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**Leading for Change:
Measuring the Characteristics of K-12 Principals in New Mexico**

by

S. Michael Weinberg

B.A., History, Dartmouth College, 1995
M.Ed., Educational Leadership, Harvard Graduate School of Education, 2001

DISSERTATION

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ABSTRACT

Research has established an indirect influence between school principals and student achievement on standardized tests. This paper considers how to measure the relationships between teacher and principal perceptions of four dimensions of principal leadership in New Mexico's K-12 schools—setting a shared vision, developing a culture of learning, managing resources, and collaborating with the community—and student scaled score growth over four years on New Mexico's standards-based assessments. Using two valid, reliable survey instruments, data was electronically collected from 437 teachers and 41 principals; aggregate reading and math scaled scores were also collected for all students in these 41 schools. Based on one-way analysis of variance (ANOVA) and estimates of Cronbach's alpha, in this application, both instruments used to survey teachers and principals were confirmed as valid and reliable. Additionally, the two instruments appeared to provide similar information from principals and teachers, as three pairs of teacher and principal variables had statistically significant correlations.

Two statistically significant relationships were identified relevant to the potential use of scaled score growth to measure school, principal, and teacher performance. First, schools with lower scaled scores in 2008 averaged more growth than schools with higher

schools. Second, scaled score growth appeared to have a leveling effect, as no statistically significant correlations were observed between scaled score growth and student or school demographic variables such as percentage of English learners, student ethnicity, percentage of students with disabilities, or percentage of students qualifying for free or reduced price lunches.

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Chapter 1

Context of Study: Effective Schools

Introduction

Leadership matters. In this era of high stakes accountability, schools are expected to make a difference in all students' performance. And while many factors affect these outcomes, including family backgrounds, teachers, and community context, numerous researchers have established that principals also play a critical role in schools' effectiveness.

What makes some school leaders more effective than others has also been articulated in various forms. One effort to synthesize the descriptions of those practices has resulted in the Interstate School Leaders Licensure Consortium (ISLLC) standards (Council of Chief State School Officers, 2008, p. 15):

- Setting a widely shared vision for learning;
- Developing a school culture and instructional program conducive to student learning and growth;
- Ensuring effective management of the organization, operation, and resources for a safe, efficient, and effective learning environment;
- Collaborating with faculty and community members, responding to diverse community interests and needs, and mobilizing community resources;
- Acting with integrity, fairness, and in an ethical manner; and
- Understanding, responding to, and influencing the political, social, legal, and cultural contexts.

This research focused on how we measure the ways in which principals in the state of New Mexico implement these practices and how this, in turn, is related to student performance.

Do Schools Matter?

Historically, research has shifted in its approach to the role of schools versus the influence of students' lives outside of school. Much of this debate began in the 1960s with the release of the Coleman Report (Coleman, Campbell, Hobson, McPartland, Mood, Weinfeld, & York, 1966). According to the findings of that initial report, the answer was, "No, schools don't matter":

Schools are remarkably similar in the way they relate to the achievement of their pupils when the socioeconomic background is taken into account. It is known that socioeconomic factors bear a strong relation to academic achievement. When these factors are statistically controlled, however, it appears that differences between schools account for only a small fraction of differences in pupil achievement. (pp. 21-22)

The news for schools was slightly better for students of color: "The achievement of minority pupils depends more on the schools they attend than does the achievement of majority pupils" (p. 22). But the Coleman Report found that characteristics like the educational background of other students in the school had a stronger relation to achievement than variations in facilities, curricula, and teacher quality.

In a follow-up study that re-examined this Equal Educational Opportunity Survey (EEOS) data set as well as additional data, Jencks, Smith, Acland, Bane, Cohen, Gintis, Heyns, and Michelson (1972) found similar results regarding the lack of a relationship

between school quality and student performance: “The amount of schooling an individual gets has some effect on his test performance, but the quality of his schooling makes extraordinarily little difference... Variations in what children learn in school depend largely on variations in what they bring to school, not on variations in what schools offer them” (p. 53). The variations Jencks et al. (1972) found were modest—“The average effect of attending the best rather than the worst fifth of all elementary schools is almost certainly no more than 10 points and probably no more than 5”—and impacted students at the elementary level more than the high school level (p. 93). Again, as with the Coleman Report, the characteristics that influenced outcomes had more to do with what students brought to school than with the schools themselves (1972). Jencks et al. (1972) concluded, “Genetic and environmental inequality played a major role in producing cognitive inequality” (p. 253). This idea that biology is the major factor influencing student outcomes has since led to numerous policy debates. From this perspective, increasing budgets, changing the size of the school, changing the size of the classes, or changing the curricula or student grouping had no consistent relationships to school effectiveness.

School Effectiveness Research, Phase I (1970 – 1989)

Schools, however, are not absolved of their responsibility for affecting the academic lives of students. Ron Edmonds, considered the figurehead of the school effectiveness research movement (Marzano, 2000), conducted additional analysis of the EOS data and refuted the findings of the Coleman Report:

The schools that were instructionally effective for poor and black children were indistinguishable from the instructionally less effective schools on

measures of pupil social background (mean father's and mother's education, category of occupation, percentage of white students, mean family size, and percentage of intact families). The large differences in performance between the effective and ineffective schools could not therefore be attributed to differences in the social class and family background of pupils enrolled in the schools. (Edmonds, 1977, p. 9)

Edmonds (1979) criticized the Coleman Report, citing the political context in which it was released and the subsequent damage it did to efforts to reform schools. While some used this as evidence against spending on poor and/or minority students, Edmonds identified numerous studies indicating positive relationships between schools and students' academic performance, including Averch, Carroll, Donaldson, Kiesling, and Pincus (1972); Brophy and Good (1970); Gordon (1923); Green, Hoffman, Morse, and Morgan (1966); Mayeske, Okada, Beaton, Cohen, and Wisler (1972); Rist (1970); State of New York, Office of Education (1974); Weber (1971); and Wheeler (1942). This body of research, along with Edmonds's own, is the critical foundation upon which school improvement rests: "Repudiation of the social science notion that family background is the principal cause of pupil acquisition of basic skills is probably prerequisite to successful reform of public schools" (p. 23).

Table 1 summarizes the seminal studies that advanced understanding of this field (Marzano, 2000).

Table 1
School Effectiveness Research: A Historical Overview

Researcher(s)/ Studies	Summary
Rutter, Maughan, Mortimer, and Ouston, 1979	In this longitudinal study in London, various school characteristics were correlated with outcome measures such as attendance, behavior, academic achievement, and delinquency. The variables that had a significant relationship with these outcomes were: academic emphasis, teaching behavior, use of reward and punishment, degree of student responsibility, staff stability, and staff organization.
Klitgaard and Hall, 1974	This study was the first large-scale attempt to identify variables related to effective schools. While some schools were found to produce large gains in student achievement, this study did not address how this effect differed for various student subgroups.
Brookover, Beady, Flood, Schweitzer, and Wisenbaker, 1979	This study of 68 elementary schools looked at data related to three variables, school inputs (socioeconomic status of families, school size, teacher/ pupil ratios), school social structure (teacher satisfaction, parent involvement, openness of teaching practices), and school social climate (14 indicators such as expectations of students, teachers, and administrators and student self-confidence). Where there was considerable overlap between the three variables, school climate stood out as a feature of effective schools.
Outlier studies (various authors)	These studies used linear, multi-variable regression equations to identify schools that exceeded expectations based on established variables such as socioeconomic status. Work in this area was conducted by Brookover and Schneider (1975); Lezotte, Edmonds, and Ratner (1974); New York State Education Department (1974a and 1974b); and Spartz (1977). Results varied, but common characteristics of effective schools identified through outlier studies include: good discipline, high teacher expectations of student achievement, and strong administrative leadership.
Case studies (various authors)	These qualitative studies generally attempted to look deeply at a small set of schools (Brookover & Lezotte, 1979; Glen, 1981; Venezky & Winfield, 1979; Weber, 1971). Similar to previously noted research, the characteristics of effective schools most frequently cited include high expectations, strong leadership, and orderly climate.
Implementation studies (various authors)	As opposed to descriptive studies, implementation studies involved applying interventions, such as developing missions of improving student achievement, across a set of schools. This approach, as documented through Milwaukee's Project RISE (McCormack-Larking & Kritek, 1983), found modest gains in student achievement.

Based on this body of school effectiveness research, five characteristics of high-performing schools were identified: strong leadership; high expectations for students; an orderly atmosphere; an emphasis on basic skills; and effective monitoring of student achievement (Marzano, 2000, p. 19). Chapter Two describes in detail more recent research regarding the effect of strong leadership.

School Effectiveness Research, Phase II (1990 – 2000)

Researchers like Teddlie and Stringfield (1993) have advanced these early efforts. In their longitudinal study of Louisiana schools, they concluded, “School-related behaviors on the parts of principals, teachers, students, and parents were better predictors of student achievement than were second-order factors containing socio-economic status and racial data” (p. 25). Teddlie and Stringfield (1993) described Coleman (1966) and Jencks et al.’s (1972) work as a “production function,” measuring education as a series of inputs and outputs (p. 16). Simply put, “Schools make a difference” (p. 25). More specifically, they determined that 13% of the variation in individual student achievement could be linked to the differences between schools. From a practitioner’s perspective on school reform, Teddlie and Stringfield forwarded the idea that school effects are “alterable” (p. 26).

The context of schools makes a difference and Teddlie and Stringfield (1993) presented a slightly modified list of characteristics of those effective schools: 1) Clear academic mission and focus; 2) Orderly environment; 3) Student engaged time-on-task; and 4) Frequent monitoring of student progress (p. 36). Further differences, such as short-term versus long-term expectations for student

success, were found between schools. I explore in Chapter Two the ways in which effective school leaders play a role in each of these characteristics.

Finally, Marzano (2000) offered a different interpretation of the Coleman Report using the binomial effect size display (BESD). Using this statistical metric, even a 10% variance in school effect leads to great differences in student achievement (p. 6).

Reconsidered through this analytical tool, the effect size noted in the original Coleman Report tells us that schools make a difference in the academic lives of poor students.

The Impact of Poverty on Academic Performance

For the purposes of this research, low socio-economic status (SES) will be used interchangeably with the term poverty, as well as the technical label applied in New Mexico, economically disadvantaged (ED). Each of these labels is generally determined as a family's eligibility for the free and reduced lunch program (FRL). Though income alone is not the greatest determinant of student success—"home atmosphere" (White, 1982), as well as mothers' literacy rates (Sastry & Pebley, 2010), have been identified as more specific factors—SES is most frequently the proxy for a cluster of aspects related to impact of poverty.

Whatever the term, poverty's effects on academic achievement have continued to be well documented. As early as 1963, Charters concluded:

To categorize youth according to the social class position of their parents is to order them on the extent of their participation and degree of success in the American Educational System. This has been so consistently confirmed by research that it can now be regarded as an empirical law. . . . SES predicts grades, achievement and intelligence test scores, retentions at

grade level, course failures, truancy, suspensions from school, high school dropouts, plans for college attendance, and total amount of formal schooling (pp. 739–740).

More recently, neuroscience has confirmed what has long been observed—poverty far outweighs race, ethnicity, family structures, and other factors as causes of cognitive disadvantage (Lee & Burkam, 2002). By the age of three, children born in poverty average only half the vocabulary of higher-income students and by the time they enter kindergarten their cognitive scores are 60% lower than the highest socio-economic group (Hart & Risley, 2003; NCES, 2005).

As seen in an analysis of New Mexico’s standard-based assessment (SBA) data, when students’ socioeconomic status is controlled, disparities in racial or ethnic differences diminish significantly: “Socioeconomic status appears to have a more consistent impact on student achievement levels, regardless of race/ ethnicity” (New Mexico Legislative Finance Committee, 2009, p. 4). In fact, “The gap in achievement between low income students and their [non-economically disadvantaged] peers is larger than regularly reported and is persistently large regardless of race or ethnicity” (p. 4).

These initial deficiencies may be compounded once students arrive at school. Across the country, there is a strong, negative correlation between the percentage of poor students at a school and that school’s academic achievement scores—as poverty mounts, test scores drop (Calkins, Guenther, Belfiore, & Lash, 2007). Though some have found no relationship between school quality and the percentage of disadvantaged students (Strand, 2010), others have concluded that the schools that these lower-SES students enter are quantifiably lower quality as measured by the amount of resources they receive,

the qualifications of their teachers, the attitudes of those teachers, and the neighborhood conditions (Lee & Burkam, 2002). According to Peske and Haycock (2006), when measuring teacher qualifications, “In schools where more than 90% of the students are poor just one percent of teachers are in the highest quartile” (p. 7).

Calkins et al. (2007) called this confluence of economic and environmental disadvantages the “perfect storm of poverty,” and the effects are devastating (p. 28). Non-poor students attending these high-poverty schools fall behind more frequently than poor students attending low-poverty schools (Lippman, Burns, & McArthur, 1996, p. 35). Conversely, children who are raised with the disadvantages of poverty who transfer to middle-class suburbs and middle-class schools show rapid behavioral and academic gains (Anyon, 2005).

Unfortunately, this is a timely, relevant challenge facing U.S. schools. As of 2011, 21% of all children in the United States lived in families with incomes below the federal poverty level (Seith & Kalof, 2011). While the phenomenon affects students of all races and ethnicities, minority students are hit particularly hard—over two-thirds of all minority students currently attend these high poverty schools (Orfield & Lee, 2005). By 2025, the number of minority students in America is projected to exceed the number of nonminority students, with Hispanics constituting 39% of school-age students (Hodgkinson, 2008; MBDA, 1999).

This challenge of meeting the needs of the lowest performing students is particularly relevant in New Mexico, where 68% of schools did not make Adequate Yearly Progress in 2008; by 2011, that number increased to 87% (Winograd, Garcia, &

Dasenbrock, 2008; PED, 2012). This has resulted in New Mexico having one of the highest rates of schools in need of improvement status in the nation.

This high failure rate correlates to poverty rates in the state, but similar to national trends, the populations most affected are minorities (Craig, 2009). Hispanic and Native American students in New Mexico are more likely to attend a school where greater than 75% of the students are eligible for free and reduced lunch. Native Americans, for example, constitute 11% of the overall student population, but 56% of those students attend a high poverty school; by contrast, White students make up around 30% of the overall population, yet only 12% attend these high poverty schools. The impact of poverty is compounded by the increased likelihood of teachers with lower license levels working at these high poverty, high needs schools (New Mexico Legislative Finance Committee, 2009).

