PROBLEM SOLVING AND PRINCIPAL'S INTERACTION WITH ACCOUNTABILITY

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ABSTRACT OF THE DISSERTATION
Problem Solving and Principal's Interaction with Accountability

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PROBLEM: Increasing accountability in public schools has created a new set of problems for school leaders. With the prominence of high stakes testing, the pressure to make Adequate Yearly Progress, accountability for closing the achievement gap of every subgroup of students, the demand for a highly qualified faculty and related pressures from school boards and communities, school leaders are faced with an array of unstructured, complex problems. Set within a rich literature on educational leadership and the relatively unexplored literature on problem solving, this study examines the school principal's interaction with the problems created by accountability to determine how expert leaders perceive, approach, and engage others in addressing complex problems. Three areas of interaction are explored (Leader Capacity, Leader Response and Organizational Response) in order to address the following questions:

- Does the mental model of the expert principal differ from a more typical principal as it relates to problem solving?
- How do leaders' beliefs, conceptions of problems, and knowledge influence their response in problem solving?
- How does the problem solving capacity of the expert school leader differ from that of the non-expert?
- Are there leader responses to problems created by accountability that offer the best possibility of school success?

METHOD: A total sample of 24 New Jersey middle school principals were selected using a regression analysis of three years of New Jersey data from within four quadrants of performance: High Socio Economic Status (SES) and higher than predicated performance, low SES and higher than predicted performance, high SES and lower than predicated performance, low SES and lower than predicated performance. These principals must have been leaders in their respective schools for at least two years permitting their school's performance to serve as a proxy for expertise. Once selected, principals were interviewed by two researchers using an in-depth guide in order to probe areas of interest in the study. The data from the 24 interviews was coded using a qualitative software package and analyzed according to the conceptual framework serving as the basis of discussion and findings.

FINDINGS: Differences exist between successful principals and typical principals with respect to approaching and resolving complex problems. This study finds patterns of influence that are significant in capturing attributes of successful school leadership. Specifically, more expert principals tend to operate with an inventive mindset that approaches problems with an open mind toward trying new avenues toward reform. Similarly these principals are more likely to set broad goals for a problem's resolution and engage others in a substantive fashion.

SIGNIFICANCE: Adding to the rich body of literature on school leadership by offering a construct for effective problem solving addresses an important area of study. In an era of increasing accountability, transparency, and complexity, identifying school leaders with the capacity to innovate and set broad goals for addressing the complex problems associated with student achievement is essential.

I dedicate this to the students who will not achieve unless courageous leaders are able to set themselves aside to create open doors for all learners.

ACKNOWLEDGEMENTS

I am first and foremost thankful for the opportunity to study in a context that offers hope to our nation's students. I appreciate that Rutgers University is committed to the underdog and hope to be able to use the knowledge gained through this rigorous process to open doors of opportunity for students who enter life with many doors closed. To my core, I am thankful to God for opening my eyes to see a world that desperately needs courageous leaders.

I wish to thank my wife Donna for encouraging me to continue in this process despite the fatigue that comes from years and years of seemingly endless research. Thank you for hanging in there and being a source of encouragement. To my three boys, Ryan, Shaun, and Kyle, thank you for slowly warming up to the idea of your dad being a doctor, and for always encouraging me in that pursuit. I hope I have modeled a commitment to learning that you too will pursue. To Shaun, thank you for the side bet. I know you are a bit richer because I missed the deadline, and I probably still owe you.

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Finally, I wish to thank Dr. Raymond González, my research partner, and Dr. William Firestone, my dissertation chair, you both pushed and pulled so that this project could finally be completed. We are bonded in a way that only a few in the world can understand.

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CHAPTER I

Introduction

School accountability law such as No Child Left Behind (NCLB) creates problems for school administrators at all levels. Whether it is the task of hiring and retaining highly qualified faculty or the work of raising sub-par performance of subgroups on high stakes tests, school principals must interact with both challenges and opportunities created when consistent standards and consequences are attached to school success. Given the notable differences in performance between school in high socio economic environments and those in low ones, an examination of the kinds of problems created by accountability law reveals that similar themes, problems and opportunities arise regardless of a school's level of success or socio economic status (Kannapel, Coe, Aagaard, Moore, & Reeves, 2000; Lumpe, 2005; Sunderman, Orfield, & Kim, 2006; Yeh, 2006). Depending upon how these challenges are framed by school leaders, they either become impetus for sustaining and/or advancing school reform or obstacles that block progress. This study examines how principals interact with problems created by accountability law, specifically high stakes testing, positing that the leader's perspective regarding problems and cognitive interaction with them creates another lens through which expert leadership can be examined in reforming schools.

Past research suggests that expert leaders possess a number of tendencies when approaching problems that are not shared by others. These include a personal awareness of the influence of values where expert leaders rely on values when problem solving; an

approach to problem solving that includes dependence on logic and reasoning; a strong value on using data to inform decision making and to help create a strong foundation for problem solving; the possession of problem relevant tacit knowledge often gathered through experience in similar circumstances; and an optimistic, long-term perspective toward the problems of schools (Leithwood & Steinbach, 1995). Coupling these with the intrapersonal qualities of working well with others, engaging others in problem solving processes, perceiving one 's self to be influential, and seeking collaborative "buy in" from affected constituents should create conditions where school leaders can leverage problems into opportunities. At the core of these attributes is capacity. The research on school leader problem solving has generally focused on a variety of domains and has not singled out issues related to accountability policy for special attention. This study examines the interaction between a school leader's capacity and his/her conception of and response to problems to better understand the interaction between the problems created by accountability and school success (see Figure 1).

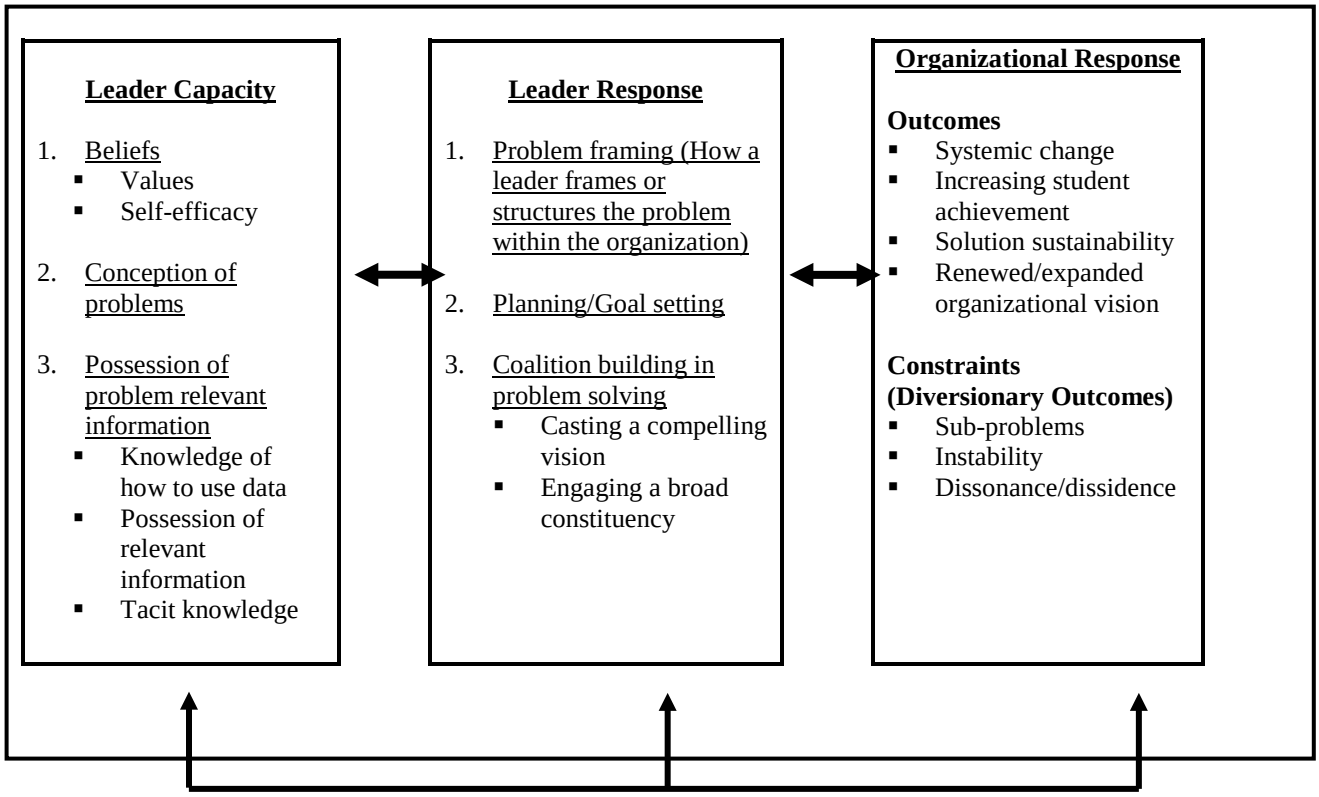

Figure 1. The interaction between the capacity of the leader and his/her response to problems interacts with an organizational response.

It has been suggested that an effective school leader understands the role and influence of the many facets of schooling (Bolman and Deal, 2003). This leader deliberately interacts with all members of the school community to create conditions where people are engaged in thinking, contributing and learning and by doing so appears to communicate an understanding of the greater context of problems that arise which engages appropriate members as problem solvers. When interacting with a problem, an expert leader interacts with the social and organizational context embedded in the problem so that solutions honor those who are impacted and so that all constituents

remain proactively engaged in the organization (Leithwood & Steinbach, 1995). In addition, this leader relies upon a value system that honors the mission of the school he serves because within this context, greater buy-in and flexibility in offering solutions results (Knapp, Copland, & Talbert, 2003).

This study examines the relationships defined by the arrows in Figure 1, specifically the interaction between leader capacity and response with the organizational response as a predetermined outcome (school leaders participating in the study will be selected based upon school performance). These relationships offer a set of research questions – an exploration of the interaction between the problems created by accountability and the way that school leaders interact with them. The following questions will be explored:

- Does the mental model of the expert principal differ from a more typical principal as it relates to problem solving?
- How do leaders' beliefs, conceptions of problems, and knowledge influence their response in problem solving?
- How does the problem solving capacity of the expert school leader differ from that of the non-expert?
- Are there leader responses to problems created by accountability that offer the best possibility of school success?

With these questions in mind what follows is a review of the literature on problem solving, accountability, and leadership creating a foundation for analyzing leader capacity and response as it relates to the problems created by accountability. This review provides a framework for understanding the complexity of problems created by accountability and

establishes context for studying the interaction between leader capacity and response. For the purposes of this study, the organizational response, identified in Figure 1, is a predetermined variable which serves as a proxy for identifying expert school leaders. This aspect is described in greater detail in the methodology chapter.

CHAPTER II

Review of Literature

Introduction

A robust and growing body of research exists on school leadership and its influence on culture setting, organizational response and student achievement. In addition, the cognitive problems solving processes of leaders have been explored in a variety of social and psychological venues. This review explores both of these areas of research under the backdrop of school level accountability in order to identify an area requiring further research: the interplay between leadership, accountability law and problem solving. By exploring the aspects defined within the conceptual framework (Figure 1), the arrows connecting these bodies of research become the focus of the proposed study. This review explores the attributes noted in the framework in order develop the need for this research as well as provide context for the research questions raised.

Context

Problem Solving

Problem solving is a routine, but rarely studied, part of the work of school leaders. On a daily basis, principals face a myriad of problems ranging from highly structured, highly routine issues to highly unstructured, non-routine ones. In one of the few analyses of expert problem solving among school leaders, Leithwood and Steinbach (1995) examined the problem solving processes of expert and typical principals as they worked

through the most structured and least structured problems. In their study, expertise was assessed through two methods: evaluation by independent district administrators and performance on *The Principal Profile* (Leithwood & Montgomery, 1986). Both typical and expert principals appeared to interpret and handle the most structured problems similarly. Highly structured problems tend to be routine in nature permitting the school leader to utilize experience from past similar situations to resolve the new dilemma. When dealing with these problems, school leaders typically expressed an ability to solve the problem because they had faced similar situations before. The primary difference between typical and expert leaders in solving highly structured, routine problems presented in the nature of interpretations where experts demonstrated a tendency to choose solutions that engaged their faculty while typical leaders tended to operate in a more isolated fashion appearing to care more about self preservation than their expert counterparts.

Leithwood and Steinbach also examined the responses of experts and typical leaders when dealing with non-routine or unstructured problems. Because these problems pushed the leaders outside of their area of comfort because solutions often required innovation and change, significant differences in their handling began to emerge. On behalf of the school community, expert leaders weighed consequences on the academic growth of individual and groups of students whereas typical leaders were primarily concerned about consequences for themselves. Experts also perceived themselves as able to handle the problems and worked to gather as much relevant information as possible before proceeding whereas typical leaders were often frightened or intimidated by the problems and irrelevant issues tended to cloud decision making.

Finally, as expert principals worked toward solutions they adhered to a principled vision and developed a rationale that permitted faculty buy-in to the solutions proposed. Less expert or typical principals on the other hand were primarily concerned that constituents were happy and therefore did not as readily adhere to personal values, principles or a strong vision. For the purposes of this review, these areas are noted in the conceptual framework as arenas of action and will be explored in greater depth below as central aspects under examination as the leader's interaction with accountability law is considered.

Accountability

The problems created by accountability are of a non-routine nature. There are multiple and varied accountabilities that influence the work of the principal where their response to public achievement data, the underperformance of subgroups, internal and external pressure, and increasing demands for high performance for all are little studied aspects of the principal's work. The highly politicized and public aspects of accountability, dealing with high standards for teacher recruitment and retention, and working to see all subgroups perform at high levels on state assessments creates new and complex challenges for school leaders. Leithwood and Steinbach's work suggests that expert school leaders should bring unique strengths to bear when addressing demanding and difficult problems. Because the problems of accountability raise questions about pedagogy and curriculum development, it also follows that specific dimensions of expertise are required for addressing them effectively. Some of the typical complicating factors or dysfunctional responses to the problems of accountability are a tendency toward a flattened or widened school curriculum, external blame for poor results, and

quick fix or teach to the test response strategies (Kannapel et al, 2000). It seems that each of these complications arises in part because of how school leaders frame the problems created by accountability law and how they exercise specific areas of expertise in working toward resolutions.

Close scrutiny of district performance and stern external expectations regarding expected levels of achievement for all students create problems for school leaders. In their review of effective schools, Reynolds and Teddlie (2000), identify a belief structure that best promotes school success. This belief structure is one where school personnel accept responsibility for the success and failure of students and perceive themselves to be influential actors in any reform or remediation effort. In this context, successful school leaders appear able to cultivate a fertile vision for seeing all students succeed creating conditions that advance achievement levels regardless of socio economic status. The *way* school leaders speak of achievement and *how* they convey their beliefs creates conditions where there is internal accountability for the analysis of achievement data. Expert school leaders appear to hold an optimistic belief structure and foster personal responsibility among all members of the school environment regardless of the difficulty of the problems being faced (Datnow & Castellano, 2001). This internal schema or mental model helps mediate a common response to high stakes testing where teachers deflect responsibility for failing students because they tend not to believe the adage that “every student can achieve at a high level (Kannapel et al, 2000).”

Leader Capacity

Introduction

For the purposes of this review, leader capacity is defined by both internal, personal attributes and also the degree to which a leader depends upon external resources (either data or personnel) in accomplishing his work. Aligning with the attributes noted by Leithwood and Steinbach (1995) in their review of the characteristics of expert problem solvers, this review examines each construct noted as "Leader Capacity" in Figure 1 in order to capture the fullness of the available research. Providing a thorough review of each attribute establishes a foundation for studying the interaction between leaders and the problems created by accountability.

Beliefs

Values. In any organization, as the leader attends to the symbolic or visionary aspects of the organization's mission, belief structures are developed that have the power to advance innovation and adaptation (Bolman & Deal, 2003). If these systems of beliefs foster acceptance of responsibility for areas needing improvement and create an environment for continually seeking new ways of doing business to adapt to new situations, the organization develops a learning capacity that can help advance reform. At times leaders must invent new solutions to complex problem they face. Leithwood and Jantzi (1999b) articulate this concept as transformational leadership, a style that attends to developing a compelling vision and an innovative system of beliefs. "Transformational leadership focuses on increasing the organization's capacity to innovate (Hallinger & Heck, 1998, p. 169)." Their work suggests that an innovative school culture, built off of the influence of the transformational leader, sets a context for

learning where a wholesale commitment to learning in a school creates conditions for reform. As such, it can be argued that the goal of school leadership is to create conditions where innovation and learning are the first priority, because this kind of school environment becomes populated with individuals who are intrinsically motivated to carry out the primary functions of a school. Leithwood and Jantzi (1999) offer six specific dimensions of the transformational school leader: building vision and goals, providing intellectual stimulation, offering individualized support, symbolizing professional practices and values, demonstrating high performance expectations, and developing structures to foster participation in school decisions. It appears that these six dimensions deal primarily with capacity building of human capital in schools, and human capital is the source of a school's internal system of beliefs raising questions of how the leader's influence plays a role in developing a school's capacity.

As the influential school leader encourages members participate in solving important problems or in developing structures for improvement, the system has a greater likelihood of moving fluidly (Spillane, Halverson, & Diamond, 2001). This kind of distribution of leadership or beliefs requires individuals in the system to not simply possess authority to act on behalf of the organization, but to perceive themselves to be influential in changing the way the organization does business. Members form collaborative groups or coordinate action depending on what each situation demands creating a flow of tasks designed to carry out the organization's overall mission. Marzano, Waters and McNulty (2005) elaborate on this concept by identifying twenty one leadership responsibilities that positively correlate with student achievement. Of these twenty one responsibilities, seventeen deal with affective attributes of human

interaction suggesting that engaging members of the school in meaningful tasks, tasks that require a flexible and optimistic belief structure, connects positively with achievement and productively with solving problems. They further suggest that sustaining an influential belief structure offers support to ongoing school improvement and reform.

Under NCLB legislation, schools are to ensure that *all* students attain high levels of performance on state assessments. The terminology in the law reflects a commitment to all students and requires that test results be disaggregated by subgroup in order to ensure that achievement gaps are closed. Subgroups include the performance of minority, special education and Limited English Proficient students. In a school where leadership is distributed successfully, accountability for and the response to the failing performance of a subgroup becomes everyone's problem (Cawelti & Protheroe, 2001). Short term, ineffective solutions will be replaced by more meaningful sustained reform. Consider the following statement by a school principal: "Fifty percent of our special education students failed to meet a minimum standards on a state assessment, and it appears by looking at the data that the overall performance of special education students declines between fifth and eighth grade. Let's examine our practice to see if there are identifiable areas of action that may address this deficiency." A faculty that is engaged in leadership, who is committed to achievement at all levels and believes in decision making based on good data will likely respond with a request for greater analysis and an action plan to consider areas of the curriculum that do not adequately address the needs of the identified students (Newmann, King, & Rigdon, 1997). Perception of influence appears

to contribute to the integrity and sustainability of solutions and empowers members to make important educational decisions.

Beliefs are influential. In their study on professional community and organizational learning, Bryk, Camburn and Louis (1999, p. 771) stated that:

> "when professional structures and faculty norms are in place, a climate often develops in which faculty are encouraged to seek out and perhaps even try new ways of teaching. Given this connection, our results lead us to suspect that if professional community in fact fosters instructional change, it does so by creating an environment that supports teacher learning through innovation and experimentation."

Innovation and experimentation require a belief structure that empowers members to see their role as much more significant than the worker bee mindlessly carrying out routine tasks. Innovation requires a belief structure that empowers thinking which facilitates problem solving. And these beliefs position schools to be responsive to the increasingly complex demands of seeing every child succeed. In their examination of the mental models of school leaders, Ruff and Shoho (2005) found that school leaders with an engaged overall approach as well as an internal locus of control were those where faculty buy-in and understanding of reform was greatest. In addition, in their study of the belief structures of teacher leaders, Ross and Gray (2006) found that transformational leaders have a direct effect on promoting and sustaining high efficacy beliefs – perceptions of influence. In the context of this study, their findings suggest a connection to Leithwood and Steinbach's (1995) conception of the mental models of expert principals and problem

solving – that expert problem solvers operate with a different mental model than their more typical peers.

The values of the school leader should influence both his capacity and his interpretation of problems. These values are reflected in decision making and in problem solving. They are felt by teachers and community members and are most often unspoken. Schools reflect the values of the leader and the values of the leader influence the problem solving process. In their study of principal leadership and school capacity, Youngs and King (2002, p. 665) found the following, "effective principals can sustain high levels of capacity by establishing trust, creating structures that promote teacher learning and either (a) connecting their faculties to external expertise or (b) helping teachers generate reforms internally." Beliefs and values create capacity in the human capital. As members perceive themselves as influential and central to problem solving processes, schools become better centered on their mission of learning and better equipped to initiate, respond to and sustain reform. Beliefs are influential and appear to be influential in sustaining organizational momentum and reform. In sum, it appears that school leaders with an internal belief structure that generates capacity will be those whose interactions with problems demonstrate higher levels of expertise.

Principal self-efficacy. It is already noted that a leader's capacity for generating a compelling vision for learning at all levels and for creating conditions where teachers in a school system perceive themselves to be influential is a significant and positive effect of transformational school leadership (Ross & Gray, 2006). Further, Leithwood and Steinbach (1995) suggest that, as leaders approach problem solving with a long-term perspective, believing in the effect of their work, more substantive change results. In

tying self-efficacy with school success, Bandura (1997) offered four sources of self-efficacy beliefs with mastery experiences or success in prior experiences as most influential. Building upon this work, Tschannen-Moran and Garies (2007) extend these ideas further in their work with principal self efficacy noting that "principals with a strong sense of self-efficacy have been found to be persistent in pursuing their goals [and] are more flexible and more willing to adapt their strategies based on contextual conditions (p. 90)." Their work affirmed the reliability of the Principal Self Efficacy Scale (PSES) in determining a principal's efficacy beliefs and also affirmed the notion that these beliefs are influential in creating leadership conditions that support high levels of problem solving. In this study it is hypothesized that expert leaders possess higher efficacy scores than non-experts creating a stronger basis for effective problem solving.

Conception of Problems

How leaders conceive of or envision problems and their solutions has influence on the impact of their problem solving ability (Leithwood & Steinbach, 1995). While few differences became evident in how leaders conceived of and interacted with the most structured problems, differences surfaced between experts and non-experts when interacting with non-routine situations. Looking at how experts interpret complex problems, Leithwood and Steinbach found that experts, as compared to their non-expert counterparts, were more likely to:

- "develop a relatively clearer understanding of the problem before attempting to solve it;
- devote more time and effort to the initial formulation of ill-structured problems; and

- are more inclined to view the immediate problem in its relationship to the broader mission and problems of the organization (p. 124, 125)."

