on leadership roles and also work to ensure their student’s needs are being met.

The administration at Lightfoot did not echo the teachers when asked about reaction to students not learning. All four teachers at the school went first to the SST process, but the administrator talked about interventions that would be tried first step before students were referred. She saw the SST process as the last resort rather than the first. According to her, “we have intervention programs. Some of the teachers keep the kids after school. We had the formalized intervention program sponsored by the district the ASAP program.” Teachers did mention the after school program, but it was solely based on the previous years scores on the CST and not current data received from assessments this year. The principal also spoke of a preventative measure used to increase



reading fluency. That program was not mentioned by any of the teachers who were interviewed.

The interviews and survey data shown in Table 4.6 seem to indicate teachers at Harvest assume considerable responsibility. Harvest team members seem to hold themselves accountable for the work as a team.

So we chose by looking at the data we chose the standard we were focused on and how our instruction would be different this time. How are we going to re-teach it because they didn't get it. (HT 3)

We disaggregate the data and look for weakness like I said and areas that we are strong in so that we can make sure that we don't let go of that and forget it. (HT2)

When talking about the re-teaching, the collective we is used by both lead teachers. It seems to indicate there is an understanding that each team member is responsible for the improved outcomes and the spiral teaching.

The responses from Lightfoot indicate that most teachers feel responsible that all students learn, but the response for the last question is closer to indicating about half of the teachers feel responsible when students fail. In contrast, nearly all of the teachers at Harvest feel responsible when students fail. The teachers at Harvest also feel more responsible to help one another do their best. This is supported in the discussion of collaborative distribution where the perception indicates teacher conversations at grade level meetings have an impact on teaching practice. This could also be an influence in the development of the peer mentoring. When teachers feel responsible to help one another they might be more likely to engage in conversations about practice. The Likert Scale used for the responses in this area of the survey were as follows: 1-Nearly All, 2-Most, 3-About Half, 4- Some, 5-None, thus a low mean score indicates a positive practice.

*Table 4.6: Teacher Responsibility for Learning*

Teacher Responsibility	Harvest Mean	Lightfoot Mean
HMT feel responsible to help each other do their best	1.32	2.44
HMT feel responsible that all students learn	1.35	2.09
HMT feel responsible when student in this school fail	1.39	2.59

### Data Driven Decision-Making

3.0 In what ways do teams use data to inform their work?

3.1 How is data analyzed at the site and team level to ensure student success?

3.2 How does data driven decision-making connect to improved student outcomes?

Both interview and survey data were used to determine the evidence of the practice of data driven decision-making present at each school. The survey questions related to the practice were analyzed and the mean values were determined. An independent t-test was done to determine if the differences were statistically significant. Survey findings were then cross-referenced with interview data in order to ascertain if there was support for the findings.

Data driven decision-making was clearly perceived as a practice at both schools. It seems that this practice is a part of the core work at both schools. This practice seems to be more reliant on the administration. At Harvest teachers reported that the principal brought in the practice of data analysis and he took time to teach them how to lead this process. At Lightfoot, the administration leads the data discussions at grade level meetings. It has become a focal point at both schools and is an integral part of their regular discussions. At both schools data is discussed at grade level teams as well as in whole school staff meetings. This difference in structure is consistent with the work of

Datnow, Park, and Kennedy (2008) who found successful schools incorporated data analysis as a part of their core work. While not all schools approached this task in the same way, it was a critical component of their success.

*Table 4.7: Data Driven Decision-Making Survey Questions*

Data Driven Decision-Making	Harvest Mean	Lightfoot Mean
Teachers and admin, depending on data, can modify student achievement plans.	4.63	4.00
The ILT facilitates the use of data to guide instructional practice.	4.57	4.12
Teachers in meetings look at different forms of data to ensure students are learning.	4.69	4.32

When the independent samples t-test was run using the composite variable of data driven decision-making, there again was a statistically significant difference in the responses from the two schools. Harvest (M=13.89 SD=1.41) Lightfoot (M=12.44 SD=1.52);  $t=.220$ ,  $p<.05$  (.000) 2 tailed-test. The magnitude of the difference in the means (mean difference =1.44, 95%CI- .740-2.14) is significant. This mean difference does have the lowest magnitude of all of the constructs. This might be influenced by the differences in who is leading the data discussions.

Harvest seems to have developed a culture where data is valued and used to make decisions about teaching and learning. Every interview contained detailed accounts of how data was generated and used to determine next steps.

We will also look at our strengths so teacher that are doing really well in that strand and others are struggling we can go to them and find out what they are doing. For weaknesses as a whole we will put that strand into our next round of 90 90 90. It might be five kids and that is a standard we are working on is small groups. So it is just making sure we are going back and re-teaching the standard as a whole that we were lacking in. And then in writing as well we will still look at their writing and what do we need to stick in the next writing piece to model. (HT4)

We used to have a teacher that was having student summarize a passage every morning when they came in. But they never corrected it. They just read a passage and had to summarize it. And summarizing is an excellent higher level thinking skill. But for them to never get feedback on it wasn't a good use of time. How was it going to help them? A lazy student who didn't want to summarize would come in and read it and write three sentences and turn it in. That was not beneficial to that student and that was what was actually happening. So we used the data to, well actually we asked if you could show us the data that that was effective and there was no data. So that practice got eliminated. (HT3)

And we sit down and look at our results. What are the areas of weaknesses, what are the areas we did well? What are the areas we lack in and what are we going to do about it. And we talk well maybe we should do this maybe we could do a hands on activity. Oh I have this activity that worked very well. For example, that on the 24 week assessment when we were still having trouble with rates and proportions so we maybe what could we do to help with ratio and proportions. So we decided lets have the kids bring supermarket ads and look for you know when it day five pounds of tomatoes for whatever what is the unit rate for that. So it is more hand on and how it pertains to them their world instead of we are teaching this for the CST or we are teaching this so that you are proficient in this area. (HT2)

The school has a structure of assessments the teachers have created to monitor student progress. They have an 8, 16, and 24-week formal assessment. All of these are teacher created based on the highly tested standards in the grade level. Each team has gone through the standards and the released test items. "Um, the way we determine goals is we each grade level has created grade level assessments that mirror the CST and we make sure that they are standards based (HT2)." While many schools assess on a regular basis, this school takes it one step further and refines teaching based on the results. All assessments here are used formatively and they result in closer attention on students who fail to meet the proficient level. This is a cornerstone of the creation of high reliability.

Assessments are not limited to the formal 8,16,and 24-week tests. The teachers also use informal assessments and respond when students are not learning the concept.

One of the teachers interviewed talked about how she turns homework review into a quick assessment of student understanding and responds when students do not understand. “I say to the student can you tell me where you started that. You know it takes only a minute. Where they would put their pencil on the origin and okay what is the first move. Have them show it to me. If they are totally lost, then I know right then and there I am going to re-teach this to you at recess or come in the morning (HT3).” Students are being closely monitored for their understanding and being offered multiple opportunities to learn the concept. This seemingly communicates a culture that lessens the potential for failure.

Teams use data to monitor student progress, but it also results in change in practice. Several teams shared stories of practice being altered by data. The fifth grade team looked at their results from the 24-week assessments and determined students were having difficulty with an algebraic concept. This led to a discussion of how they had taught the lesson prior to the assessment. They concluded the way they had presented it was too abstract for the students to master the concept. As a team they designed a new lesson that was more closely tied to the real world application of the skill and each presented the new lesson to the students.

If they could relate it to something in the real world they might be able to remember it. So we assigned our activities we began with a word problem and they had to write an equation. When they got the equation we said how would we graph that, lets graph that. So we would make a function table. From the function table they got the ordered pairs and so they were like oh x can be anything. If he ran two miles then you put in 2. So that is how we re-taught the algebra. So that is how we use the data to drive our instruction. (HT3)

Follow up assessments were used and they found the students has a firmer understanding of the concept. This focus on the needs of the students resulted in 98% of the English learners scoring proficient and advanced in math on the CST in the 2009-2010 school year.