The Role of the Principal

The encouraging news, however, is that particularly at these high needs schools, leadership matters (Leithwood, Louis, Anderson, & Wahlstrom, 2004). Hallinger and Heck (1996), frequently cited for their comprehensive review of school leadership, concluded that principals are able to “exercise a measurable, though indirect effect on school effectiveness and student achievement” (p. 157). In their meta-analysis of international research, Bosker and Witziers (1995) identified strong leadership as a significant school-level variable that influences student achievement, second only to teaching among these influencing variables (Wallace Foundation, 2006; Winograd, Garcia, & Dasenbrock, 2008). Marzano (2000) estimated school level effects accounting for 6.66% of the variance in student achievement (p. 77); in a separate review, Waters,

Marzano, and McNulty (2003) estimated schools to have an effect size of 0.25. Finally, Louis, Leithwood, Wahlstrom, and Anderson (2010) reported that while the overall effect size is small, leadership accounts for approximately one-quarter of the total school effect on student learning; this is only slightly less than the one-third explained by classroom factors (Hill, 1998).

School leaders affect student achievement directly by creating environments where teachers can work effectively. Much attention focuses on the impact principals can make as instructional leaders, such as their ability to improve instruction by actively providing feedback to teachers, arranging effective professional development, and buffering teachers from external demands (Freedman, 2003; Fullan, 1995; Glickman, 2002; Leithwood, Riedlinger, Bauer, & Jantzi, 2003; Louis, Leithwood, Wahlstrom, & Anderson, 2010; Robinson, Lloyd, & Rowe, 2008). Ferguson, Hackman, Hanna, and Ballantine (2010) concluded that student achievement rises when “leadership teams focused thoughtfully and relentlessly on improving the quality of instruction” (p. v). At the elementary level, this may involve an understanding of the content as well as the delivery of instruction, while given the complexity of disciplines at the secondary level, instructional leadership efforts tend to focus on supporting innovations in teacher behavior and creating structures, such as empowering department heads to lead instructional initiatives (Louis, Dretzke, & Wahlstrom, 2010; Louis, Leithwood, Wahlstrom, & Anderson, 2010). Though small, these effects on student learning are statistically significant (Heck & Hallinger, 2006).

As is reflected in the school improvement model I present in Figure 1, the principal’s impact on student achievement comes through an ability to shape teachers’

working conditions and create a positive organizational environment (Hoy, Hannum, & Tschannen-Moran, 1998; Leithwood, Louis, Anderson, & Wahlstrom, 2004; Schein, 1992; Supovitz, Sirinides, & May, 2010; Witziers, Bosker, & Krüger, 2003)). Behind most great teachers is a great principal: “The number one reason for teachers’ decisions about whether to stay in a school is the quality of administrative support” (DeVita, Colvin, Darling-Hammond, & Haycock, 2007, p. 17). Principals play a critical role in recruiting and retaining high quality teachers (Young, Fuller, Brewer, Carpenter, & Mansfield, 2007).

Filling schools with effective principals, however, is challenging (Burkhauser, Gates, Hamilton, & Ikemoto, 2012). While there may not be a shortage of certified principals, there is a shortage of “well qualified administrators who are willing to work in the places of highest demand, especially in underserved communities and schools where working conditions are most challenging” (Darling-Hammond, LaPointe, Meyerson, Orr, & Cohen, 2007, p. 4). Quality, in this definition, is less a function of certification than an ability to respond to a variety of challenges and improve student performance as described in greater detail in Chapter Two. According to Knapp, Copland, Plecki, and Portin (2006), “The quality of educational leadership...is neither uniformly high, nor focused to a great extent on learning” (p. 11). As DeVita, Colvin, Darling-Hammond, and Haycock (2007) wrote, “States are only beginning to put together coherent systems that reliably achieve the goal of placing an appropriate, well-trained principal in every school” (p. 12). Principal turnover rates contribute to teacher turnover rates, and nationally, in schools with more than 50% economically disadvantaged students, the five-year turnover rate reached 73% in 2007 (Fuller, Orr, & Young, 2008).

Unfortunately, principals also have the capacity to have a marginal or even negative impact on student achievement (Robinson, Lloyd, & Rowe, 2008; Waters, Marzano, & McNulty, 2003). In some cases, similar actions can lead to differing results. Many principals, for example, visit classrooms. Highly effective principals, however, make these visits frequent and spontaneous, regularly providing formative feedback to teachers regarding their observations. Less effective principals, in contrast, typically announce these visits in advance and do not provide the same depth of meaningful suggestions following the visit (Louis, Leithwood, Wahlstrom, & Anderson, 2010). The differences, while subtle, point to the art of observation and evaluation in effective principals' roles as instructional leaders (Marshall, 1996).

Implications of this Study

Better understanding of how to measure what makes some principals more successful at increasing student achievement has the potential to inform how leaders are selected, prepared, evaluated, and provided with ongoing professional development. Improving leadership, subsequently, is one element that can contribute to improved educational outcomes within New Mexico.

Chapter 2

Review of the Literature

Potential Levers of Effectiveness

Starting from the premise that schools do make a difference in the academic achievement of students, much research has focused on the characteristics that make particular schools more effective than others. These potential levers range from federal and state policy at the macroscopic level down to individual teachers. I review the research around each of these influences in this chapter, primarily focusing on the role of school principals in improving student performance. I conclude by synthesizing the work of these researchers into my own model that locates school principals in the overall schema of school improvement.

The Impact of Teachers

Fundamentally, research on school improvement begins with analysis of the effects of teachers on student performance. Much research in this area seems to indicate a relationship in teacher quality and student achievement. Brophy (1986) identified teaching practices, such as clearly articulating learning objectives, differentiating instruction, and classroom management strategies, that led to improved student performance. Similarly, as Darling-Hammond (1999) noted, “The increase of teacher quality revealed a correlation with student achievement when analyzing student standardized tests results” (p. 14). The strength of that correlation, however, varies between research studies. Teddlie and Stringfield (1993) found teachers accounted for roughly the same amount of variance as did school-level variables; Madaus, Kellaghan, Rakow, and King (1979), on the other hand, found a much greater teacher to school effect

ratio of 4.5 to one. Regardless of the size of the effect, Marzano (2000) noted that in 30 separate estimations in the Tennessee Value Added System Studies from 1997, teacher effect was significant at the 0.0001 level 100% of the time. Findings such as these led Wright, Horn, and Sanders (1997) to conclude, “The most important factor affecting student learning is the teacher” (p. 63).

Highly qualified teachers, however, are not necessarily the most effective teachers. Rouse (2008), for example, looked specifically at the effect of National Board Certification—a rigorous process designed to identify exemplary teachers—on student performance. After matching for years of teaching experience, licensure, and certification, the results of the study “revealed that a statistically significant difference did not exist in student achievement for National Board Certified Teachers and non-National Board Certified Teachers at the K-8 grade levels” (p. 64). Similar results were reported regarding the lack of correlation between licensure levels and student performance within New Mexico (New Mexico Legislative Finance Committee, 2009).

While researchers have identified many teacher-level variables, they typically fall into three categories (Marzano, 2000). The first, instruction, includes elements such as identifying similarities and differences, summarizing and note-taking, reinforcing effort, assigning relevant homework, organizing cooperative learning groups, and activating prior knowledge. The second category, curriculum design, “addresses the order and pacing of content and instructional activities” (Marzano, 2000, p. 63). Classroom management, the third category, includes strategies that “maximize the effectiveness of interaction between teachers and students and students and students” (Marzano, 2000, p.

65). Of the three, classroom management has the greatest overall effect on student learning (Strong, Ward, & Grant, 2011; Wang, Haertel, & Walberg, 1993).

In a separate study, Leithwood, Louis, Anderson, and Wahlstrom (2004) presented a meta-analysis of effective classroom conditions that share some similarities with those identified by Marzano:

- Class size – Particularly for younger and economically disadvantaged students, reducing class size allows for improved instruction and increased engagement (Finn, 2001).
- Teaching loads – At the secondary level, the total number of students and subjects taught across the academic year impacts student achievement.
- Teaching in areas of formal preparation – Again, at the secondary level, certification based on formal preparation has been shown to have significant, positive effects on student achievement (Goldhaber & Brewer, 2000).
- Homework – Homework has both positive and negative effects. While it contributes to immediate achievement, independent problem solving, and greater self-discipline, it has also been shown to contribute to students' loss of interest in school and affect their ability to participate in other activities (Cooper, 1989; Cooper & Valentine, 2001). The type and amount of homework as well as the age and academic ability of the students affects the impact of homework for students.
- Student grouping – Though many schools continue to separate students by ability, heterogeneous grouping has been empirically shown to be more effective for a broad range of students (Yonezawa, Wells, & Serna, 2002). These improvements

have been attributed to higher expectations for learning, faster paced instruction, peer modeling, and more challenging curriculum.

- Curriculum and instruction – In contrast to the emphasis on basics taking place at many high poverty schools, those students benefit from the same rich curriculum generally offered to more privileged students (Brophy, 1999). Leithwood et al. (2004) described this type of curriculum as one in which “the instructional strategies, learning activities, and assessment practices are clearly aligned and aimed at accomplishing the full array of knowledge, skills, attitudes, and dispositions valued by society” (p. 62).

School-level Effects

Good teachers are more effective if they are working within well-coordinated systems. At times, the conditions within a school are difficult to separate from principal level effects—use of time to maximize instruction while allowing for collaboration, for example. Styron and Nyman (2008) compared cultural attributes of high and low performing schools. Their data suggested, “Low-performing middle schools scored higher [than high-performing middle schools] on organizational structures; supportive, directive, and committed behavior; collegial leadership; principal influence; and resource support” (p. 12). In contrast, high-performing schools outscored low-performing schools only in the realm of collegial behavior. No significant differences were found between the two sets of schools in “institutional integrity, teacher affiliation, academic emphasis, instructional practices, and restrictive and disengaged behavior” (p. 1). In this particular study, however, the school level effects were not strong enough to overcome the

socioeconomic conditions separating the low-performing from the high-performing schools, highlighting the importance of measuring growth within a school.

Jesse, Davis, and Pokorny (2004) reported similar results. Though not a comparison study, in their analysis of high-performing schools that served primarily Latino students, the researchers found that those schools “were characterized by strong leadership; a clear focus on achievement; positive climate, including supportive relationships among students and teachers; good communication with parents” (p. 23). Jesse et al. (2004) also found that “surprisingly little attention was paid to providing culturally relevant curriculum or bilingual instruction” (p. 28).

Bosker and Witziers (1995, p. 4) synthesized much of the school effectiveness research that I presented in Chapter One, using hierarchical linear modeling to rank the effect size of eight school-level variables that impact student performance. In descending order, those variables are:

- Opportunity to learn/ content coverage – Alignment between the curriculum students are taught and the assessments by which student achievement is measured;
- Time – While in its most basic form, this is simply a measure of the amount of time allocated for instruction, increasing the amount of time during which students are successful at the tasks they are engaged in has the strongest relationship to student achievement;
- Monitoring – This consists of both having clear school-wide academic goals as well as the processes to monitor progress toward those goals;
- Pressure to achieve – Setting high expectations for student achievement;

- Parental involvement – Some behaviors related to parental involvement include written exchange of information, parental roles in policy and curricular decisions, and easy access between parents, teachers, and administrators;
- School climate – Creating an atmosphere that students perceive as orderly and supportive;
- Leadership – This includes well-articulated leadership roles, providing adequate information, and facilitating group decision-making; and,
- Cooperation – The extent to which staff share resources, ideas, and solutions to common problems.

According to Marzano (2000), with the exception of time and parental involvement, these variables align with the five school effectiveness correlates developed in the cumulative research efforts of the 1970s and 1980s.

Leithwood, Louis, Anderson, and Wahlstrom (2004) described similar school-level policies and practices that impact student performance:

1. School size – Elementary schools appear to function best with 250 to 300 students while more effective secondary schools range from 600 to 700 students (Lee, 2000). In addition to the overall size of the school, at the secondary level, the total student load, or number of students that teachers come in contact with each academic term, is inversely related to student performance (Ouchi, 2009).
2. Decentralized governance – Site-based management allows for local discretion over curriculum, though the effects are mixed depending on how this aspect is implemented (Leithwood & Menzies, 1998).

3. Decision-making – Teacher involvement in the decision-making process can help gain compliance; build loyalty; enhance their professional roles; and improve job satisfaction, morale, and feelings of self-efficacy.
4. Sense of school-wide community – Relationships between students and teachers can engage and motivate student learning as well as create commitment to the overall school goals.
5. Antiracism – In addition to creating policies and practices that increase equity within schools, these efforts are more effective when the teaching and support staff reflect the students’ racial and ethnic backgrounds (Solomon, 2002).
6. Student retention and promotion – Though student retention can have adverse effects on learning and graduation rates (Darling-Hammond, 1998; McCoy & Reynolds, 1999; Reynolds, 1998), differentiated policies that account for student needs have been shown to have positive effects on student performance.
7. Instructional program coherence – A close relationship between curriculum, instruction, assessment, and learning climate has been shown to have positive effects, particularly for students of poverty (Newman, Smith, Allensworth, & Bryk, 2001).
8. Extracurricular activities – Extracurricular activities contribute to better grades, higher educational aspirations, improved self-esteem, and more (Holland & Ambre, 1987).
9. Allocation of teacher time – Increasing the number of working hours for teachers, especially when the additional time is focused on school improvement initiatives, can contribute to a more professional school culture (Waugh, 2000).

10. Teacher working conditions – This includes a variety of variables, including meaningful feedback, low levels of student misbehavior, leadership opportunities and participation in decision-making, incentives and rewards, peer assistance/teaming, and professional development.