This comprehensive method for interacting with complex problems coupled with their finding that expert principals were more likely to adhere to a principled vision for generating solutions suggests differences between how leaders conceive of the problems they face. These differences also led to expert leaders to adopt a broader range of goals when generating solutions in addition to engaging a broader part of the school community in attaining solutions. In addition, the information that expert problem solvers relied upon in generating solutions played a role in the solutions sustainability and organizational impact.

Possession of Problem Relevant Information

Knowledge of how to use data. Because of its power to tell a story in a compelling fashion, data based decision making is touted as a significant vehicle for motivating and sustaining school reform efforts (Togneri & Anderson, 2003; Waters & Marzano, 2006). School leaders who accurately "tell the story" of their school's successes and failures help frame important conversations about the need for improvement leading to sustainability and faculty acceptance of the process. The capacity related to problem solving here is that school leaders equipped with and comfortable relying upon a wide array of information are likely to use the most refined and effective solution processes. Spillane, Diamond, Burch, Hallett, Jita, and Zoltners (2005) present the use of accountability data in very personal terms arguing that school leaders who

personalize its story are those who successfully persuade teachers to give it the credence needed to act upon it.

When interacting with problems, leaders who "own" the stories the data tell, appear to be best able to help teachers do the same in order to overcome complacent attitudes about being accountable for every child. In addition, working with accurate information about student progress permits teachers to be less defensive and more proactive in working to see students make academic gains. For example, by looking at longitudinal assessment results using data analysis software, teachers can evaluate the performance of students longitudinally permitting them to assess the impact of the entire school program. When this information becomes safe yet personal, teachers are more likely to respond with appropriate instructional strategies (Firestone & Gonzalez, 2007). It is incumbent upon the school leader to generate a use of strong data in this way to create conversation in schools about possibilities rather than blame on an external entity for the situation.

Possessing problem-relevant information. This study will explore whether expert principals approach problems armed with information that forms a basis for decision making and development of a wide array of options (Leithwood & Steinbach, 1995). Firestone and Gonzalez (2007) examined the usefulness of data in a variety of contexts including its ability to guide action, enlighten areas needing attention in a school setting, mobilize support for action, and legitimize the hard work of schools. Each of these areas has a role in problem solving as noted by Leithwood and Steinbach. By looking at state assessment data in a

systematized and efficient fashion, schools are best equipped to decide what areas need attention and action. It appears that this kind of problem relevant information is vital to the enterprise of problem solving in schools.

When a leader lacks adequate problem relevant information, a common response to accountability law is for teachers and school leaders to narrow the curriculum to a focus on the set of specific skills and strategies most useful for passing the state test (Sunderman, Orfield & Kim, 2006). This narrowed curriculum results from assuming a short term view of problem solving and through exercising response options that inadvertently rewrite curriculum. Instead of adhering to rich and deep curriculum standards, schools often respond to the consequences of failing subgroups with a curriculum that more closely resembles lists of things to know and strategies for performing well on assessments rather than deep and meaningful ways of thinking (Lumpe, 2005). This suggests that the most effective responses to this problem will be from school leaders who are well versed with subject content knowledge or those who empower the kind of organizational learning and professional community that calls faculty to collectively think beyond simple and routine answers. Possessing problem relevant knowledge is critical from a problem solving perspective.

Tacit knowledge. In their study of reputationally effective superintendents, Nestor-Baker and Hoy (2001) reviewed the influence of tacit knowledge on the success of the leaders. They conclude that reputationally successful superintendents possess a high degree of knowledge gained from experience on the job enabling them to assume a more proactive approach in problem solving. Leithwood and Steinbach (1995) conclude similarly that knowledge gained from experiencing similar problems permits leaders to

assume a longer term view of the problem and potential solutions. Couple tacit knowledge with the possession of content area expertise, as noted by Nelson and Sassi (2000) where they argue that school leaders desiring to impact classroom instruction, curriculum development and student achievement must possess specific subject content knowledge in order to clearly delineate a compelling academic program, and conditions are created whereby school leaders can influence reform when interacting with the problems of high stakes testing. As school leaders move from a general focus on knowledge acquisition and passing tests to substantive conversations about subject area learning, conditions for deep learning and thinking are established. A school leader's possession of subject area content knowledge and relevant information appear to be influential if a meaningful response to the challenges of complex problems such as those created by accountability law is to be reached.

Leader Response to Problems

Problem Framing

As already noted, determining a leader's response to a non-routine, unstructured problem depends upon how a leader conceives the problem – whether the problem is perceived as an opportunity or simply an obstacle to overcome. It has been stated that the leader's framing of the problem as a component of his capacity influences the subsequent response. In this section, the leader's conception of a problem as an opportunity for improvement or a chance to influence policy interact with his view of the problem on a larger social context and his values to produce a more comprehensive response by expert leaders (Leithwood & Steinbach, 1995). Again, Leithwood and Steinbach emphasized that *how* leaders conceived the problems they faced determined their response. As expert

leaders interacted with unstructured difficult problems, they were more likely to plan thoroughly and develop solutions with the greater good of the organization in mind whereas typical leaders often became afraid and acted more out of preservation than vision. In addition, more expert leaders operated within a strong vision a high ethical sense of responsibility to the community beyond those immediately impacted by the problem. This sense of responsibility and optimism about leadership influence tied to problem solving manifested itself in more thorough responses to dealing with problems including gathering a broad array of information prior to moving toward solutions, engaging in careful planning, mobilizing coalitions of support and action (distributing leadership), setting clear goals for solutions, and exercising system values in forming solutions.

Planning

A requisite to an expert response to problems is projecting long term, well planned strategies for dealing with problems, which contrasts with minimal goal setting and strategic thinking by non-expert leaders (Leithwood & Steinbach, 1995). Knapp, Copland and Talbert (2003) describe this as acting strategically to insure that remedies are not perceived by faculty and staff as whimsical or faddish. They further suggest that this strategic thinking or planning must occur in arenas of action that most closely correlate with student achievement; that pathways are created in existing contexts and in multiple venues so that broad based support can develop. Arguably, this kind of strategic thinking generates a broad support for reform within contexts that school faculties value leading to the sustainability of the initiative. In this light, it appears that as leaders

sustain initiatives and assume a long term view of the solutions being proposed, the desired result is most likely to occur.

Coalition Building in Problem Solving

Casting a compelling vision. In their examination of successful school districts, Togneri and Anderson (2003) cited the development of a compelling vision as a critical component to school success. A compelling vision is only compelling, however, if it is widely articulated and accepted among members of the organization. The work of the effective school leader is to cast a vision that becomes widely accepted and valued by members in the system. For example, if a school district identifies its mission as "all students will achieve at high levels," school leaders must accept the challenge of fulfilling that mission by motivating members to adapt practices accordingly. The leader assumes responsibility for seeing that members understand and are willing to contribute to completing the mission. Further, leaders must help members of the school system to perceive themselves as influential and vital to carrying out the work of the school. As leaders communicate the work associated with the vision, members realize their roles and responsibilities and work toward its attainment. Affirming this in a problem solving context, Datnow and Castellano (2001) found that leaders able to convey a compelling vision for reform and also engage a wide array of constituents in its attainment were those able to sustain progress around difficult initiatives.

Engaging a broad constituency. Expanding this notion further, in order to facilitate a system wide commitment toward carrying out the mission, school leaders engage constituents in the leadership process. This action or distribution of leadership provides a basis for members to perceive their own influence and impact on sustaining

reform. A distributed leadership framework provides insight toward understanding how members of an organization find entry points into the leadership enterprise. At the school level a distributed perspective of leadership deals with the level to which teachers and other actors in the system are engaged in processes that promote the school's mission. Because the work of schools is learning, successful distribution of leadership often manifests in the formation of teacher teams or collegial networks that help promote dialogue about achievement (Knapp, Copland, & Talbert, 2003). In a problem solving context, as members actively interact with problems, having been granted entrée by the leader, proposed solutions move forward with faculty buy-in and broad support. This response to problem solving is cultivated by the leader who seeks collaboration and a broad range of voices participating in the leadership process.

Implications for Research

Growing accountability pressures have created a new set of problems for school administrators, and these problems are non-routine and complex in nature. In their work evaluating the cognitive problem solving processes of expert school leaders, Leithwood and Steinbach (1995) articulate behavioral differences between expert and typical leaders. This study examines these differences in light of the extensive body of research on effective school leadership opening an important avenue of research: the interaction between the problems created by accountability and expert school leadership. Researchers examining school reform pursue the common goal of identifying conditions where reform is best initiated and sustained. Often this research is set in the context of identifying organizational conditions or leadership responses so that well read and passionate practitioners can attempt to model the findings in their own school setting in

somewhat of a formulaic approach. This research, however, examines the ideas associated with capacity positing that expert school leaders posses a set of characteristics that demonstrate a greater capacity to interact with accountability's problems in a way that offers hope for long term reform.

Figure 1 in Chapter 1 presents the conceptual framework for the research. It suggests areas of leader capacity lending toward effective and thorough interaction with problems where, the interaction between a leaders internal responses and his problem solving strategies creates outcomes that sustain school reform. This framework is born out of a synthesis of the literature on leadership, school reform and problem solving. It suggests that there are unique characteristics associated with leaders with capacity for reform in schools as they approach the difficulties created by accountability law. This mixed methodology study examines the elements embedded in the conceptual framework by interviewing a sample of principals to understand their conception of and interaction with the problems created by accountability. By developing a series of questions that analyze and tell the story of each principal's cognitive processes, the leader's capacity is evaluated along with the organization's response. This preliminary analysis sets the groundwork for more in-depth research in this area of school leadership.

Leader interaction with the problems of accountability is an area of study not readily found in current literature creating an appropriate place for this investigation. It is hoped this study will help understand how leaders address the challenges created accountability law and also offer guidance for how to enhance the quality of leaders to cope with the challenges created by such law.

CHAPTER III

Methodology

Introduction

The following topics are addressed in this section: Genre of Research, Sampling Methods, Data Collection Methods, Data Management and Analysis, Researcher's Role in the Study, Trustworthiness Features, and Management Plan/Timeline. The data collection and study methodology are shared by two researchers investigating related but different questions. For this reason, sampling techniques and the interview guide is broad enough for both studies yet narrow enough to permit in-depth study of both topic areas. In addition, by conducting interviews with two researchers, the breadth and richness of the sample and description is increased.

Genre of Research

Because of the power of qualitative research to be both analytic and descriptive as it interacts with participants in their world, it is chosen as the primary research methodology in this study (Marshall & Rossman, 1999). Quantitative methods are used, however, to determine a sample of subjects identified as achievement outliers in their field. Nonetheless, the primary genre of research in this study is both exploratory and descriptive in order to document the phenomena of school success in the context of the leaders' response to problems. By conducting in-depth interviews about how school principals conceive of and interact with the problems created by accountability law, an assessment of leader capacity and response permits analysis of the characteristics and

processes consistent with leaders of middle schools. The sample is selected through an analysis of school performance and District Factor Grouping (DFG) which allows the researcher to contrast responses of "expert" and "typical" principals. In this context, the variation in the data enhances the generalizability of the research (Schofield, 2002).

The patterns and relationships among leaders, the problems of accountability and the impact on the organization are explored through in-depth interviews between the researchers and school leaders. Typical for in-depth qualitative interviews, the structure of the interviews are conversational yet followed the systematized format noted below. In addition, because this study seeks to assess a leader's capacity by examining belief structures, a phenomenological approach to the interview process will be used to interact with the leader's present experience in the context of the phenomenon being explored (Marshall & Rossman, 1999).

Sampling Methods

Unit of Analysis. In order to better understand leadership practices in response to multiple demands for accountability the unit of analysis for the proposed research is the school principal. More precisely, the population for the study is public middle school principals in New Jersey who have served in the same school for at least two years. Therefore, only principals in schools that operate under the auspices of a district board of education and are supported by tax dollars were considered for the study. This distinction effectively excludes private and charter schools, yet includes district academies and magnet schools. Furthermore, to control for variables that may be associated with different types of schools, the term middle school is defined as schools that go up to eighth grade, but do not go lower than fourth grade. Only schools that fit

these criteria are included as part of the population for this study from which a sample was selected.

Two variables described below determine the sample for this study: Socio economic status and predicted performance. The two variables permit the researcher to identify outliers in each quadrant of Figure 2, permitting higher than predicted performance in the two upper quadrants to surrogate for expertise. Because the body of research related to problem solving most often ties to the expertise of the leader, this study requires an identification of this attribute. By carefully examining the outlier school leaders, ensuring that they have been leading in the identified setting for a minimum of two years, the success (or lack of) serves as the measure that helps identify the expertise of the leader. This way the data collected through the interview process was able to be evaluated based upon the ability of each leader. Although qualitative data coding was conducted blindly, without knowledge of which leader represented school where achievement was stronger than predicted, it was eventually evaluated by expertise in order to identify specific patterns of belief or response.

Sample. The study employs a stratified purposeful sampling methodology (Gall, Gall, & Borg, 2003; Miles and Huberman, 1994) to select participants. This type of sample permits the researcher to select cases at clearly defined points of variation, thus permitting analysis of the interaction and differences between cases. Participants are selected based upon the two dimensions depicted in the sampling matrix in Figure 2. The first dimension attempts to vary the respondents according to socioeconomic status based upon the state's District Factor Grouping (DFG) associated with the school where they work. According to the New Jersey Department of Education, a DFG represents an

approximate measure of a community's relative socioeconomic status (SES). Because the SES of a community is linked to the community's success on standardized achievement tests, it is important to differentiate the sample by this measure so that school achieving beyond their peers in each quadrant can be identified. The classification system provides a useful tool for examining student achievement and comparing similarly-situated school districts in other analyses. DFGs are calculated using the following six variables that are closely related to SES:

1) Percent of adults with no high school diploma

2) Percent of adults with some college education

3) Occupational status

4) Unemployment rate

5) Percent of individuals in poverty

6) Median family income.

This dimension facilitates the comparison of responses between principals in similar as well as different SES contexts.

The second dimension in the sampling matrix is predicted performance on state assessments. It is this measure in the upper two quadrants of Figure 2, where schools perform at rates beyond their peers that serve as a proxy for the expertise of the leader. Relying on the data and model being used for a report to the New Jersey legislature, a regression model was completed that examined unexpectedly high and low performance among middle schools.

This model was developed using data from 2004, 2005, and 2006 assessments. Schools were classified by grade level according to assessments administered. That is,

schools were grouped as having data on NJASK 4th grade assessments, GEPA or HSPA assessment scores. Schools were included in the statistical modeling if all data elements necessary were available for all 3 years. Three matched panels of school data were constructed using data elements from a variety of sources.

School demographic data, including rates of children qualifying for subsidized (free or reduced) price lunch, children with limited English language proficiency, and children by race/ethnicity were drawn from NJDOE sources and were averaged for each school over the 3 year period, to account for unexplained fluctuations and missing data in limited cases. The Locale code from the National Center for Education Statistics Common Core of Data was merged with the NJDOE school files, such that we could include an interaction measure to account for the difference between urban poverty (large or midsized central city schools) and non-urban poverty. Finally, district level data on the percent of adult females with education level of graduate degree or higher, from the U.S. Census and NCES School District Demographic System (SDDS) were merged with the NJDOE school demographic and assessment data. The result was three separate, 3-year data sets of New Jersey Schools. The first panel of schools included 1295 schools with complete data reporting 4th grade assessment scores from 2004 to 2006.

The dependent or response variables used in the regression were a composite of the language arts literacy scores and mathematics scores on the Grade Eight Performance Assessment (GEPA) for 2004 to 2006. The independent or explanatory variables used in the regression includes values that controlled for ethnicity, poverty, language proficiency, enrollment size, per pupil resources, and district contextual factors such as DFG. The result of the least square regression produced a list of outlier school principals whose

performance was higher or lower than expected based upon the ordinary least squares residual values that ranged from -3.022 to 4.719.

The final ordinary least squares regression model selected for use in the statistical pre-screening of schools is specified as follows:

$$\mathbf{Math\&Language(ln)_{ij} = b_{0ij} + b_1FreeReduced_i + b_2Disability_i + b_3ELL_i + b_4Asian_i + b_5Black_i + b_6UrbanPoverty_i + b_7FemaleGradDegrees_{i*} + b_8DFGHigh_{i*} + b_9Year + e}$$

Where Math&Language(ln) is the natural logarithm of the combined mean scale scores for all students on math and language arts for school "i" in year "j." FreeReduced is the percent of children qualifying for free or reduced price lunch in school "i" averaged across the three years, Disability is the percent of children taking the assessments who were classified as having a disability, in school "i" averaged across the three years, ELL is the percent of children classified as having limited English proficiency averaged across the three years in school "i," Asian is the three year average percent of students identified as Asian in school "i," Black is the three year average percent of students identified as black in school "i," UrbanPoverty is the interaction of the percent of students qualifying for free lunch if attending school "i" in a large or midsized central city. Our indicator for the percent of adult females having a graduate degree or higher is a district level indicator (with schools nested in districts) based on Census 2000 data. Similarly, District Factor Group status is a district level indicator applied in this case to schools. Finally, a year indicator is included to account for annual shifts in the average mean scale scores.

OLS models were estimated to the NJAJSK fourth grade panel, GEPA eighth grade panel, and HSPA high school assessment panel of data. Standardized residuals were then estimated. To the extent possible, with considerations such as sample reduction due to missing data, the same model was applied across grade levels. Robust standard errors were estimated, clustering schools as repeated cases over the three year period.

Table 1 provides the OLS regression estimates for the NJASK 4 model of 1295 schools over the three year period. The model explains 64% of the variance in combined mean scale scores. All but the percent LEP/ELL variable are statistical significant.

Table 1: OLS Regression Estimates of NJASK 4 Math and Language Arts Mean Scale Score

DV=ln(Total Math/Lang)	Coef.	R.S.E.	P>t
% Free/Reduced (3yr)	-0.089	0.007	0.000
% Disability (3yr, Tested)	-0.119	0.020	0.000
% LEP (3yr)	-0.025	0.020	0.209
% Asian (3yr)	0.023	0.008	0.003
% Black (3yr)	-0.054	0.007	0.000
Urban* x % Free Lunch	-0.018	0.008	0.027
% Adult Females with Grad Degrees	0.164	0.016	0.000
DFG is GH, I or J	0.005	0.002	0.027
Year = 2005	0.012	0.001	0.000
Year = 2006	0.017	0.001	0.000
Constant	6.123	0.004	0.000
R-Squared	**0.638**		

NCES Locale is Large or Midsized Central City

The residuals of these models are then used to evaluate which schools have higher than expected mean scale scores and which schools have lower than expected mean scale scores. Note that there are many possible factors in the residuals and the data only accounts for demographic and location factors beyond control of local school officials. Further, relative under or over performance is gauged against the "average" expectation, or line of best fit produced by the ordinary least squares regression equations. Further, by using standardized residuals an assumption is accepted that the residuals are normally distributed, or at least close.

Based upon these two dimensions, an initial set of 37 school leaders (approximately 9 in each quadrant) were identified that met the outlier requirements described above. The process of contacting each leader resulted in a final sample of 24 school leaders, 12 identified as high achieving or "experts," and 12 as low achieving or more "typical" leaders. The distribution of these 24 leaders resulted in the sample identified by the four quadrant matrix described in Figure 2. The unequal distribution of leaders in each quadrant occurred because leaders in a given quadrant became unavailable for a variety of reasons. Although balance in each of these quadrants is desirable, this presents a minor limitation because the number of "experts" and "typical" leaders is congruent. As already noted, identifying principals based upon this criteria permitted the researcher to analyze the interview data in context in order to describe patterns consistent with school leader expertise. In addition to increasing generalizability, this type of sampling permits the narrative aspects of the data to be evaluated within their story or setting (Reissman, 2002).

Predicted Performance	Socioeconomic Status: High	Socioeconomic Status: Low
Higher than expected	6 principals 6 male	6 principals 3 male, 3 female
Lower than expected	8 principals 5 male, 3 female	4 principals 3 male, 1 female

Figure 2. Stratified purposeful sampling techniques were used to identify 24 school leaders representing specified levels of performance and socio economic status.

Figure 3 identifies the degree of experience and school size for each leader in the sample. It was already noted that a requirement for participation in the study is that the leader had a minimum of two years experience leading his/her respective school, which is why the years of experience begins at two. By factoring a minimum number of years of experience, the intent is to more effectively associate the effect of the leader on organizational learning.

	School Size			Experience		
Quadrant	0 - 250	251 - 500	501 - greater	2 to 5	6 to 10	11 or more
High SES, High Achievement	0	3	3	4	2	0
Low SES, High Achievement	0	2	4	1	0	5
High SES, Low Achievement	0	3	5	4	1	3
Low SES, Low Achievement	0	1	3	2	0	2

Figure 3. School size and years of experience for each member of the sample.

Data Collection Methods

Overview. This study employs a combination of quantitative and qualitative research methods in order to better understand the interrelationship among school leaders, the problems created by accountability and the leader's problem solving processes. Prior to conducting in-depth interviews, the Principal Self Efficacy Scale (PSES) (Appendix 3) was administered in attempt to capture each leader's efficacy beliefs as another piece of context for the review of the interview data. This scale offers a tested quantitative evaluation of this affective attribute described in greater detail below. Unfortunately, the administration of the PSES did not afford the opportunity to evaluate perceptions of self-efficacy because the survey was not completed accurately by all of the leaders. Because of this, perceptions of self-efficacy and problem solving remain areas requiring further exploration.

After taking a pre-interview survey, principal leaders were interviewed to examine their interaction with problems and accountability. A component of these interviews examines how school leaders assess, prioritize and approach the problems of accountability. Using a cross comparative case study approach permitted a close examination of the contexts, conceptions, beliefs, and practices of the principals in the study, each influenced by similar demands for student performance set by high-stakes testing and accountability. Finally, using each principal's reaction to a problem scenario presented in the pre-interview survey, the extent to which the capacity of a school leader interacts with the leader's response to problems is evaluated relative to the school's overall success.

Principal self efficacy scale (PSES). Building on Tschannen-Moran and Woolfolk Hoy's (2001) work dealing with teacher sense of efficacy, Tschannen-Moran and Gareis (2004) developed and tested the PSES (Appendix 3) in order to gain access to a reliable tool to assess the mental models of school leaders. Their study tested three different instruments finding general reliability with the PSES, an 18 question, modified version of the Teacher Self Efficacy Scale. The original tested version of the PSES consisted of 50 items which was reduced to an 18 item scale clustering in three primary factor or subscale areas: Efficacy for management, Efficacy for instructional leadership, and Efficacy for moral leadership. These factor areas have reliability loadings of 0.53 to 0.82, 0.45 to 0.81, and 0.42 to 0.78 respectively. In addition, neither the SES of the students nor the experience level of the student was significantly correlated to a principal's sense of efficacy. The race of the principal was only slightly correlated with white principals having a higher sense of efficacy than black principals (t = -3.41,

$p<0.01$) (Tschannen-Moran and Gareis, 2007). The PSES is a valid instrument that offers the chance to assess efficacy beliefs, but unfortunately did not present valid information for analysis in this study.