Data is also a valued commodity at Lightfoot Elementary. They use the information from state test results as a starting point. They also use benchmark assessments developed by the district throughout the year in math and writing. This year they implemented two internal assessments. The assistant principal developed both of these using a test bank and then the data was shared in the grade level teams. They talked about the perceived weaknesses, but no teacher gave a detailed explanation of how that data was used to modify practice. The hierarchical structure of leadership may not be as conducive to having discussions occurring at multiple levels within the organization.

Data analysis at Lightfoot is a more centralized leadership practice with teacher leaders playing a less active role. Nevertheless, data are being used to change practices and to place student in appropriate interventions to ensure learning gaps are closed. The data-guided decision making structure in place at Lightfoot seems to be contributing to improving student achievement and helping the school maintain gains. The teachers who were interviewed did not specifically share instances where data influenced a change in practice, but the attention to the monitoring of progress seems to have a positive influence on improved student outcomes.

### High Reliability Organizations

The monitoring of student progress and responding when students do not show progress are both critical components of high reliability organizations. Interviews and

survey data were analyzed to find evidence of the practices, which promote the development of these characteristics in the organization.

Several questions in the survey were designed to determine the presence of characteristics of a high reliability organization. This seeks to answer question 4.0: Is there evidence of the characteristics of high reliability organizations present at the school?

Organizations of this type have a structure present in the organization designed to prevent failure. In schools this manifests as a reliance on monitoring progress and responding with a plan when students do not learn. It is a cyclical process with the ultimate goal of closing the gaps in learning so that all students are achieving and getting the instruction they need.

The assessments cycles implemented at both schools are critical to the developing high reliability. Both schools have assessments, which have been created at the schools with the intention of monitoring progress of students in regards to power standards. These standards have been determined by examining state tests to ascertain which standards are highly tested at each grade level. Each of the schools has taken this information and created tests mirroring the standardized test. At Harvest each grade level as a part of their collaboration develops the tests, while at Lightfoot the responsibility for creating the assessments is taken on by the assistant principal.

The survey contained seven questions intended to test the perception of the teacher's role in creating high reliability through grade level conversations. The survey results, which can be seen in Table 4.8, seem to indicate there is a greater perception at Harvest that teachers help one another solve instructional problems and work together to

improve instructional practice. There was less evidence that teachers at Lightfoot engaged in the same practices, however, the lack of teacher sharing best practices at this point in time does not seem to have interfered with the development of high reliability. It seems this may be more reliant on the data review cycle rather than the distribution of leadership as originally supposed.

*Table 4.8: High Reliability Variables*

HRO Variables	Harvest Mean	Lightfoot Mean
Teacher teams at my school discuss strategies share materials and resources to help meet student needs	4.66	3.88
Teachers at my school discuss and help one another solve instructional problems	4.49	3.39
The principal provides a structure that encourages the staff to participate in improving academic achievement	4.74	3.79
Teachers in meeting regularly review student work to improve instructional practice	4.57	3.88
Conversations at GL meeting enable all teachers to increase the number of students achieving grade level proficiency or above.	4.51	4.06
Teachers plan together to meet the needs of diverse learners including EL and special needs students	4.46	4.15
Teachers and administrators work together to solve student academic problems	4.29	3.82
Expectations for student achievement are raised through teacher collaboration.	4.66	4.18

All questions have a higher mean at Harvest than Lightfoot. This seems to indicate teachers have a belief that their interactions are making a difference in the academic success of students. This is confirmed by the answers to the survey questions related to collective responsibility (Table 4.9). The higher mean at Harvest seems to



indicate teachers feel more responsibility when students do not achieve their targets. This is also supported by the information in Table 4.1, which indicated there was a statistically significant difference in the perception of high reliability behaviors between the two schools.

*Table 4.9: HRO Collective Responsibility*

Collective Responsibility	Harvest Mean	Lightfoot Mean
Teachers work to develop a plan for learners who are not meeting grade level expectations	4.50	3.97
Teachers and administrators share decisions about how instructional time is used and how the school is organized.	4.31	3.85
Teachers and administrators share accountability for student academic success.	4.54	3.88
How many teachers are willing to take risks to make the school better	4.44	3.57
HMT take responsibility for improving the school	4.53	3.66
HMT set high standards for themselves	4.59	4.03
HMT feel responsible to help each other do their best	4.68	3.54
HMT feel responsible that all students learn	4.65	3.89
HMT feel responsible when student in this school fail	4.56	3.37

The first three questions in the table were based on a Likert Scales consisting of five responses: 1-Never, 2-Rarely, 3 Sometimes, 4-Often, and 5-Always. The responses seem to indicate teachers are Harvest see themselves as more integral in the development of plans to address student learning gaps. There is also an indication there is a greater degree of collaboration between teachers and administrators when it comes to developing plans to address student learning. This seems to support the findings of a wider distribution of leadership.

The last six questions in the table were measured using a different Likert Scale. The scale ranges were as follows: 1-None, 2-Some, 3- About Half, 4 Most, 5-Nearly All.

Originally this scale was in reverse order from that shown here, it was reversed when running the independent t-test to eliminate the impact of the negatively worded response scale. The reversed values are shown in the table above. When looking at the responses to the individual questions, it seems there is a stronger perception of responsibility for student outcomes and helping colleagues improve at Harvest. The wider distribution of leadership might be influencing the perception of responsibility. The data collected for this study cannot prove that relationship.

It seems both schools have developed a means for ensuring high reliability. The monitoring of progress and responding with interventions is occurring at both schools. One school is more structured in their response and has developed specific after school and before school interventions, while the other is freer to develop plans based on grade level needs.

### Conclusions

In this chapter I have reviewed the achievement data for both schools. It is apparent that improvement has occurred at both schools. I have also discussed the perception of the distribution of leadership practice occurring within each school. Harvest Elementary seems to have a wider degree of distributive leadership practices, but there seems to be an indication that leadership is fragile and any disruption to the team or the leadership can have adverse effects. Lightfoot's leadership structure, although less distributed, seemingly promotes consistent academic progress. This will be further explored in the next chapter.

It seems that data-driven practice is a critical part of the improvement process as well. The examination of data was occurring at a whole school level as well as in grade

level teams. The main difference was again in the leadership of these discussions. Harvest teachers seem to take this leadership task on and take responsibility for the outcome of their decisions more readily than those at Lightfoot. However since both schools are making progress the responsibility might not need to be distributed to the teaching level. It appears if the process is occurring with fidelity it has a positive effect on student outcomes.

The key findings will be further discussed in the following chapter along with implications for current practice and further research. In addition, the practices reviewed in this chapter will be examined for their contribution to the development of high reliability characteristics and organizational learning.

## CHAPTER 5: SUMMARY AND DISCUSSION

This chapter presents an overview of the study including a statement of the problem, a brief review of methodology, and a summary and discussion of the results. Subsequent sections discuss limitations, conclusions, implications for practice, and suggestions for future research.

### *Statement of the Problem*

As stated in chapter 1, NCLB has increased the pressure on schools to perform at high levels and to ensure all students are learning. It has brought a new focus on the performance of English learners and minority students. This has resulted in schools focusing on these groups of students in order to prevent the school from being labeled as low performing. If schools are labeled low performing for an extended period of time, it can result in the reconstitution of the school.

Most of the current research in the field addresses this problem from the district or whole school perspective (Harris 2004; Marzano et al., 2005; Rossi & Stringfield, 1995). Researchers have looked at the elements that make districts and schools effective, but have not honed in specifically on individual teachers and teams achieving that success. How is the leadership distributed in a successful school? Does the distribution of leadership promote the development of the characteristics of a high reliability organization? How do the interactions between staff contribute to higher student achievement? How are they using data to drive decisions about teaching in the classroom? Are conversations about data resulting in changes in practice? How are those changes in practice directly tied to increased student achievement? These are some of the questions explored in this study.

*Review of Methodology*

A multiple case study was used for this study. Both a survey and interviews were used to examine the practices of each school. The survey was administered at each school by the researcher. Participants were given a brief overview of the study and each participant was informed of his or her rights.

The head administrator was interviewed at each school. In addition, four teacher leaders were interviewed. Each of the teacher leaders is a member of the Instructional Leadership Team (ILT). Each was informed of their rights, and the interviews were recorded and transcribed.