The Impact of District Leaders, School Boards, and Other Stakeholders

At a third level, researchers have looked at the relationship between school boards, superintendents, and student performance. This research is built upon the notion that these various layers of leadership are additive, indirectly but measurably contributing to student performance (Gronn, 2009). The findings indicate several trends. First, schools are more likely to be effective if they are situated within a well-coordinated system that situates the district within the context of the larger community (Leithwood, Louis, Anderson, & Wahlstrom, 2004; Wallace Foundation, 2006). In their synthesis of the research around districts that have been effective in the face of a variety of challenges, Leithwood, Louis, Anderson, and Wahlstrom (2004, p. 45) identified 12 common strategies:

1. District-wide sense of efficacy;
2. District-wide focus on student achievement and the quality of instruction;
3. Adoption and commitment to district-wide performance standards;
4. Development/ adoption of district-wide curricula and approaches to instruction;
5. Alignment of curriculum, teaching, and learning materials and assessment with relevant standards;

6. Multi-measure accountability systems and system-wide use of data to inform practice, to hold school and the district leaders accountable for results, and to monitor progress;
7. Targeted and phased focuses of improvement;
8. Investment in instructional leadership development at the school and district levels;
9. District-wide job-embedded professional development and follow-up support for teachers;
10. District-wide and school-level emphasis on teamwork and professional community;
11. Policy governance approaches to board-district and district-school relations; and
12. Strategic engagement with state reform policies and resources.

Even with these conditions in place, however, the connections between district-level actions and student performance are “more hypothetically than empirically demonstrated” (Leithwood et al., 2004, p. 45).

Other researchers have found mixed results regarding the relationship between district-level leadership and student outcomes. Leithwood and Jantzi (2008) found a strong but indirect influence between the conditions district leaders establish and student performance; superintendents, in particular, have a small but measurable influence on student performance (Hart & Ogawa, 1987). Specific actions that contributed to achievement include proving a compelling vision for the district’s organization, providing opportunities for capacity development, structuring collaboration, and

managing the instructional program. Similar combinations of strategies have been found to affect organizational conditions (Chen & Bliese, 2002; Hallinger & Heck, 1998).

Time alone, however, is not an indicator of the likelihood of establishing these favorable conditions, as superintendents with tenures exceeding eight years in small districts tend to see declining student test scores (Alsbury, 2008). Similarly, in situations where school board turnover increases for politically motivated reasons, student test scores decline (Alsbury, 2008). This is particularly problematic in New Mexico where the continuity of reform efforts is often disrupted—between 2003 and 2008, 76% of school districts reported one or two changes in their superintendents (Winograd, Garcia, & Dasenbrock, 2008).

Finally, other stakeholders that influence student outcomes include parents, the wider community, higher education institutions, and unions. While some examples of successful arrangements have been documented (Doyle & Pimentel, 1993; Hickey & Andrews, 1993; McLaughlin, 1987), the direct relationship is less clear.

The Impact of State and Federal Educational Policy

At both the state and federal level, educational policies affect the larger context of school effectiveness (Sizer, 1992; Wahlstrom, 2008). Major state-based initiatives include establishing standards aligned with high-stakes assessments (Leithwood, Louis, Anderson, & Wahlstrom, 2004). Unfortunately, in most instances, there is a lack of collaboration and coordination between states and districts (Wallace Foundation, 2006).

Numerous researchers, including Conley and Picus (2003) and Rossman and Wilson (1995) have found that “policy applied on a grand systemic level may be ineffective because of local contextual variation” (p. 599). Based on these findings,

Haddad and Alsbury (2008) argued for the importance of considering local community context as a variable in student achievement. As opposed to a one-size-fits-all approach to policy, their data instead suggested “a more differentiated approach to state-level policy development” (Haddad & Alsbury, 2008, p. 101). This is true between states, as well—Louis, Thomas, Gordon, and Febey (2008) found that varying conceptions of local versus state control affect the implementation of mandates and reform efforts. Certain state policies, such as alignment of standards-based assessments across grade levels, have compelled meaningful improvements in some schools (Ferguson, Hackman, Hanna, & Ballantine, 2010).

Characteristics of High Poverty, High Performance Schools

Moving from influences of teachers at the classroom level to federal education policies, Calkins, Guenther, Belfiore, and Lash (2007) conducted a meta-analysis of schools that have demonstrated success relative to their percentage of high poverty students. They concluded that there are nine common characteristics, some of which overlap with those previously described:

1. Discipline – Orr, Byrne-Jimenez, McFarlane, and Brown (2005, p. 28) called a calm, orderly environment a “prerequisite for learning,” and a sizeable body of research supports the relationship between effective classroom management and student achievement (Cotton, 1995; Lipsey & Wilson, 1993; Wang, Haertel, & Walberg, 1993).
2. Action against adversity – Recognizing the environmental challenges surrounding many students of poverty, high-performing schools develop “school-based initiatives that actively shield disadvantaged children from the risks and

adversities within their homes, schools, and communities” (Borman & Rachuba, 2001, p. 31).

3. Student-adult relationships – Many researchers, including Haberman (1999) and CPE/ Caliber Associates (2005) have noted the positive impact of teachers forging relationships with their students.
4. Accountability for achievement – Routinely monitoring student achievement data and adjusting instruction accordingly is central to maintaining what Reeves (2003) called a “laser-like focus on student achievement” (p. 3).
5. Personalization of instruction – Closely related to the two previous characteristics, numerous studies cite the relationship between feedback-based instruction and student achievement (Chenoweth, 2007; CPE/Caliber Associates research review, 2005; Marzano, 2000).
6. Professional culture – While all schools engage in some sort of professional development, what distinguishes high-performing schools is the direct link between these activities and improving instructional practices. All staff tended to be involved and the focus is determined from a larger context of continuous improvement within the school (CPE/Caliber Associates, 2005).
7. Resource authority – Given the depth of research demonstrating the importance of teaching quality in determining student achievement, effective schools have the autonomy to make their own personnel decisions (Hattie, 2005; Reeves, 2003; Rowan, Correnti, & Miller, 2002; Sanders, Wright, & Horn, 1997).
8. Agility – In districts that have not formally allowed this level of autonomy regarding human and fiscal resources, leaders within successful schools have

demonstrated an ability to work around and within the system. Leaders at these schools reshape and incorporate “district wide projects and special initiatives for disadvantaged students into their own strategies for maximizing performance, rather than acquiescing to the guidelines and requirements of individual programs” (Orr et. al, 2005, p. 24).

9. Resource ingenuity – High-poverty, high-challenge schools tend to have leaders who are “strategy mavericks” and “resource entrepreneurs” (Calkins et al., 2007, p. 44). These are leaders who work outside of the school to bring volunteers, partnerships, and additional funds to bear upon their schools. In addition to attracting resources to a school, effective leaders strategically align those resources to support the schools’ instructional goals (Robinson, Lloyd, & Rowe, 2008).

Many of these characteristics correspond to a host of larger community and socioeconomic conditions. Effective leaders, however, recognize the connections between schools and the surrounding world (Leithwood, Louis, Anderson, & Wahlstrom, 2004). As I present later in this chapter, effective principals directly establish these connections, which in turn indirectly contributes to student outcomes.

Definitions of Leadership

Of these various entry points into the study of school effectiveness, the one most compelling to me is the role of the principal. As a public school principal for six years, it is at this level that I see potential synergy as district and state-level policies converge with the skills of a school’s teachers (Louis, Leithwood, Wahlstrom, & Anderson, 2010). It is the principal that negotiates this confluence with the opportunity to shape a school

culture in ways that positively affect student performance. As Leithwood, Louis, Anderson, and Wahlstrom (2004) concluded, “There are virtually no documented instances of troubled schools being turned around without intervention by a powerful leader. Many other factors may contribute to such turnaround, but leadership is the catalyst” (p. 4).

Schools today are generally viewed as complex organizations. Whereas in the not-so-distant past the principal’s role was seen as managing a fairly stable environment, steadily increasing pressures for external accountability have put a new set of expectations on school leadership.

In response, Leithwood (1993) described the need for *transformational leadership*. This approach to leadership differs from the traditional managerial or instructional approaches that are seen as inadequate to the tasks at hand (Eyal & Kark, 2004). The challenges facing transformational leaders are “second-order”—both the means and the ends for school restructuring are uncertain (Waters, Marzano, & McNulty, 2003). Some researchers, such as Robinson, Lloyd, and Rowe (2008), have examined the effectiveness of transformational versus instructional leadership; other descriptors include participative, democratic, moral, and strategic. The adjective applied to that leadership model, however, is less important than the strategies and practices employed (Leithwood, Louis, Anderson, & Wahlstrom, 2004). For the purposes of this work, transformational leadership will be generally defined as: 1) developing a shared vision, 2) creating a productive work culture, and 3) distributing leadership across the organization (Leithwood, 1992; 1993). The four variables of effective leadership I considered for this

study—vision setting, creating a culture of learning, management, and collaboration—fit within the following definitions of transformational and distributed leadership.

Transformational Leadership

Broadly speaking, leadership can be defined as “providing direction” and “exercising influence” (Louis, Leithwood, Wahlstrom, & Anderson, 2010, p. 9). Traditionally, many of the challenges facing school leaders were fairly straightforward, operational issues (Harris, 2005). Schools were perceived as conservative organizations with a high degree of stability (Eyal & Kark, 2004), and because of this predictability, largely functioned as what Leithwood (1992) called, “Type A Organizations”—“characterized by centralized control, top-down decision making, and internal competition” (p. 8). Leadership over these organizations is termed either managerial or monitoring, with organizational goals of maintaining stability and keeping things the same (Eyal & Kark, 2004; Louis, Leithwood, Wahlstrom, & Anderson, 2010).

In the era of No Child Left Behind, however, schools have been pressed by the need for continual improvement (Eyal & Kark, 2004; Louis et al., 2010; NPBEA, 2001; Peterson, 2002). As the Wallace Foundation (2006) noted, “If principals merely perform as competent managers, but not engaged instructional leaders who can develop effective teams in their schools to drive sustained improvements in teaching and learning in every classroom, they do so at the risk of their jobs” (p. 1). This requires constant and often radical innovations, and though it goes by many names—including entrepreneurial and charismatic—the term most often applied to the leadership style necessary under these conditions is *transformational* (Bass, 1985; Burns, 1978; Eyal & Kark, 2004; Leithwood, 1992). Transformational leaders are change-oriented and promote innovation within

organizations to overcome both internal and external obstacles (Bass, 1997). Effective transformational leaders, however, are not “superheroes or virtuoso soloists” (Wallace Foundation, 2004, p. 2). Instead, these leaders are “Regular people.... They are not big, outsized personalities and they are not the only leaders in their schools. Especially in the larger schools, the principals know that they can’t get it all done themselves” (DeVita, Colvin, Darling-Hammond, & Haycock, 2007, p. 30). In a review of 33 studies, Leithwood and Jantzi (2005) found that about half concluded that transformational leaders had a small, indirect influence on academic or social student outcomes.

These leaders support beliefs and values that differ from the status quo and motivate the other members of the organization “to sacrifice their own personal interests for the sake of a collective goal and to perform beyond expectations” (Eyal & Kark, 2004, p. 216). Instead of leading in Type A organizations, transformational leaders operate within Type Z organizations (Leithwood, 1992; Ouchi & Jaeger, 1978). These are characterized by reduced differences between the members’ status, participative decision making, and power that is “stretched over” people (Spillane, Halverson, & Diamond, 2004, p. 16), rather than held over them (Leithwood, 1992). This approach to leadership is alternately referred to as collective (Leithwood & Mascall, 2008), shared (Pearce & Conger, 2003), and dispersed (Ray, Clegg, & Gordon, 2004); each of these falls into the larger category of *distributed leadership*.

Distributed Leadership

Distributed leadership is collective, inclusive, and empowers the organizational members (Harris, 1992). This model of leadership directly contrasts the “great man” approach described in bureaucratic structures (Pearce & Conger, 2003). Within a

distributed leadership framework, formal leaders “hold the pieces of the organization together in a productive relationship and...create a common culture of expectations” (Harris, 1992, p. 11). More consistent with Type Z organizations, distributed leadership within a school requires a principal to involve others—including students, staff, and parents—in the decision-making process (Leithwood, 1992; Leithwood & Mascall, 2008; Pounder, Ogawa, & Adams, 1995). Leadership rotates among various individuals in formal ways, such as through teams or committees as well as informal ways (Gronn, 2000; Supovitz, Sirinides, & May, 2010). Within this type of distributed leadership, also known as additive, leadership comes through influence, rather than power (Gronn, 2002, p. 679). In schools today, this may take many forms, including peer coaching, instructional advice networks, and professional learning communities focused on the quality of student work (DuFour, DuFour, Eaker, & Many, 2010; Louis, Dretzke, & Wahlstrom, 2010; Supovitz, Sirinides, & May, 2010).

In a comprehensive review of studies between 1980 and 1995 of effective principals, Hallinger and Heck (1996) found, “More involvement from a variety of stakeholders in decision making is characteristic of higher-producing schools” (p. 174). This increased involvement is significantly related to the quality of teachers’ work setting, motivation, and commitment to the common good (Leithwood & Mascall, 2008; Pounder, 1999). Increased involvement has also been shown to have a positive effect on school improvement (Donaldson, Johnson, Kirkpatrick, Marinell, Steele, & Szczesiul, 2008; Mayrowetz, Murphy, Louis, & Smylie, 2007; Mayrowetz & Smylie, 2004; Spillane, Halverson, & Diamond, 2004).

According to Lambert (2002, p. 37):

We no longer believe that one administrator can serve as the instructional leader for an entire school without the substantial participation of other educators. The old model of formal, one-person leadership leaves the substantial talents of teachers largely untapped. Improvements achieved under this model are not easily sustainable; when the principal leaves, promising programs often lose momentum and fade away. As a result of these and other weaknesses, the old model has not met the fundamental challenge of providing quality learning for all students.

Effective schools emphasize the need for increased leadership from greater numbers of people to solve problems. Staff teams and parent advisory groups are specific structures with significant correlations to student achievement (Leithwood & Mascall, 2008). As Louis (2008) summarized, “It is not the lines of authority that predict how school leadership is effectively enacted as much as it may be a result of the leader’s understanding of equalizing power in all relationships associated with schooling” (p. 594).