In-depth interviews. As already stated, the primary method of data collection is through in-depth interviews designed to elicit information regarding the areas of interest under examination. Specifically, the standardized open-ended interview approach (Patton, 2002) is used to interview each participant with opportunities for further probing, assuming a conversational approach (Marshall & Rossman, 1999) throughout each interview. In addition, two researchers conducted the interviews, each investigating accountability and problem solving for slightly different purposes requiring that the format be standardized yet specific enough to gain insight for both studies. The researchers piloted the instrument included as Appendix 1 making adjustments as necessary based upon the data collected and evaluated in the pilot. The decision to use two researchers is based upon the need to maximize the amount of information gathered in a limited amount of time in order to respect the personal and professional demands of each respondent, an attempt to equalize the quality and quantity of information collected from each respondent in order to reduce bias and obtain comprehensive data from everyone, and the need to minimize the potential for variation in the data collection as a result of having two researchers conducting the interviews.

The questions for the interview (Appendix 1) were developed in three phases. The first phase involved the independent creation of interview guides by each researcher to capture the individualized needs for data required by their respective examinations. In the second phase, the two guides were combined, refined, and reduced to three main

categories of questions: leader's priorities, leader's conceptions of accountability, and leader's conceptions of and responses to problems. Once complete, a pilot study was conducted with a first round of four interviews where each interviewer asked the questions in a different order based upon the three categories, after which the quality and efficiency of the interview guide was assessed and adjustments were made. Next, the researchers further refined the interview questions and protocols based upon the data collected and the different interview experiences. The resulting guide was used to collect an additional four interviews included in the pilot study. Once the pilot data was evaluated, minor adjustments were made to the final draft of the guide in order to probe additional areas and refine the questions based upon the richness of the data collected. In addition, a set of problem scenarios (Appendix 2) was developed in order to standardize principal reactions to the problems they must address as practitioners.

For the pilot study, principals were asked to describe a complex problem of their own choosing and then were asked questions related to their approaches to problem solving. Because the problems identified by the principals varied greatly, the pilot study demonstrated limitations in conclusions that could be drawn about their approaches to solving problems. For the purposes of the pilot, similar problems were analyzed in a comparative fashion, but those whose scope was too far away from the context of the study were simply overlooked in the data analysis. To refine this portion of the interview, a set of six problems (Appendix 2) was presented to each principal as part of a pre-interview survey (with the PSES) to be rank ordered from hardest to easiest to approach. Each of the six problems is centered on issues such as the performance of sub-groups on state assessments, Highly Qualified Teacher (HQT) status, or a school's

standing regarding Adequate Yearly Progress (AYP) providing a strong basis for analysis regardless of which problem is chosen. Based upon Leithwood and Steinbach's (1995) work, these problems fit into the category of non-routine or unstructured problems permitting the research to center on how principals deal with these most unique situations. The problem solving framework in this study builds off of the differences between the way school leaders handle routine and non-routine situations. Evaluating each leader's approach to problem solving in this preordered fashion permits stronger analysis regarding both conception of problems as processes related to problem solving.

Summary. Data collection for this study occurs in two stages: each participant will complete a pre-interview survey in order to rank order six problems presented, and then each will participate in an in-depth interview. The contextual basis attained by pre-interview survey permitted a stronger analysis of the interview data because of its power to assess the mental models of the school leaders relatively free of contextual influence. In addition, by ranking problems in advance, participants were questioned about problem solving processes where the context for each of the problems presented will be similar enough to offer more standardized, and therefore, more consistent data to evaluate. The interviews that follow the pre-interview survey took approximately one hour to complete and offered a rich, contextualized data source for analysis in this study.

Data Management and Analysis

Eisenhardt (2002) notes that analyzing data is the heart of building theory in case study research. Often, as in this study, the amount of data gathered is enormous creating a need for organization as well as careful within-case analysis. Data gathered from 24 interviews provides a rich context for analysis, but requires careful organization, coding

and searching for the emergence of both within and cross case patterns. These patterns are the basis for drawing conclusions about the cognitive processes associated with problem solving and the influence of accountability law on the work of the middle school principal. As theories are developed from the research questions under investigation, it remains important to keep the construct of the conceptual framework in mind as data is reviewed and also evaluate that construct in the context of each case. Then cross comparative analysis most effectively leads to the emergence of patterns and the development of hypotheses (Eisenhardt, 2002).

Following Denzin's (2002) six steps in the interpretive process, this study:

1. Frames the research question in context.
2. Deconstructs and analyzes critical prior conceptions of the phenomenon under investigation.
3. Captures and obtains multiple instances of the phenomenon (problem solving) in the natural world.
4. Deconstructs the phenomenon and evaluate its essential features.
5. Reconstructs the phenomenon in light of its essential features, parts pieces and structures.
6. Contextualizes the phenomenon back in the natural social world.

By following these six steps in the formation of the research and data analysis, the interpretive process is strongest. Accomplishing this required careful and detailed analysis as well as accurate coding of the qualitative data.

Interviews were digitally recorded and transcribed in order to gain full access to the rich description found in the discussion with each participant. Using NVivo 7, a

qualitative research software package, the data was coded and analyzed for the story it reveals. Six phases of analysis were used to evaluate the data revealed through the interview process (Marshall & Rossman, 1999). These six phases are: 1. organizing the data, 2. generating categories, themes, and patterns, 3. coding the data, 4. testing the emerging understandings, 5. searching for alternative explanations, and 6. developing conclusion for a final report. Important to the process is testing the emergent understandings developed through the analysis and the subsequent search for alternative explanations for the patterns revealed. The applicability and meaning of the study is founded upon a detailed analysis that reduces researcher bias and permits the data to tell their story independent of the researcher's desire to draw specific conclusions. To accomplish this, the researcher handled the data carefully and kept detailed field notes so that the coding and subsequent analysis honors the conceptual framework and the "story" the data itself tells. In addition, as data was analyzed and coded, the elements detailed in Figure 1 served as a basis for sorting, evaluating, and understanding the relevance of the themes that emerged.

Researcher's Role in Study

The data collection and interview instruments for this study are compiled from questions posed by two researchers. The questions, while parallel in their description of sampling methods and interview techniques, differ in their scope and analysis. This study examines problems solving through the lens of accountability while the other researcher investigates principal conceptions of accountability. Overall, the collaborative effort provides opportunity for an expansive and rich set of data and yet maintains the purity of research for each researcher. While collaboration exists in the development of

methods and research technique, the work maintains standards acceptable for case study inquiry.

Marshall and Rossman (1999) describe four areas the researcher must consider in deploying himself for the research: the degree of participation (*participantness*), the degree to which study participants are aware of the research areas (*revealedness*), how intensely the researcher is involved in building trust and rapport prior to conducting the research (*intensiveness* and *extensiveness*), and the degree of specificity of the research questioning (*focus of the study*). In the area of *participantness*, Patton (2002) describes a continuum describing the degree of participation in the daily life of the subjects ranging from full participation to a strict observer. Overall, it is preferred that the researcher have some degree of participation in order to develop trust and a comfort level as interviews are conducted. For this study, because there are 24 interviews to conduct (approximately 12 for each researcher), participation is more on the observer end of the continuum with intent to develop trust through empathy and connection over the problems faced by school leaders. The depth with which both researchers have worked together in developing the interview guide and in analyzing results from the pilot study serves as a vehicle for maintaining uniformity within the reality that there are two researchers conducting interviews. The consistent format of the interview guide, with little room for deviation will also help in this regard. Finally, by establishing rapport tied to the problems facing school leaders, a degree of connectedness will surrogate for daily participation in the lives of the subjects. Because both researchers are practitioners, a positive rapport was established with each principal that also fostered a degree of trust.

Transparency was established early in the sample selection and pre-interview process so that study participants were aware that they are participating in a study of accountability and problems solving. Participants were informed how they were selected (with the most sensitivity given to subjects chosen because their school's predicted performance is lower than their peers) and were informed regarding the scope of the questions under investigation. For the nature of this study, establishing an open dialogue regarding how principals approach problem solving and accountability enhanced the richness of the interview process. The researchers worked proactively to establish rapport (the context of both researchers being practicing or former principals plays an important role in building trust) so that the sense of openness leads to free and unhindered conversation. Concealing information would more likely lead to skepticism and fear preventing open sharing of important information.

Finally, the *focus of the study* is more specific than diffuse. By testing and developing specific interview questions ahead of time, the information gained was more standardized among study subjects. Following a semi-structured interview approach, however, permitted the researcher to investigate responses in greater depth than a strict adherence to an interview guide allows when clarification on a given topic is necessary (Gall, Gall, & Borg, 2003). By combining the standardization desired through a common interview format with an established rapport and flexibility in dialogue with study participants, the resulting data presented a most accurate portrayal of the leadership models used by study participants.

Trustworthiness Features

The trustworthiness of this study is established by Marshall and Rossman's (1999) four pronged approach: Design and methods are explicitly detailed, research questions and the data's relevance are clearly revealed and rigorously argued, the study is situated in a well developed scholarly context, and clear field notes and records are kept for future analysis. By detailing a thorough research methodology complete with features offering generalizability and replication, this study serves to open further inquiry into the problem solving processes and perceptions of school leaders. By controlling for experience, school type and school performance, the study permits detailed and replicable investigation of the beliefs, attitudes and responses to the problems created by accountability. The interview guide was tested and revised for further clarity and the sample was selected through systematic quantitative methodology. In addition, the standard interview protocol being followed by both researchers helps with reliability. The combination of these attributes coupled with careful data collection, coding and analysis creates a solid context for the study's findings to possess credibility.

Management Plan/Timeline

Following Marshall and Rossman's (1999) recommendations for creating an adequate timeline, this study was proposed in the spring with in-depth interviews scheduled for the summer months when school principals are more likely to dedicate their time to the process. In a demonstration of respect to the time pressures of a school principal, the researchers proposed entrée in the waning months of the school year and conduct the interviews when school was not in session whenever possible (several interviews occurred in the fall but were conducted at a time most convenient for the

principal). A similar timeline was used for the pilot study, which permitted a more relaxed and reflective dialogue between the researchers and study participants. Data from the studies was collected using digital recorders with field notes typed by the researchers as conversations unfold. The digital data was then transcribed, coded and readied for review in the months following the interviews so that the entire volume of nearly 300 pages of interview transcripts was effectively evaluated for the story it tells. By adhering to the pre-interview guidelines already noted and by seeing that data collection and coding is completed when the information is fresh on the minds of the researchers, in-depth analysis within an appropriate time sequence follows.

CHAPTER IV

Discussion of Findings

Introduction

Introduction to the findings.

Using qualitative research software, NVivo 8, a broad set of codes was evaluated and refined yielding two pure types of principals who appear to be on opposite sides of a response continuum: (1) Principals who are inventive when faced with complex problems who also set broad goals when faced with complex problems. These leaders identify broad outcomes and meaningfully engage others in the problem solving process. (2) Other principals express feelings of helplessness when faced with complex problems, perceiving themselves to be captive by the problem solving process. These leaders conceive problems narrowly leading a shallow or insignificant engagement of others. The pure types of each type of leader appear to fall along a continuum of expertise as well where the inventive broad goal setting leaders lead in successful contexts while the helpless, narrow oriented leaders lead in schools where achievement is poorer than predicted for the Socio Economic Status of the community.

Among the interviewed principals, three best approximate the pure types of inventive/broad goal/deep coalition leaders and two principals approximate the pure type at the other end of the capacity and response continuum. Principals 11, 12 and 20 are the most inventive leaders. Principals 11 and 12 work in a low socio economic school districts yet have a predicted performance above their peers, and Principal 20 works in a

high socio economic district and has a predicted performance above his peers. For the purposes of identifying a pure type, expressions of optimism appear to be a characteristic that does not fall along the continuum of expertise, and is therefore considered as an independent characteristic that demands further exploration.

By contrast two principals represent the pure type at the other end of the continuum where the leaders perceive themselves to be helpless in the face of complex problems which couples with a narrow approach to addressing problems. These principals, numbers 41 and 42, work in high socio economic school districts, yet each school's performance is lower than expected for that district factor group. At this end of the continuum, the frequency of characteristics of the pure type appear to be more prevalent in high socio economic, low performing schools than in the low SES areas.

Introduction of terminology.

The process of identifying traits associated with problem solving is founded upon a close examination of Leithwood and Steinbach's (1995) cognitive framework for how leaders approach and solve complex non-routine problems. The conceptual framework of this study identifies two primary portions of analysis: (1) the leader's capacity for solving problems, which examines a leader's belief structure and first interaction with or response to problems, and (2) the leader's response, which examines the practical aspects of solution generation and the ways that the leader includes others in the problem solving process. Working through the data from the interviews provided evidence of several aspects of leader capacity and response that appear to add to the literature on how leaders approach and solve problems. Specifically, it appears that there are several characteristics of interaction that lend themselves to problem solving approaches most

present in effective and ineffective leaders. The terminology associated with the pure types of these leaders is described below.

Inventiveness v. helplessness. The problems presented during the interview process involved complex issues related to the achievement gap or more specifically to the underperformance of a specific subgroup or demographic in a school setting. In the face of increasing accountability for ensuring that all students meet with success, principals were asked to describe a problem familiar to them as they work in their respective settings. Principals described a range of beliefs, goals, and strategies for solving the problems. Several responded to the problem by identifying novel or innovative strategies they employ when first faced with the problem. These leaders are coded as having an inventive belief structure. To be coded as inventive, the leader must have described a new approach or strategy that he/she initiated in the face of a complex problem. In other words, the leader did not simply rely on whatever strategy the school already employed, but rather looked at the problem as an opportunity to initiate a reform or change of practice. Seven of the 24 leaders described inventive solutions, while six described feelings of helplessness.

One continuum of principals' thought ran from inventiveness to helplessness. Leaders who described challenging social conditions, thick and daunting bureaucracy, the folly of over-testing students, or family situations that blocked the efficacy of their work were coded as feeling helpless in the face of complex problems. These feelings stood in stark contrast to those of leaders who acknowledged many of the same obstacles yet invented ways around them. In all, six leaders were coded as feeling helpless in the face of accountability related problems.

Broad v. narrow goals. When asked to envision a solution for the problem they raised, leaders identified outcomes on a continuum of narrow to broad goals. Broad outcomes included the identification of an auxiliary set of expectations for the problem being addressed, whereas leaders narrow outcomes centered on wishing that their school be removed from a negative list – e.g. the Schools In Need of Improvement list, or avoiding the ire of the school Board, community, or superintendent. Of the 24 respondents, nine leaders described broad goals for their problem's resolution, and discussed these goals in rich context, where all but three represented schools where achievement was higher than expected. Five leaders described the solutions they hoped to accomplish in narrow, limiting terms and all but one of these is a leader in a school where socio economic conditions are high yet predicted achievement is low.

Deep v. shallow engagement. Leaders who engaged other in a meaningful fashion were coded as having identified deep coalitions because they genuinely empowered members to act and hold power in the problem solving process. Leaders who engaged community members as active participants in substantive stood in contrast to leaders who kept much of the power in the problem solving process to themselves or distributed participation in insignificant ways. Of the 24 respondents, 11 described meaningful and deep engagement, whereas ten leaders described shallow participation. All but one of the leaders describing meaningful engagement works in a school setting where achievement is stronger than expected, while eight of those who described shallow participation work in settings where performance is lower than expected.

Optimism. Principals who described their perspective on the problem they faced in optimistic or hopeful terms are also coded. Any statements that suggested the leader

perceived the problem as an opportunity for his/her school or a statement that revealed the leader's belief system to be attached to the perception of a positive trajectory as a result of the problem or subsequent intervention was coded as optimistic. Eight of the 24 principals made statements that revealed a degree of optimism. Five of these leaders represented schools where achievement was higher than predicted, and three represented underperforming schools in high socio economic settings. None of the principals that lead schools in low SES, low performing schools made statements that revealed an optimistic outlook in their leadership.

Summary. The pure type of an inventive leader who described outcomes in rich context and engaged others in a meaningful fashion occurred three times, all among principals representing schools where achievement was better than expected. This research investigates these leaders as demonstrating a unique set of characteristics of effective problem solvers. By contrast, leaders who express a sense of helplessness in the face of complex problems and then articulate narrow goals and fail to engage others are the pure type at the other end of the continuum. Table 1 assigns a value of "1" for each positive attribute and "-1" for each negative characteristic, which provides opportunity to see each principal along the continuum described above. The pure type at each end has a score of either 4 at the positive end (principals 11, 12 and 20) and a score of –4 at the other end (Principals 41 and 42). Detailed in each section that follows are specific examples of the incidents of each attribute and a more thorough discussion of the context for the findings.

Table 1. Incidents of pure type leaders. (Leaders above the thick black line lead schools where achievement is better than predicted whereas those below the line lead schools where achievement is poorer than predicted. Socio economic status is each school is identified in Table 2.)

Principal	Control: Inventive to helpless	Conception of problems: Broad to narrow	Goal setting: Broad to narrow	Engagement: Degree of participation	Overall score	SES (high/ low)	ACH. (high/ low)
11	1	1	1	1	4	low	high
12	1	1	1	1	4	low	high
20	1	1	1	1	4	high	high
15	0	1	1	1	3	low	high
23	0	1	1	1	3	high	high
10	1	0	1	1	3	low	high
21	0	0	1	1	2	high	high
24	1	1	1	-1	2	high	high
13	1	1	0	-1	1	low	high
14	0	0	0	1	1	low	high
22	0	0	0	1	1	high	high
25	0	0	0	1	1	high	high
34	0	1	0	0	1	low	low
33	0	0	0	0	0	low	low
46	-1	1	0	0	0	high	low
47	0	0	0	-1	-1	high	low
30	-1	0	0	-1	-2	low	low
43	-1	0	0	-1	-2	high	low
40	0	0	-1	-1	-2	high	low
32	0	-1	-1	-1	-3	low	low
45	-1	-1	-1	0	-3	high	low
44	0	-1	-1	-1	-3	high	low
41	-1	-1	-1	-1	-4	high	low
42	-1	-1	-1	-1	-4	high	low

Table 2 identifies the socio economic status of the school that each leader represents as well as the expected performance based upon the regression analysis of New Jersey middle schools. The initial coding for each attribute suggested in the

conceptual framework was conducted without attachment to the leader's context, but was evaluated once the data was thoroughly coded.

Table 2. Socio economic status and predicted achievement of the leaders studied.

	Socio Economic Status	
Achievement	Low	High
High	Principals 10, 11, 12, 13, 14, 15	Principals 20, 21, 22, 23, 24, 25
Low	Principals 30, 32, 33, 34	Principals 40, 41, 42, 43, 44, 45, 46, 47

Order of analysis.

The subsequent sections of analysis follow the sequence identified by the conceptual framework and align with the descriptions above in order to provide a thorough review of the attributes and characteristics of each type of response or behavior. Each behavior or response reflects themes in past research on problem solving as reflected in the discussions with these principals.

Leader Capacity

Beliefs, Values, Mindset.

Introduction. Leaders approach decision making based upon a pre-formulated set of personal beliefs about their own efficacy or influence as a leader. In addition, their perceptions of problems and accountability coupled with their understanding of the

context of problems create a context that appears to influence outcomes and organizational response. When complex, non-routine problems present, a leader relies upon his/her schema and tacit knowledge within the context of the broader implications or external factors associated with of the problem to respond and formulate a response. A leader's response to problems created by accountability and high stakes testing engages the same two realities: how a leader conceives the problem within its broader context and how the leader chooses to respond in light of his/her beliefs. These two aspects of a leader's response appear to be interconnected and interdependent. This section examines how a principal's schema or pattern or beliefs influences a response to problems. In reference to the conceptual framework of the study, Figure 4 identifies the portion under discussion in this section. Coding began with broad codes identifying things each respondent said that suggested a belief system and then were narrowed to the topics discussed below.

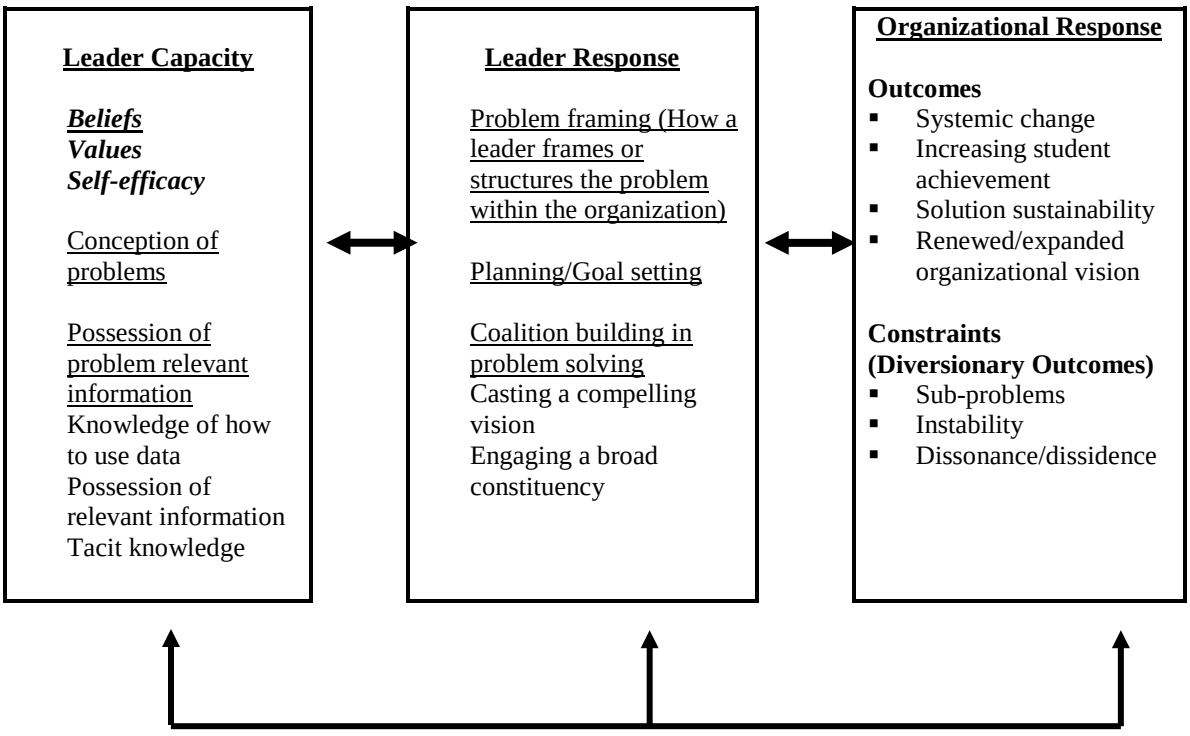

Figure 4. Beliefs: helplessness and inventiveness (section under review italicized).