Surveys were analyzed using SPSS. Descriptive statistics were used to determine the differences in the perceptions of the staff at both schools in the areas of distributed leadership practice, high reliability characteristics, data driven decision-making practices, and organizational learning. Items were grouped into composite variables and compared using an independent t-test to determine if there was a significant difference between the schools.

The interviews were used as supportive evidence for the findings in the survey. The survey was used as the primary measure because it involved the entire staff rather than just those who held more formal leadership roles within the school. Since the results were examined through the lens of distributed leadership as conceptualized by Spillane (2006), it was important to capture the perceptions of the whole teaching staff as well as those with assigned leadership roles.

Documents examined as a part of the study included school plans and assessment data as reported by the CDE (California Department of Education). The documents were

triangulated with the findings in both the survey and interviews. In addition, the documents were used to develop an understanding of the leadership structure at the school, the professional development plan as it related to supporting teaching and learning, and the action plans developed by each school.

### Discussion of Results

High reliability organizations develop clear and widely shared goals as a guide for their work (Rossi & Stringfield, 1995; Stringfield, Reynolds, & Schaffer, 2007; Taylor & Angelle, 2000). The schools in this study have each created a shared vision and a common purpose. All interviews at both schools spoke clearly of their school mission. Teachers and administrators are clearly focused on student improvement and have devoted their time and financial resources in a way that addresses the needs of the school.

High reliability is also dependent upon organizations being able to adapt and change if circumstances warrant. Both of the schools demonstrated the ability to change and grow in knowledge. Personal mastery seems to have increased at each school. The teachers at Harvest increased their individual mastery through interacting with others as a part of the peer mentoring process. Teachers at Lightfoot increased in their mastery of agreed upon models such as gradual release of responsibility and implementing their writing program through modeling and observation. Teachers were engaged in observing one another and improving the fidelity of implementation. Fidelity to school wide implementation of a focused program is important to the success of a reform based on such implementation (Borman, Rachuba, Datnow, Alberg, Mac Iver, Stringfield, & Ross, 2000).

Each school used a different leadership structure to improve their normal

operations and to monitor student success of teaching and interventions, important components of highly reliable organizations (Stringfield et al., 2007). The student outcomes, distributed leadership pathways, and the leadership practice of data driven decision-making are discussed in the following sections using the theoretical lens of schools as high reliability organizations.

### *Student Outcomes*

Both of the schools in this study have managed to significantly raise student achievement using different restructuring models. One important difference in the two paths to improvement was the decision at Harvest to reconstitute the staff, with the new principal selecting the staff and replacing two-thirds of the former staff. There were also staff changes at Lightfoot, but the existing staff was given the option to select to stay. The leadership at both schools knew their task was to raise student achievement, and both received extra financial support through QEIA funding to accomplish the goal. In both schools the funds provided additional staff to support the improvement process. A critical question that remains to be answered in both schools is what happens when funds for the additional staffing are depleted?

The initial rise in achievement at Harvest may be attributable to the almost complete change in staff personally selected by the new principal. This change seemed to have resulted in developing a staff that was focused cohesively on eliminating the achievement gap. Interviews with both administrators and teachers at Harvest revealed they were very clear on their purpose and the route they were taking to achieve their goals. This was a radical change, and based on the results this could be an indication of a pervasive sense of purpose and responsibility for success that drove the immediate

improvement in student outcomes. This complete change contributed to the identification and articulation of a vision shared by the whole staff. As shown in chapter 4 they have developed a climate of “laser like focus”, a term used by each person interviewed. This clear focus in student outcomes corresponds with the first of six dimensions of transformational school leadership identified by Leithwood and Jantzi (2000) as well as being a hallmark of high reliability organizations (Taylor & Angelle, 2000). Rossi and Stringfield (1995) found staffs in high reliability schools shared a common belief and a feeling that failure would be disastrous.

Even with this diligence and focus, there was a slight decline in scores for Harvest in the third year. A possible explanation for this decline comes from the work of Rosabeth Moss Kanter (2004). Kanter asserts that it is easier to move schools initially, but it is difficult to keep going after initial improvements. She believes that people have worked so hard to raise scores and when they see improvement they begin to relax and enjoy the success. Further change requires more motivation to get better rather than settle for the progress already attained. This could be part of the decline in scores at Harvest. Also, once API scores of over 800 are achieved, it may require additional strenuous effort to maintain a high poverty school at this level. It is also important to note that not all teams demonstrated a decline in results. Some teams continued to increase student achievement, and that seems to indicate that not all teams lack motivation to continually improve. It would require further examination of each grade level team to determine the level of internal motivation.

In contrast, the change in focus at Lightfoot may not be as great since only 50% of the staff left and their departure was on their own volition. The choice of the teachers



who stayed may not be indicative of their embracing the new focus of the school. While they did not have the same growth as Harvest in the first year, they seem to be delivering sustainable results and student success is growing incrementally. This incremental growth could be evidence of the cyclical effect noted by Stringfield et al. (2007) where initial gains encouraged staff and this led to a second level of effort. When the second level succeeds, a third level becomes possible. This cycle leads to an upward re-benchmarking of goals and promotes consistent progress.

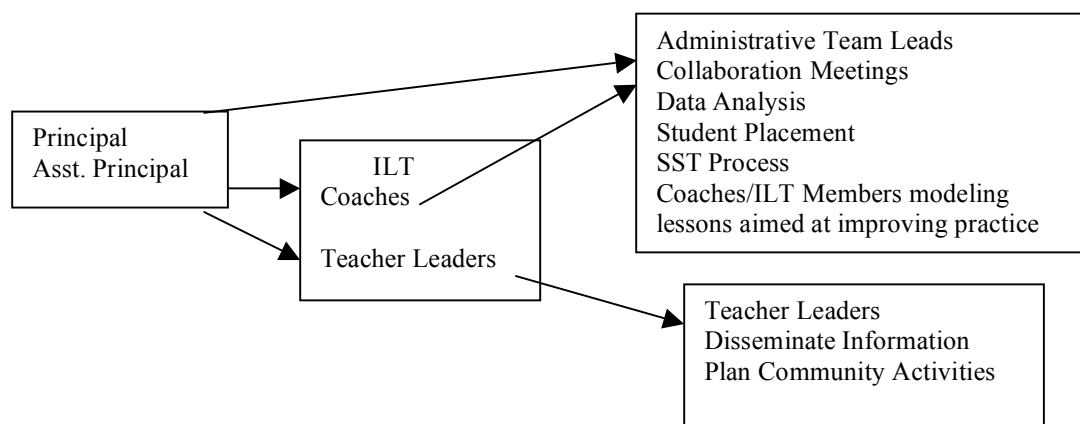
Change in staff may well be needed in chronically underperforming schools as these two were, but the pathway for reconstitution may not need to be the same to achieve results. Some schools may benefit from the more complete restructuring while others do not require such drastic measures. More research would be necessary to determine the factors relevant to this decision.

#### *Distributed Leadership Practice*

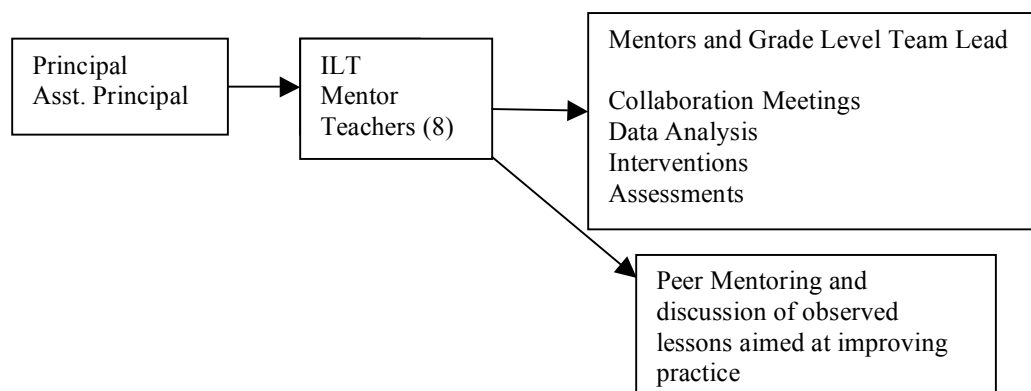
Although there are differences between the schools, both have organized in a manner that promotes student success, which is the ultimate goal. While initially the researcher held the hypothesis that a wider distribution of leadership would make a substantial difference in the success of the school that does not seem to be the case. It would seem the leadership structure is not as critical as the leadership practices, especially those tied to data analysis, in achieving sustainable success. When the practice of data analysis is widely distributed it seems to have a positive effect on the student outcomes. This practice might be easier to implement than distributed leadership because it relies less on the capacity of individuals. In this study, both pathways resulted in positive outcomes for students.