Too much of a good thing, however, has been empirically shown to have a negative effect on student engagement: “More leadership actually detracts from clarity of purpose, sense of mission, sufficient certainty about what needs to be done to allow for productive action in the school and the like” (Leithwood & Jantzi, 2000, p. 61). It is contingent upon transformational leaders, then, to establish the climate for these processes to be distributed effectively across organizations. Though a challenging prospect, these leaders are able to create organizations that continually learn and improve (Datnow, 2005; Hargreaves & Fink, 2006).

Principals as Transformational Leaders

For the purposes of this research, the primary transformational leader under consideration is the school principal. While the principal holds a formal position of power, in keeping with the definition of a Type Z organization (Ouchi & Jaeger, 1978), the principal's role is not traditional top-down leadership (Leithwood, Jantzi, Silins, & Dart, 1992). Instead, Leithwood and Jantzi (1999) found that effective school principals work to affect "school conditions," which then affect classroom conditions. In reform initiatives in Chicago, for example, principals had significant influence over the conditions that lead teachers to be receptive toward change (Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010; Waugh, 2000).

Establishing trust between the teachers in a school, for example, is one important factor that contributes to more effective reform initiatives within a school (Bryk & Schneider, 2003; Bryk, Sebring, Allensworth, Luppescu, & Easton, 2010; Ferguson, Hackman, Hanna, & Ballantine, 2010; Hoy & Sweetland, 2001; Louis, 2007; Louis, Dretzke, & Wahlstrom, 2010; Supovitz, Sirinides, & May, 2010; Tarter, Bliss, & Hoy, 1989; Tschannen-Moran, 2004). A second example of how principals can affect school conditions is by creating the structures that allow a school to function as a professional learning organization (Wahlstrom & Louis, 2008). Principals in these types of organizations increase student achievement by fostering supportive roles between staff, creating a culture with shared values, facilitating a collaborative development of curriculum and instruction, and promoting reflective dialogue (King & Newmann, 2001; Louis & Marks, 1998; Marks, Louis, & Printy, 2000; Nicolaidou & Ainscow, 2002; Smylie & Wenzel, 2003; Tighe, Wang, & Foley, 2002). These characteristics are

embodied in the ISLLC standards (CCSSO, 2008). This research examined the relationships between these principal characteristics and student performance.

Challenges to Transformational Leadership

Transformational leadership is inherently risky because it necessitates relinquishing control within a high stakes environment (Lyons & Algozzine, 2006).

Leithwood (1992) summarized some of the challenges of this leadership model: involving others in the decision-making process, actively listening to group discussions, avoiding preconceived solutions, being open to various viewpoints, and changing course when necessary. According to Kellogg (2006), the empirical evidence regarding the impact of shared leadership on school outcomes is inconsistent. Malen (1999, p. 209) concluded:

Despite more than a half century of research, credible and consistent evidence regarding the nature of participatory structures and processes in schools and their impact on individuals and institutions is more rare than one might expect, given the recurrent advancement of ‘shared decision making’ as a robust reform strategy. Simply put, the ‘chains of evidence’ required to make confident claims about these ventures have mighty thin links and very big holes.

Similarly, McNeill and McNeill (1994) identified several challenges to shared leadership, including a skewed agenda toward operational versus instructional issues and blurred boundaries between the principal and the management team. The potential benefit, however, is the possibility that “staff members as a group could develop better solutions than the principal could alone”

(Leithwood, 1992, p. 11).

Influences on Leadership

Although I provide additional discussion on the inputs that influence leadership development in the conclusions and implications section, a brief consideration here of these influences is merited. Leithwood, Louis, Anderson, and Wahlstrom (2004) identified several variables that affect leadership formation. First, formal preparation programs vary in their quality (Darling-Hammond, LaPointe, Meyerson, & Orr, 2007). Effective preparation programs have been found to be long-term, job-embedded, and carefully planned with a coherent curriculum that is focused on student achievement. A second input affecting leadership is ongoing learning experiences. Leithwood et al. (2004) described the need for “authentic” experiences that contribute to a leader’s ability to reflect and problem solve. Meaningful professional development for principals will embed this learning in real-life contexts while also extending understanding. Finally, summative feedback as part of the principal evaluation process is integral to shaping leadership development (Porter, Polikoff, Goldring, Murphy, Elliott, & May, 2010).

Characteristics of Effective Leadership

A large body of research investigates the characteristics of effective school leaders; while various descriptors have been applied, I provide an overview of the range of practices and narrowed my study to those variables that have received general consensus for their ability to improve student outcomes.

Establishing a Belief in the Need for Change

Teachers are the engines that drive school improvement and their personal commitment to change is vital to the success of any initiative. The process for establishing that motivation is complex, but principals play a key role (Leithwood, 1993; Leithwood, Steinback, & Jantzi, 2002). Contrary to much of the rhetoric surrounding *No Child Left Behind*, Waugh (2000) and others have found teachers were more motivated by their perceptions of the value of reform for students than by fear of sanctions (Leithwood, Steinback, & Jantzi, 2002; Finnigan & Gross, 2007). Staff are more able to function productively at a high level if they first have a shared understanding of the purpose of their work as well as the constraints within which they must operate (Leithwood & Mascall, 2008; Wenger, McDermott, & Snyder, 2002). Principals help craft this vision of potential change (Leithwood, 2008) and set a new direction (Leithwood & Jantzi, 2008), though according to Elmore (2003), “Knowing the right thing to do is the central problem of school improvement” (p. 9).

Establishing Clear, Valued Goals

Involving others in the process of setting a clear, compelling school mission, vision, and expectations is a critical role of school principals (Hallinger & Heck, 1996; Leithwood & Jantzi, 1999; Supovitz, Sirinides, & May, 2010). Robinson, Lloyd, and Rowe (2008) estimated an effect size of 0.42 standard deviations (moderately large) for establishing goals and expectations; this dimension has the strongest direct impact on student learning (Witziers, Bosker, & Krüger, 2003). Rather than maintaining the status quo, transformational leaders “stimulate people to arrive at new (and higher) goals for personal and professional development” (Hallinger & Heck, 1996, p. 173). Teachers are

more likely to be motivated by goals they find personally compelling, challenging, and achievable (Bandura, 1986; Ford, 1992; Locke, Latham, & Eraz, 1988). Within the context of schools, the particular nature of these goals is most effective when it is related to student learning and success (Finnigan & Gross, 2007; Leithwood & Jantzi, 2006; Leithwood, Steinback, & Jantzi, 2002). An emphasis on academic goals is embodied through perceptions such as, “The principal makes student achievement the school’s top goal” and “Schoolwide objectives are the focal point of reading instruction at this school” (Robinson, Lloyd, & Rowe, 2008, p. 659).

Providing Incentives

The incentives an effective school leader can provide vary from material incentives, such as money, to intrinsic incentives that appeal to a teacher’s sense of professional pride. In an era of high stakes accountability, Finnigan and Gross (2007) found that teachers are “particularly sensitive to their status within a professional community and the threat to that status implied by probation identification” (p. 616). Warding off these extrinsic goals in favor of more meaningful intrinsic goals—student learning regardless of high stakes testing—is a challenge to contemporary principals (Leithwood, Steinbach, & Jantzi, 2002). Principals provide incentives on a more emotional level by complimenting teachers, involving them in the decision making process, and acknowledging their contributions (Leithwood, Steinbach, & Jantzi, 2002).

Creating a Sense of Capacity and Efficacy

Teachers who willingly engage in reform initiatives generally have strong beliefs “about their capabilities to exercise control over their own level of functioning and other events that affect their lives” (Bandura, 1997, p. 118). This variable is also closely

related to what Hoy, Tarter, and Woolfolk Hoy (2006) called “academic optimism” (p. 425). According to Leithwood, Steinback, and Jantzi (2002), “Teacher efficacy beliefs are influenced by such variables as school size, sense of control over classroom conditions, sense of community, teacher assignment, the nature of the school’s culture, and feedback from colleagues and supervisors” (p. 101). Strong correlations have been found between teachers’ efficacy beliefs and student outcomes (Tschannen-Moran & Hoy, 2001; Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998). Participation in shared decision-making has been identified as one way in which teachers increase their job satisfaction and sense of efficacy (Weiss, 1992). Effective principals build hope among teachers in their own abilities, capacities of students, and the possibilities of the school. This efficacy, in turn, “strongly predicts focused instruction” (Wahlberg & Louis, 2008, p. 458). It also increases a teacher’s motivation to engage in reform initiatives (Leithwood & Jantzi, 2008).

Negotiating the Surrounding Context and Previous Experiences

A final factor that affects the success of reform initiatives is the larger picture within which they are embedded. Successful leadership in one setting does not necessarily transfer to different settings, whether that means a different geographic setting, staff make-up, or student demographic profile (Leithwood, Louis, Anderson, & Wahlstrom, 2004). According to the basic premises of situativity theory, the context in which a person operates informs how they are likely to function within that setting (Anderson, Reder, & Simon, 1996). For some, the mention of the word “reform” evokes images of multiple failed initiatives, resulting in high levels of skepticism—a chorus of “Here we go again” emanating from the staff lounge. Ferguson, Hackman, Hanna, and

Ballantine (2010) described six fears that contribute to resistance to change: fear of wasting time and energy; fear of losing autonomy; fear of incompetence; fear of becoming socially isolated; fear of unpleasant surprises; and fear of more work (p. 24).

For others, reform initiatives have been well planned and adequately supported with both time and material resources (Finnigan & Gross, 2007). While principals do not have control over much of what happens beyond their schools, a primary responsibility they have is buffering their staff from outside distractions (Hallinger & Heck, 1996; Leithwood, Steinback, & Jantzi, 2002; Weick, 1976). Though many teachers are inherently motivated, removing external obstacles to success is often a responsibility of effective principals (Lawton, 2001). Principals also influence the stability of the organization, influence the relationship between the school and community, and provide professional development relevant to the reform (Leithwood, 1993; Spillane, Halverson, & Diamond, 2004).

Many researchers have attempted to combine these and other characteristics into models that describe the collective practices of effective leaders. I present and compare several of those models in the following section.

Leadership Models

Research indicates several themes of action common to effective transformational principals. As was presented earlier regarding effective schools, principals have an indirect effect on student learning by shaping the overall school conditions. As can be seen in Table 3, these leadership practices can be understood in varying but overlapping terms.

Leithwood and Jantzi (2000, p. 55), for example, described the most critical principal practices as:

1. Working directly with teachers to improve effectiveness in the classroom,
2. Providing resources and professional development to improve instruction,
3. Regularly monitoring teaching and student progress,
4. Participating in discussions on educational issues, and
5. Promoting parental and community involvement in the school.

Consistent with the definition of transformational leadership, Silins, Mulford, and Zarins (2002) emphasized vision-setting, establishing a participatory decision-making structure, and creating a supportive culture. Waters, Marzano, and McNulty (2003) included many of these same ingredients but broke them into 21 leadership responsibilities. These include elements from establishing discipline to developing collective teacher capacity and engagement. In a more recent summary, Leithwood and Jantzi (2005) presented these practices organized around four areas: 1) setting direction through consensus; 2) supporting teachers; 3) strategically allocating resources; and 4) fostering collaboration and engaging families and the community. In a follow-up study, teachers perceived the principal practices most important to helping improve instruction as focusing the school on goals and expectations for student achievement, keeping track of teachers' professional development needs, and creating structures and opportunities for teachers to collaborate (Louis, Leithwood, Wahlstrom, & Anderson, 2010).

Another group of researchers (Robinson, Lloyd, & Rowe, 2008), identified five dimensions of effective leadership practices: establishing goals and expectations; resourcing strategically (aligning to instructional goals); planning, coordinating, and

evaluating teaching and the curriculum (including monitoring student progress); promoting and participating in teacher learning and development; and ensuring an orderly and supportive environment, including protecting staff from administrators and parents. Supovitz, Sirinides, and May (2010) condensed this list to three practices: setting mission and goals, encouraging collaboration and trust, and improving teaching and learning. Finally, Ferguson et al. (2010) outlined their version of five steps leaders must take for their schools to become exemplary: 1) accept responsibility to lead the change process; 2) set a purpose with a clear mission statement with a few key ideas and priorities; 3) design strategies and incentives for inclusive adult learning; 4) develop standards for judging teacher and student work; and 5) implement plans, monitor quality, and provide support and incentives.

Culmination of Research: Educational Leadership Policy Standards

Across the breadth of school effectiveness research, various effective leadership criteria have been put forth. Depending on the authors, those indicators vary in number and content, although they tend to have more in common than not. In an attempt to synthesize the research on effective school leadership, the Council of Chief State School Officers (2008) developed policy standards that “spell out clear expectations about what leaders need to know and do to improve instruction and learning” (Wallace Foundation, 2006, p. 3). These Interstate School Leaders Licensure Consortium standards (ISLLC standards), presented in Table 2, are intended to help guide the pre-service training for schools of education, the continuing education programs for principals, and districts’ evaluation processes (CCSSO, 2008). The National Policy Board for Educational

Administration and the Educational Leadership Constituent Council recently aligned these standards for administrative preparation programs (NPBEA, 2011).