Helplessness. Some principals made statements that revealed an inability to act in the face of a complex problem. This inability to act was coded as helplessness. Whether this inability is caused by the leader's personal schema or his/her perception of forces beyond his/her immediate control is difficult to ascertain. By definition, helplessness is an expression that reveals the leader's perception that the problem is essentially unsolvable, and is usually coupled with the identification of problems outside the leader's immediate control. Responses that were coded as revealing helplessness also suggested the leader was deflecting responsibility for solving the identified problem. Further, by resigning to a predetermined outcome, principals made statements that expressed

helplessness because of an external force or other factors beyond the subject's control. Whether it is because of a fixed mindset or static belief system or whether external conditions led the principal to be resigned to the status quo or worse, the end result of each belief system described appears to result in an inability or unwillingness to adequately address a complex problem.

Helplessness has two sides, unwillingness and inability. Both result in similar verbal expressions that suggest an inability to influence change yet one appears to be internally generated by the principal's perception of his/her own influence, and the other caused by a mindset that places external blame on situations perceived to be beyond the principal's control. Regardless, the expressions of helplessness are five times more likely to be made by principals of low achieving schools in districts with high socio-economic status. Table 3 details respondents who made statements characterized by helplessness.

Table 3. Helplessness: Respondents describing an inability to influence a positive outcome.

		Socio-Economic Status	
		Low	High
Achievement	Low	1 (30)	5 (41, 42, 43, 45, 46)
	High	0	0

The kind of helplessness described by the principal identified in the low achieving, low SES middle school expresses helplessness from fatigue from facing insurmountable odds. When asked to respond to feelings associated with the problem of underperforming subgroups on high stakes tests, Principal 30 expressed the following:

> Well it could weigh you down. You know you can get the sense that you're trying everything possible. You're trying to make changes in youngsters' attitude and behavior in school. You're trying to teach positive lessons to get youngsters to climb over the hump and everything that you do just doesn't work and that could be very frustrating and very debilitating.

This statement is coded in the same genre of helplessness, yet it appears that the context is more aligned with a kind of fatigue associated with attempting to overcome insurmountable odds. It is noteworthy that there were no respondents in high achieving schools that made statements of helplessness, and only this one in a low achieving, low SES school.

When asked to respond to the problem of the underachievement of a subgroup on the NJASK, Principal 41 who leads a school with a high SES and low achievement shared the following:

> You know, when you're talking about race and things like that, then Special Education students, but I think it's the hardest because, um, you're talking about test scores, and you're talking about a lot of factors that you can't control as principal -- whether it be, with Special Education, learning needs, um, but also, you know, whether it be ethnic related, or culture related -- I think there's a lot of factors outside of your control.

This statement deflects responsibility for the achievement of the special education population because of "factors outside your control" and is characteristic of sentiments shared by other principals in the same quadrant.

Part of the helplessness expressed by principals is bound to belief systems that identify factors like the happiness of parents, teachers, or students that influence decision making and outcomes. These influences are perceived to be values of the school community that must be addressed, yet do not have causal links to high expectations for performance. The following statement, made by Principal 46 who leads a low achieving, high SES school, is thematically consistent with this genre:

> It is easiest, the easiest thing for me to do is drop standards and make parents happy and kids happy and somehow I think when the kids are happy the parents are happy. However, that is not good for, it is not good for accountability, absolutely not and the more I avoid that, the more higher ground I try to take. Of course the more I can beat up for, but the bottom line is that is what I get paid for.

In discussing the role of parents in the problem solving process, Principal 46 acknowledges that "keeping parents happy" often supersedes the ability to hold students to high expectations. In context, this statement is followed by:

> The vast majority of parents with students with special needs do not care about their test scores. But there are one or two you come across that really do. But I would say in a nut shell, the conflict here is that when we hold some of our special need students accountable, they struggle and become very unhappy. And there is usually a backlash to that.
>
> I never win. I never win, because I do not think I have them long enough to actually claim victory either way. But I would say my disappointment every year comes with how well they do not do. They do not do well on standardize testing for many different reasons, including the fact that some of them just do not have the emotional stability to take a test. So I feel, although the parents [might be happy,] I do not think they are winning. I am definitely not winning and the school is not winning in this situation.

The inherent frustration of competing demands found in this statement characterizes a sense of helplessness created by the perception of competing influences. This principal believes that happiness, whether the student's or the parent's, takes precedent over achievement. The internal conflict that occurs each year as another round of

disappointing test results present is the recurring theme of the principal's leadership. It appears that helplessness governs the mindset rather than a perception that a more influential role is possible.

In addition to conflicting demands, some principals expressed, in very clear terms, a philosophical belief that some students simply cannot or will not achieve. This sentiment is captured by the comments of Principal 33 who leads a low performing, low SES school:

> I want the teachers to take -- I want *all* the teachers to take greater ownership, and have higher expectations and have hope for every kid in this building -- and I'll be the first to admit to you -- there is a -- you know, like I said before -- there's a one or two percent -- I don't know, whatever it is -- there are five or eight kids who -- they're not gonna make it -- they're gonna end up dead or behind bars. But -- other than those five or eight or six or whatever the number is -- every single kid in this -- in this building has to be fully prepared to be the best he can be, and go on to high school, and succeed.

When asked to describe the future for these "five or eight kids," Principal 33 shared his philosophy"

> The best that I can do is try to teach them how to gauge when and where and how to best deal with anger. We have anger management programs here. Uh -- I have a kid here whose, uh -- the parenting in his house stopped at birth. And he's very, very, very intelligent. I used to dislike him intensely -- he hated my guts! And then one day -- see, when they go into this Penalty Box I have, they have to write a paper. I read his…and for the most part -- and the kids -- and I told this to the teachers -- I don't care if they call you a horse's ass in that paper. Let's get them to write, let's get them to think.

Because of a perceived helplessness in the face of absent parenting or harmful societal influences, the principal does not see himself/herself as influential with a portion of the student population. Whether this mindset can be coded unwillingness or inability is difficult to determine because it manifests attributes of both. Most commonly associated

with low performing schools, helplessness as a mindset, appears to reduce the effectiveness of a principal's ability to become innovative in his/her approach to raising academic standards or implementing reform.

Some principals made statements suggesting that they disagreed with holding students accountable for achieving in school regardless of socio economic status, background, or ability. These principals were unwilling to accept responsibility for some students because the external forces preventing the children from achieving were too difficult to overcome, or that they perceived schooling to be about more than achievement on this style test. By arguing that the achievement bar is set too high, teachers are unwilling to compensate, or societal or personal factors are too great to overcome, these principals appeared resigned to the status quo in their schools. An extension of helplessness, respondents who disagreed with accountability or high stakes testing were more likely to lead underperforming, high SES schools, see Table 4.

Table 4. Respondents disagreeing with high stakes testing.

		Socio-Economic Status: Low	Socio-Economic Status: High
Achievement	Low	1 (33)	4 (40, 41, 44, 46)
	High	1 (13)	0

Principal 13 who leads a high achieving, low SES school expressed a philosophical disagreement with testing, and alluded to the reality that some students will not achieve at high levels:

> Everybody is not going to go to Harvard. I don't think everybody is going to go to college and I think we sometimes lose sight of that and I think we need to look at the whole student and all the students and I think whether it be some day's getting a kid to school and keeping them here is the priority for that student.
>
> (Interviewer asked respondent to clarify what happens when the focus on students extends beyond testing in to other areas of the child's development.)
>
> I don't think you do but test scores go up, you want to see that, you want to see kids learning, kids achieving whether it is sports drama, you know, everybody is clicking and you know everybody is not going to get along and I have always preached that you know but we are family and family's fight and but we're going to have to get through it.

In context, these statements share the same perspective as comments revealing deep resignation to the reality that some students will not achieve at satisfactory levels, yet suggest a broader and possibly bolder willingness to advocate for students. The "fight" described at the end was tied to battles with central office personnel or state expectations when it takes longer for achievement scores to increase. Because this respondent leads a school where students outperform their peers in similar schools, the philosophical disagreement with a one size fits all approach to testing does not appear to hinder results. This contrasts with similar statements by peers in lower performing schools.

Principals have a variety of reactions to testing and the accountability for the performance of every subgroup. Whether each sees the sorted data as an opportunity or hindrance is covered later, however, Principal 44's statements about the sorted data suggest a deep disagreement:

> Then you have the state, or AYP, saying, "You have to separate children by ethnicity – African-American, Hispanic-American, socio-economically, Special Ed – and focus on these sub-groups. It goes against every single educational grain that I have in me. It goes against things that we've been working to promote. I mean, socialization is just as important as academics at this age group.
>
> I believe it runs counter to that. I really do. I think it runs counter to that – and I'm sure you must have heard this over and over again – you're in the field of education – I think we're, you know, some of our children of Special Education are there because they have a learning disability. And to have them have the same criteria as a Regular Ed child, it's very disheartening for them. I mean, it hurts when you have a child, a Special Education child, with their parents at an IEP meeting crying, saying, "What's wrong with my child?" because of some state test.
>
> And Steve, to me, the best way I can describe it: it's like a water balloon. You squeeze one end and all the water shifts to another area of that water balloon. I mean, when I first came here I inherited a failing school. And at the time we were lacking in a certain sub-group. I believe I'm going back four/five years ago, it was African-Americans or Hispanics in writing. We've addressed that, and now another problem squirts up over here. Now it is African-Americans and math. We concentrate on that *and* we have to maintain the integrity for two straight years of the language arts, which we did not pass, and then the next year, Special Education pops up. So I feel like one of those games where you're battling and pounding…(whack a mole).

This principal's frustration is characteristic of those who disagree with disaggregating testing data into subgroups to hold schools accountable for their progress. The feeling of frustration tied to rising and falling test scores depending upon which ethnic group is presently in the "bull's eye," and reveals a helplessness to exert a lasting impact on achievement. The principal's own words suggests that somehow test scores rise when the school puts effort behind "reform," but this change does not have a lasting influence on the work of the school or its teachers. Describing himself as the subject of an arcade game who gets hit back down again, the principal reveals both frustration and

helplessness in the face of the work of raising test scores. This leader represents a low achieving school in a low socio economic community.

Six of the twelve principals who lead underachieving schools made statements that revealed a degree of helplessness in the face of complex problems tied to the achievement of all students, five of these in high socio economic settings. Several leaders also disagree with high stakes testing or identifying achievement gaps for subgroups. Expressions of helplessness appear when the leader does not perceive himself/herself as influential in dealing with the problems of underachievement. Sometimes helplessness is tied to external forces that are perceived to be insurmountable and sometimes to philosophical disagreement with the concept that everyone can achieve at high levels.

Inventiveness. Bolman and Deal (2003) describe the successful school leader as one who attends to the symbolic or visionary aspects of the organizational mission in a fashion that advances innovation and adaptation to the complex problems that can arise in the work of schools. These leaders seek new ways to conduct their business by recognizing needs, and demonstrating the capacity, to invent structures and systems that permit students to achieve despite complex obstacles. Hallinger and Heck (1998) evaluate an organization's ability to innovate as reflective of the transformational leader's capacity to communicate and adapt school structures and programs to meet the shifting demands of diverse learners. Some leaders express an inventive mindset in the face of complex problems. These leaders react to problems of underachievement by inventing new approaches or by recreating a context for their work. The ability to invent solutions or strategies in the face of complex problems stands at the other end of the continuum

from helplessness. Evidence of inventiveness presented when principals described innovations designed to deal with complex problems. Coding in this section is attached to statements that suggest an acceptance of responsibility for underperforming students and a willingness to employ new strategies when faced with complex problems.

Inventiveness was coded when principals made statements that indicated their willingness to add structures or ideas to address a problem. Inventiveness was also coded when principals added structures but then took steps to protect these from being eroded by the bureaucracy of a school district or by the lack of resources. Often statements reveal a reallocation of resources designed to better and more effectively address a specific problem. These statements contrast to those that convey the sense that the problems of underachievement faced in schools are beyond the control of the school leader. Seven of the 24 principals made statements that revealed a sense of inventiveness. The respondents are indentified in Table 5.

Table 5. Respondents demonstrating inventiveness in their response to problems.

		Socio-Economic Status: Low	Socio-Economic Status: High
Achievement	Low	1 (34)	0
	High	4 (10, 11, 12, 13)	2 (20, 24)

Inventiveness appeared in two ways. Several of the principals described how creative problem solving where generating solutions and new ideas was a routine component to their mindset. Consider the following series of statements by Principal #20:

When asked to reflect on community involvement:

> I think it was January 1st of 07 -- was it 07? 06 -- that we made the front page of the New York Times for students -- middle school students being unruly in the community after school hours. Uh -- so we turned, and -- fast forward all the way to today -- and we have, uh, an extensive program, you know, 3-6 program after school, free of charge for all the students. Uh -- there's free counseling for students and their parents. There's tons of field trips, which include theater and, uh, recreation centers and sports games and museums -- uh, a whole litany of recreation and athletic programs but also a ton of enrichment opportunities. Uh -- and it doesn't cost the school district a dime!

Reflecting on how much freedom in perceived when taking action:

> And it was the first week of October and it had to be in place by the end of October. Um, so we created a model that worked, but probably wasn't the best model. We didn't have curriculum in place so we were scurrying to identify materials and approaches that we were going to use that were going to be different than what we were doing -- doing during the school day.

In discussing efforts made to promote achievement:

> We can look at it in a number of different frames, and one was going back five years ago where we had a middle school that was totally leveled from 6th grade through 8th grade with tracking. And we have, um, a sixth grade program now that is almost entirely de-leveled, with the exception of mathematics. And, in that process you've seen kids, uh, becomes friends with children they wouldn't ordinarily become friends with, you have classrooms that are much more diverse -- where typically classrooms were -- you correlate race and economic status with the academic level children were placed in.

These statements demonstrate a school leader who perceives his work to be influential in making change on behalf of students or the community. The first quote was a personal reflection on progress he has made in working with the community at large. Unlike principals who may have adopted a more disconnected and helpless approach, Principal #20 did not blame families for the misbehavior of students, and neither did he describe the situation as a community problem rather than a school problem. Instead he responded to the bad report in the New York Times with ideas, collaboration, and programs suggesting an attitude or mindset that did not limit his work. Similarly, the second quote revealed an effort to invent strategies and structures best designed to deal with underperforming students. The statement acknowledges that he may not have found the best solution, but conveys a sense of responsibility and willingness to invent additional strategies and structures on behalf of students. His effort to de-track students in the third scenario suggests willingness to take risks in addressing a failing status quo.

Creatively "bucking the system" on behalf of students is another attribute coded as inventive. Principals describing actions that they hid from central office or took without the knowledge of superiors conveyed willingness to takes risks on behalf of students. Several of the principals noted in Table 6 took creative steps to address underperformance, but did so without the knowledge or permission from superiors. This kind of inventiveness reveals a mindset that is willing to do whatever it takes to see that students make progress. Consider this statement by Principal #13:

> Put them into the after school help. Get them whether or not we might want to slip them in basic skills (described hiring extra basic skills teachers) I shouldn't say this to a central administrator but we kind of slipped them in there without them (central office) knowing, you know, and that's the good thing too.

"We kind of slipped them in there without central office knowing." The essence of this statement reveals a commitment to seeing programs advance on behalf of students regardless of the means.

Similarly, Principal #24 described his role as removing the barriers that stand in the way of teachers doing their job:

> Most of my teachers would say that that's the number one thing. For them. If they said "what's the number one thing for the principal," you know, to be focused on?" it would be to make sure that they have a good buffer between them and everybody else that could get in the way of them doing their jobs. Which is a really big part of what I do every day. I think anyway.
>
> I mean, that's sort of my philosophy -- I sort of take a Servant-Leadership kind of position, you know. And I say, "What can I do to help you get where you want to be?" And that's what I focus on every day.

This leader described the need to remove the "barriers" that stand in the way of his teachers accomplishing their work. Instead of requiring his teachers follow a prescribed set of rules or processes, he permitted them to invent ways to assist students. Instead of mandating a one size fits all approach, he permitted teachers have some space. The efficacy of this approach is not considered, however, the statements reveal a predisposition to exerting creativity in problem solving.

In contrast to permitting teachers to act on their own, Principal #10 demonstrated inventiveness by mandating creativity and continuity among all of her teachers:

> For me, to be accountable, I have to be sure all the teachers are conforming with the course standards in their lesson plans using a well-rounded diverse group of plans, so all the kids can be educated at different light. I meet with them periodically about that. I'm a firm supporter of workshops, new trends. I like to see them try different things and work pretty big; and I was always big on publicity, like, "Hey, here's what we're doing in our school. We got this unique little project." Sometimes those things outside the box will help the kid learn and that's where I'm accountable that I get them to make available all out to the kids. If it's

> funding we need, I do the best I can with limited budgets to purchase new software – or anything we might want to use in the classroom. I like to hear that. I investigate a lot. That's where I am accountable. I think I do a pretty good job in trying to get them what they need.
>
> Academically, we're pretty nifty with (things like) that. We try to get everybody here to move, whether it's through mandating extra help which we'll be doing in January through their academics…if the kid couldn't make it academically, they can't look at us and say you never tried.

Again, this mindset reveals that the principal perceives herself to be influential in ensuring that students achieve at high levels. To accomplish this, the principal secures resources and sets mandates for teachers to follow. This type of inventiveness contrasts with permitting individual creativity because it appears that the principal assumes more control over the process, yet the heart of context of the statements are the same: the principal operates with a clear sense that his/her work is influential and possesses the capacity to overcome underperformance through innovation.

In contrast to principals that described feelings or attitudes of helplessness, nearly a third of the principals made statements that revealed an attribute at the other end of the continuum – inventiveness. All but one of these leaders represents a school that is performing at levels that are higher than predicted. These leaders do not deflect responsibility for problems, but rather describe detailed steps to address them. This attribute was not found in principals of low performing schools in high SES districts, and only once in a low performing, low SES school. Four principals (more than half of the leaders in this quadrant) that lead schools in high performing, low SES schools demonstrated inventiveness as part of their mindset and two principals (one third of the leaders in this quadrant) of high performing, high SES schools did as well.

Summary. There appears to be a continuum between a helpless and inventive mindset. This continuum of thought presents as principals described their responses to

the complex problems associated with high stakes testing. Helpless leaders described conditions beyond their control or simply deflected responsibility; whereas inventive principals accepted responsibility for the problems they faced and created structures and strategies to generate solutions.

Conception of Problems

Background. Leithwood and Steinbach (1995) describe a mental model where respondents possess problem-relevant information that supports a broader, more relevant response to complex problems. Figure 5 illustrates the section of the conceptual framework under review. In light of this research, three main areas are explored in this section: optimism, the conception of problems in rich context, and the conception of problems in narrow context.

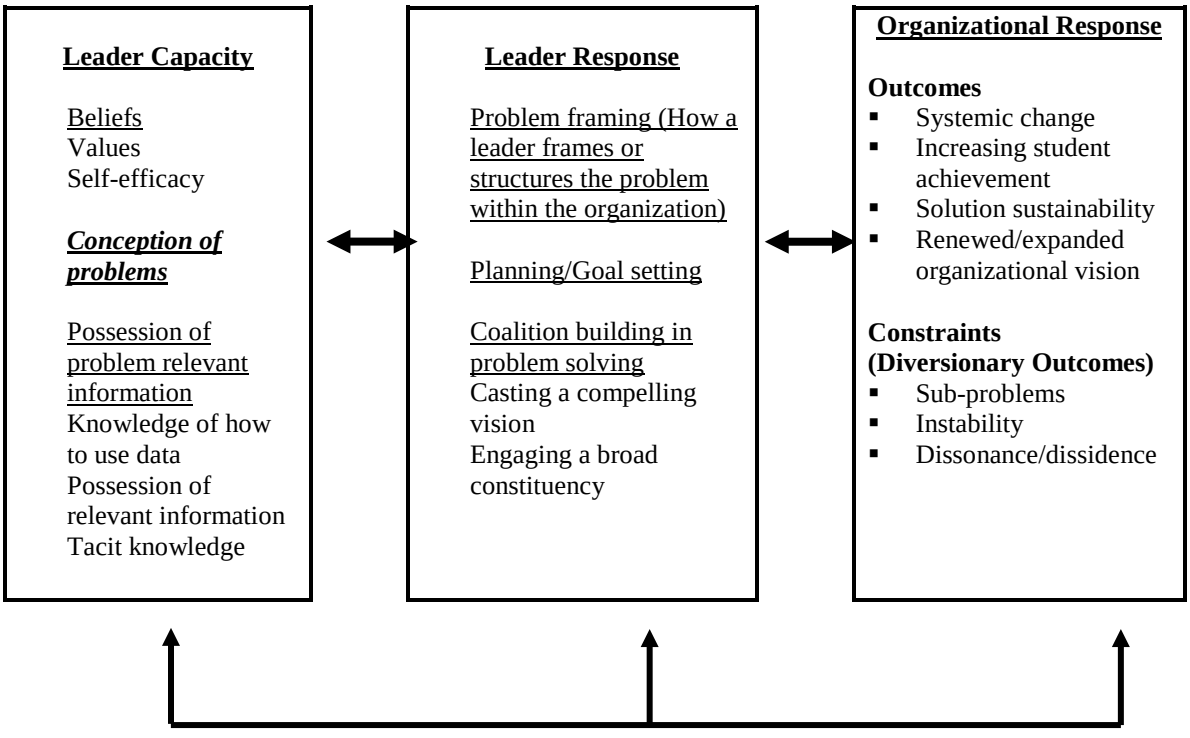

Figure 5. Conception of problems (section under review italicized).

Optimism is explored through questioning that identifies whether respondents perceive problems as opportunities or obstacles. This discussion led to a review of how leaders perceived the problems they faced, and whether they interacted with the problem in rich context. The continuum between rich and narrow context deals directly with how deep the principals perceive the problem or its solution to be. Those who conceive problems in rich context appear to understand the broad impact of their work, while those who conceive the problem more narrowly understate the depth of impact of addressing the problem.

Optimism. All 24 principals were asked to opine whether the problem presented is an opportunity or an obstacle. Where there appeared to be a positive sense of the problem's influence on the work of the school, a coding of "optimism" was attached to the response. Table 6 illustrates the number of respondents who made statements that revealed a degree of optimism when approaching the complex problems presented by high stakes testing and accountability.

Table 6. Respondents demonstrating optimism in conceiving problems.