To achieve their stated goals, each school has developed a different leadership structure. The figures in 5.1 visually represent the distribution of leadership practices in each of the schools. Survey and interviews indicated there is a statistically significant difference in the perception of distributed leadership at each school. Harvest has seemingly developed a wider pattern of distribution, while Lightfoot has distributed leadership in a more traditional hierarchical structure to an administrative team. This difference in leadership patterns supports the notion that there is not a preferred way to structure a school for success (Reeves, 2003).

### *Lightfoot*



### *Harvest*



*Figure 5.1: Distribution of Leadership Practices at Lightfoot and Harvest*

A key finding in this study is how leadership was distributed and what leadership practices these leaders assumed varied across the two schools. Both schools have a principal and assistant principal as chief leaders in the school. Each school has also developed an Instructional Leadership Team (ILT) and teachers representing all grade levels serve as members on the team along with the principal and assistant principal. At Lightfoot, the coaches also serve as members of the ILT and played key roles in guiding the grade level teams.

Both of the schools seem to have developed the critical functions and leadership practices associated with creating high reliability. Both schools have improved their normal operations, created a structure to detect problems, and a plan for recovering from the problems identified (Bellamy, Marshall, & Coulter, 2005). This does not seem to be dependent on the distribution of leadership to teachers within the school, but the distribution of this leadership practice to someone within the school.

One key difference seems to be the multiple pathways open at Lightfoot for the tasks related to collaborative analysis of data, planning interventions, planning assessments, and modeling and discussing teaching practice. While the principal and associate principal at Lightfoot often delegate the responsibility for these leadership tasks to coaches, they also circumvent the coaches at times and deal directly with the grade level teams. In contrast, the administration at Harvest relies exclusively on the ILT to lead this work and does not assume a leadership role inside of the grade level team meetings.

The hierarchical structure at Lightfoot with the responsibilities for key leadership tasks distributed primarily to the two administrators and coaches at this point in time

seems to ensure the reliability of results. The leadership practices of data collection and analysis and interventions for struggling students are well planned as a part of normal operations, which is critical for high reliability (Taylor & Angelle, 2000). The responses at Lightfoot were predetermined and were less reliant on the interactions of teams or the knowledge of individuals within the school. Harvest, in contrast, has distributed the leadership practices of data collection and analysis as well as developing interventions for students more widely to grade level teams. Through interaction among colleagues, teachers were able to solve instructional problems. During the time frame of this study, the disruption of personnel on a couple of the teams seems to have adversely impacted the teacher practices. It is not possible in this study to determine the long-term effect, but since the teams involved in the changes showed the most disruption to achievement gains, it seems to indicate this is should be a real concern.

At both schools leadership is distributed to the ILT. This is consistent with leadership structures found by Spillane (2006) at Adams School. Typically, leadership is distributed to three to five formal leaders who have responsibility for certain leadership routines. That is the case in both schools. However, there are differences in how and what leadership tasks are distributed to these formally designated leaders. In the case of Lightfoot, either the administration or the coaches are doing the leadership tasks directly related to the core work of the school. They are leading the grade level collaboration meetings where data is analyzed and intervention plans are being made. In contrast, the mentor teachers were leading the discussions about data at Harvest. The involvement of the teachers at Harvest has contributed to teachers not in formal leadership roles taking on leadership tasks in the peer-mentoring program. This distribution has seemingly

increased the potential for collaborative conversation aimed at changing practice to improve outcomes. Teachers at Harvest seemed to have developed interdependency aimed at improving their individual practice, and this is occurring without involvement from administration. This collaborative conversation might also be contributing to the higher degree of collective responsibility felt by the staff and the overall higher level of achievement reached by the students.

The administration or the coaches are leading the discussions related to teaching practice in the peer-mentoring activities at Lightfoot. Teachers, ILT members at this point, are demonstrating lessons within the collaboration meeting. The feedback is aimed at improving the practice of the teacher being observed. At Harvest the peer mentoring has become widely distributed among the entire staff and is aimed at improving the practice of the observer. These differing structures regarding mentoring practices deserve more study to document if the degree of collaborative conversation around practice is deeper and more open when the administration or those representing administration are not present during the discussion. There could be a perception of evaluation rather than a climate of improvement when an administrator is present.

It seems the leadership structure at Harvest where the leadership tasks associated with teaching and learning have been distributed to the ILT and then to the grade level members has the potential to develop the lateral leadership identified by Harris and Townsend (2007). There is evidence that supports the idea that building lateral leadership is a means to sustain school improvement (Fullan, 2000). This collective leadership provides an opportunity for teachers to work together to develop expertise and lead

innovation and change within their own classrooms or grade levels (Harris & Townsend, 2007).

Another leadership task carried out by teachers at Harvest is the development of assessment cycles. The monitoring of progress and responding when student do not learn is a critical component of developing high reliability. This task is completed collaboratively at grade level meetings. The teams looked at standards and designed assessments that mirror state assessments. After these assessments they analyzed data and made adjustments to teaching to address student needs. This again is an example of the wider distribution. Teachers are leading this core work of the organization independent of administration. They have assumed responsibility of the entire process. In contrast, the assistant principal created the assessment cycle at Lightfoot and did not involve either the coaches or the ILT members in the process. This limited teacher involvement may contribute to the lower levels of collective responsibility reported by the staff.

Through distributing leadership broadly, Harvest seems to have achieved dramatic improvement results in a short period of time, but at this point it is uncertain as to whether these results can be sustained. Lightfoot's gains came more slowly but have continued for three years. The results of this study seem to indicate the narrower distribution of leadership at Lightfoot has been able to sustain the growth over the three years better than the more broadly distributed leadership model. This might be due to the fact that key people in the leadership chain within a couple of grade levels left at Harvest and caused a disruption in the continuity of the teams. This might indicate that a more distributed model of leadership is difficult to maintain and therefore possibly threatens the sustainability of results. However, achievement at Lightfoot might also decline if the

principal and or other key members of the administrative team left and there was less teacher leadership in place to sustain current practices (Hargreaves & Fink, 2006).

### *Data Driven Decision-Making*

The development of data driven decision-making seems to intertwine with the development of high reliability. Stringfield, Reynolds and Shaffer (2007) found that to be the case in their study of 12 Welsh schools. The processes for data analysis became more sophisticated over time as the staff became more adept and better data systems were put in place. The monitoring of progress and the creation of intervention plans based on the assessment are both critical elements of developing highly reliable organizations. When student progress is monitored learning gaps are identified quickly and teaching can be adjusted to address those gaps.