Table 2

ISLLC Standards and Functions (CCSSO, 2008, p. 15)

Standard	Functions
1. Setting a widely shared vision for learning	<ul style="list-style-type: none"> A. Collaboratively develop and implement a shared vision and mission B. Collect and use data to identify goals, assess organizational effectiveness, and promote organizational learning C. Create and implement plans to achieve goals D. Promote continuous and sustainable improvement E. Monitor and evaluate progress and revise plans
2. Developing a school culture and instructional program conducive to student learning and staff professional growth	<ul style="list-style-type: none"> A. Nurture and sustain a culture of collaboration, trust, learning, and high expectations B. Create a comprehensive, rigorous, and coherent curricular program C. Create a personalized and motivating learning environment for students D. Supervise instruction E. Develop assessment and accountability systems to monitor student progress F. Develop the instructional and leadership capacity of staff G. Maximize time spent on quality instruction H. Promote the use of the most effective and appropriate technologies to support teaching and learning I. Monitor and evaluate the impact of the instructional program
3. Ensuring effective management of the organization, operation, and resources for a safe, efficient, and effective learning environment	<ul style="list-style-type: none"> A. Monitor and evaluate the management and operational systems B. Obtain, allocate, align, and efficiently utilize human, fiscal, and technological resources C. Promote and protect the welfare and safety of students and staff D. Develop the capacity for distributed leadership E. Ensure teacher and organizational time is focused to support quality instruction and student learning
4. Collaborating with faculty and community members, responding to diverse community interests and needs, and mobilizing community resources	<ul style="list-style-type: none"> A. Collect and analyze data and information pertinent to the educational environment B. Promote understanding, appreciation, and use of the community's diverse cultural, social, and intellectual resources C. Build and sustain positive relationships with families and caregivers D. Build and sustain productive relationships with community partners
5. Acting with integrity, fairness, and in an ethical	<ul style="list-style-type: none"> A. Ensure a system of accountability for every student's academic and social success B. Model principles of self-awareness, reflective practice,

manner	<p>transparency, and ethical behavior</p> <p>C. Safeguard the values of democracy, equity, and diversity</p> <p>D. Consider and evaluate the potential moral and legal consequences of decision-making</p> <p>E. Promote social justice and ensure that individual student needs inform all aspects of schooling</p>
6. Understanding, responding to, and influencing the political, social, legal, and cultural contexts	<p>A. Advocate for children, families, and caregivers</p> <p>B. Act to influence local, district, state, and national decisions affecting student learning</p> <p>C. Assess, analyze, and anticipate emerging trends and initiatives in order to adapt leadership strategies</p>

As can be seen in Table 3, the various descriptions of the characteristics of effective leadership overlap that I presented earlier in this chapter overlap considerably and align with the four ISLLC standards that I have identified as predictor variables for this study.

Table 3

Comparison of Characteristics of Effective Leadership Models to the ISLLC Standards

	Hallinger (2000)	Leithwood and Jantzi (2000)	Silins, Mulford, and Zarins (2002)	Waters, Marzano, and McNulty (2003)	Leithwood and Jantzi (2005)	Robinson, Lloyd, and Rowe (2008)	Ferguson, Hackman, Hanna and Ballantine (2010)
ISLLC Standard 1: Collective vision/ mission setting	Defining the school's mission	Working directly with teachers to improve classroom effectiveness	Vision-setting	-Culture -Optimizer -Ideals/ beliefs -Change agent -Flexibility	Setting direction through consensus	Establishing goals and expectations	-Set a purpose with a clear mission statement with a few key ideas and priorities
ISLLC Standard 2: Culture of learning	Managing the instructional program	-Regularly monitoring teaching and student progress -Providing resources and professional development -Participating in educational discussions	Creating a supportive culture	-Providing contingent rewards -Affirmation -Monitors/ evaluates curriculum, instruction, assessment -Intellectual stimulation -Managing resources -Situational awareness -Order -Discipline	Supporting teachers	-Planning, coordinating, and evaluating teaching and the curriculum -Promoting and participating in teacher learning and development Resourcing strategically (aligning to instructional goals)	-Implement plans, monitor quality, and provide support and incentives -Develop standards for judging teacher and student work - Inclusive adult learning -Accept responsibility to lead the change process
ISLLC Standard 3: Resource management	Promoting a positive learning climate				Strategically allocating resources		
ISLLC Standard 4: Collaboration		Promoting parental and community involvement	Establishing participatory decision-making structures	-Relationships -Outreach -Communication -Input	Fostering collaboration and engaging families and community	Protecting staff from administrators and parents	

According to the Wallace Foundation (2006), the practices embodied in these standards, along with training, conditions, and incentives, determine the quality of school leadership. The impact of each function, however, is not equal. Depending on their magnitude, Waters, Marzano, and McNulty (2003) placed these practices on a continuum that they describe as *first-order changes* to *second-order changes*. A first-order change for some may be a second-order change for others; collaboratively developing a shared vision, for example, may constitute this type of second-order change for some leaders. While each order of change may result in improved outcomes, second-order changes require leaders to work more deeply with staff and the community and may even throw the organization into a stage of “conscious incompetence” (Waters, Marzano, & McNulty, p. 8).

Aligning principal preparation, evaluation, and ongoing training around these standards (NPBEA, 2011) has the potential to create what DeVita, Colvin, Darling-Hammond, and Haycock (2007) called a “cohesive leadership system” (p. 2). Knowing the characteristics of effective school leaders might influence how those leaders are identified, prepared, and supported in their practice. School leaders who have been prepared in accordance with these standards and whose performance is positively evaluated according to these standards have been found to run schools that make a difference for students (Darling-Hammond, LaPointe, Meyerson, Orr, & Cohen, 2007).

Synthesizing an Effects Model

Many of the researchers cited in this chapter, including the recent Wallace Foundation school leadership work led by Louis, Leithwood, Wahlstrom, and Anderson (2010), position principals within the constellation of influences on student achievement.

After considering other models as well as the general research I presented in this review of literature, I constructed a model, presented in Figure 1, which situates principals within the student-level, teacher-level, school-level and external policy-level effects. While the focus of my research is on the influence of principals in this model, according to Bryk, Sebring, Allensworth, Luppescu, and Easton (2010), each of these elements are like ingredients of a cake, and absent any single ingredient, you no longer have a cake.

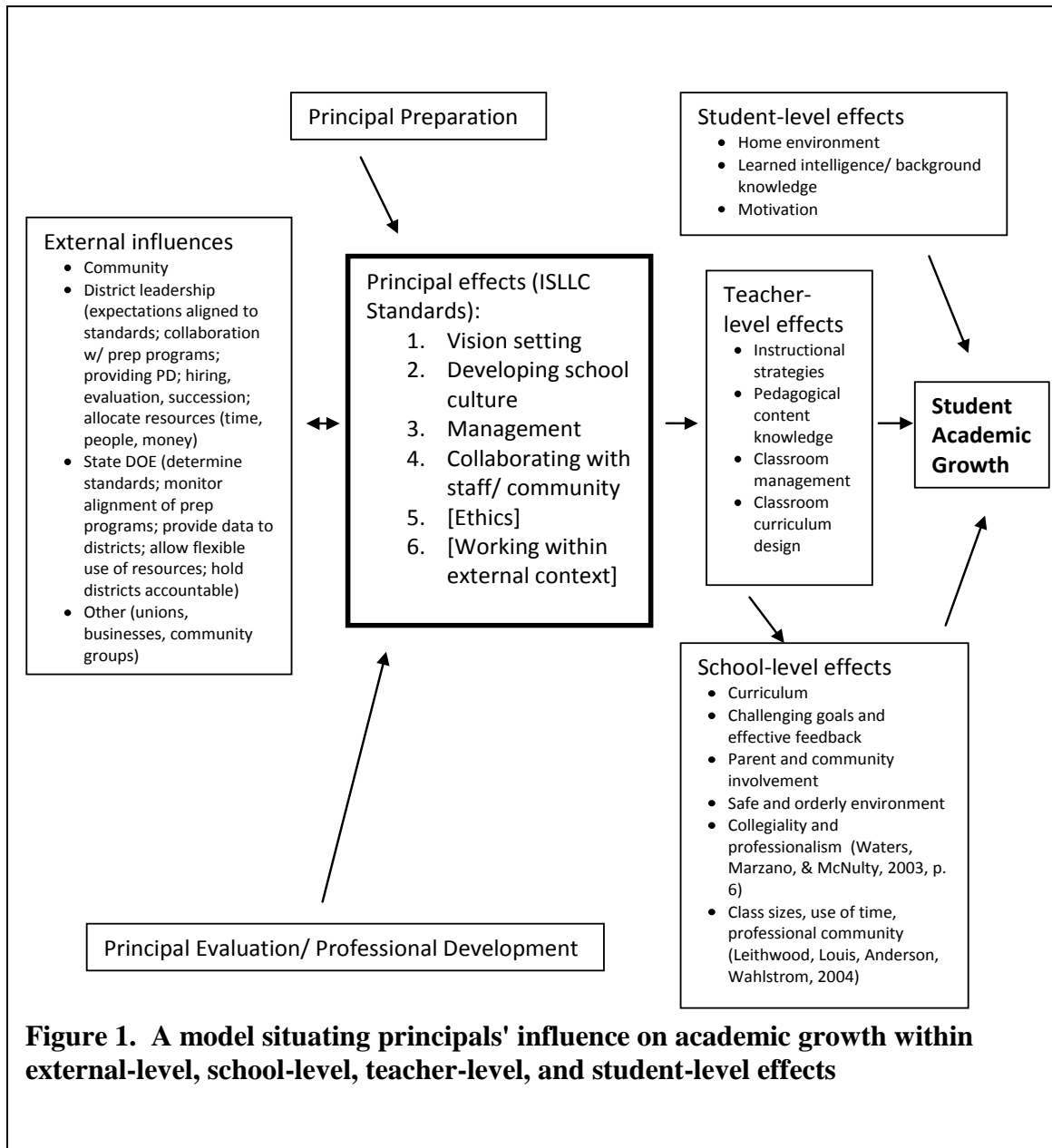


Figure 1. A model situating principals' influence on academic growth within external-level, school-level, teacher-level, and student-level effects

Research Question

By reviewing the literature, I have established that previous studies have determined three things: one, that schools matter; two, that while there are multiple elements both inside and outside of schools that affect student achievement, the building principal is an important element; and three, that certain principal leadership behaviors

make a difference in a school's effectiveness. My research built on these findings by exploring the relationships between principal actions and student performance. More specifically, I am interested in quantifying the relationship between practices defined in the ISLLC standards with student outcomes as measured by growth in scaled standardized test scores. Within those standards, I have identified four of particular interest to this current research—setting a vision, establishing a culture of learning and growth, managing resources, and collaborating with the community. This further narrowed the study to examine the relationships between principal implementation of the ISLLC standards of vision, culture, management, and collaboration and student performance as measured by the New Mexico standards-based assessments.

These potential relationships between the ISLLC standards and student performance are particularly germane given the school leadership challenges within New Mexico. Winograd, Garcia, and Dasenbrock (2008) determined, “Student achievement in math and reading is significantly related to the total years of a principal’s experience in the district” (p. 3). Turnover rates, however, are alarmingly high: between 1994 and 2004, more than half of New Mexico’s schools had three or more principals. Additionally, one-third of New Mexico’s principals are older than 55, with an average age of 51 and the number of educational administration degrees conferred by New Mexico’s five largest universities decreased by 43% from 2003 to 2008 (Winograd et al., 2008). Given these leadership challenges within New Mexico, my research question was: “What are the relationships between principal implementation of the ISLLC standards of vision, culture, management, and collaboration and student performance in New Mexico public schools?” Increasing understanding of these relationships has the potential to

inform principal identification and preparation, evaluation, and ongoing professional development and in doing so, improve academic outcomes for New Mexico's students.

Chapter Three

Research Methods

Introduction

Although New Mexico is a relatively small state, it is also incredibly diverse: from large, urban districts like Albuquerque to small, rural districts like Mosquero; from districts like Gadsden that serve mostly Hispanic students to others like Zuni that serve mostly Native Americans; from the affluent to the extremely poor. To increase the generalizability of this study across this diversity, I opted to use quantitative methods to survey as many eligible schools as possible. In this chapter, I detail my methods.

Instrumentation

Teacher Questionnaires

Numerous instruments have been designed to study effective school leaders (Borden, 2011; Leadership Frameworks, 1988; Silins, 1994; Teddlie & Stringfield, 1993; Valentine & Bowman, 1988). Many of those instruments are used to survey a combination of the constituents who interact with principals, including students, community members, and parents. The most direct impact principals have on the teaching and learning process, however, is through their instructional leadership with teachers—they “work more closely with principals than any other professional group” (Valentine & Bowman, 1988, p. 6). I considered four quantitative research questionnaires—“School Effectiveness Questionnaire” (Baldwin, Coney, Fardig, & Thomas, 1993), “Audit of Principal Effectiveness” (Valentine & Bowman, 1988), “Transformational and Transactional Leadership Questionnaire” (Silins, 1994), and

“CALDES” (Borden, 2011, 1999)—to determine which was the best fit for my research questions.

First, the “School Effectiveness Questionnaire” (SEQ), measures school effectiveness across 11 dimensions: instructional leadership, clear and focused mission, safe and orderly environment, positive school climate, high expectations, frequent assessment and monitoring of student achievement, emphasis on basic skills, maximum opportunities for learning, parent/community involvement, strong professional development, and teacher involvement in decision making. According to a review of the SEQ, however, “No data are reported linking scores on this set of questionnaires with other indicators of effectiveness” (Baldwin, Coney, Fardig, & Thomas, 1993). The review also noted the lack of norms and questioned the intercorrelations between the 11 characteristics. Given the lack of empirical evidence that the identified characteristics can improve school effectiveness, the validity of this instrument is questionable.

A second instrument, “The Audit of Principal Effectiveness” (Valentine & Bowman, 1988), was developed in several iterations, resulting in 80 items that cover three principal areas of skill with nine associated factors. Those domains and factors are: 1) organizational development (organizational direction, linkage, and procedures); 2) organizational environment (teacher and student relations and interactive and affective processes); and, 3) educational program (instructional and curricular improvement). The process of arriving at these particular characteristics of effective principals included a review of available research, such as Austin (1979); Edmonds (1982); Hersey (1986); Keefe, Clark, Nickerson, & Valentine (1983); Mackenzie (1983); Persell & Cookson (1982); Purkey & Smith (1982); Robinson (1985); Rogus (1983); Rutter (1979); and

Sweeney (1982). The synthesis of this research resulted in 162 items divided into two forms that combined to cover 12 theoretical constructs about principal leadership. After piloting the instrument over several studies, it was shortened to create what the authors hoped was a “useful tool so future researchers can make a meaningful contribution to the understanding of building leadership” (Valentine & Bowman, 1988, p. 18).

A third instrument, the “Transformational and Transactional Leadership Questionnaire” (Silins, 1994), was developed in Australia to compare principal effectiveness with four outcomes: student performance, curriculum, teachers, and school culture. After conducting a pilot study with 458 primary teachers, Silins administered a revised questionnaire, consisting of 106 items, to 291 teachers from 58 schools. Sixty-two of these items asked teachers to use a Likert scale to rate principals based on: vision, individual consideration, collaborative problem solving, goal achievement, and ethos. Silins (1994) developed a path model “1) to test the construction of the latent variables from the observed or manifest variables, 2) to examine causality between the constructs of the model, and 3) to estimate the magnitudes of the hypothesized relationships” (p. 6). Based on standards for the size of the path coefficients, three out of the eight constructs were deleted from the model because they did not contribute to an explanation of the four outcomes.