Achievement	Socio-Economic Status: Low	Socio-Economic Status: High
Low	0	3 (43, 44, 46)
High	3 (12, 13, 15)	2 (20, 23)

When asked whether a problem was viewed as an opportunity or an obstacle, Principal 12 from a low SES community where achievement was higher than similar peers said the following:

> Oh, it could a greater opportunity, much greater opportunity just to take a step back to be reflective: Are we really addressing children not only in all academic levels but children who come into this place with all different types of baggage? Are we meeting their needs, and if we're not, then what do we need to do differently? And how exciting is that? Here's a new opportunity to perhaps take a look at what we do and how we could do it better.

As this principal discussed the compound problem of lacking Highly Qualified Teacher with failing subgroups on the New Jersey Assessment of Skills (NJASK), she conveyed hope that the mere identification of the problem will create a chance for her school to see things they would not have otherwise considered. In thinking through the problem and conceiving a response, this same principal shared the following:

> We looked at everything, we looked at attendance, we looked at behavior, we looked at academic performance, we looked at what types of physical issues there might be with the child, we considered the gamut. How many times late to the building, how many days absent, was there a pattern in the lateness, was there a pattern in the absence, is there a pattern in the behavior issues that we're having, is there a pattern to their nurse visits. What types of issues are they going to guidance with is there a pattern there? Academically, are they falling further behind in math, were they falling further behind in language? What is the makeup of the home? Is it a single parent home, are there two parents, do both parents work? So we ran the gamut on it.

In this case, when the problem of under qualified teachers and subsequent failure on state tests was considered, it was conveyed with a sense of optimism and was described in a broad and rich context. In thinking about the problem, the principal used her knowledge of risk factors and school influences to review the many aspects to student performance in school. As she did this, she conveyed a sense of optimism that her community of educators might discover a new way of assisting students to make academic progress (inventiveness). This principal's response reveals a connection between an optimistic outlook and inventiveness and the setting of broad goals.

In terms of his expression of optimism, Principal 15 described the natural progression of a addressing a difficult problem:

> I am going to say the obstacle was in it. It was killing us; I mean we were having little or no success with that group of kids. And of course I could approach (the problem with) "look we can't do worse – nobody is passing," so the best we can do is get some of these kids passing and it was certainly from then on an opportunity to see if we could have an impact or whether we would just going to have to settle for the same old results we had been getting all along, and luckily it's starting to see positive results.

This statement conveys optimism that influence is possible. Even if it started with the recognition that the work itself will be disruptive, the sense that no action will yield the "same old results" provided motivation to adopt a complex plan of action. When

presented with a complex problem, the principal became both cheerleader and planner in formulating a response. Principal 15 expressed optimism in problem solving and also aligned at the inventive end of the inventiveness/helplessness continuum. He represents schools where achievement is stronger than predicated, yet there are several other leaders who also expressed optimism in their responses yet lead schools where achievement is lower than expected.

Principal 44 (low achievement, high SES) discusses the problems his school faced with an optimistic sense that things were improving. His optimism tied into the morale of the faculty and conveyed that his school has decreased the number of failing indicators associated with Adequate Yearly Progress (AYP).

> It's improving my school because I learned a long time ago when I was a teacher I did not like being *told* what to do by, you know -- the line was always there -- the administration-teachers. What you have this way, when you have your teachers buying into it who are going back, and when a *teacher* is telling a teacher and soliciting their ideas -- you have morale increase, you have better buying-in, you have more of a dedication. The other part is we've made tremendous progress. Where we used to miss *five* of the forty one indicators, now we're down to missing *one.* So we *are* making progress. And not just been academically -- all areas of the building.

Aside from this expression of optimism, this leader also made statements that revealed resignation in addressing the problems of accountability and also described a narrow focus in goal setting. In context, the expression of optimism appears to stem from making improvement on the AYP list yet does not appear to tie to substantive reform.

Similar to Principal 44, Principal 46 made remarks that were coded as optimistic yet he also made statements that characterized his approach to accountability as helpless. In discussing problem solving he spoke about his passion for addressing problems:

> …the most fun that I have in school as a principal is problem solving. And challenges sometimes are tough and you take a beating, but if the school runs perfectly every day, you would not need me. But my mind needs to solve problems. If I am not solving problems, I am bored. …every year, you get a new set of problems and things happen and it is just a challenge…I want a new set of challenges, …I think it is a privilege of this job to be able to solve problems and get involved with kids. It is a challenge and I love doing that aspect of it.

This principal speaks in favorable terms when thinking about addressing problems, yet is also coded as feeling helpless in the face of complex problems – those dealing with the achievement of students. It appears that expressions of optimism by some principals are part of the leader's schema or belief structure yet inconsistently align with other attributes that appear to be associated with a strong approach to problem solving. It is noteworthy that an array of principals is coded as optimistic yet this attribute does not appear to connect to efficacy in problem solving.

Conceiving problems within the broader mission of the school. Each principal was asked to provide an initial reaction to a problem created by high stakes testing and accountability. In the initial reaction, each leader discussed his/her perception of the problem and of its impact upon the broader mission of their school. In this portion of analysis, the leader's initial reaction is called "conception of the problem." *How* a leader conceives the problem at its origin appears to have an impact on the problem solving strategies that are developed for its resolution. There are two different ways that principals conceive of the problems created by accountability.

Some principals immediately convey a clear understanding of the overall impact of the problem before they make any effort to solve it. These leaders see beyond the immediacy of their own needs as a leader and describe conditions that lie under the surface of the problem. The depth of their response indicates that they understand that an

underperforming subgroup or a lack of highly qualified teachers has broader influence over the overall functioning of their school. The leaders who conceive problems in this manner present thoughtful, in-depth responses that reveal their understanding of the problems within the broader goals of their school community.

Conversely, some leaders frame the problems in a narrow context where their response is limited to how a "solution" will impact their own standing as a leader or the perception of superiors or community members. Most often, these leaders quickly responded to the problem with ideas or solutions that describe a superficial or temporary answer. These leaders are identified as conceiving the problems narrowly or without consideration of the broader impact on the organization. The ideas generated are conceived quickly and without a detailed understanding of the complexity of the non-routine problem.

Each principal's reaction to the problems presented were initially coded in NVivo in the following categories: "clearly understands problem," "carefully formulates response," "develops broad goals for solutions," "evidence of fatigue or discouragement," and "understands broader context of the problem." Based upon the responses coded in these sections, two primary categories emerged: Principals who describe the problems within the broader context of influence in their school, and those who misread the problem or describe solutions tied to shallow or superficial aspects of their leadership. These categories are be termed "Describes problems in rich context," and "Sees problems narrowly." Leaders in the first category see under the problem to the core issues facing their school community whereas those in the latter group describe the problem in superficial terms.

There is no overlap where a principal was coded in both of the categories noted above. Further, following detailed analysis of the coded comments, the predominance of leaders that made statements revealing rich context most often lead schools where achievement levels are high (see Table 7). In contrast, those whose convey a more narrow conception of the problem are fewer, but entirely made by leaders of low performing schools. It is important to note that principals not coded in these categories offered a conception of the problem that did not fit into the categories described above because they either detailed a problem that did not have a significant impact on student or their answers were not easily categorized. Regardless, of the 24 principals interviewed in the study, 14 offered responses that aligned with these categories.

Table 7. How leaders conceive problems – in broad or narrow terms.

	High Socio-economic status		Low Socio-economic status	
	High Achievement	Low Achievement	High Achievement	Low Achievement
Describes problem in broad context	3 (20, 23, 24)	1 (46)	4 (11, 12, 13, 15)	1 (34)
Describes problem in narrow context	0	4 (41, 42, 44, 45)	0	1 (32)

When presented with a problem, leaders describing problems in rich context often became contemplative in their response. As they considered the problems of under-performing subgroups or a lack of highly qualified teachers, they describe factors far away from the problem that create the basis for a rich and comprehensive solution generation. For example, some spoke of the need for better program articulation from

early grades, the influence of race and race relations on the under-achievement of minority students, or the need to break old paradigms or patterns of grouping.

Principal 20 reflected on his work dealing with the achievement gap in his school and reflected on when the problem come to light for him:

> And then, on those first days of school, walking through the halls and seeing classes that were almost all white, and classes that were all black. And uh -- and then just beginning to live it, and recognizing that we weren't providing opportunity for children -- that we're only reinforcing, um, some of the negative elements that are tied with, you know, poverty and the like.

He described interviewing with the school district (nine years prior to the interview) and not being asked any direct questions about the achievement gap, but after seeing African American students as a failing subgroup, he began to notice the discrepancies he described above. Instead of succumbing to blaming family culture or background, however, he engaged his school in strategic discussion with a program at Harvard:

> We got heavily involved in the Tripod Project with Ron Ferguson at Harvard. And uh -- and we were really banking on that solving the achievement gap, and as, uh -- the deeper we got involved with Ron, the quicker his focus would change, and evolved, and the district wasn't willing to keep pace with it, um -- And so, it had to become an internal effort. And we had to look to make the difference in the school, and that was focused on providing opportunities for kids to get in other areas of school to make this -- you know, increase their motivation, for them to build relationships with teachers, and knowing that a lot of research shows us that, um, a lot of impoverished students and minority students don't come to school with the same intrinsic motivation that their white or more affluent counterparts may, and that their motivation -- rather than being for themselves or for what their family values are -- that they perform to satisfy the teacher to maintain a good relationship with the teacher. Our focus then became on the type of interactions teachers have with children -- how that focus and that effort will directly correlate with student achievement. Um -- so that's I think how we molded the school into what it is today.

There is a progression to his response. He initially conceived the problem as a central problem for his school to face. He did not deflect the responsibility to an outside agency or group, but rather began to strategize within the context of the areas over which he had influence. Then, when the district was no longer willing to support his effort, he turned the focus toward the things over which he had control: teacher attitudes, professional development, and opportunity for students. Because he conceived the problem in broad terms initially, the range of responses grew proportionally rich. In addition, his plan for dealing with the problem over time is thoughtfully considered.

Similar to Principal 20, is Principal 11 who serves in a low income school district yet boasts strong achievement results. When describing the situation she faced in her school she recounted how the top performing students were moved to other magnet schools in the district and she was left with special needs, LEP, and other needy students. While principals in the group who were coded as seeing the problem narrowly described similar situations, this principal recounted the various iterations of change she initiated to deal with the complexity of her situation:

> Prior to NJASK because we had no instrument to see where the deficiencies were so we decided to get an instrument to assess them before they got here so that we can prepare a plan to address individual needs and also to schedule those students in homogeneous groups. Before we had heterogeneous groups and now we have, at that point we felt that the best way to get to try to address their skills to group them was to do this type of scheduling so we found that many of our students came ill-prepared and we found also that our best students did not come here. Our best students are sent to accelerated programs, enrichment programs, middle schools that have these enrichment programs. Unfortunately, I don't have that in my school. There is one specific school in this district that has the cream of the crop so of course, I'm losing 50 to 60 students in sixth grade every year. So of course, I'm going to get the kids that are in dire need of improvement. So how do we address that?

> Okay that's one way; we've assessed them before they come here. We schedule them into either a general remedial class, extend the day activities, tutoring, and now I have a second teacher in the classroom, an inclusion teacher to meet those special needs of population because now I don't have the cream of the crop, what do I get? I get the special needs population. So one-third of my population is special needs. One-third of my population is bilingual LEPs so they also have language-learning problems. You know, they're new to the country and so the third I do have are also remedial and a few in there that maybe are average students. So we've tried to develop individual schedules for those students.

These statements suggest that this principal authorized individual treatment for the students in her school that were underperforming. There was no evidence that students were written off because they came from the wrong background or that the school deflected responsibility because the "best students" were sent to other schools. Instead, this principal developed broad goals for addressing the needs of her students and conceptualized solutions to the problems of underperformance by formulating a comprehensive plan.

The other seven principals coded as conceptualizing the problems they discussed in rich terms also described events and circumstances where they had to shift an entrenched culture, revise ineffective grouping practices, secure alternate resources, and/or set specific standards for the performance of teachers in order to ensure the success of all students. These leaders described the complexity of the problem and were unsatisfied with the status quo. In addition, each of them considered the roots of the problem. In other words, instead of looking at a problem of underperformance and focusing upon the immediate need of making Adequate Yearly Progress or staying out of trouble from superiors or community members, the leaders describing the problem in its full context described longer term solutions that may not avoid immediate consequence of underperformance, but would likely realize stronger long term results. *Conceiving*

problems narrowly. As noted in Table 8, some principals described the problems they faced by shifting the blame outside the school walls or describing "quick fix" solutions to the problems presented. When faced with complex, non-routine problems, these principals described their conception of the problem in simple, narrow terms. Principals coded with this attribute did not conceive the problem in solvable terms. Only five of the 24 principals interviewed demonstrated this characteristic, and all but one was from an underperforming school in an affluent school district (see Table 8). Because only five principals made comments that fall into this category, it may be difficult to draw conclusions about the efficacy of their work. Regardless, it is noteworthy that some principals conceived the problems associated with accountability in narrow terms where self-protection or quick fix solutions appear to overtake a broader sense of mission.

Consider the comments of Principal 44 who presides over a low achieving middle school in an affluent community:

> And Steve, to me, the best way I can describe it -- it's like a water balloon. You squeeze one end and all the water shifts to another area of that water balloon. I mean, we -- when I first came here I inherited a failing school. And at the time we were lacking in a certain sub-group. I believe -- I'm going back four/five years ago -- it was African-American, Hispanic in writing. We've addressed that, and now another problem squirts up over here. Now it was African-American math. We concentrate on that *and* we have to maintain the integrity for two straight years of the language arts -- which we did not pass -- and then the next year, Special Education pops up. So I feel like one of those games where you're battling -- pounding --

This comment describes the superficial aspect of staying off of the annual list that identifies Adequate Yearly Progress (AYP) and does not look at the broader goal of addressing the performance of the minority student. Neither does it consider how the performance of each subgroup that "pops up" might connect to the performance of the

others. Rather than understanding that something larger might be under the surface, the principal identifies the substance of the problem as staying off of the annual list. As he speaks about the annual AYP reporting he expresses frustration with the notion that some aspect will always appear. The comments also convey that solutions do not occur over a sustained period, but that underperformance can be "fixed" with shallow or short term reforms that often shift the focus of leadership to another problem.

Principal 44 went on to describe part of the solution he employed to work with underperforming African American students in mathematics when he spoke of beginning a group where students could celebrate the accomplishments of other African American mathematicians:

> And they were discussing Benjamin Banneker who was a great mathematician. And he was pretty much discussing with them the importance of math, the importance of going to college, of going to high school -- by showing them raw statistics. Uh, but I had some -- couple PTA -- couple parents in my community take great offense to that. They felt that it was singling out. They felt that it was profiling. And they felt that they as parents should be discussing statistics pertaining to African-American males and not the school. So, I ran into some resistance there.

In context, the principal spoke about some of his strategies for promoting high achievement among his African American students but promoting the achievement of others cannot replace strategic intervention on behalf of underperforming students. By describing this strategy, Principal 44 communicated a greater concern for appeasing his superiors or community members than for implementing the deep and strategic reform necessary to improve achievement in the school.

Another shallow response tied to beliefs that devalued the use of achievement testing as an accountability measure. In these cases, most typically made by leaders of schools in high socio-economic communities, leaders expressed frustration with the

concept of school success being tied to how students perform on achievement tests. Without dismissing the importance of a school's responsibility to address the social and emotional characteristics of its students, the statements of these leaders are coded as conceiving problems in narrow terms because they did not articulate a broader plan for dealing with underachievement.

As Principal 45 spoke of the performance of a failing subgroup, she conveyed that even the students do not see the importance of the state tests:

> I want to shift from the kids in terms of… really meaning anything to them, I think, they are fed up too, even though, a lot of publicity that is going on with this testing. Some districts may have parents pumped up. I think right here in this district, they are pretty content with what is going on educationally. So they are almost as aggravated about testing as the teachers are, because they are there, always testing...that is filtering down to the kids. Because we have heard kids say, "we do not need all of these, what do we need this for?" So that has had impact, not always good.

This principal immediately characterized the group as very small saying, *"…there are only 83 kids in that class. So, to me, that was part of the problem. Because it is a [small] number. Every poor student jacked up the percentage."* She goes on to describe her plan to deal with the underperformance, which did not include a detailed analysis of the reasons why some students fail, but rather a simple approach of speaking with teachers about how to work with the individual students. In the absence of an approach that described systemic reform, the statements reflect a narrow approach to problem solving.

Similarly, Principal 42, another principal presiding over a low performing school in an affluent community stated this when asked about the failing subgroups:

> You know, we can talk about differentiated assessment and then in April and May, given everybody the same piece of paper and say, "Okay, it doesn't matter how you learn or what works for you?" everybody is going

> to do at this way. So, this is really a real contradiction in what the state wants and what we know as practitioners.

Once again, when describing the reaction to a failing subgroup, this principal said that she and her teachers know their students better than the tests; therefore the state's attempt to hold school accountable is short sighted.

Summary. Principal's conceptions of accountability problems were coded as either rich and broad or narrow and shallow. The interpretation of complex problems are analyzed according to Leithwood and Steinbach's (1995) finding that expert problem solvers conceive problems in rich terms that include a clear understanding of the complexity of the problem, the understanding that time and effort is required to undertake a broad solution, and the ability to see the problem in relationship to the broader mission or goals of the organization. The principals identified in Table 8 conceive problems in contrasting fashion where some provide a rich description that appears to result in a more complex set of problem solving strategies, while others examine the problem in very simple and often dismissive terms.

Leader Response

Problem Framing and Goal Setting

Introduction. How leaders conceive problems when they are first presented was already reviewed noting that principals conceive problems along a continuum of two extremes: Broad and rich or shallow and narrow. 14 of the 24 principals conceived the problems of accountability at these extremes, 9 describing the problem in rich context and 5 speaking of the problem in its narrowest terms. This section evaluates how these leaders subsequently structure or frame the problem at the early stages of the problem solving processes. Figure 6 illustrates the portion of the conceptual framework under

review in this section. Problem framing evaluates how the leaders position solutions within the broader context of the organization. In other words, as they begin to process ideas for addressing the problems presented, do they generate solutions that deal with substantive issues that impact upon organizational reform or learning, or do they formulate responses that provide short term or short sighted solutions? Leithwood and Steinbach (1995), argue that leaders who conceived problems in rich or broad context presented solutions that were framed in the deeper context of organizational learning and reform.

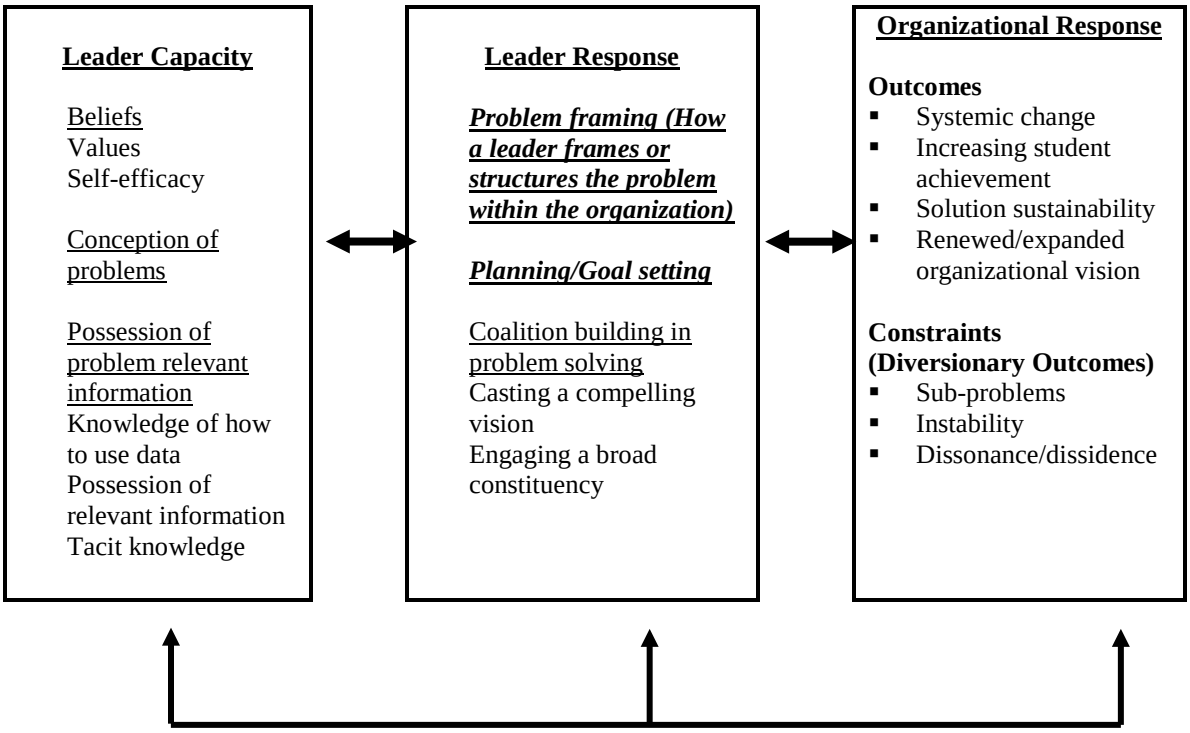

Figure 6. Response: problem framing and goal setting (section under review italicized).

Broad goal setting. According to Leithwood and Steinbach (1995), leaders who initially conceived complex problems with a broad understanding and appreciation for the impact upon the larger system more often framed responses that more thoroughly addressed the intricacies and depth of the problem. This study evaluated principal responses to the problems created by high stakes testing, which led some principals to articulate ideas for long-term sustainable solutions, while others described a superficial response articulating a quick solution designed to steer clear of trouble. This section evaluates the problem framing responses or goal setting of leaders identified as having conceived the problem in rich context in order to determine the extent to which they framed long term, influential solutions. In addition, an assessment of the difference in response by principals of high achieving schools compared with low achieving ones will also be examined.