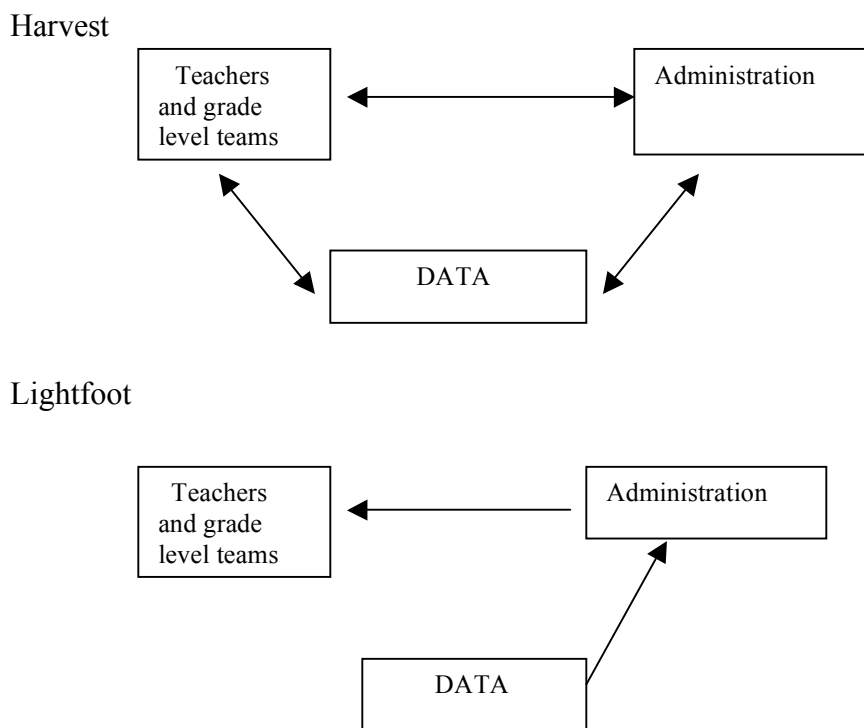
Data use has become part of the leadership practices of both schools and is reinforced by district policies. Student progress was monitored with the intention of developing practices aimed at narrowing the gap of under achieving students. The data discussions at Harvest were widely distributed in the organization, but since Lightfoot was experiencing consistent growth in student achievement, it does not seem that distribution of this process made it more effective. The differences seem to be in how data were generated and the responsibility for its analysis. Results from this study indicated that one path to improvement can be an administration led leadership practice of data analysis to guide grade level teams more directly. This study confirms Datnow, Park and Kennedy (2008) findings that successful schools can approach data use in a variety of ways, but the process of engaging in data examination is a critical component of success. This practice of data analysis and use is also a cornerstone in the development

of high reliability (Stringfield, Reynolds, & Schaffer, 2007).

This study revealed examples of teachers interacting with data and it resulting in a change of practice. This seemed to have occurred more at Harvest where the interactions were more open and teachers were able to make alternate decisions about practice. This level of analysis, however, is dependent upon the skills of the individual teachers at the school. The ability of teachers to both interact with data and have the ability to implement new strategies might have to be a consideration when making personnel choices for a school with a high degree of distributed leadership practice.

Results from this study indicated data driven decision-making was the most critical leadership practice to improve student outcomes, and it confirms the findings of others that use of data by leadership teams has been shown to be the strongest predictor of teachers focusing on changing teaching practices (Chrispeels, Castillo & Brown, 2000). It has also been shown to be one of the commonalities in high reliability schools (Stringfield, Reynolds, & Schaffer, 2007). It may be more important than the structure or pattern of distributed leadership. Both schools have adopted a structure that includes the analysis of data as a whole school and in teams. Student progress toward standards is monitored through an internal assessment cycle developed at each school. While the teachers at Harvest had more freedom to develop interventions based on the assessments, each school seemed to offer a response when students were not making sufficient progress. Developing high reliability is dependent upon reviewing the data and creating plans to address the gaps. The findings of this study suggest that it is the leadership practice of using data that may be more important than who this leadership practice is distributed to, broadly to teachers or more guided by administrators and coaches.





*Figure 5.2: Data Use in the Study Schools*

Figure 5.2 visually represents the differences in the data analysis approaches and pathways at each school site. The figure for Harvest indicates this process was more widely distributed. Data were both used and constructed by the administration. They supplied data in the form of state reported scores, district collected data, and they constructed data from their observations as a part of walkthroughs conducted with cohort schools. These data were shared with the teachers in grade level teams and as a whole school.

Teachers at Harvest were also consumers and creators of data. They used the data supplied by the administration, but in turn collected anecdotal data from the classroom and internal assessments and reported that to the administration. They were involved with the creation and analysis of the internal assessments as well. This analysis was done with administration and also in teams without the administration. Results of the interactions

were shared with administration, but teachers were allowed to make instructional changes based on data, which were generally supported by the administration.

In contrast, the data analysis at Lightfoot was directed by the administration. Administration shared data with teachers at both grade level meetings and staff meetings. Either the administration or the coaches led grade level meetings where data were discussed, and decisions related to practice came from the administration rather than the teachers. While teachers may have been engaged in other conversations with colleagues, they were not free to try new practices based on those interactions. This seemed to be a result of the leadership structure at the school and the stronger focus on external intervention programs to guide improvement rather than on grade-level generated solutions.

It would seem both structures were conducive to building the leadership practice of using data to inform instruction. Both schools have developed a time for collaboration within the school day, and that time was used for examining data. In their study of effective elementary schools Datnow, Park, and Wohlstetter, P. (2007) asserted that having a time within the school day is a key component of using data at the school level. Each school has built a foundation for the review of data as well as developing plans based on the data. The data conversations were part of a structure that promoted continuous improvement, which was conducive to developing a high reliability organization.

Each school has established interim assessments aligned to standards as a part of their reform models. The results from the assessments guided the next steps taken at the school. For instance, students can receive additional help either before or after school

based on their performance on the assessments. While there might be more individual responses at Harvest because of the freedom offered by the distributed model, both schools have demonstrated the ability to intervene with struggling students and bring them to the proficient level. Researchers have identified this practice of monitoring progress and developing a response for students who do not learn as a critical leadership task for developing high reliability (Bellamy, Crawford, Marshall, & Coulter, 2005; Rossi & Stringfield, 1995; Stringfield et al. 2007; Taylor & Angelle, 2000). The data seems to indicate it is the development of a response that is necessary not distributing the responsibility for response throughout the school.

### Conclusions

A conclusion from this study is that while distributed leadership patterns can differ and yield positive results for students, a change in leadership personnel should be approached carefully if improvements are to be maintained. Taylor and Angelle (2000) would agree with this as they assert to maintain the culture of a school, hiring practices need to include the use of the vision, goals, and norms. It is not a matter of simply filling a teaching position. Since the lead teachers at Harvest were creating agendas, running meetings using data, creating and monitoring assessments, and peer mentoring the hiring practice would need to fit the expectations and perhaps not be “hiring as usual” in the post and bid process used by most districts. It might require a more extensive search much like hiring an administrator. The development of high reliability is a dynamic process. District leaders might need to be more strategic when deciding on personnel and equipment cuts. As technology improves, it increases the ability of practitioners to more accurately determine areas of need. If the funding is interrupted, it could adversely

impact the success and sustainability of efforts.

A second conclusion is that success of the distribution of leadership is dependent upon the capacity of individuals in the organization to do the work of leading. This does not simply include leading others, but participating in co-constructing leadership in a collaborative manner. Schools have traditionally been structured in a way that might limit the development of leadership abilities. Teachers have long had the ability to operate autonomously in their classrooms rather than working as a collaborative team with common practices across the grade level. Learning to collaborate and lead collaborative teams may take the development of new skills. Also, all teachers do not possess the desires, capacity, or experience necessary to participate in a collaborative leadership model. This seems to point to a caution when distributing the leadership. As many scholars point out (Fullan, 2006; Leithwood et al., 2006), there is a perception that everyone can be a good leader even without preparation. While some people have the capacity to improve as a leader, each person increases their ability at varying rates. Some take considerable time to develop as a leader and that can interfere with achievement in the short term. Katzenmeyer and Moller (2001) assert one of the obstacles to developing teacher leadership is the notion that leadership should be intuitive rather than something that develops over time. It is important to note not all people will develop into effective leaders.

Third, the egalitarian norm embedded in most school cultures may hinder the distribution of leadership. This norm sometimes results in teachers being unwilling to draw attention to themselves by taking on leadership roles within the school (Katzenmeyer & Moller, 2001). Teachers with defined leadership roles are sometimes

perceived as a part of the administration and that can interfere with collegial relationships between teachers (Darling-Hammond, 2004). In this case study, recruiting highly qualified teachers who also assumed a mentoring role in addition to regular teaching responsibility rather than coaches seems to be effective in Harvest as a way of promoting broad distribution of leadership. In addition, facilitating these mentor teachers to also empower other teachers is one way of preserving equality and at the same time recognizing different talents.