A fourth and final instrument, the CALDES (Appendix A, “Teacher Questionnaire”) (Borden, 2011, 2002), includes items from the “Audit of Principal Effectiveness” (Valentine and Bowman, 1988), the “Transformational and Transactional Leadership Questionnaire” (Silins, 1994), the “Leadership Climate Inventory” (Watson, 1985), and the “School Assessment Questionnaire” (Bamburg, 1990). The 95 items were

chosen to measure teachers' perceptions of research-based, effective principal behaviors that include: "helping teachers improve their performance, recognizing a job well done, sharing expectations with teachers, and enforcing school rules" (Borden, 2002, p. 24). The concurrent validity for this instrument was not determined because there is no "gold standard" for assessing principals' activities; similarly, the predictive validity was not assessed because the instrument is not designed to forecast future behaviors (Borden, 2002, p. 25). Using one-way analysis of variance within three sub-scores, however, Borden was able to distinguish the principals from each other and concluded that the principals do "differ from school to school in their instructional leadership activities" (p. 27). Based on estimates of Cronbach's alpha reliability for the 95 items and for the three sub-scales she created and tested, Borden concluded that "each of the three sub-scores is also a reliable measure" (p. 28).

The Teacher Questionnaire was the best match for my research question for several reasons. First, this instrument synthesized relevant items from four research-based questionnaires and reworded questions to improve the respondents' attention to each item. Second, through several iterations of field testing, the reliability and validity of this version were confirmed. And third, based on my analysis, the 95 items comprehensively aligned with my four variables. Several revisions, however, were necessary.

The first revision involved minor rewording to make the questions relevant to teachers in New Mexico; for example, I changed references to the "Ministry" to the "Public Education Department." Second, I changed the phrasing of the answer choices to improve participant understanding (Fowler, 2002). In its original format, respondents

selected from a five-point Likert scale, with numbers one and five being, “Strongly Agree” and “Strongly Disagree.” In the Teacher Questionnaire, I changed these choices to “Completely Agree” and “Completely Disagree.”

Finally, I revised the length of the instrument. Whereas the original version consisted of 95 items, in an attempt to increase the response rate, I removed 33 closely related items or those that did not correlate directly with the four identified practices, resulting in a 62-item questionnaire.

To test several hypotheses around specific, research-based behaviors, one important step in constructing my model was connecting each of these 62 items with the four variables I tested. Through this process, I created 4 composite variables—TEACHVISION, TEACHINSTRUCT, TEACHMANAGE, and TEACHCOLLAB—each with between 13 and 17 associated items (see Appendix F for the items sorted by variable). The statistical analyses described in Chapter Four ensure the validity and reliability of these revisions.

Principal Questionnaires

The first principal questionnaire I considered, developed by Darling-Hammond, LaPointe, Meyerson, Orr, and Cohen (2007) as part of the “School Leadership Study” commissioned by the Wallace Foundation, consisted of 48 items and focused on the relationship between principal preparation programs and their school leader effectiveness. The questionnaire drew from the federal “Schools and Staffing Survey” (NCES, 2006), Leithwood and Jantzi’s (1999, 2000) studies of effective school leadership practices, and the Interstate School Leaders Licensure Consortium (ISSLC) standards. While both the reliability and validity of the instrument were established, the preponderance of items

focused on both pre-service and in-service training, reducing the relevance for my particular research interests.

A second questionnaire I considered, the Vanderbilt Assessment of Leadership in Education (VAL-ED), was developed over a three-year period by two school leadership researchers, a school psychologist, and a psychometrician (Porter, Polikoff, Goldring, Murphy, Elliott, & May, 2010). Based on the ISLLC standards, this paper and online assessment is a 360-degree instrument, requiring responses from teachers, the principal, and the principal's supervisor. Condon and Clifford (2010) reviewed eight principal performance assessments that met their minimum reliability rating of 0.75. These eight included the Diagnostic Assessment of School and Principal Effectiveness, the Instructional Activity Questionnaire, the Leadership Practices Inventory, the Performance Review Analysis and Improvement System for Education, the Principal Instructional Management Rating Scale, the Principal Profile, and the VAL-ED. Of these eight, the VAL-ED had the highest reliability, 0.98, and had content, construct, and concurrent validity. Unfortunately, though commercially available and in use by many districts, costs prohibited use of the VAL-ED instrument in this study.

A final questionnaire I considered, and ultimately decided to use, is the "Leadership from Learning Principal Survey" (University of Minnesota, 2005). This instrument, developed by several researchers, including Leithwood, Louis, Wahlstrom, Anderson, and Jantzi, was used in "Learning from Leadership," a multi-year, mixed-methods study also commissioned by the Wallace Foundation. The researchers developed both teacher and principal questionnaires that were originally administered in 2005, revised slightly, and re-administered in 2009. These instruments began with a pool

of approximately 400 existing items and scales that both sets of principal investigators had used in their previous research (Leithwood, Aitken, & Jantzi, 2001; Louis, Marks, & Kruse, 1996). After field testing and interviews with focus groups, the final result was a 134-item principal survey, requiring about 30 minutes to complete (Leithwood & Jantzi, 2008). Data collected from these questionnaires have been used in numerous studies as part of the Wallace Foundation's larger project on the impact of leadership on learning.

Based on their sample of 180 schools across 45 districts in 9 states, Leithwood and Jantzi (2008) used estimates of Cronbach's alpha reliability coefficient to determine the reliability of their scales. The sets of researchers also used a path analytic technique, linear structural relations (LISREL), to test the validity of casual inferences for pairs of variables while controlling for the effects of other variables (Leithwood & Jantzi, 2008; Louis, Leithwood, Wahlstrom, & Anderson, 2010).

As was the case with the teacher questionnaire, I revised the length of the "Leadership from Learning" questionnaire (Appendix B). After eliminating questions not directly related to my research questions—those related to the influence of state level policies, for example—I identified 39 relevant items that are coded on a 5-point Likert scale. Similar to my work steps for the teacher surveys, I tied each item to one of my four constructs—PRINVISION, PRININSTRUCT, PRINMANAGE, and PRINCOLLAB—and I created a composite score for each of these variables.

Sample

Initially, I attempted to calculate the sample size based on the number of teachers in New Mexico—22,779 in 2007-08 (Garcia, 2009). Upon further reflection, however, I concluded that, given that the unit of analysis for my research is the principal, I should

instead focus on how many schools I needed to sample and then determine the number of teachers at each of those schools.

In 2011, there were 454 elementary schools, 181 middle schools, and 192 high schools in New Mexico (Public School Review, 2011). Based on data from New Mexico's Office of Educational Accountability, 418 of those schools have had the same principal since the 2007-2008 school year. Limiting the study to these principals ensured that they were at the school at least for the first year for which I collected student performance data, 2007-2008, and that they were still present at the same school for the most recent year in which standards-based data were available, 2010-2011. Assuming an error rate of 4 percent, to achieve a 95% confidence level, I estimated that I needed 246 principals in my study (Talent Management Solutions, 2010). By distributing the questionnaire to each of the 418 eligible schools, I needed a 61% response rate to have 246 participating principals.

Rather than sampling teachers within those schools, I attempted to administer the questionnaire to all certified staff within each building. For each participating school, I surveyed each teacher with the goal of an 80% response rate for each site. School size did not limit the sample, as schools with as few as 30 students in their testing population have been found to provide consistent results for growth (Goldschmidt, Choi, Martinez, & Novak, 2010).

My goal was to have respondents from elementary, middle, and high schools. According to Louis, Dretzke, and Wahlstrom (2010), many previous studies have focused on a single level of schools and those that sample all levels tend to draw from a single district. As I described in my review of literature, however, the level and type of school

matters in improving student achievement. For example, influencing student achievement has been easier in elementary schools than in secondary settings (Louis, Dretzke, & Wahlstrom, 2010). While I received responses across these three levels as well as from alternative and charter schools, the number from each category is not great enough to draw generalizable comparisons between the levels.

Instrument Dissemination and Collection Procedures

In my limited experience with school-based survey research in New Mexico, administering hard copies of questionnaires was more effective than electronic distribution (Weinberg, 2010). In that study, my response rate was 56% (10 out of 18) for the pencil and paper method versus 23% (7 out of 30) for a web-based version. These differences, however, are more likely a result of my own influence—I was the principal of the school where I administered the hard copies—than the distribution method. Without this direct connection to the schools across New Mexico, I used Survey Monkey to create a web-based, electronic version of the teacher and principal questionnaires. An electronic version of the survey was easier to disseminate, secure for participants to complete, and simple to return and track responses.

Based on interviews with the New Mexico School Leadership Institute, the Office of Educational Accountability, former doctoral students, and the Legislative Education Study Committee, there is no substitute for direct contact when it comes to influencing response rates. Presentations at staff meetings, follow-up emails, and numerous phone calls are essential to achieve even modest rates of return.

One concern I had was that, by their nature, principals operating in schools making less academic growth may be less inclined to place the same emphasis on the

questionnaire and therefore get a lower response rate. The same may well be true in reverse—principals in high-growth schools may view questionnaires as a distraction to the core mission of instruction. While I did not have specific strategies to combat this non-response bias, it is clear that those who did not return the questionnaire had the potential to skew the reliability of the data (Light, Singer, & Willett, 1990).

Using data from New Mexico’s Public Education Department’s Student Teacher Accountability Reporting System (STARS), I initially emailed my principal questionnaire to 418 principals who I believed had been at their schools from the 2008 school year (2007-2008) to the 2011 school year (2010-2011). Based on initial responses from those invitations from principals who had moved to new schools or moved to new positions within the district as well as principals I could not contact by email or phone, I concluded that the actual total number of eligible principals in my data set was 329. I sent each of those principals an electronic invitation in April 2011 (see Appendix C, “Principal Invitation”). The invitation included an attachment with the principal’s questionnaire and a link that I asked principals to forward to their teachers to invite them to participate in the study by completing a teacher questionnaire.

For the next six weeks, I sent a series of four reminders and follow-up emails. To principals who had completed the questionnaire, I sent thank you notes as well as reminders to encourage additional teachers to complete their questionnaires.

By the end of the 2011 school year, I received 105 responses to my principal questionnaire, a 32% response rate. After removing respondents who completed less than 50% of the questionnaire (in some cases, an individual appeared to start responding at least once before final completion) or respondents who identified themselves in roles

other than principals (i.e. school counselors or directors of instruction), I determined that I had 95 valid principal responses, a response rate of 29 percent.

Because I wanted to compare these principals' responses with teachers' responses against student growth as measured by New Mexico's standards-based assessment, I was not able to include all of these principals in my final data set. As I describe in more detail in Chapter Four, in some cases, I did not receive questionnaire results from teachers, while in other cases, SBA data was unavailable because of the type of school, such as an early learning center or alternative learning setting. As a result, I determined that I had complete data—teacher responses, principal responses, and SBA data—from 41 schools, 12% of the 329 eligible principals. I imported data for these 41 principals, along with teacher data and standards-based assessment data that I describe later in this chapter, into IBM SPSS Statistics 19.0 (2011) for analysis.

Data Set Construction

I coded each of my items on a Likert scale of one to five for both the teacher and principal instruments. For those negatively phrased questions, I reverse coded the values of the responses in SPSS to allow for consistent analysis of the responses (Vogt, 2007). Once these values were entered, I created four new variables of principal effectiveness by totaling the scores from the items on the questionnaire associated with each variable. For the teacher instrument, I created a composite score for the four variables for each school, resulting in eight independent, continuous variables.

I also gathered demographic data on each school, such as socio-economic status (FRL, a continuous variable determined by the percentage of students qualifying for free and reduced price lunch); student demographics (continuous variables such as percentage

of students considered English language learners, ELL; special education, SPED; as well as percentage of students belonging to various ethnic categories—NATIVE AMERICAN, HISPANIC, WHITE, etc.). Finally, I conducted correlation analysis to determine how these variables related to each other as well as to the outcome measure, student growth on achievement tests (Vogt, 2007).

Value-added Measures

The outcome that I measured against, student scaled scores in reading and math as measured by the New Mexico standards-based assessments (SBA), are reported as a continuous variable between zero and 80 for each school in the sample. Given the background factors (FRL, ELL, etc.) that contribute to a wide range of starting points for the schools across any sample, one way to compare the school, teacher, and leader-based effects is by measuring the change in scaled scores over time.

This value-added approach is considered a strong indicator of whether students at some schools are learning more than students at others (Braun, Chudowsky, & Koenig, 2010). Because the variable measures growth regardless of each students' / schools' baseline, the student-level effects are removed from the calculation (Ferguson, Hackman, Hanna, & Ballantine, 2010). Value-added models, according to the Organisation for Economic Co-operation and Development, are “an attempt to capture the virtues of a randomized experiment when one has not been conducted” (Braun, Chudowsky, & Koenig, 2010, p. 108).

The tests that make-up New Mexico's standards-based assessments in grades 3-9 are vertically equated, meaning “scale scores within the same subject at adjacent grades are in the same metric and thus can be compared. Therefore, student growth can be

monitored across time as the student moves from one grade to the next” (Harcourt Assessment, Inc., 2007, p. 46). Standards-based assessment results reported as vertically scaled scores “yield highly correlated ($r > 0.90$) school-level results based on mean initial status and growth estimates” (Goldschmidt, Choi, Martinez, & Novak, 2010, p. 337). These assessments are considered a reliable method for monitoring school performance over time (Faubert, 2009). While the scale used for New Mexico’s standards-based assessments changed in 2011, the same scale has been applied back to 2008, making longitudinal comparisons statistically possible (P. Goldschmidt, personal communication, March, 2012).

Given the range of scores within a proficiency level, using a change in scaled scores is a better indicator of growth than proficiency rates (Ferguson, Hackman, Hanna, & Ballantine, 2010). Students’ scaled scores in New Mexico are intervals that are comparable across grades (Hambleton & Swaminathan, 1987), but given the unit of analysis at the school level, I aggregated these scores to determine a change in scaled scores in reading and math for each site. By averaging the change in scaled scores across the available grade levels at each site (i.e. grades three through five at traditional elementary schools, grades 6-8 at middle schools, and grade 11 at high schools), the stability of the scores will further increase (Linn, 2003).