Nine principals are already identified as conceiving problems in rich context as noted in Table 7. Each was subsequently evaluated for how a solution to the identified problem was framed in order to determine the level to which the principal understands the root causes of the problem and to assess the degree to which a clearly articulated and comprehensive plan was developed. In addition, coding of the interview data included evidence of the principal's awareness that the identified problem is connected to the broader goals of the organization. Each of the principals identified as having conceived the problem in rich context identified an understanding that the solution was complex and non-routine, but variation existed in their willingness to address the root causes of the problem. Principal 24, for example, understood that the underperformance of the students in language arts most likely stemmed from an inconsistent use of expectations

and language regarding how writing is assessed. He described the inconsistency of use of the language contained in the state scoring rubric, yet also identified his own unwillingness to address this problem:

> So I can do things to help the sixth grade teachers to address those fifth graders so that when they take the test at the end of sixth grade, things are better for them. Things like getting the sixth grade teacher to the same place that the seventh and eighth grade Language Arts teacher is. They're -- the first thing they do is to hand out that six-point writing rubric, you know, and the reading teacher is handing out the four-point writing rubric, and -- and it's the first page of their notebook, and, you know, everything that they do is, "Where does this fall in the state's writing rubric?" Well, I think if I held a gun to my sixth grade teacher's -- Language Arts teacher's head, she might not know what's on that rubric. You know -- and her whole thing is poetry and creative writing and, you know -- probably if I was a better principal, I could focus on getting her to where those other two teachers are. But I always resisted it, to tell you the truth, because, I -- you know -- the thing that I hate most about what's happening -- I mean it's one thing to deal with the data the state wants you to have, and stuff like that, but -- I mean, the last thing I want to do is become this person who is running a school where the only thing we're concerned about is NJASK test scores. And so -- you know, I could come down harder on her, and I could say, "Look, you just have to do -- you have to teach *this* way" -- but that goes against my -- my grain. So, uh -- real world problem -- it's gonna be talking with the superintendent, talking with the principal and -- of the other school -- "What can we do to unify the curriculum in the fifth grade?"

Principal 24 clearly understands that the problem of underperformance is linked to the systemic approach to teaching writing expectations, yet cannot bring himself to require his teachers to use common language in order to set common expectations. This principal serves in a high achieving, high socio-economic school community yet appears to resist compliance with state testing requirements in a systemic fashion.

By contrast, the other two principals of high achieving, high SES schools spoke of systemic initiatives to address the roots of the problem. Principal 20 described in detail

the process he and his school community went through in order to develop continuity of program and expectations for students:

> And, um, a litany of changes that haven't been well-documented, very loose curricula, um, that doesn't support teachers or delineate clear scope and sequence, um, for educators. And we took a lot of steps backwards rather than trying to improve that by restructuring administrative, um, roles and providing less support in the elementary school where we used to have the traditional model of, um, secondary department chairs in the high school, and then K-8 content area supervisors. Well the model changed to be 6-12 content supervisors, having one generalist curriculum leader for the elementary schools. And -- it took any focus off of curriculum. And, so where we needed to develop the foundation of skills and really tighten up a program, there wasn't a person that necessarily had the resource or experience to do it, but surely didn't have the time to do it.
>
> I certainly don't want to take sole responsibility, and there were initiatives in place before I arrived here. Uh -- but I don't think it was on center stage like it was after my first year. Uh, there certainly were staff that felt that way. Um -- first of all, the staff isn't diverse enough -- it doesn't reflect the community and the student population. Uh -- so we needed to identify more role models, more people to connect with kids, and we made efforts to do that along the way. But um -- the people that work here share those values we talked about at the beginning of the interview, and they wanted the right opportunities for kids. Uh, but I don't think they felt they had the power to be able to influence program and craft goals and objectives that were going to lead us in that direction.

These remarks identify a strategic approach to developing expectations for teachers and students. The principal articulates a purposeful approach to approaching the achievement gap problem in his school and appears to understand that a multi-faceted, multi-dimensional approach is necessary to address the issues at hand. In addition, unlike Principal 24, he assumes responsibility for the problem and the solution. Similarly, Principal 23 spoke about the need to evaluate performance across grade levels in order to set clear expectations for teachers and students. He described a comprehensive approach

to evaluating achievement data in order to develop strategic and purposeful initiatives for his school community.

Four principals of high performing, low SES schools were identified in Table 7 as conceiving problems in rich context. Principal 15 summarizes the attitude of all four principals when framing responses to the problems they described:

> I think the school has seen from all of this that to teach a child it's a group effort not just a history teacher working alone or a science teacher working alone or a math teacher working alone and just working on your discipline within the confines of your classroom but working jointly and working cooperatively through planning and projects and so forth to as a group help that child be successful. We've got far more of that that we've been able to pull off in the last 8 or 9 years then we ever had before.

His description of a systemic and strategic approach to under-performance is consistent with the other three principals identified in this category. Each, in varying terms, spoke of achievement problems as everyone's to deal with. In each, the leader assumes responsibility to model a commitment to the performance of every child where he internalizes for his school community the comprehensive work required to influence change.

In much greater detail, Principal 11 framed her response by examining the broader conditions facing her school and by creating an individualized approach for each student:

> …at that point we felt that the best way to try to address their skills to group them was to do this type of scheduling so we found that many of our students came ill-prepared and we found also that our best students did not come here. Our best students are sent to accelerated programs, enrichment programs, middle schools that have these enrichment programs. Unfortunately, I don't have that in my school. There is one specific school in this district that has the cream of the crop so of course, I'm losing 50 to 60 students in sixth grade every year. So of course, I'm going to get the kids that are in dire need of improvement. So how do we address that?

We schedule them into either a general remedial class, extend the day activities, tutoring, and now I have a second teacher in the classroom, an inclusion teacher to meet those special needs of population because now I don't have the cream of the crop, what do I get? I get the special needs population. So one-third of my population is special needs. One-third of my population is bilingual LEPs so they also have language-learning problems. You know, they're new to the country and so the third I do have are also remedial and a few in there that maybe are average students.

So we've tried to develop individual schedules for those students. With that, our teachers were given three reading specialists here that give coaching, intensive coaching to the teachers in reading and in writing and also from one year to the next, we decided how we can incorporate writing in other subject areas as well. I'm talking maybe about four or five years ago, okay? So now, not only is reading and writing in the language arts, but is also in social studies and science. So the district now within the last year and a half to two years has decided to integrate both language arts and social studies. Well, we had already tried to address that but now everybody is on the same page.

I'm not saying that it's perfect, you know, what they did. There has been some disagreement in terms of how to structure the language arts class. We're in 90-minute blocks so therefore, there are many activities within that 90-minute block and social studies and all those other subjects on 90-minute blocks so we try to make sure that things are similar in language, arts, and in social studies. Sometimes, it's a little difficult and our goal is also to incorporate those reading strategies in science and in math because we found in math, when we tested the students that their difficulties were in answering open-ended questions. They're really deficient in that. And what is open-ended? Reading comprehension.

Because for many years, the middle school curriculum was, I'm not going to say it's ignored, but it wasn't revised for many years for over five years and it's just within the last two years that it has been revised and we've been receiving a lot of professional development from the district whereas we were stand alone before we had to do a lot of the professional development in-house. So it's going to take a while to see that improvement. To see the teachers buy in to the strategies to differentiate instruction strategies that we're trying to implement within the curriculums, but hopefully, we can see this improvement with the test from year to year.

Evident from this lengthy quotation is a rich problem framing process. Principal 11 articulates a systemic approach to reform. She does not express helplessness in the face of serving a school population of low achieving students where the "cream" has been skimmed off to other schools, but rather articulates strategies for grouping, supporting students in creative ways, and developing faculty to be better equipped to serve the students in the school. This is strong evidence of rich problem framing and goals setting. It is evident that this principal has devoted time to planning, connecting solutions to the broader goals of the school community, and demonstrating a clear understanding of the problem. Principals 12 and 13 frame their responses in similar depth as they describe grouping strategies and the realization that they were responsible for the performance of all students. Consider this brief exchange about grouping with Principal 13:

> Principal 13: Heterogeneous yes. Put some of them in our higher groups too because I mean this kids sometimes these kids have been since kindergarten in the same group of kids and there just you know killed by association. They are not going to work because they don't. It's not expected of them.
>
> Interviewer: It's just that the message that they get.
>
> Principal 13: Exactly, so we put them in a higher level classes, higher level groups, and you know.
>
> Interviewer: How long have you been doing that?
>
> Principal 13: Two years now. Two years. So, it's slowly coming around. It's slowly…

Shifting grouping patterns in schools requires broad commitment from teachers and staff developers because it typically requires breaking old paradigms of performance expectations. By braking old patterns of homogenous grouping, Principal 13 framed a response in terms of providing access to rich programming for all students. This again

reflects a deeper understanding of the problems he faced and a commitment to long-term sustainable solutions.

By contrast, Principal 34 who leads a low performing, low SES school also identified teachers as a central ingredient to high performance, yet did not articulate a response that engaged him or members within his system on a systemic effort to reform. Instead he responded with a narrowly described wish for better qualified teachers:

> I think what I would like to see is I would like I mean here our teachers are rated as either unsatisfactory, basic, proficient or distinguished. I would like to see let's assume a hundred percent of my teachers are highly qualified. I would expect that the next level of achievement would be to be rated distinguished because once you are rated distinguished we don't have the concerns about student achievement.
>
> Kids assume responsibility for their learning because they have teachers who are able to guide them but I think initially when you post a question I taught him in another way and I was going to say how simple it is, if I get a person that I considered to be highly effective in terms of doing the majority of the things but with the proper support and some other opportunities for schooling and the like if we can set up an evaluation process that would allow us to determine in district that they are highly qualified that would help us because there are number of great candidates that I would like to bring here but they are not highly qualified but I know they would do extremely well.

Instead of seeking to develop teachers through the kind of systemic reform described by the other principals above, Principal 34 articulated a wish that he could simply hire better teachers. Understanding that good teaching matters is important, but the distinction noted here is that this principal did not articulate a comprehensive plan to deal with the underperformance of his current faculty. Although he understood the problems of underperformance in broad terms, he did not frame a response with a long-term comprehensive plan and neither did he structure goals that attached to the root causes of the underperformance of students.

Similarly, Principal 46, a leader in a low performing, high SES school, described the complexities involved in the underachievement of minority students yet could not identify a systemic approach to reform. The problem was perceived in broad, complex terms yet the response was framed narrowly in a context that did not adequately engage the entire school community in reform:

> Changing the culture of the building with 98% of our kids being white. Changing the culture of the building will also mean I think changing the culture of the community at large and I might get lost in trying to solve the problem like that, because these kids are common to us with pre-conceived notions. And I think at the middle school level. Middle school kids, clamp up, excuse me, clamp on until the differences in each other at this point. Because they are trying to figure their way to their world and they will notice differences. They will notice all sorts of things that you as an adult will never notice anymore. But that is a complex issue, because it will involve the community. And that is tough.
>
> The PTA would be a place that I would go, because I hold the PTA near and dear to me at all times. My relationship with the PTA is not only about money. It is about support for the programs that we do. If I come to the PTA with a problem about, a sub-group of students (African American) in my school. I think they would be a resource for me.

This principal identified the problem in broad terms noting that the performance of minority students will require a cultural change in his school, yet he did not frame his response in a comprehensive manner, but rather suggested involving the PTA in developing a solution. When probed, he did not articulate a substantive or comprehensive plan in which his school must engage. So, this principal appears to have understood the breadth of the problem to be complex and even described it in rich terms, yet when framing solutions did not articulate a systemic approach to its resolution.

In setting goals, the expert problem solver conveys an understanding of the complexity of the problem by articulating goals and strategies that convey depth and a long term view of the problem's resolution (Leithwood and Steinbach, 1995). As already

noted, it appears that most principals who initially identified the problem in broad terms also conveyed a resolution strategy or vision in similarly broad terms. This portion of the discussion more specifically examines the goal setting process. Table 8 summarizes the leaders who conceived problems in rich terms and the leaders who described a broad set of goals for the problem's resolution. The table does not imply correlation, but based upon the qualitative analysis, suggests that most often leaders who initially understood the problem in broad, comprehensive terms also responded with more in-depth goals and a compelling vision.

Table 8. Conception of problems, planning and goal setting, and coalition building.

	High Socio-economic status		Low Socio-economic status	
	High Achievement	Low Achievement	High Achievement	Low Achievement
Describes problem in broad context	3 (20, 23, 24)	1 (46)	4 (11, 12, 13, 15)	1 (34)
Describes problem in narrow context	0	4 (41, 42, 44, 45)	0	1 (32)
Articulates broad goals for resolution	4 (20, 21, 23, 24)	0	4 (10, 11, 12, 15)	0
Articulates narrow goals for resolution	0	5 (40, 41, 42, 44, 45)	0	1 (32)
Engaged meaningful/deep coalitions	5 (20, 21, 22, 23, 25)	1 (46)	5 (10, 11, 12, 14, 15)	0
Engaged shallow coalitions	1 (24)	6 (40, 41, 42, 43, 44, 47)	1 (13)	2 (30, 31)

In order for a principal to be coded as having set goals in broad terms, the depth of problem analysis and proposed solution must reflect a complex understanding of the problem. The principal must have first understood the problem to be complex and non-routine, and then proposed goals and strategies that reached beyond supporting achievement through test preparation materials or shifts in teaching assignments, but rather through comprehensive professional development, curricular revision, and/or more significant faculty and community engagement in the proposed solution. In addition, principals coded as having established broad goals also appeared to understand the problem as carrying significance and meaning toward genuine achievement, which stood in contrast to those who discounted using state test data as reflective of the school or program's efficacy.

Characteristic of planning and goal setting that spans beyond a short term solution is Principal 11's description of her view of the underperformance of her students:

> Well, I guess the high schools could complain about us. Okay, it trickles down saying that, "Oh, you're not preparing the student. They come here and they're lacking in skills, we had to put them in remedial class, blah, blah." And then we go down to the elementary schools or feeder schools and say the same thing. It's an opportunity I think to collaborate with those feeder schools. This year, we're going to try to and I've reached out to those principals to show them that data, to show them where our students are lacking, and I'm going to offer the services of my reading specialist, along with our sixth grade teachers or language arts teachers in the upper grades to see if we, not to say, "We got you, you did it wrong. The kids are not coming prepared," but more of, "Let's meet together and see how we can solve the problem. Maybe there is something in your fifth grade curriculum and your fourth grade curriculum that's not being addressed. Maybe the emphasis isn't on writing or different types of reading strategies." So that's what I hope to see, you know, that we can work together to see if they can address these problems there to get to have more time with them and hopefully, we can just have our students just progress from that point, you know, have them come here at least at a fifth grade reading level rather than beginning reading or second and third grade reading level and because that's what has been happening. They're

> not up in reading level, not even close to it, not even two years you know at this point where we get them. So I see it as an opportunity to improve teaching strategies and also student growth.

In discussing the performance of her students, this principal realizes that a solution is beyond what she can accomplish in her school setting. She understands that achievement is multi-faceted and is willing to engage the principals from the feeder schools in a conversation about reforming curriculum and practice to better meet the needs of the students. Embedded in the statement is also the realization that she may need to adjust practice to better meet the demands of the high school once her students leave her care. The forming of coalitions is discussed later, but the implication in this dialogue is that the coalition for this leader must include leaders and teachers from other schools if the problem of underperformance is to be adequately addressed. Principal 11 leads a school in a low socio economic setting yet her school performs at levels higher than her peers.

Similarly, as Principal 15 discusses the success his school has realized in overcoming the poor performance of the special education subgroup, he first describes the breadth of individuals involved in the process and then expresses satisfaction that the "solution" he generated should sustain even after his retirement:

> Principal 15: So that now I've got people working comfortably within the area of what they are comfortable working with, they are buying in to what I wanted them to try because we are starting to see some success with it, and I think the kids themselves are [success with it]. But it's involving the staff, it's involving other colleagues in the decision, it's trying to use data to convince them that at least this is worth trying and then ultimately its having some success with it that hopefully will feed further success.
>
> Interviewer: As a result of going through this process, what you want to see change or what are you hoping to see change?
>
> Principal 15: Well one other thing was to make AYP two years of growth. I don't particularly want to see as go back into that cycle but who knows right now. I am sort of looking at myself is being certainly toward the end

> of my career, I am right now looking at probable retirement at the end of the school year. And I feel right now that I can go into retirement with a sense of feeling that at least well I did the job and took the pay for it, I gave it a hundred percent. And certainly coming out from under that campaign is a big personal achievement that I am proud of for this building.
>
> Interviewer: And a final question, what do you hope that the school learns as a result of going through this problem solving process involving your special education students?
>
> Principal 15: I think the school has seen from all of this that to teach a child it's a group effort, not just a history teacher working alone or a science teacher working alone or a math teacher working alone, and just working on your discipline within the confines of your classroom but working jointly and working cooperatively through planning and projects and so forth, [in order] to as a group help that child be successful. We've got far more of that then we've been able to pull off in the last 8 or 9 years then we ever had before.

This lengthy exchange captures the long and involved process that Principal 15 articulated as he attempted to engage a broad constituency in addressing the underperformance of his special education population. Based upon the regression analysis conducted for this study, his special education population made better strides than peers in similarly grouped schools. In addressing the problem, he leaned upon an array of teachers, not only the teachers who were directly involved with the tested subject. As already noted, he conceived the problem in broad terms, and then set and carried out broad goals for its resolution.

Principals 20, a leader of a school with high SES and high achievement, articulated a view of the problem in slightly different terms. However, he is also coded as seeing the problem in broad terms. When asked about the problems faced, this principal adopted a view of race and access that suggested he understood some of the common barriers facing students of color in schools. In discussing an approach to the

problem, he conveyed a response that offered a comprehensive look at the backgrounds and access of the students:

> Yes. Yes, and, um -- and then beginning to -- starting to notice that, and then going and looking further into student records on, you know, a different page within your software -- and seeing the codes correlating with race. And then, on those first days of school, walking through the halls and seeing classes that were almost all white, and classes that were all black. And uh -- and then just beginning to live it, and recognizing that we weren't providing opportunity for children – that we're only reinforcing, um, some of the negative elements that are tied with, you know, poverty and the like.
>
> And so, it had to become an internal effort. And we had to look to make the difference in the school, and that was focused on providing opportunities for kids to get in other areas of school to make this -- you know, increase their motivation, for them to build relationships with teachers, and knowing that a lot of research shows us that, um, a lot of impoverished students and minority students don't come to school with the same intrinsic motivation that their white or more affluent counterparts may, and that their motivation -- rather than being for themselves or for what their family values are -- that they perform to satisfy the teacher to maintain a good relationship with the teacher.

Exploring the nation's achievement gap and the influence of income and race is not the focus of this study as it has a volume of literature all its own, however, it is clear from Principal 20's statement that he adopted a proactive approach to addressing the performance problems faced by his students. He did not cast external blame nor did he attempt to simplify a solution, but rather described conditions that required his entire faculty to engage in generating solutions. Contrasted to other leaders who externalized or oversimplified blame for how students performed, this leader articulated a broad understanding of the problem and also described broad goals for its resolution.

These leaders are illustrative of principals who described broad goals for how a problem was to be addressed because it was clear from their statements that a thoughtful and deliberate approach was planned to address the problems of performance. In each

case, the constituency involved in addressing the problem spanned beyond dealing with an individual teacher or even an individual school, and instead expanded to a comprehensive reform effort that involved shifting the behavior and attitudes of an array of school personnel. These responses indicate an understanding of the complexity of the problems faced because they do not oversimplify either the problem or the proposed solution. By contrast, the next few paragraphs describe leaders who articulated a narrow set of goals and perspective on addressing the problems.

Narrow response and goal setting. Table 8 reveals five principals who characterized problems of accountability in narrow, limiting terms. These leaders did not consider systemic solutions when responding to a given problem, but rather quickly responded with ideas or solutions that offer a superficial or short term solution to a complex problem. Therefore they are identified as conceiving the problems narrowly or without consideration of the broader impact on the organization. The ideas generated lack a detailed understanding of the complexity of the non-routine problem presented. The leaders noted previously frame responses and set goals that reveal a deep understanding of complexity of the problem where responses include a wide array of constituents and strategy, while others frame their response in simple terms that belie the depth of effort required to influence reform. The following leaders approach the problems with superficial ideas, solutions, and goals.

Principal 32 works in a low performing, low SES school in an urban environment. When questioned about the poor performance of her students on standardized testing, she characterized the problems in simple and narrow terms failing to acknowledge the complexity of the achievement gap or of the problems of underperformance. When asked

to frame a response to the achievement problems in her school she spoke of inadequate time for administrators to meet:

> My co-principals maybe in the Middle Schools when we get together, we do, we try, if they would let us get together, you know. Like when we were meeting, like we tried the last time, we were able to talk to each other. But you know what, education is a quite thing to completely different than corporate or company. You know, I tell teachers, when things are going a little smoothly, and everything looks like it's fine, nothing exciting is happening. You need people to be talking about radical changes for excitement to happen so it seems like sometimes, you know, you have principals meetings, all those meetings, they are there, but they don't let us talk. We never get an opportunity to actually talk together, we have to be on the phone, you know how that is, that's like a snap shot 10 minutes if you are lucky. Like we were at a meeting, and we are at the hall talking, you know about frustrations and things of this kind, so that, even those few minutes is a good enough of a network that helps a lot.

Identifying the support of a network of other leaders can be an important component to one's work; however, this is the extent to which this principal articulated a "solution" to the problems her school faced. She went on to say, "NCLB regs never bother me. They never bother me, I never understood why it's such an issue. State testing has been here as long as I been a teacher in the district. You know, they changed name…HSPA, blah, blah, so whatever results of the NCLB or not, the state is using those tests to evaluate [us]. So what do we talk about NCLB for?" Her response reveals both a frustration with the measures used to judge her school's performance, yet fails to articulate a comprehensive vision of what she is after as a school leader. She does not respond to the problems identified by the problems of subgroups, but rather deflects responsibility and frames her primary response as longing for more time to meet with colleagues.

Principal 32 discounted the importance of analyzing the root causes of why certain subgroups did not perform well on the literacy section of the state test. Instead of

responding with a comprehensive plan, she spoke of creating conditions where teachers would be happiest and appears to deal with the superficial aspects of instructional leadership:

> No, I don't focus on that (underperforming subgroups associated with making Adequate Yearly Progress). Because when you focus on that, you're not focusing on what's really important. If we are rigorous in instructing our students, we make the call. Now, literacy, why didn't that happen? Frankly maybe it should have, but last summer I looked at everything about that. I moved some teachers to different grade levels, literacy teachers, and I found that I could see by them teaching [at different levels], it made a big difference. They're happier on the grade level they are at now. And they're getting along more collegially in the small learning community they are in right now, that makes all the difference in the world, all the difference in the world.

This leader went on to discuss the variety of programs offered in literacy in her school, but never articulated an analysis of achievement data or a detailed report on the performance of individual teachers. It appeared that her leadership and planning objectives were mostly tied into wishing her teachers to be happy and engaged, and did not address strategies for improving instruction or addressing underperformance. By beginning with the definitive statement "No I don't focus on that" when asked about the underperformance of subgroups, she adopted a stance that suggested she knows best and will not be open to considering the test data as a valid indication of how or why students did not achieve. These statements reflect a narrow approach to problem solving and planning.