Results from this study suggest if schools are to distribute leadership broadly, two steps seem critical. The first is determining what are the leadership practices that if distributed more widely could enhance student learning. Second is being cognizant of developing the capacity of individuals before they are thrust into leadership roles. In addition, support would be necessary for continuing to evolve and learn about leading and leadership. Spillane and Thompson (1998) assert in order to sustain reform, districts must allocate funds that promote and develop human (individual leadership skills) and social (group trust, norms for collaboration, and access to key information) capital through collaboration. This might include collaboration within the school and between schools.

A final conclusion emerging from this study is that in distributing leadership across the organization it is also important to think about succession. Unplanned principal succession has been found to have an adverse effect on school progress (Leithwood, Day, Sammons, Harris, & Hopkins, 2006). When examining Welsh schools for sustainability of from the High Reliability Schools Project, Stringfield, Reynolds, and Schaffer (2007) found skillfully managed succession was critical. Seven out of eight of the schools with

leadership changes selected someone who was familiar with the reform and committed to its success. In most cases this reenergized the efforts of the school. This study suggests when there is a broad distribution of leadership to teachers and key teachers leave adverse affects can occur as happened at Harvest. Teachers in leadership roles left the school and on those teams student achievement declined. Relationships are at the core of doing collaborative work. Changing members could disrupt the trust established and could adversely impact the efficacy of the team. Trust is an element that requires time to establish. If too much change occurs in one team, it may undermine the distributed leadership practices.

#### Implications for Practice

With the current climate of education reform, it is important to examine what changes result in long-term gains in student achievement. The goal of reform should be the elimination of the achievement gap because it has larger societal implications if it is not addressed. The gap of achievement in schools is directly tied to the gap in income earning potential in the future. The student we fail to help cannot compete in the global marketplace. This perpetuates the gap in income earnings making the poor even further behind. Education is the great equalizer. It opens doors for a future. If we fail to prepare students adequately, we ultimately limit their opportunities in life.

Many schools will face restructuring as a part of being labeled as low performing. It is imperative that we examine approaches that work in a variety of situations in order to increase our ability to create a model to work in multiple contexts. This study looked at two schools that restructured in different ways and the development of two leadership pathways that positively contributed to student success. Each has its successes and

problems that provide learning for the educational community at large.

When incorporating a data driven model for change in instructional practices, it is important to consider the teachers ability to use data in that manner. In order to increase the competency of the staff in the process of data analysis, ongoing staff development to learn and then refine the practice in order to make the most effective use of this leadership practice would be necessary. This has implications at the district and state level. The funding and support for schools to operate in this fashion must be something state and district leaders are committed to in the long term. Structures will have to be in place to support the development of individuals to collaborate more effectively about student work in order to improve practice (Datnow, Park & Wohlstetter, 2007). Since some schools will not be able to fund coach positions, it is important the have structures in place that increase the efficacy of teachers to do this work (Harris & Townsend, 2007). This ongoing training and support might be difficult to fund in the current fiscal environment.

Data use in schools must be supported and nurtured from the district level down to the classroom. A process for examining data would include developing a safe environment free of repercussions (Park & Datnow, 2009). It takes a certain level of courage to examine data, and the level of trust necessary for this work must be developed within the organization. Teachers and administrators need to frame the process as an evaluation of current instructional practices not of whether the teacher is good or not. The structures necessary to support teachers learning new methods and developing a support network of colleagues might be necessary. Having the multilevel supports in place would promote a climate of continuous improvement.

In order to develop and maintain a climate of data use in teaching and learning, those entering the profession must be taught this skill as a part of teacher preparation. Teachers need to come into the work place with some knowledge of how to use data to make instructional choices and how to have collegial discussions about such practice. Education departments at the university level might need to examine how effective they are at preparing teachers for the realities they face in the workplace. This might require a restructuring of teacher preparation programs at some institutions.

#### Future Research

While each distribution model resulted in positive growth in the two study schools, more research is indicated to determine the long-term sustainability of each model. This would include the remaining time of the grant as well as the years beyond. What structures need to be in place to sustain results when funding sources diminish? What district supports are necessary? How do current hiring and staffing protocols support or impede sustainability?

While data were an important part of the success at these schools, more research is indicated to see exactly how teams and individual teachers think about data and use it to differentiate instruction. Which data are most critical to them? Which data is the most powerful for change in practice? What are the conversations they are having about data and how does the interaction support or impede change? Are there circumstances where it is better for administration to lead the discussions about data rather than teachers? Continuing to research the complexities of data use at all levels and its role in developing sustainable results could result in important learning for the educational community at large.



More research is needed using a distributed perspective as well. Since distributed leadership practice occurs in the interactions between individuals, it would be important to examine those interactions and the pathways present in the organization that support them. Also, more work needs to be done to more fully understand how those interactions influence student outcomes. Currently surveys, interviews, and observations are used to gather data about leadership practices at schools, but a clearer understanding of the complexity of the leadership and management might require other approaches. Spillane and Healy (2010) feel this examination might require the development or redesigning of research tools. Both quantitative and qualitative measures might have to be reevaluated in order to develop a more complete understanding of leadership and management in the elementary school setting.

## APPENDIX A: INFORMED CONSENT TO PARTICIPATE IN RESEARCH

Eileen Dial, a graduate student at the University of California, San Diego, is conducting a research study to explore the various pathways being used by schools in using QEIA funds to improve student outcomes. Of particular interest in this study is to understand how the leadership team uses data and works to guide the whole school in improving student learning.

Perspectives of administrators and teachers are critical in developing an understanding of the leadership structure and the culture of the school site. You are being asked to participate in a survey in order to aid the researcher in the examination of this important school reform model. The survey will take approximately 20 minutes to complete. No individual name or other identifying marks will be used on the survey. However, in order to report back the collective responses the name of your school and your role in the school will be requested in the demographic section of the survey.

Only the research team will have access to the information you provide for analysis purposes. This is done to ensure your confidentiality so that you may feel free to respond as candidly as possible. There are no known risks associated with participation in this study. However, you may decide not to consent to participate and may skip a question if you choose.

If you have any questions about the study, you may direct inquires to the principal investigator Eileen Dial at [edial4020@cox.net](mailto:edial4020@cox.net) or (619) 460-3748. Questions can also be directed to my advisor Dr. Janet Chrispeels at (858) 822-4253 or [jchrispeels@ucsd.edu](mailto:jchrispeels@ucsd.edu). If you have any questions regarding your rights as a research participant, you may contact the Institutional Review Board at the University of California, San Diego Human Research Protections Program at (858) 455-5050.

Thank you for taking the time to complete the survey and contribute to the understanding of pathways that improve student learning.

## APPENDIX B: PARTICIPANT INTERVIEW CONSENT FORM

- Project Title:** An Exploration of the Impact of QEIA on Developing Pathways for Student Success and Creating Cultures That Promote High Reliability.
- Purpose:** This study seeks to examine the study to explore the various pathways being used by schools in using QEIA funds to improve student outcomes. Additionally, the cultures of each of the schools will be examined to determine how they may reflect the characteristics of high reliability in their respective schools.
- Procedures** You are being invited to participate in a one-on-one interview that will last approximately one hour. I will be asking your permission to tape record the interview. There will be questions about leadership structure as well as practices that enable you to monitor and achieve increases in student achievement. There are no right or wrong answers and your candid responses are appreciated. You may decline to answer any of the questions and you may stop the recording at any time.
- Benefits** Although there are no direct benefits to you for participating in this study, your school will be presented with composite results that could provide insights that might prove helpful in sustaining your progress. Your responses could provide beneficial information for the larger educational community and provide a possible reform model for other schools to emulate.
- Confidentiality** All information collected in this study is confidential. Responses will be anonymous and kept confidential through the use of pseudonyms for participants and anyone mentioned by a participant. All audiotape recordings and transcripts will be entered into a computer file and both hard and digital copies will be stored in a locked safe. This data will be maintained on a single password protected computer. The researcher is the only individual with access to the safe, computer, and files.
- Withdrawal & Questions** By signing below, you indicate that the researcher has explained this study answered your questions, and that you voluntarily grant your consent, which can be withdrawn at any time, for participation in this study. If you have any questions regarding this study, I will be happy to answer them now. If you have any questions in the future, please contact me at (619) 460-3748 or [edial4020@cox.net](mailto:edial4020@cox.net). Additionally, questions may be directed to my advisor, Dr. Janet Chrispeels, at (858) 422-1625 or [jchrispeels@ucsd.edu](mailto:jchrispeels@ucsd.edu). If you have any questions about your rights as a research participant, you may contact the Institutional Review Board at the University of California, San Diego Human Research Protections Program at (858) 455-5050.