Data Analysis

I describe these steps in greater detail in Chapter Four, but my general approach involved an analysis of descriptive statistics for each component of my data set, substantial investigation into the relationships between my variables and what each of those variables tells us about effective school leaders, and consideration of how, in future

research, I might use these variables to fit a linear regression model. First, I tested the fit of the instrument to the purposes of my study. One aspect of fit, validity, can partially be determined by making sure that the principals in the study are distinguishable from one another and that they differ in their sub scores on my four variables of effectiveness (Jaeger, 1993). I did this by looking at the significance and value of the *F* statistic for each sub score using a one-way analysis of variance (ANOVA). Second, I tested the internal consistency, or reliability, of my instrument for all items as well as the four variables by looking for Cronbach's alpha reliability estimates that exceeded 0.70 (Vogt, 2007).

Third, using IBM SPSS Statistics 19.0 (2011), I calculated the descriptive statistics for each of my variables as well as my demographic and student performance data. These statistics included mean, minimum, maximum, range, standard deviation, kurtosis, and skewness. For categorical variables, such as ethnicity, I calculated frequencies and percentages and created a system of dummy variables (Field, 2005, pp. 208-209) to estimate correlations between these variables and others in the dataset (Vogt, 2007).

Fourth, I tested the relationships between my variables. I estimated full and partial correlations between each of the eight variables of principal effectiveness and student growth as measured by change in scaled scores (Vogt, 2007). I also estimated the Pearson correlation coefficient amongst the eight variables to determine how effectively the principal and teacher survey instruments measured similar aspects of leadership (Field, 2005, pp. 174-175). In Chapter Four, I present the results of these analyses.

Chapter Four

Results

This study examines the relationship between effective K-12 principals in New Mexico and student growth as measured by changes in scaled scores on New Mexico’s standards-based assessments. The literature I reviewed asserts that principals do have a small, measureable impact on student performance, and from this, I hypothesized the model in Figure 2 to describe how that indirect influence fits into the overall schema of school improvement:

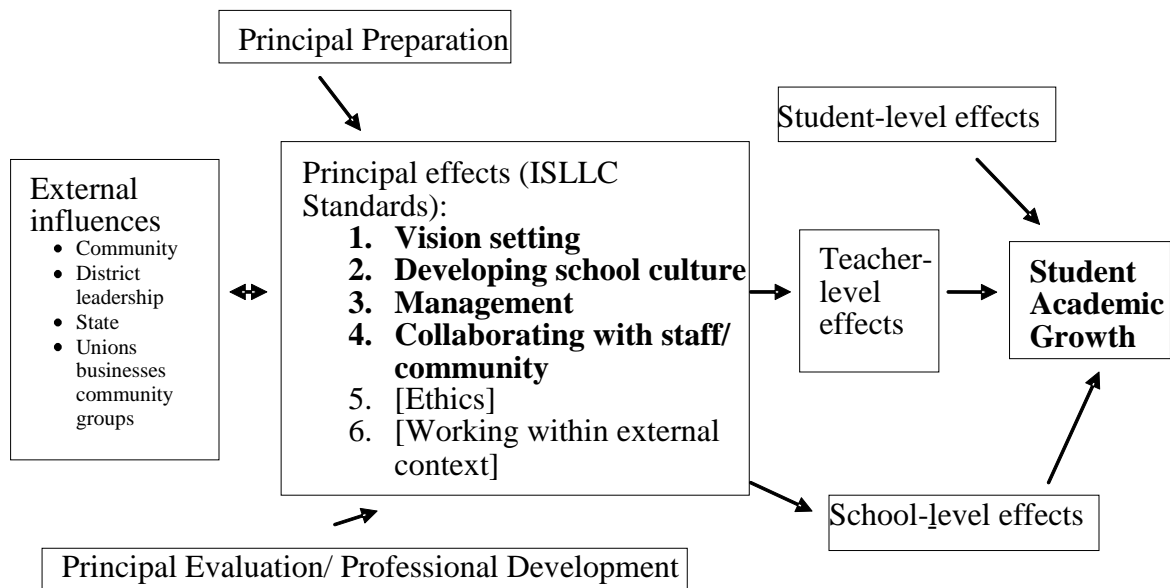


Figure 2. School improvement effects model

As I discussed in Chapter Three, the six ISLLC standards comprise the principal practices most likely to indirectly influence student academic growth. In my model, I highlighted the four standards in bold that I tested as variables of principal effectiveness—vision-setting (VISION), developing school culture (INSTRUCT), management (MANAGE), and collaborating with staff and the community (COLLAB). I

measured these variables by surveying principals and teachers in schools across New Mexico where the same principal had been in place since at least the 2007-2008 school year and through the 2010-2011 school year. I treated the principals' self-ratings of each of these variables as well as the teachers' composite ratings of their principal as eight predictive variables of student growth. In this chapter, I present an overview of the descriptive statistics for the teacher survey data, the principal survey data, and school-level demographic and SBA data. I also consider the reliability and validity of these two instruments in assessing principal performance and present the results of a series of correlation analyses.

Survey Instruments

In this section, I describe the performance of the two survey instruments I used to collect data to create eight predictor variables of student growth. I also provide descriptive statistics for the principal and teacher respondents, answering questions such as who are these principals and teachers and what kinds of schools do they come from. After describing how I calculated scores for the eight composite predictor variables, I analyze the descriptive statistics for each of these variables and consider the leadership implications of those scores. I conclude this section by presenting results of the tests of the reliability and validity of each of the survey instruments.

Principal Questionnaire

Table 4 provides descriptive information for the 41 principal respondents from schools with complete data. On average, those individuals have worked as principals for 11.05 years and have been at their current schools for 6.21 years; the maximum number of years for a principal at the current school was 21 years and the total number of years

overall as a principal was 32. The average number of principals that served at these schools over the past 10 years, including the current principal, is 2.43. This is slightly below New Mexico’s trend, given that between 1994 and 2004, 51% of New Mexico’s schools had 3 or more principals (Winograd et al., 2008).

The 41 schools ranged in size from a minimum of 60 students to a maximum of 2,100 students, with a mean of 464 students. The districts ranged in size from a minimum of 120 students to a maximum of 92,000 students, although most of these principals, 75%, reported working in districts with fewer than 40,000 students.

Table 4
Descriptive Statistics for 41 Principals in New Mexico, Including Number of Students in the School and the District

	Mean	Min	Max	Range	Standard Deviation	Kurtosis	Skewness
Years as a Principal	11.05	3*	32	29	6	0.94	1.07
Years as Principal in this School	6.21	1*	21	20	3.45	4.44	1.62
Principals at School in Last 10 Years	2.43	1	8	7	1.32	2.93	1.16
Number of Students in School	463.5	60	2,100	2,040	357.58	6.53	2.22
Number of Students in District	17,929	120	92,000	91,880	29,085.32	2.1	1.92

*Values less than 4 years may be a result of reporting errors

Of the 41 principals, 23 (56%) are female, 14 (34%) are male, and 4 did not respond; this ratio is consistent with the range of state and national averages. Twenty-nine of the 41 respondents consider themselves White (Non-Hispanic), nine responded

Hispanic, three responded Native American, and three responded Other. The count exceeds 41 because some respondents consider themselves part of more than one of the ethnic/ racial groups provided on the questionnaire.

Teacher Questionnaire

I received 563 responses to the teacher questionnaire from 45 schools. Even after multiple reminders, principals from 50 schools who completed the questionnaire either did not forward the teacher version or were unable solicit responses from their teachers. This highlights the challenge to response rates of relying on an intermediary. Nonetheless, after matching those responses to the schools for which I had valid principal responses as well as SBA data and eliminating respondents who did not agree to participate or who completed less than 50% of the items, 437 valid teacher respondents remained. The number of respondents per school as well as the percentage of teachers from each of these 41 schools can be seen in Table 20 in Appendix E. The number of teachers at each school was determined based on data supplied by the New Mexico Public Education Department. At schools where the number of respondents exceeds the number of teachers on record, principals likely distributed the questionnaire to additional staff, such as instructional assistants, ancillary service providers, or support staff.

Ideally, I would have determined an acceptable response rate to improve the reliability and validity of the composite variables from each of the schools. One approach is to identify an acceptable percentage of respondents from a particular school; another is to set a cut-off based on the number of responses. Using the percentage method would favor small schools, where fewer responses can still result in a high rate of participation, while counting total numbers of responses works to the advantage of larger

schools that might generate higher raw numbers but still have lower participation percentages. Of my 41 schools, six had responses from only one or two teachers, hardly providing a robust or well-rounded impression of the principals (see Appendix E, “Number of Teacher Respondents by School”). For this exploratory study, however, I elected not to eliminate these schools from my sample, but kept this in mind when I evaluated my overall results.

For the 437 teachers at the 41 schools (see Table 5), the number of years of total teaching experienced ranged from one to 40, with a mean of 14.11 years. At their particular schools, those teachers’ years of experience ranged from one to 35, with an average of 7.58 years.

Table 5
Descriptive Statistics for Years of Teaching for 437 New Mexico Teachers

	Mean	Min	Max	Range	Standard Deviation	Kurtosis	Skewness
Years teaching at current school	7.58	1	35	34	6.225	2.646	1.516
Years teaching, total	14.11	1	40	39	8.745	0.008	0.751

Of the 437 teaching respondents, 91% consider their status full-time; 2% consider their status part-time; and the remainder did not respond.

Table 6
Descriptive Statistics for Teaching Statistics for 437 Teachers in New Mexico, Including Teaching Status, Gender, and Ethnicity

	Count	Percent
Full-time teaching	399	91%
Part-time Teaching	9	2%
No response	29	7%
Male	78	18%
Female	321	73%
No response	38	9%
African-American	6	1%
Asian	7	2%
Hispanic	136	31%
Pacific Islander	1	0%
Native American	23	5%
White (Non-Hispanic)	237	54%
Other	11	3%

At 73% female, 18% male, and 7% without a response to this item, this sample of teachers is similar in gender distribution to the national population, where approximately 84% of teachers are female and 16% are males (Feistritzer, 2011). The majority of teachers, 237 of 437, consider themselves White (non-Hispanic), 136 consider themselves Hispanic, 23 consider themselves Native American, and 25 consider themselves to be of other races or ethnic backgrounds.

Principal Variables

Given that I deliberately scrambled the items on the instrument for each of the four variables of principal effectiveness, PRINVISION, PRININSTRUCT, PRINMANAGE, and PRINCOLLAB, my first data analysis step was to sort the items by variable. The assignment of items to variables can be seen in Appendix F. After replacing missing values for each item with the variable mean (Vogt, 2007), I calculated a composite score for each variable for each principal by adding the Likert scale values

for the items that index the variable. The total possible points by variable varied based on the number of items that variable comprised. The VISION variable, for example, had 35 possible points, while the PRINCOLLAB variable had 138 possible points. The total possible score for each principal variable and the descriptive statistics for each variable are presented in Table 7.

Table 7
Descriptive Statistics for Principal Variables for 41 Principals in New Mexico

	Total Possible	Mean	Min	Max	Range	Std. Dev.	Kurtosis	Skewness
PRIN VISION (7 items)	35	29.58	23	35	12	2.84	-0.3	-0.17
PRIN INSTRUCT (9 items)	45	36.42	29	43	14	3.84	-1.03	-0.15
PRIN MANAGE (8 items)	40	30.13	22	39	17	3.55	-0.44	-0.07
PRIN COLLAB (16 items)	138	95.25	72	119.6	47.6	10.18	-0.1	0.16

On average, these 41 principals rated themselves highest on the PRINVISION variable (29.58 out of 35 possible points). This ISLLC standard has four components: collaboratively developing and implementing a shared vision and mission; collecting and using data to identify goals, assess organizational effectiveness, and promote organizational learning; creating and implementing plans to achieve goals; and promoting continuous and sustainable improvement. Principals who scored high on this variable are likely to be the type of leaders who have used data to diagnose a school’s needs and established a clear set of strategies to address those opportunities for improvement. This construct is central to the definition of transformational leadership I provided in Chapter Two (Leithwood, 1992; 1993). For these 41 principals, their self-ratings on

PRINVISION showed a moderate, positive, statistically significant correlation with the number of years working in the particular school ($r = 0.359$, $p = 0.027$), suggesting that this ability to motivate others around a clear vision may improve with time.

The second variable, PRININSTRUCT, includes items addressing principals' perceptions of their ability to manage change; facilitate student learning; raise test scores; encourage teachers to use data, observe each other's classrooms, and talk about instruction; provide a coherent program for students across grades; align assessments to standards; and include the leadership team in curricular decisions. Principals who rated themselves highly in this variable are likely to consider themselves the instructional leaders I described in Chapter Two (Wallace Foundation, 2006). Similar to PRINVISION, a moderate, positive, statistically significant correlation existed between the number of years working in the particular school and principals' self-ratings on PRININSTRUCT ($r = 0.325$, $p = 0.046$).

PRINMANAGE, the third variable, focuses on creating a safe, positive learning environment; organizing time so instructional disruptions are minimized and teachers are able to collaborate with each other; providing a range of extracurricular activities and after-school academic support; and including the leadership team in budgetary and human resource roles. Principals who rate themselves high on this variable likely consider their schools to be clean, orderly, well-run organizations, all prerequisites of effective schools identified by Teddlie and Stringfield (1993) and others. While I did not observe a correlation between time at a school and self-ratings as an operational manager, I did find a moderate, positive statistically significant correlation between the nine Hispanic principals and their self-ratings of PRINMANAGE (Spearman's $\rho = 0.373$, $p = 0.023$).

I did not identify anything in my review of literature that suggests a cultural link between ethnicity and strength in managing the operations in a school, and I am interested to see if this same trend holds true for a larger sample of school principals.