Four principals from low achieving, high SES schools also reflected on the problems they faced in simple or narrow terms. All four of these leaders framed responses in simple terms where solutions were either focused on a scapegoat such as an ineffective teacher or fatigue that the school and community were tired of looking at test

scores. Principal 45 spoke of pressure from the superintendent, which resulted in an action plan for a single teacher:

> So, the superintendent sees test scores, in the past, the superintendent had seen the test scores and they are what they are, we are going to do this…but these were really bad, and so, he directly correlated it to teachers with the test scores. Because you know as well as I do, they will break them up according to [clusters], and the other problem was, the year before, they were at the 97th percentile, and they dropped to less than half of that. So, I have to be the deliverer of a correction action plan to staff member who has been in this business since he got out of college and is now ready for retirement, and do it in a manner that I would hope that he [will] understand. [I did this so] that we can do a correction action plan. And try to see what we are going to do to make this year better.

Due to the superintendent's requirement to develop a corrective action plan for a year of poor performance (despite the narrative, a pattern of underperformance is prevalent in this school as indicated by the regression analysis used to identify the principals for the study), this principal focused on one teacher with known poor results, rather than develop a comprehensive set of reforms for her entire school community. The narrowness of how the solution was framed is consistent with the narrow terms with which this leader saw the problem in the first place. In this case, how the principal conceived the problem and how she framed a response were consistently narrow.

After conceiving the problem of poor performance by Special Education students in narrow terms, Principal 42 was unable to articulate a problem solving approach: "It would be different because I think knowing what our goals are in special education, we have a very inclusive environment, you know, we've been involved in that long enough to see some trends and to make, you know, I don't know if this is -- this is something that we're going to encounter all the time, whether this was just an anomaly. I just don't know what at this point. So, I -- I don't know that I can answer that." Both the problem

and the solution were described in terms that did not account for the complexity underneath. In addition, there is a sense of powerlessness that was already noted. Again, this leader conceived and framed the problem in simplistic terms. Similarly, Principal 44 spoke simply of wishing to get off of the "list" (the list that identified his school as "In Need of Improvement," and Principal 41 simply identified factors outside of his control:

> Uh, one might be a little more sensitive in nature, you know, when you're talking about race and things like that, then Special Education students, but I think it's the hardest because, um, you're talking about test scores, and you're talking about a lot of factors that you can't control as principal -- whether it be, with Special Education learning needs, um, but also, you know, whether it be ethnic related, or culture related -- I think there's a lot of factors outside of your control.

Principal 41 accurately identifies factors outside of the direct influence of the school, but does not evaluate measures that can be taken to create conditions inside the school that might overcome these obstacles. Others with similar problems are able to articulate meaningful solutions, yet this principal was unable to see how his leadership or even his school community might exert positive influence. This narrow framing of a response to complex problems is consistent with the narrow terms with which the problem was described in the first place.

Similarly, five principals who lead schools in high socio economic areas yet underperform compared to similar peers, described their planning procedures in narrow terms. Principal 42 adopted an approach that appears to be a noble attempt to engage teachers in reform, yet did not describe a comprehensive basis for her approach:

> For instance, we talk about differentiated instruction and differentiated assessment. We're…we're involved right now in a whole differentiated assessment piece with our teachers. We pick a topic, I said, I pick a topic each year that we're going to focus on. We…I get them a book, we run book discussion groups, where we, you know, we dialog and we talk about how we feel about certain things. And right now we are talking about

> differentiated assessment and grading, and certainly differentiated instruction is something that, you know, we want our teachers to buy into. How do we do that in a classroom, when we have standard instruments?

This response gives the appearance of tying into sound instructional practices, yet the principal sis not articulate a basis whereby decisions are made regarding what approach to adopt. She described study groups where teachers are looking into instructional strategies, yet did not articulate a plan to address the performance of specific students. Instead, she went the other direction in her response when she noted the challenges of attempting to have teachers differentiate instruction when the test instruments are all the same. By adopting this approach she is communicating a philosophical disagreement with standardized testing, yet is not offering an alternative that provides a stronger basis for decision making. Each of the principals whose comments about planning were coded as shallow adopted a problem solving action plan that was primarily centered on their own instincts or leadership objectives, but did not address the achievement levels of students in a personal and significant manner. Rather than basing instructional decisions or professional development upon comprehensive achievement data, these leaders appeared to discount the achievement data in favor of their own interpretation or action plan. Therefore these leaders are coded as having an underdeveloped or narrow plan of action.

Summary. Nine principals described the problems they faced in rich, broad terms noting the complexity of the problems faced. Of these nine leaders, seven also framed their response in rich terms by describing comprehensive plans for addressing the issues they face. Two of the leaders, principals of low performing schools, followed their broad description of problems by framing responses in narrow terms provoking additional

inquiry regarding the research question about how leaders conceive problems and actual problem solving. In addition, the five leaders who conceived the problems they faced in narrow and simple terms also framed responses in ways that did not address the complexity of the problems faced. Overall, these findings express support for the notion that how principals conceive problems directly influences but does not strictly determine the complexity and comprehensive manner in which they respond.

Planning and the engagement of others

As leaders face problems, expert problem solvers develop comprehensive and thorough plans that reflect the complexity of the problem. There tends to be a continuum of responses to the problems created by high stakes testing that runs from shallow, short term or quick fixes to comprehensive reform that engages the whole school community in a meaningful fashion (Knapp, Copland, & Talbert, 2003). Thorough planning involves comprehensive goal setting, which includes the development of a clear and compelling vision for the desired results, and the development of coalitions that are empowered to engage in the work. Since leaders have already been identified as describing problems in either rich or narrow terms, each is re-evaluated in this section for how they involve others in the solution. Effective planning involves establishing clear and compelling goals and a vision for a systematic result, developing effective teams or coalitions specifically formed to address the problem, and distributing responsibility for carrying out the "solution" or reform across a broad constituency.

Nearly all of the principals (22 out of 24 interviewed) involved others in their problem solving processes. Engaging a group of people in a meaningful fashion involves

setting a clear and compelling vision for implementing reform and engaging a broad constituency in meaningful work. Although many of the leaders participated with others to address the problem they faced, coding tied to this attribute looked for meaning and significance in the process of distributing leadership. In other words, in order to be coded as having formed effective coalitions, the principal must have included evidence that others would assist with the assessment of the problem by evaluating data or research in order to collaborate on a plan or resolution. Where principals simply identified others that they would "include" in the process without sharing leadership or voice, the coding was identified as shallow. By contrast, where leaders effectively distributed responsibility as they described the problem in rich terms, leaders were coded as having formed effective coalitions. Engaging others is part of how leaders response to problems. Noted in Figure 7 is the portion of the conceptual framework that is evaluated below.

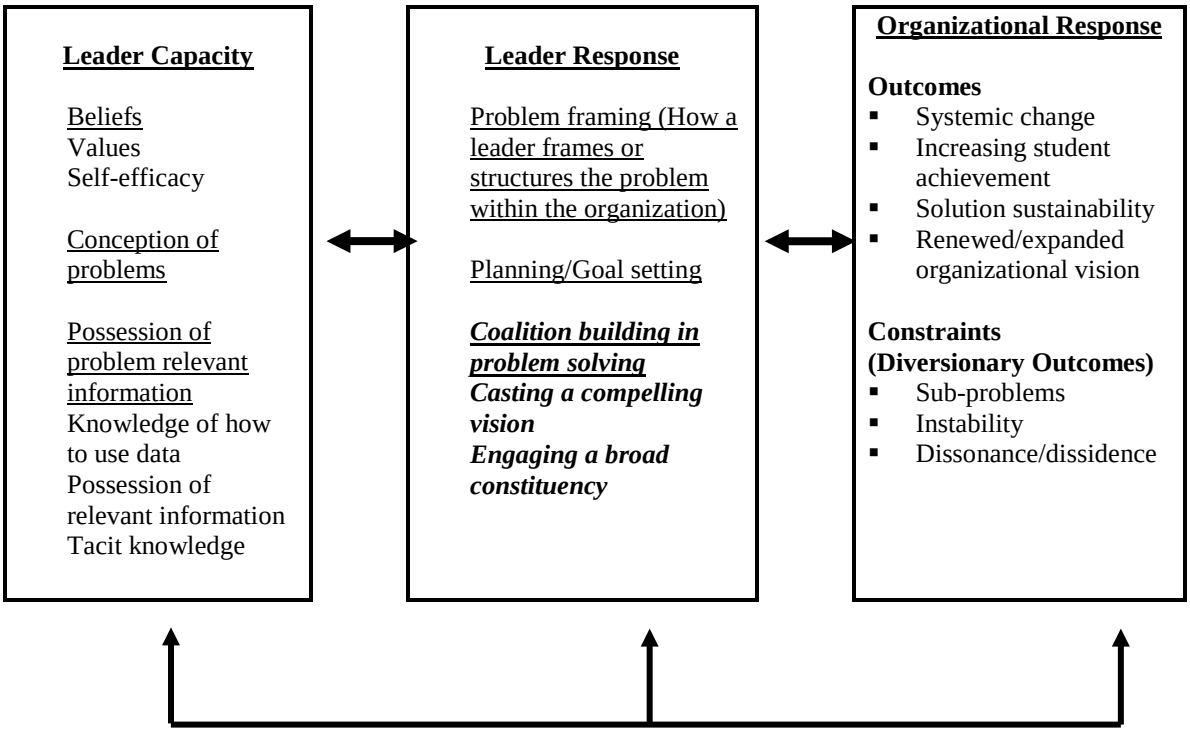

Figure 7. Engagement of others: broad or narrow constituency (section under review italicized).

Shallow engagement.

Principals 32 and 42 noted above worked with others to address the problem they faced, but did so at a superficial level where teachers were not empowered to act or think. In these cases teachers were not empowered as decision makers or informal leaders, but were rather treated as passive members of the problem solving team. In some cases, a problem was not uniquely identified because the principal did not perceive the situation to warrant additional attention. When asked about involving others in the problem solving process, Principal 30 captures this notion of superficiality:

> Well, they play all those roles. They play all those roles. They are advisory to some degree, and they're decision makers. We asked them to

> be researchers to indicate their knowledge of the current [literature] that's out there. One of the things that I do is that I share with them the current [literature], the current positions that educators have taken things that are written so far. But I asked them to read them, digest them, and incorporate them. I sent out mostly principal memos, relative to testing, relative to classroom management, and relative to lesson planning, homework, and social work. We have a dialogue regarding decisions.

Evident from this exchange, this principal simply shares information forward with his faculty but does not treat them as integral to generating solutions. When asked about including others, he includes them on his agenda and his perceptions but does not articulate including them in a broader, richer problem solving process. There is no evidence that he distributes responsibility for the problems of underperformance, but rather involves them in intellectual exercises that appear to be disconnected from the day-to-day problems in the classroom. By sending articles and memos, the leader perceives himself to be distributing leadership, but is doing little more than if he had not shared the information forward because he did not articulate substantive follow-up or a engagement in how the research tied to the underperformance of a particular subgroup.

Similar to this are Principals 43 and 44 illustrate this coding in slightly different terms. Each forms committees to investigate and discuss the problems of performance yet neither identified substantive work attached to these committees. Principal 43 spoke of forming a "bunch of committees" yet did not articulate how the work of these committees would influence his school's growth. He did not discuss the kind of information the committee would seek or the way that an in-depth analysis would help reform instructional practice. It appears that the formation of the committees or the distribution of leadership was a function of what he thought he should do rather than a strategic and well developed plan of action.

Principal 43

> Uh – you know, nobody really wanted to care about the test scores 'cause there was an attitude of, "Well, we're gonna blame this, we're gonna blame that, we're gonna blame this." So what I really did was I developed a bunch of committees and opened it up to anybody that wanted to be a part of it. And so, we had different committees going at one time. We had a – at the time it was only the GEPA – we had the GEPA Improvement Committee, and we talked about how we're going to make it work, and what strategies we could use to make it better. Um, we had a, um the two moving committees. You know, and any time there was an issue, I mean – I don't like to make decisions by committee, and I never did…

Similarly, Principal 44 describes his mechanism for dealing with the complicated matter he faces tied to achievement when he articulated the following:

Principal 44

> But what I do is I surround myself with dedicated, loyal, devoted teachers -- and staff, I should say -- that we meet once a month, and we go through the criteria and we develop plans. We call -- that's my Building Level Management Team.
>
> We also have a Board of Education member that is a liaison -- former PTA president of mine, member of the community -- that is also invited to join in on some of these meetings. Um, as well as the PTA president. I -- every month when I have a PTA meeting I share with them what we've discussed at Building Level. I invite them to join us. Um, I -- how many of them show? Zero! But the invite is there -- some of them will call me.

At first glance, this quote seems to suggest a more in-depth formation of a team or coalition, yet when pressed further about the work in which the Building Level Management Team engaged, there was no evidence that transformative interaction with data or problems was created. Whether this is due to the reality that the building management team is too disconnected from the work in the classroom (members of the BLMT were representative but there did not appear to be a connection back to teach

practice) or because the principal did not have a thorough understanding about how to engage his teachers in substantive discussion of reform is difficult to say and is a limitation of this finding. However, this coding is representative of several of the other leaders who were coded as having formed shallow teams or coalitions.

Meaningful or deep engagement.

In contrast to the leaders noted above as having described forming teams in shallow terms, there were 12 principals whose conceptualization of teams was more thorough causing them to be described as having formed effective teams. Ten of these leaders are from schools where achievement results are higher than their peers in similar schools. In a long exchange about the transformation at his school, Principal 20 described a process whereby his teacher came to accept responsibility for the performance of students. The turning point for his school occurred as he continually engaged them in substantive discussion about the problems the school faced where they gradually accepted responsibility for how students performed. The following excerpt is in the middle of a long exchange about how he engaged his faculty in the reform process:

> So by opening up the lines of communication and having those difficult conversations, we created the opportunity for people to be able to embrace that type of change, and to take ownership of the change. So it didn't go just from, "Yea, we'd *like* to see opportunities like this for kids." It went from people saying, "Well, I want to *lead* an opportunity like this for children."

This quote shows the depth of effort put into using teams to implement reform. There was a sustained effort on the part of the leader to help teachers move from deflecting responsibility to participating in the process of helping students achieve at higher levels. This is representative of the principals who were coded as having formed effective coalitions.

Principal 15, who leads a high performing school in a low socio economic district conveyed a similar response:

> The first year we did it whining complaining the second year we did less of it, the third year I haven't heard any [whining] in relation to that and the test scores are starting to improve. I let them pick what the one that had a natural inclination toward math work with the math, I like the one I had to replace one and I hired one specifically with a strong background in language arts. So that now I've got people working comfortably within the area of what they are comfortable working. They are buying in to what I wanted them to try because we are starting to see some success with it…But it's involving the staff its involving other colleagues in the decision it's trying to use data to convince them that at least this is worth trying and then ultimately it's having some success with it that hopefully will feed further success.

Again, characteristic of the leaders who were coded as having formed effective coalitions, this leader described a multi-year process of engaging teachers in owning the necessary reform. He spoke of using data to convince and then using successes to build upon the reform. This is consistent with the process whereby faculty is engaged in meaningful reform and with how leadership and responsibility is effectively distributed. This kind of process stands in contrast to simply forming committees or teams with no clear connection to the students that are struggling to learn.

Summary.

Forming meaningful coalitions to engage in the work of school reform is a well documented aspect of effective schools. For this study, it is the belief and action of the leader that is investigated as an attribute in the problem solving process. Do leaders describe rich and deep coalitions or do they default to the insignificant involvement of others? It appears that leaders who engage others in a meaningful fashion more often represent schools where achievement is stronger than expected. By contrast, leaders who

describe shallow and insignificant coalitions appear more likely to represent underperforming schools.

Summary of Findings

This study finds that a leader's belief structure and response to problems falls along a continuum of identifiable characteristics that align with the ability to create conditions that promote higher than expected achievement. By coding each attribute blindly (without knowledge of predicted achievement), the emergence of the pure types at each end of the performance continuum is credibly established (see Table 1). At one end, inventive leaders who expect broad outcomes of their work and engage others in a meaningful fashion lead schools where achievement is stronger than expected, whereas leaders at the other end of this continuum are leading underachieving schools. These leaders appear helpless in the face of complex problems and do not expect their work to carry significant influence. Neither do they engage others in a meaningful fashion.

CHAPTER V

DISCUSSION

Initial identification of the principals in this project relied upon on identifying "expert" leaders using a regression analysis that evaluated predicted achievement as a surrogate for expertise. Principals were identified using a model that looked at length of service to a particular school (at least two years was prerequisite), socio economic status, and predicted achievement. Principals were selected in four quadrants, which are used in this discussion as surrogates to identify expert and typical school leaders. Principals in the high achieving quadrants are noted as expert leaders, whereas principals in the low achieving quadrants are more typical (see Table 9). The expertise of the leaders is important for this portion of discussion because a review of the predicted pure types in relation expertise reveals that leader's capacity toward and response to complex problems differs, which provides a novel finding within the body of literature on cognitive problem solving.

Important to note for the purpose of the discussion is that the identification of principals as expert or typical was kept hidden when coding the interview transcripts for the various attributes identified in the conceptual framework of the study. Because specific patterns and attributes emerged, resulting was an identification of pure types along a continuum, which are now cross referenced with expertise in this portion of the analysis. Along with identifying expertise, Table 9 presents a summary of the principals on the continuum of pure types (a score of 4 is a pure type demonstrating the positive

characteristics of inventive principals who initially conceptualize problems in broad context, establish broad goals, and engage a deep coalition of others to address the problem, whereas a score of -4 is the pure type at the other end of the continuum revealing a helpless leader who sees the problem narrowly, sets minimal or superficial goals for its resolution, and fails to engage a meaningful constituency in the problem's resolution.

Table 9. Expert v. typical leaders (Continuum score from 4 to -4 in (X)).

Achievement	Socio-Economic Status: Low	Socio-Economic Status: High
Low	Typical leaders 30 (-2), 32 (-3), 33 (0), 34 (1) Average score: -1	Typical leaders 40 (-2), **41 (-4), 42 (-4),** 43 (-2), 44 (-3), 45 (-3), 46 (0), 47 (-1) Average score: -2.375
High	Expert leaders 10 (3), **11 (4), 12 (4),** 13 (1), 14 (1), 15 (3) Average score: 2.67	Expert leaders **20 (4),** 21 (2), 22 (1), 23 (3), 24 (2), 25 (1) Average score: 2.167

Leithwood and Steinbach (1995) examined the responses of experts and typical leaders when dealing with non-routine or unstructured problems. Because unstructured problems push leaders outside of their area of comfort because solutions often required

innovation and change, significant differences in their perceptions and responses were noted. They found that expert leaders weighed consequences on the academic growth of individual and groups of students whereas typical leaders were primarily concerned about consequences for themselves. Experts also perceived themselves as able to handle the problems and worked to gather as much relevant information as possible before proceeding whereas typical leaders were often frightened or intimidated by the problems leading to irrelevant issues clouding decision making. Finally, as expert principals worked toward solutions, Leithwood and Steinbach found that they adhered to a principled vision and developed a rationale that permitted faculty buy-in to the solutions proposed. Less expert, more typical principals on the other hand were primarily concerned that constituents were happy and therefore did not as readily adhere to personal values, principles or a strong vision. These findings align with the findings in this study as the analysis shows that expert leaders are more often predisposed to adopting an inventive mindset when approaching complex problems and this mindset appears to connect to the development of a broad set of outcomes and the formation of deep and meaningful coalitions. More typical leaders, however, tend to express feelings of helplessness in the face of complex problems which connects to a superficial set of outcomes and the formation of shallow, insignificant coalitions. A review of the findings suggests alignment between the mental processes of "expert" leaders and the use of effective problem solving strategies.

Leader capacity and problem framing.

Using Leithwood and Jantzi's (1999b) description of the transformational leader, this study posits that leaders vary in their capacity to address complex problems in part

because of the predispositions tied to their beliefs and values. The transformational leader operates with a compelling focus on increasing the organization's capacity to innovate, and this mindset is found in leaders who can clearly describe a compelling vision that engages a broad constituency (Hallinger & Heck, 1998). Building the conceptual framework upon this notion, interview transcripts were evaluated first based upon how a leader initially conceived the problem, and then how the leader's belief and values influenced a response. It is during this analysis that the range of responses such as inventiveness v. helplessness, broad v. narrow understanding of the problem, broad v. narrow goal setting, and rich v. shallow coalitions emerged as significant characteristics. The discussion that follows examines these traits in context of expertise and the leader's work in order to describe a mindset and predisposition that may be useful toward identifying leaders who may be most influential in implementing reform.

Beliefs. The group of leaders that held the highest demonstrated tendency to be innovative or inventive when faced with the complex problems associated with accountability was the "experts" leading in low socio-economic, high achieving schools. Four of the six leaders in the high achieving, low SES quadrant made statements that showed their willingness or predisposition to innovate when faced with the difficult problems of underperforming students (see Table 10). The next highest group of innovators was the principals leading high achieving schools in a high SES context. Although only two of six demonstrated inventiveness as a characteristic of this group of "experts," the number stands in contrast to only one leader of underperforming schools demonstrated a tendency toward inventiveness. In other words, 6 of 12 "expert" leaders made statements that suggested an inventive mindset while only 1 of 12 of the more

"typical" leaders demonstrated inventiveness as part of his/her belief structure. Based upon this finding, it appears that the capacity to innovate or invent solutions is a characteristic of an expert problem solver. Although causation is difficult to assess, the notion that leaders possessing the most inventive mindset are the leaders of schools where achievement is higher than predicted is a finding that has implications for practice.

Table 10. Leaders demonstrating inventiveness as a mindset.

		Socio-Economic Status: Low	Socio-Economic Status: High
Achievement	Low	Typical leaders 1 of 4	Typical leaders 0 of 8
	High	Expert leaders 4 of 6	Expert leaders 2 of 6

At the other end of the same continuum, leaders making statements that suggested they felt helpless in the face of complex problems were evaluated. These statements were typically reflections that placed external blame for underperforming students on the community, previous school experiences, or the student's family. When faced with complex problems, these leaders externalized blame and made statements that revealed their own feelings of helplessness to act. In contrast to leaders who invented new systems and strategies, these leaders were not able to articulate solutions or envision a

different future for the underperforming students. Ten of the twenty four leaders in the study made statements that revealed a predisposition toward helplessness or resignation in the face of complex problems. Of these ten, all but one are identified as "typical" leaders leading underperforming schools (see Table 11). All but one of the leaders serving in high SES schools described feelings of helplessness and resignation in the face of questions about the underperformance of subgroups of students. Whether the leader's context contributes to the defeatist mindset of the leader is difficult to ascertain. In other words, there remains a question similar to the chicken and the egg regarding whether the leader's mindset was already in place and contributed to the underperformance of the school. Causation is not evaluated in this study, but it is clear that the preponderance of leaders possessing a helpless or resigned predisposition are leaders of underperforming schools.

Table 11. Leaders demonstrating helplessness or resignation in the face of complex problems.