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Participant's Name

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Date

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Participant's Signature

APPENDIX C: AUDIOTAPE CONSENT FORM

As a part of this project, an audiotape recording will be made of you during your participation in this research project. Your participation is completely voluntary. In any use of the audiotapes, your name will not be identified and your identity will be kept completely anonymous. You may request to stop the taping at any time or to erase any portion of your taped recording. Please indicate below the uses of these audiotape recordings to which you are willing to consent by initialing the statements.

\_\_\_\_\_ 1. The audiotapes can be studied by the researcher for use in the research  
Initial project.

\_\_\_\_\_ 2. The audiotapes can be used for scientific publications.  
Initial

\_\_\_\_\_ 3. The audiotapes can be reviewed at meetings of scientists interested in  
Initial the study of education and educational practices.

You have the right to request that the tape be stopped or erased during the recording.

You have read the above description and give your consent for the use of audiotapes as Indicated above.

\_\_\_\_\_ Signature \_\_\_\_\_ Date

\_\_\_\_\_ Witness \_\_\_\_\_ Date

## APPENDIX D: E-MAIL INVITATION TO PARTICIPATE IN INTERVIEWS

Dear (Insert Name)

You are invited to participate in a research study titled: An Exploration of the Impact of QEIA on Developing Pathways for Student Success and Creating Cultures That Promote High Reliability. The purpose of the one-on one/ focus group interview is to explore your perceptions of the leadership structure and practices that assist in the creation of pathways for student success. Questions regarding practices that enable teams to monitor and increase student achievement will also be discussed in the interview.

You will need to spend approximately one hour of your time to participate in the interview. Please communicate with your principal if you consent to be a part of the interviews conducted at your site. I will be in contact with your administrator to set up a schedule for interviews.

Thank You,  
Eileen Dial

## APPENDIX E: ONE-ON-ONE INTERVIEW PROTOCOL (ADMINISTRATORS)

Researcher will introduce self and make sure all consent forms are signed.

School Name \_\_\_\_\_ Date \_\_\_\_\_

Thank you for agreeing to participate in this research project regarding QEIA funding and the development of various pathways that ensure student success. This study is designed to help me make a connection between QEIA funding and the development of various pathways that ensure student success and possibly contribute to the development of characteristics that promote high reliability.

The purpose of this interview is for you to provide your perspective on the leadership structure and the practices that support increases in student achievement. There are no right or wrong answers to any of the questions. Your identity will be kept confidential as the results are analyzed.

We will create a recording of our interview today. The recording will not reveal your name and will be reviewed by the researcher and university committee members. These people are not affiliated with your school site.

Are there any questions?

I may need to seek clarification and ask additional questions. Are you ready to begin?

1. How have normal operations changed as a result of QEIA?
  - How have your day-to-day operations changed?
  - How have the day-to-day actions of your teachers changed?
2. How have the funds from QEIA been used at your site?
  - How does it support teaching and learning?
  - Do you think you could be doing the same thing without QEIA?
  - How are decisions about the use of funds made?
  - How is the ILT involved in the decision making process?
3. How would you describe the culture of your school?
  - \* How do you think that relates to your success?
  - \* Is there a metaphor you can think of that captures the culture of your school?
4. How would you describe the leadership structure in your school?
  - Could you tell me how leadership is distributed?
  - Could you tell me about the role of your teacher leaders?
  - \* How leaders respond when a student is not making progress?
5. How does the ILT support teaching and learning?
  - \* What is the role of the ILT in determining goals for student learning?
  - \* What kinds of instructional decisions are made by the ILT?
  - \* What kind of instructional decisions are made in the grade level?

6. What does collaboration look like at your school?
  - Could you tell me how agendas are created?
  - What is the process that determines what teams focus on during this time?
7. How are decisions made about teaching and learning?
  - What role do the team leaders have in instructional decisions?
8. How is data used to support teaching and learning?
  - How often is data analyzed?
  - Can you tell me about the process for analyzing data?
  - What kind of data do the teams/school use?

How do the teams respond when students are not making progress?

## APPENDIX F: ONE-ON-ONE INTERVIEW PROTOCOL (ILT MEMBERS)

Researcher will introduce self and make sure all consent forms are signed.

School Name \_\_\_\_\_ Date \_\_\_\_\_

Thank you for agreeing to participate in this research project regarding QEIA funding and the development of various pathways that ensure student success. This study is designed to help me make a connection between QEIA funding and the development of various pathways that ensure student success and possibly contribute to the development of characteristics that promote high reliability.

The purpose of this interview is for you to provide your perspective on the leadership structure and the practices that support increases in student achievement. There are no right or wrong answers to any of the questions. Your identity will be kept confidential as the results are analyzed.

We will create a recording of our interview today. The recording will not reveal your name and will be reviewed by the researcher and university committee members. These people are not affiliated with your school site.

Are there any questions?

I may need to seek clarification and ask additional questions. Are you ready to begin?

1. How would you describe the culture of your school?
  - \* How do you think that relates to your success?
  - \* Is there a metaphor you can think of that captures the culture of your school?
  
2. How would you describe leadership in your school?
  - \* How is it distributed?
  - \* What is your specific role in that distribution?
  - \* How do you carry out that role?
  - \* Could you describe for me the process by which information moves from the ILT to grade level teams?
  
3. How do you support teaching and learning?
  - \* How do you determine goals for student learning?
  - \* How do you respond when a student is not making progress?
  - \* What steps are you taking to enable all children to reach proficiency?
  - \* Are there supports available to help teachers improve practice?
  - \* Do you have a role in those supports?
  
4. How does the leadership team use data when making decisions?
  - \* How is data used in your grade level meeting?
  
5. How have normal operations changed as a result of QEIA?
  - \* Can you tell me how your day-to-day actions have changed since QEIA?
  - \* What role has the ILT played in decisions about QEIA funding?



6. What does collaboration look like in your teams?
  - \* How do you determine the focus of your meetings?
  
7. Can you tell me how your team uses data?
  - \* What data sources are used by your team?
  - \* Can you tell me about how using data has impacted student learning?
  - \* Can you tell me about a time when data use resulted in a change of practice?

## APPENDIX G: SURVEY

### DEMOGRAPHICS

Directions: Please complete the following items about yourself.

1. Please select the choice which best represents your age range.
  1. 22-27
  2. 28-33
  3. 34-39
  4. 40-45
  5. 45 or older
  
2. Please indicate your gender.
  1. Male
  2. Female
  
3. Please indicate your ethnicity.
  1. Caucasian (white)
  2. African American
  3. Hispanic
  4. Asian
  5. Multi-racial
  
4. Please select the choice which best represents the number of years employed in the education field.
  1. 1-5
  2. 6-10
  3. 11-15
  4. 16-20
  5. 20 or more
  
5. Please select the choice which best represents the number of years you have been employed at your school site.
  1. 1-5
  2. 6-10
  3. 11-15
  4. 16-20
  5. 20 or more

6. Please indicate the grade level you currently teach.

1. K
2. 1
3. 2
4. 3
5. 4
6. 5
7. 6
8. Combination \_\_\_\_\_

7. Please indicate your primary job description.

1. Classroom teacher
2. Lead Teacher
3. Classroom Support Staff (teacher's aide)
4. Site Resource Support
5. Administration

This section of the survey is designed to determine the degree of teacher leadership within your school.

Directions: Please respond to the following statements in terms of how frequently each statement is descriptive of your school: (1) Never, (2) Rarely, (3) Sometimes, (4) Often (5) Always.