		Socio-Economic Status	
		Low	High
Achievement	Low	Typical leaders 2 of 4	Typical leaders 7 of 8
	High	Expert leaders 1 of 6	Expert leaders 0 of 6

The findings on inventiveness and helplessness are significant because they demonstrate a contrast among leaders who face complex problems. Expert leaders are more likely to adopt an inventive mindset within their school community, suggesting that they carry significant influence in their context, whereas more typical leaders are more likely to feel helpless and that they have little influence over outcomes.

Optimism was also evaluated as a belief or mindset of the leaders yet there were not significant differences between expert and typical leaders regarding incidents of optimism. Of the twenty four leaders, eight made statements that revealed an optimistic outlook regarding the problems they faced. Three of these leaders, identified as "typical" leaders of high SES, low achieving schools, also made statements of feeling helpless or resigned in the face of complex problems. Three "expert" leaders appear to be optimistic as well as inventive, but the data in this study do not suggest that optimism has a connection to whether a leader adopts an inventive or helpless approach to solving problems. Optimism appears to be a characteristic that presents regardless of the degree to which a leader is inventive or helpless, suggesting that the characteristic may be an independent personality trait, which opens an area for further research.

Conception of problems. How leaders conceive or envision problems and their solutions has influence on the impact of their problem solving capacity (Leithwood & Steinbach, 1995). While Leithwood and Steinbach's research suggested that few differences became evident in how leaders conceived of and interacted with the most structured problems, differences surfaced between experts and non-experts when interacting with non-routine, more complex situations. Looking at how experts interpret complex problems, Leithwood and Steinbach found that experts, as compared to their

non-expert counterparts, were more likely to view the problem in relationship to the broader mission of the organization, which led expert leaders to develop a broader range of responses or goals while conceiving or envisioning solutions.

In this study, leaders were identified as having initially conceived the problem they faced in broad or narrow terms. Those who envisioned the problem in broad terms appeared to understand the broader implications of practice that tie to addressing the underperformance of subgroups, while those who conceived the problem in narrow terms were only able to articulate immediate and narrow goals associated with their own stability in the organization or in a subgroup's ability to overcome their deficits. Leaders who saw the problem in broad context were more likely to articulate a set of goals that connected to systemic reform while those who saw the problems narrowly typically offered quick fix, short term solutions to complex problems. There were more incidents of leader casting external blame for the problems they faced among the leaders who described problems narrowly.

Of the twenty four principals, nine leaders described the problem they faced in broad context. Four of the six "expert" leaders from low SES, high achieving schools described the problems they faced in broad context where it was understood that the setting of broad goals for the problem's resolution would result in overall improvement for the organization. Similarly, half of the "expert" leaders from high SES, high achieving schools envisioned the problems similarly where the problem was understood in broad context, which seems to link with setting stronger and broader outcomes (see Table 12). By contrast, only two of the "typical" leaders (one in each quadrant) were able to articulate an understanding of the problem in broad and comprehensive terms.

One of these leaders was also able to articulate an inventive predisposition in problem solving, which would make a follow-up study for this principal interesting to see whether his sustained leadership could have an impact on the school's overall academic standing. Based upon these findings, it appears more likely that expert leaders adopt a pattern of conceiving the problems they face in a broad and systemic manner where the problem is seen in rich context so that solutions span beyond quick fix ideas into more systematic reform.

Table 12. Leaders describing problems in rich/broad context.

Achievement	Socio-Economic Status: Low	Socio-Economic Status: High
Low	Typical leaders 1 of 4	Typical leaders 1 of 8
High	Expert leaders 4 of 6	Expert leaders 3 of 6

Leader response to problems.

A leader's initial conception of a problem appears to have an influence of the depth of response and goal setting related to the problem. In this study, how a leader initially conceived a problem was coded as "broad" or "narrow" depending upon the depth with which the leader initially conceptualized the problem. Leithwood and Steinbach (1995) emphasized that *how* leaders conceived the problems they faced

determined their response. In their work, as expert leaders interacted with unstructured difficult problems, they were more likely to plan thoroughly and develop solutions with the greater good of the organization in mind whereas typical leaders often became afraid and acted more out of self-preservation than vision. In addition, more expert leaders operated within a strong vision a high ethical sense of responsibility to the community beyond those immediately impacted by the problem. This sense of responsibility about leadership influence tied to problem solving that manifested itself in more thorough responses to dealing with problems including gathering a broad array of information prior to moving toward solutions, engaging in careful planning, mobilizing coalitions of support and action (distributing leadership), setting clear goals for solutions, and exercising system values in forming solutions.

In this study two areas of response are considered in relationship to how leaders initially conceived the problem: the breadth of goal setting related to proposed response and the degree of engagement of others who contributed toward the solution. The findings appear to support Leithwood and Steinbach's notion that leaders who initially conceived problems in either broad or narrow terms responded with goals, planning and coalitions that aligned with their initial conception of the problem.

Goal setting. Of the 24 principals in the study, eight described desired outcomes in broad terms where overall organizational growth was articulated and expected. Of these eight leaders, six had also conceived the original problem in broad terms, and all eight are experts. By contrast six leaders described their expected outcomes or goals in narrow terms, identifying superficial goals for the problem's resolution. Five of these six leaders are also coded as having conceived the problem in narrow or simple terms and

all six serve in schools where achievement is poorer than predicted for their DFG. These responses of these typical leaders align with Leithwood and Steinbach's findings related to effective or typical problem solvers.

Eight leaders described goals for the problem's resolution in broad terms that demanded significant changes to the school community as a result of dealing with the problem presented. Table 13 illustrates that these eight leaders represented 8 of 12 expert leaders, four from high performing schools in low SES areas and four from high performing schools in high SES areas. None of the principals was from an underperforming school and none of the typical leaders described a broad set of goals for the problem's resolution. As already noted, all but two of the leaders represented in Table 5 initially conceived the problem in broad terms, which appears to result in richer and deeper goal setting. One leader who represents a high achieving school in a low SES area initially articulated the problem in broad context yet was not identified as articulating broad goals for the problem's resolution.

Table 13. Leaders describing broad goals or outcomes.

		Socio-Economic Status	
		Low	High
Achievement	Low	Typical leaders 0 of 4	Typical leaders 0 of 7
	High	Expert leaders 4 of 6	Expert leaders 4 of 6

These findings suggest that expert leaders initially conceive problems in rich and broad context, and then are able to articulate goals that address the organizational structure when proposing solutions. By articulating broad goals when addressing a complex problem of achievement, these leaders demonstrate an understanding that systemic reform rather than quick fix, test prep type strategies are needed for schools to realize their full potential. The expert leaders described the initial problem as a systemic problem and then described solutions in similar fashion. Coupling an inventive mindset with the ability to understand the complexity of problems creates significant capacity in problem solving.

Coalition building. Togneri and Anderson (2003) cited the development of a compelling vision as a critical component to school success, but also noted that a vision is only compelling if it is widely articulated and accepted among members of the organization. The extent to which a school leader distributes responsibility for addressing the problems faced by his/her school is evaluated by looking at the depth with which others are engaged in the problem solving process.

At the school level a distributed perspective of leadership deals with the level to which teachers and other actors in the system are engaged in processes that promote the school's mission. In a problem solving context, the remarks of the principals in this study were evaluated for the degree to which a constituency was engaged. Those describing a superficial interaction were coded as failing to engage a meaningful constituency; while those who clearly engaged others in the complex work they described were identified as engaging others in a meaningful fashion. This is also referred to as coalition building.

All but two (10 of 12) of the expert leaders described the formation of meaningful coalitions as a significant aspect of the problem solving process, whereas only one of the typical leaders articulated the engagement of others in rich terms (see Table 14). Of the five leaders from high performing schools in a low SES context, two are identified as pure type leaders who also adopted an inventive mindset, and set rich goals for addressing the problem. One leader from a high performing school in a high SES context was also identified as a pure type. Of the ten leaders who described deep meaningful engagement of others, six described broad goals for addressing the problem they faced. The only typical leader to engage others in a meaningful fashion was from an underperforming school in a high SES context. This leader had also described broad goals for the problem's resolution but was operating from a helpless mindset. This leader stands in stark contrast to the other 11 principals from underperforming schools who failed to engage others in a meaningful way.

Table 14. Leaders who formed meaningful coalitions.

		Socio-Economic Status: Low	Socio-Economic Status: High
Achievement	Low	Typical leaders 0 of 4	Typical leaders 1 of 7
	High	Expert leaders 5 of 6	Expert leaders 5 of 6

Of the 12 principals identified as typical leaders, only one described the formation of meaningful coalitions. Eight of the others described only superficial and narrow ways in which others become engaged in the problem solving process. These eight leaders spoke of providing information to others, but failed to articulate how these members would actively take part in the work of reform. Of these eight, two are pure types who have a helpless predisposition and are unable to see problems in broad context or set systemic goals to address the problem. Half of the eight leaders who were unable to engage others also operate with a helpless mindset.

Engaging others in the work of reform is a characteristic that aligned most closely with the expertise of the leaders, with more expert leaders engaging others in a meaningful way and typical leaders being unable to do so. The concept of successfully distributing leadership and responsibility to others appears very closely tied with the success of an organization. This affirms Datnow ad Castellano's (2001) work that found that leaders who successfully engaged others in reform were more likely to sustain progress around difficult initiatives. It appears that expert leaders are able to clearly convey responsibility for the work of reform while simultaneously casting a clear and compelling vision for progress. This aligns with conceiving problem in broad context and generating solutions that span beyond a quick fix orientation.

Contribution to Literature

Leader type. The pure type, expert leader identified in this study operates with an inventive mindset, sees problems in broad context, describes broad goals to address complex problems, and engages others in a meaningful fashion. Extending Leithwood

and Jantzi's (1999b) conceptualization of the transformational school leader into a problem solving context, the effective problem solver extends his/her influence from vision casting and innovation into the creation of effective and productive solutions to problems. The pure type expert problem solver approaches problems with the capacity to innovate, yet is able to translate this capacity into practical and deep solutions. In addition, he/she is able to effectively distribute the responsibility of implementing reform to others in the organization, thereby building capacity within the institution to innovate. An examination of these findings within the body of literature on leadership and problem solving identifies several clear characteristics that lay the foundation for leaders to implement reform.

By contrast, the pure type typical problem solver was unable to get beyond his/her own fears to understand the problem in its complete context let along articulate systemic goals for addressing the problem or for engaging others. This helpless leader saw only the superficial aspects of the problem yet became powerless to act because of a variety of complicating factors including self-preservation or fear of reprisal. This leader failed to see the problem in its full context and therefore did not describe meaningful goals or engage others in a sustained and significant fashion. In a problem solving context, leaders who cannot innovate or who are unable to act systemically appear unable to implement reform.

A review of the research questions proposed for this study reveals that the mental model of an expert problem solver is indeed different from that of a typical leader. Leaders with a predisposition to innovate in the face of complex problems are more likely to leverage their initial conception of the problem to develop goals and solutions that

impact the organization's capacity to innovate. At a time in school leadership where complex issues such as the achievement of all students are too easily oversimplified into test prep, quick fix strategies, leaders who understand the complexity of problems and can invent solutions and engage others in the problem solving process appear to be those most likely to sustain meaningful reform.

Organizational response (learning). Impact on the organization is another area of consideration in this study. Does an organization's ability to learn improve under the expertise of a skilled problem solver? Organizations with a skilled problem solver at the helm create conditions for organizational learning, sustained solutions to problems, and the potential to increase in student achievement. Because a regression analysis identifying high performing and low performing schools was conducted at the beginning of the study in order to surrogate for expertise, organizational outcomes are somewhat predetermined. It is noteworthy, however, that leaders of the higher performing schools demonstrate leadership characteristics that establish conditions where a positive organizational response presents. Teddlie and Reynolds (2000) found that effective schools, those that demonstrate a tendency toward organizational learning, were characterized by an effective and visionary leader and an engaged constituency. They further found that effective schools from low SES communities were led by principals who distributed a pervasive sense that all students can learn. This study supports this notion. Schools that are out-performing their peers in similar SES contexts are led by principals who demonstrate a unique set of characteristics as effective problem solvers. It follows that these organizations cultivate conditions associated with sustained organizational learning.

Limitations

The primary advantage of the phenomenological approach to interviewing employed in this study is that it permitted the researcher to explore the lived experiences of the principals in order to understand belief and behavior patterns. "The purpose of this type of interviewing is to describe the meaning of a concept or phenomenon that several individuals share," which offered a firm basis for exploring the mental processes associated with effective problem solving (Marshall & Rossman, 1999, p. 112). The limitations associated with this approach are three-fold: generalizability due to the size of the sample, the unit of analysis, and the surrogate for expertise.

Distinct patterns of thought and behavior emerged among the 24 principals interviewed for this study; however, the size of the sample creates some limitations in the generalizability of the findings. Each of the principals was asked to describe problem solving processes associated with a problem they had experienced or one to which they could relate. This created a strong context for many of the leaders to discuss problems related to high stakes testing and accountability. Some, however, despite in depth probing by the researchers during the interview process, described problems where the patterns of thought and behavior sought through this study were not easily recognizable. Coupling this with a relatively small sample of leaders creates a limitation for the findings.

Because of broader consistency of structure and practice in middle level education, the unit of analysis for this study is the middle school principal. This choice was made in order to eliminate limitations due to the varying contexts in which high school or elementary principals lead, however, there remains a minor limitation in the

generalizability of the findings because only middle level leaders were interviewed. The question here relates to the transferability of the findings to populations of leaders in other contexts. To ameliorate this limitation, care was taken to adhere firmly to the conceptual framework for the study throughout the interview and discovery process, but it should be noted as a limitation regardless (Marshall & Rossman, 1999).

Although the noted expertise of each leader was kept blind throughout the interview and analytical process, the identification and connection to expertise relies upon the regression analysis of New Jersey school leaders. Because expertise was predicated upon a school performing above its peers in a similar context, it is assumed that the influence of the leader had direct impact on that achievement level. This limitation is reduced to by ensuring that no leader was chosen as a participant unless he/she had worked in their school for at least two years, but the question of influence still remains. Did the leader impact or inherit the performance level of the school? This limitation does not impact the belief and behavior patterns discovered among effective problem solvers, but does necessitate further exploration on the conclusions of expertise.

Implications for practice

Recruitment and retention. Recruiting and retaining high quality school leaders is a critical component to school reform. This study finds that leaders who possess an innovative mindset that understands the impact of complex problems in broad context, are more likely to establish conditions where thorough solutions and effective groups are activated to implement reform. Using the results of this study as a recruitment tool for identifying new leaders, and as the basis for evaluating the efficacy of existing leaders will have a direct impact on the overall potential of schools. Adding an assessment of a

candidate's mental model for problem solving to a search process can create conditions where pure type effective leaders can be placed in positions of leadership. Similarly, using a four part construct to evaluate the efficacy of existing leaders can help retain only the most capable.

Professional development. This study provides a framework for leveraging professional development initiatives for school leaders. Using a problem solving context, school leaders can be placed in situations where they must brainstorm solutions for the complex problems of the underperformance of students. Understanding that avoiding quick fix, shallow solutions in favor on those that influence substantive organizational change is a key ingredient to successful school leadership. In addition, it appears that successfully distributing leadership in a meaningful fashion within a school community has impact on the overall potential of an organization. Using professional development programs to reinforce successful leadership distribution and the development of broad goals when solving problems will reinforce the cadre of successful school reformers.

Questions for Future Research

Hallinger and Heck (1998) argued that, although a school leader's direct impact on student achievement is limited, their indirect impact or influence is enhanced by a transformational approach to leadership. This study adds to the body of research that suggests the impact of a quality school leader remains a significant influence toward school reform. The identification of a pure type problem solver adds depth to the notion of transformational leadership, which places the greatest emphasis on the visionary and motivational aspects of leadership (Bass, 1998, Leithwood & Jantzi, 1999). The personal

characteristic between innovative and helpless coupled with a deep perspective on the problems facing school opens opportunity for research in two primary areas.

The initial conception of this study sought to explore each principal's perceptions of self-efficacy in order to assess the mental model of each leader most thoroughly. In their work with principal self-efficacy, Tschannen-Moran and Garies (2007) noted that "principals with a strong sense of self-efficacy have been found to be persistent in pursuing their goals [and] are more flexible and more willing to adapt their strategies based on contextual conditions (p. 90)." Although attempted, perceptions of self-efficacy of the principals in this study were not evaluated because of the difficulty in getting accurate and complete a self-efficacy scale from each leader. Extending this work by exploring questions associated with a leader's schema and locus of control will create a stronger context for identifying the characteristics of successful leaders.

Similar to the self-efficacy work, this study did not thoroughly explore the impact of tacit knowledge on a principal's predisposition in approaching complex problems. Nestor-Baker and Hoy (2001) explored the on the job knowledge of reputationally successful superintendents, which added commentary on the influence of this kind of knowledge in approaching the complicated problems in superintendent leadership. Exploring the influence of tacit knowledge in the context of the problem solving strategies employed by school leaders will add insight to the conclusion drawn in this study. Does tacit knowledge influence or hinder innovation? How does tacit knowledge influence a principal's ability to see a problem in full context? Answers to these questions will provide information about the sustainability of the work of school reformers.

This study expands the research on effective leadership by identifying patterns of thought and influence found in successful school leaders. The landscape public education has shifted to include higher expectations and the individual accountability to see every student meet with success. This shift has placed principals in situations where they face the complex problems associated with the national achievement gap and underperformance of many students. Finding that innovation and comprehensive solutions work when a school community is thoroughly engaged in the reform process opens a context of leadership that is necessary to meet these new demands.

Appendices

Appendix 1

Interview Guide

Subject number:	N/A
School number:	N/A
Number of years as principal of this school:	XX
Total years experience as principal:	XX
Total years of experience as a teacher:	XX

I. Values & Beliefs:

1. What is your highest priority as a school leader?
2. Who determines that priority? In other words, in what ways do others or other's expectations contribute to the priorities you hold as a school leader?
3. In your opinion, what matters most in schools?
4. Do you think politicians or legislators would agree with you? Parents? School board? Teachers?

II. Conceptions of Accountability:

5. The following set of questions is focused on exploring the different ways you feel held accountable as a school principal and what you do in response. (Select the highest rated items (1-2) indicated in the Multiple Accountability Ranking completed by the participant (refer to pre-interview survey)). Probe as needed to make sure that the following question are answered with specific descriptions.

    a. What does it mean to be held accountable (whatever the answer was)?
    *PROBE for "What you feel accountable for?"
    b. Why does this source of accountability rank higher than others in your list?
    *PROBE for descriptions/examples
    c. As a result, how do you respond to this form of accountability?
    *PROBE for specific descriptions of behaviors, actions, responses <u>with examples.</u>

    d. What happens if you are successful?
    *PROBE for descriptions/examples
    e. What happens if you are not?
    *PROBE for descriptions/examples
    f. In what ways does this source of accountability enable you to do things to support student achievement?
    *PROBE for descriptions/examples
    g. How does this source of accountability prevent you from supporting student achievement?

*PROBE for descriptions/examples

6. Of the possible sources of accountability discussed today or described in the pre-interview survey, are there any sources that conflict in your work as a principal. If so, describe how you interpret the multiple sources of accountability.
   *Probe further for explanation / description of source.

III. Leader's conception of and response to problems
In your pre-interview survey, you were asked to rank order six problems in terms of how difficult they are to solve. You identified the following problem as the most difficult: (Cite problem). I would like to ask a series of questions related to how you might choose to solve this problem given the opportunity.

7. How will you try to make sense of this problem?

8. Sometimes problems can create opportunities or obstacles. If this problem actually arose, in what terms would you view it?

9. What information will you use in solving the problem?

10. How will each (named source of information) be used?

11. Who will you involve in solving this problem?
    - Community?
    - Central Office?
    - Teachers?
    - Students?

12. What role does each (named group) play in solving this problem?

13. What would you like to see change as a result of solving this problem?

14. What would you hope your school learns as a result of solving a problem like this?

15. Was this problem familiar?

Appendix 2

Problems (pre-interview survey)

Following are problems that school principals face.
Please rank them from hardest to solve (1) to easiest to solve (6).

a. You have just received notification that your school's general education population did not make Adequate Yearly Progress in Language Arts Literacy the previous year.

b. You have just received notification that your school's African American population did not make Adequate Yearly Progress in Language Arts Literacy for the third year in a row.

c. Members of your Parent Teacher Association (PTA) notify you that they are unhappy with writing instruction in your school.

d. In the most recent report compiled by your district's department of human resources, you received information to let you know that 20% of your faculty is not considered highly qualified.

e. Your superintendent informs you that he/she is unhappy with your school's performance in reading and writing.

f. Your faculty is angry that NCLB places such strong emphasis on test scores, yet you have just been directed by your superintendent to compose a corrective action plan to address your school's consistent underperformance.

Appendix 3

Principal Self-Efficacy Scale

This questionnaire is designed to help us gain a better understanding of the kinds of things that create challenges for principals in their school activities. Directions: Please indicate your opinion about each of the questions below by marking one of the nine responses in the columns on the right side. The scale of responses ranges from "None at all" (1) to "A Great Deal" (9), with "Some Degree" (5) representing the mid-point between these low and high extremes. You may choose any of the nine possible responses, since each represents a degree on the continuum. Your answers are confidential.

Please respond to each of the questions by considering the combination of your *current* ability, resources, and opportunity to do each of the following in your present position.

"In your current role as principal, to what extent can you…"

None at All		**Very Little**		**Some Degree**		**Quite a Bit**		**A Great Deal**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**

1. facilitate student learning in your school?

2. generate enthusiasm for a shared vision for the school?

3. handle the time demands of the job?

4. manage change in your school?

5. promote school spirit among a large majority of the student population?

6. create a positive learning environment in your school?

7. raise student achievement on standardized tests?

8. promote a positive image of your school with the media?

9. motivate teachers?

10. promote the prevailing values of the community in your school?

11. maintain control of your own daily schedule?

12. shape the operational policies and procedures that are necessary to manage your school?

13. handle effectively the discipline of students in your school?

14. promote acceptable behavior among students?

15. handle the paperwork required of the job?

16. promote ethical behavior among school personnel?

17. cope with the stress of the job?

18. prioritize among competing demands of the job?

Appendix 4

Coding scheme narrowed to four type continuum.

Coding Scheme

Beliefs	**Conception of Problem**	**Response to problems**
acceptance of responsibility	affiliation needs	***coalition building***
Resignation	thoughtfulness	information needed to address
Effects caused by problems	engagement/understanding	***perspective (short or long term)***
flexibility	optimism in response	***planning or goal setting***
inventiveness	deflects responsibility	
misunderstanding	***broad goals for solutions***	
optimism	fatigue or discouragement	
passivity	focus on basic needs	
peacekeeping	broad understanding of implications	
helplessness	***narrow goals for solutions***	

Other areas noted:
sense of efficacy
visibility
priorities as a school leader

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