8. Teachers at my school are supportive of one another personally and professionally.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

9. Teachers at my school share new ideas and strategies with each other.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

10. Other teachers recognize my professional skills and competence.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

11. It is apparent that many of the teachers at my school can take leadership roles.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

12. The ideas and opinions of teachers are valued and respected at my school.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

13. In my role as a teacher, I make judgments about what is best for my students.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

14. Teachers are encouraged to take the initiative to make improvements for students.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

15. Teachers at my school influence one another's teaching.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

16. Teachers and administrators at my school work in partnership.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

17. At my school I have make choices about the use of time and resources.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
18. Teacher teams at my school discuss strategies and share materials.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
19. Teachers have input to decisions about school change.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
20. Teachers and administrators share decisions about how time is used and how the school is organized.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
21. Teacher teams at my school discuss and help one another solve problems.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always

This section of the survey is designed to learn about the work of the ILT.

Directions: Please respond to the following statements in terms of how frequently each statement is descriptive of your school: (1) Never, (2) Rarely, (3) Sometimes, (4) Often (5) Always.

22. The principal provides a structure that encourages the staff to participate in improving academic achievement.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

23. The principal provides leadership in improving academic achievement.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

24. Teachers and administrators share accountability for students' academic performance.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

25. The Instructional Leadership Team actively seeks teachers' suggestions and ideas for improving the school.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

26. The Instructional Leadership Team helps to build a strong positive culture in our school.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
27. The Instructional Leadership Team provides support to enable staff to implement the instructional focus.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
28. The Instructional Leadership Team is developing effective strategies to involve all teachers in carrying out the instructional focus.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
29. The Instructional Leadership Team facilitates the use of data to change instructional practice.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
30. At our school leadership is nurtured and promoted among staff.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always

This section of the survey is designed to learn about how the school is working to ensure all students succeed.

Directions: Please respond to the following statements in terms of how frequently each statement is descriptive of your school: (1) Never, (2) Rarely, (3) Sometimes, (4) Often (5) Always.

31. At our school we have a shared vision and goal.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

32. At our school, teacher teams meet regularly review student work to improve instructional practice.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

33. At our school, teacher teams look at different forms of data in grade level meetings to ensure students are learning.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always

34. Conversations at grade level meetings enable all teachers to increase the number of students achieving grade level proficiency or above.

1. Never
2. Rarely
3. Sometimes
4. Often
5. Always



35. Teacher teams plan together to meet the needs of diverse learners, including English language learners and special needs students.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
36. Teachers and administrators work together to solve student academic and behavior problems.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
37. Teachers work to develop a plan for learners who are not meeting grade level expectations.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
38. Student achievement is monitored regularly in order to determine student progress toward goals.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always
39. Teachers and administrators, depending on data, can modify student achievement plans.
1. Never
  2. Rarely
  3. Sometimes
  4. Often
  5. Always

APPENDIX H: COMPARISONS IN LANGUAGE ARTS ACHIEVEMENT

LIGHTFOOT ALL STUDENTS

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	33%	19%	32%	20%	19%
2007	34%	20%	30%	24%	24%
2008	25%	31%	42%	44%	35%
2009	45%	47%	56%	48%	53%
2010	55%	46%	56%	52%	51%

HARVEST ALL STUDENTS

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	21%	20%	28%	19%	15%
2007	20%	13%	61%	19%	36%
2008	40%	30%	64%	52%	40%
2009	40%	31%	74%	70%	78%
2010	49%	37%	52%	67%	70%

LIGHTFOOT ENGLISH LEARNERS

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	19%	8%	22%	13%	5%
2007	28%	9%	17%	12%	12%
2008	22%	21%	28%	20%	12%
2009	38%	39%	45%	41%	28%
2010	55%	40%	40%	36%	32%

HARVEST ENGLISH LEARNERS

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	7%	15%	13%	8%	10%
2007	3%	5%	43%	6%	15%
2008	27%	26%	49%	16%	21%
2009	21%	25%	65%	57%	53%
2010	47%	19%	43%	51%	50%

LIGHTFOOT ECONOMICALLY DISADVANTAGED

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	32%	20%	32%	19%	19%
2007	34%	19%	30%	24%	24%
2008	26%	31%	42%	44%	36%
2009	42%	48%	52%	45%	47%
2010	51%	40%	59%	49%	49%

## HARVEST ECONOMICALLY DISADVANTAGED

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	21%	20%	28%	26%	14%
2007	20%	13%	62%	19%	36%
2008	40%	31%	61%	50%	37%
2009	39%	25%	70%	63%	75%
2010	45%	36%	51%	67%	69%

## LIGHTFOOT HISPANIC/LATINO

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	29%	17%	28%	19%	17%
2007	29%	13%	31%	20%	22%
2008	25%	30%	39%	43%	29%
2009	42%	48%	53%	43%	52%
2010	51%	43%	56%	49%	46%

## HARVEST HISPANIC/LATINO

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	18%	20%	25%	18%	22%
2007	15%	10%	62%	19%	31%
2008	37%	31%	62%	51%	41%
2009	36%	31%	72%	68%	79%
2010	47%	33%	49%	63%	68%

## APPENDIX I: CST SCIENCE SCORES

### LIGHTFOOT ELEMENTARY CST SCIENCE

YEAR	Proficient/Advanced
2006	12%
2007	27%
2008	37%
2009	32%
2010	43%

### HARVEST ELEMENTARY CST SCIENCE

YEAR	Proficient/Advanced
2006	1%
2007	10%
2008	36%
2009	58%
2010	74%

There are consistent gains in both schools in science achievement. Total gain over time for Harvest Elementary is 73%, while Lightfoot has shown a 31% gain.

APPENDIX J: CST COMPARISONS IN MATH ACHIEVEMENT

HARVEST ALL STUDENTS

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	42%	53%	28%	26%	15%
2007	50%	35%	58%	26%	22%
2008	48%	71%	76%	61%	55%
2009	67%	79%	82%	85%	80%
2010	71%	79%	69%	89%	75%

LIGHTFOOT ALL STUDENTS

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	56%	42%	28%	28%	11%
2007	56%	53%	32%	35%	22%
2008	53%	60%	37%	48%	36%
2009	52%	74%	62%	50%	53%
2010	62%	81%	71%	74%	56%

HARVEST ENGLISH LEARNERS

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	39%	54%	20%	20%	2%
2007	47%	29%	52%	13%	10%
2008	39%	76%	72%	42%	40%
2009	58%	78%	78%	85%	68%
2010	75%	72%	66%	98%	6%

LIGHTFOOT ENGLISH LEARNERS

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	45%	30%	25%	29%	7%
2007	59%	49%	27%	24%	10%
2008	49%	56%	28%	28%	23%
2009	51%	74%	60%	44%	39%
2010	64%	84%	66%	63%	49%

HARVEST ECONOMICALLY DISADVANTAGED

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	41%	52%	28%	26%	14%
2007	51%	35%	59%	26%	22%
2008	51%	72%	74%	56%	52%
2009	66%	77%	80%	83%	79%
2010	68%	78%	69%	99%	74%

## LIGHTFOOT ECONOMICALLY DISADVANTAGED

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	56%	42%	28%	28%	11%
2007	55%	54%	32%	34%	22%
2008	53%	60%	37%	49%	36%
2009	51%	73%	61%	47%	51%
2010	58%	82%	68%	73%	57%

## LIGHTFOOT HISPANIC/LATINO

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	52%	41%	27%	29%	12%
2007	52%	48%	30%	30%	20%
2008	52%	59%	34%	47%	32%
2009	49%	78%	58%	46%	51%
2010	59%	83%	70%	71%	54%

## HARVEST HISPANIC/LATINO

YEAR	2 <sup>nd</sup> Grade	3 <sup>rd</sup> Grade	4 <sup>th</sup> Grade	5 <sup>th</sup> Grade	6 <sup>th</sup> Grade
2006	40%	52%	27%	24%	14%
2007	49%	34%	60%	23%	21%
2008	49%	75%	76%	61%	56%
2009	65%	80%	81%	86%	79%
2010	71%	77%	72%	98%	74%

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