The final variable, PRINCOLLAB, asks principals to rate their working relationships with parents, teachers, community members, businesses, and unions. This variable had the most possible points, 138, primarily because many of the 16 items were broken into sub-questions, such as, “Unions are involved in setting directions for our school improvement efforts...Community groups are involved in setting directions for our school improvement efforts...Parents are involved in setting directions for our school improvement efforts.” All the models of effective leadership I presented in Chapter Two include this collaborative component, including Bosker and Witziers (1995), who identified parental involvement as one of their primary variables. Principals who rated themselves highly in this area have deliberately cultivated relationships with a variety of external stakeholders and likely consider themselves to be “resource entrepreneurs” (Calkins et al., 2007, p. 44). Like PRINVISION and PRININSTRUCT, a moderate, positive, statistically significant correlation existed between the number of years working in the particular school and PRINCOLLAB ($r = 0.340$, $p = 0.037$), perhaps indicating that as a principal becomes more established in a school, he or she is better able to reach out and leverage external resources.

Teacher Variables

Similar to the principal questionnaire, my first data analysis step was to sort the teacher questionnaire items by variable (see Appendix F). I also repeated the process of replacing missing values by substituting the item’s mean score and calculated composite

scores for each respondent for each variable. An additional step with the teacher data set involved aggregating those individual composite scores to a school level. For each item, I calculated a mean score by school then combined those scores to create a composite score by variable; this approach results in the same composite scores by school for each variable as by calculating a composite score for each teacher by variable, then finding the mean of those variable composites. Table 8 presents an example for eight teachers where the school's composite for a variable with three items is 13.125 whether the means for the three items are added together or the mean of the composite scores across all teachers is calculated.

School	Item 1 Score	Item 2 Score	Item 3 Score	Composite Score for 3 items where 15 is the highest possible score
Teacher 1	5	5	5	15
Teacher 2	4	4	3	11
Teacher 3	5	5	4	14
Teacher 4	5	5	5	15
Teacher 5	5	4	4	13
Teacher 6	5	5	5	15
Teacher 7	3	4	3	10
Teacher 8	4	4	4	12
Mean	4.5	4.5	4.125	13.125

The descriptive statistics for each teacher variable, TEACHVISION, TEACHINSTRUCT, TEACHMANAGE, and TEACHCOLLAB, can be seen in Table 9.

Table 9
Descriptive Statistics for Teacher Variables from 437 Teachers for 41 Principals in New Mexico

	Total Possible	Mean	Min	Max	Range	Std. Dev.	Kurtosis	Skewness
TEACH VISION (16 items)	80	63.81	30.75	80	49.25	9.65	2.08	-0.84
TEACH INSTRUCT (17 items)	85	68.56	39.25	85	45.75	9.07	1.89	-0.75
TEACH MANAGE (15 items)	75	59.38	30	75	45	7.95	3.16	-0.93
TEACH COLLAB (13 items)	65	50.76	29.25	65	35.75	7.26	0.94	-0.41

The items associated with each of these variables attempted to gather teachers' ratings of their principals around the same four variables of effective leadership I described earlier in the chapter. Similar to my analysis of principal variables, I looked for relationships between scores from teachers on each of these effectiveness variables and demographic variables for the teachers and schools, including number of years teaching at the school, percentage of students receiving free and reduced lunch at the school, teachers' ethnicities, and the number of years the principal had worked at the school. While I did not observe any statistically significant relationships, I did notice that for each of the variables, teachers rated their principals highly, averaging four out of five points per item. This might be a result of selection bias (Vogt, 2007): teachers whose principals have been in place for at least four years might have better relationships, and as a result, their ratings for their principals might be higher for each variable. Conversely, the teachers I did not survey at schools with more turnover might be less satisfied with

their school leaders and reflect this in with lower ratings. I describe what each of these variables measures in greater detail in the remainder of this section.

Teachers who rate their principals high on TEACHVISION, for example, think their leader has used data to identify barriers to academic achievement in the school and motivated them as teachers around specific strategies to address those needs.

High scores on the second variable, TEACHINSTRUCT, suggest teachers consider their principals to be strong instructional leaders. Some specific practices associated with this variable include leading conversations about teaching and learning, regularly observing and providing feedback, and supporting teachers' professional growth.

TEACHMANAGE, the third variable, measures teachers' perceptions of how effectively principals conduct traditional administrative responsibilities, including activities such as establishing discipline and order within the school, arranging schedules, and completing paperwork.

Finally, TEACHCOLLAB focuses on how effectively principals engage teachers, support staff, parents, community members, and others. Opportunities for collaboration with these stakeholders include determining instructional policies, planning professional development, and allocating resources.

Later in this chapter, I consider how a principal's gender might influence teachers' perceptions of leadership in each of these areas.

Validity and Reliability of Teacher Questionnaire

To determine if the teachers' assessments of their principals differ on these four variables, TEACHVISION, TEACHINSTRUCT, TEACHMANAGE, and

TEACHCOLLAB, I used one-way analyses of variance (ANOVA) to test the null hypothesis that the principals' scores across the 41 schools are identical against an alternative hypothesis that they differ by school (Jaeger, 1993, p. 261). These values can be seen in Table 10.

Variable	F statistic
TEACHVISION	5.188***
TEACHINSTRUCT	3.980***
TEACHMANAGE	4.333***
TEACHCOLLAB	4.368***

***P<0.001

For each of the four variables, there are statistically significant differences in the teachers' assessments of the principals, meaning there is measurable variation between the teachers at each school. Because the *F* statistic in each case is significant at the 0.001 level, I rejected the null hypothesis and concluded that principals across these 41 schools have differing scores on the variables. The teacher questionnaire reliably distinguished the four leadership characteristics across the 41 principals in this sample.

The teacher questionnaire in its entirety had a very high internal consistency: the estimate of Cronbach's alpha reliability coefficient for the 62 items, 0.992, exceeded the acceptable cutoff of 0.70 and was not improved with the deletion of any items (Vogt, 2007).

Similarly, the estimate of Cronbach's alpha reliability for the 17 items in TEACHVISION was 0.956. Within the TEACHVISION variable, eliminating the item, "The principal at my school asks no more of me than what is absolutely essential to get my work done" raised the coefficient by 0.007 to 0.963. From my experience as an

educator, it is not clear whether strongly agreeing with this statement is positive or negative, so I decided to eliminate it from the analysis to improve the reliability of this variable.

For the 17 items in TEACHINSTRUCT, the estimate of Cronbach's alpha reliability was 0.957 and for 13 items in TEACHCOLLAB, 0.944. Again, this value exceeded the acceptable cutoff of 0.70 and deleting items did not improve the estimate of either coefficient (Vogt, 2007).

For the 15 items in TEACHMANAGE, the estimate of Cronbach's alpha reliability was 0.917; eliminating one item raised the coefficient to 0.920 and another to 0.921, but an improvement of neither 0.003 nor 0.004 was large enough to justify deleting the items.

Validity and Reliability of Principal Questionnaire

To test the internal consistency of the principal questionnaire, I estimated Cronbach's alpha reliability coefficient for the 65 items and obtained a value of 0.834. Several items, if deleted, would have increased the estimate of Cronbach's alpha reliability coefficient by 0.003 or less, however, I determined that this improvement was minimal compared with the loss of understanding of the particular variables by removing these items. I was able to see how each of those variables held together and make decisions about individual items by looking more closely at the estimates of Cronbach's alpha reliability coefficients for each variable.

The estimate of Cronbach's alpha reliability for the seven items in PRINVISION was 0.733. Eliminating one item, "Our school improvement plan drives teachers'

professional development,” would increase the coefficient by 0.009 to 0.742. Given this minimal improvement, I left this item in my analysis.

For the second variable, PRININSTRUCT, the estimate of Cronbach’s alpha reliability for the 10 items was 0.732, but eliminating one item, “My school site council or building leadership team has a significant role in making decisions about curriculum,” raised the coefficient 0.033 to 0.765. Because of this gain as well as the number of related questions posed in PRINCOLLAB, I decided to eliminate this question from the sub-score.

For the eight items in the PRINMANAGE variable, the estimate of Cronbach’s alpha reliability was 0.560, less than the 0.70 benchmark, meaning these items do not “hang together” reliably (Vogt, 2007, p.116). Deleting the item, “Disruptions of instructional time are minimized,” raised the coefficient to 0.569, still short of the 0.70 cutoff. I considered possible explanations for the disconnect between these eight items:

1. I am able to create a positive learning environment in my school.
2. Disruptions of instructional time are minimized.
3. The school schedule provides adequate time for collaborative teacher planning.
4. Students feel safe in our school.
5. Our school provides a broad range of extracurricular/ co-curricular (e.g., plays, athletics, musical) activities for students.
6. Our school provides after school academic support activities.
7. Our school site council or building leadership team influences how money is spent.

8. Our building leadership team has a significant role in hiring and/or dismissal of school staff.

While this variable was intended to measure a principal’s perception of their ability to run a tight ship, based on the lack of internal validity, I questioned how well these items reach that objective. From my experience, it is possible that principals could consider themselves strong disciplinarians or efficient schedulers, but be dissatisfied with the range of after-school activities in the school. Similarly, these principals might deliberately limit the role of the school’s leadership team in financial or human resource decisions. In Chapter Five, I explore additional strategies for improving the reliability of this sub-scale for future research, including factor analysis to statistically identify items that hold together.

Finally, for the 39 items in the PRINCOLLAB variable, the estimate of Cronbach’s alpha reliability was 0.785. As can be seen in Table 11, deleting several items related to the influence of unions increased the estimated coefficient by 0.003 or less.

Table 11
Items to Consider Deleting from PRINCOLLAB Based on Estimates of Cronbach’s Alpha Reliability Coefficient

Item	Estimate of Cronbach’s Alpha if Item Deleted
How much influence do unions have in your school?*	0.796
How satisfied are you with this level of influence from unions?***	0.793
Unions are involved in setting directions for our school improvement efforts.***	0.794
*Scored on a four-point scale (None, Low, Moderate, and High)	
**Scored on a three-point scale (Not at all, Somewhat, Very)	
***Scored on a five-point scale	

While there might be some ambiguity surrounding these items—in some cases oppositional relationships between administration and unions extend beyond the realm of the principal—I determined that the estimate of Cronbach’s alpha reliability was acceptable and the information these items convey outweighed the reliability gains by deleting them from the PRINCOLLAB variable.

Having described the schools, principals, and teachers in my data set, calculated the descriptive statistics for each of my eight leadership variables, and tested the reliability and validity of my two survey instruments, I next describe the school-level outcome data I collected from New Mexico’s Public Education Department (PED).

Outcome Data: Standards-Based Assessment Scaled Scores

In this section, I first present an overview of the key demographic elements of both the analytic sample of 41 schools as well as the larger population of New Mexico public schools. I then describe the mean scaled scores I used to calculate the outcome variable, scaled score growth, present descriptive statistics for those scores, and consider what those scores tell us about the performance of schools over time.

Demographic Data

From New Mexico’s Public Education Department (PED), I collected the following demographic data for all K-12 schools in New Mexico for the 2007-2008 to 2010-2011 school years (SY08 – SY11): percent White, Black, Hispanic, Asian, Native American; percent male/ female; percent of students qualifying for free and reduced price lunch (FRL); percent of students with disabilities (SPED); and percent of English language learners (ELL).

As can be seen in Table 12, while the descriptive statistics for the 41 schools in my data set were similar to the statewide data, the schools in this sample had a slightly higher percentage of Native American students (19% compared with 13%), students who qualify for free and reduced price lunch (77% compared with 74%), and English language learners (28% compared with 21%).

Table 12
Descriptive Statistics for the 41 Schools with Matched SBA, Teacher, and Principal Data Compared with the Statewide Mean, 2011

	Statewide (n = 724)		Matched Data Set (n = 41)			Std. Deviation
	Mean	Mean	Minimum	Maximum	Range	
Number of Students	423	413	89	1550	1461	270.2
Percent WHITE	27.44	23.26	0	69.57	69.57	20.05
Percent BLACK	1.90	1.94	0	10.81	10.81	2.55
Percent HISPANIC	56.86	54.18	0	97.83	97.83	31.54
Percent ASIAN	1.04	1.14	0	6.48	6.48	1.63
Percent NATIVE AMERICAN	12.76	19.48	0	100.00	100.00	33.32
Percent FEMALE	48.52	49.66	40.0	68.42	28.42	5.10
Percent MALE	51.48	50.34	31.58	60.00	28.42	5.10
Percent FRL	73.52	76.94	0	100.00	100.00	27.08
Percent SPED	13.81	13.70	0	26.20	26.20	6.25
Percent ELL	21.24	27.75	0	89.47	89.47	22.61

The 41 schools in this analytic sample represented all geographic regions of the state, including rural, isolated areas as well as large, inner-city sites. Within this

geographic range, they were also a microcosm of the ethnic blend of New Mexico's communities—in some cases, schools in this sample had 100% Native American students, in others, nearly 100% Hispanic students, and in others, an even ethnic mix. While the majority were elementary schools, six were middle schools and seven were high schools. Also, while most were traditional public schools, three were alternative schools and five were charter schools. A comparison of the demographic make-up as well as the predictor and outcome variables disaggregated by elementary, middle, and high schools is presented in Table 13.

Table 13
Comparison by school level

	Elem (n = 28)			Mid (n = 6)			High (n = 7)		
	Min	Max	Mean	Min	Max	Mean	Min	Max	Mean
PRIN VISION	23.0	35.0	29.3	28.0	32.0	29.2	23.0	32.0	28.2
PRIN INSTRUCT	29.0	43.0	35.9	33.0	38.0	35.6	31.0	43.0	34.9
PRIN MANAGE	24.0	37.0	30.1	24.0	32.0	28.0	23.0	33.7	28.0
PRIN COLLAB	72.0	120	95.1	85.0	107	94.4	87.7	102	95.2
TEACH VISION	30.8	78.0	60.9	59.0	79.0	69.8	63.8	80.0	71.0
TEACH INSTRUCT	39.3	79.0	65.5	67.0	85.0	75.4	69.4	85.0	75.7
TEACH MANAGE	30.0	69.5	57.2	48.0	73.3	63.5	58.8	75.0	65.3
TEACH COLLAB	29.3	60.2	48.7	42.0	64.8	54.0	50.8	65.0	56.7
Percent HISPANIC	0.0	96.7	58.4	44.8	97.8	59.1	0.0	81.0	41.6
Percent NATIVE	0.0	98.2	17.8	0.0	4.6	2.1	0.0	100	27.3
Percent FRL	0.0	100	76.5	43.9	100	68.5	36.1	100	83.5
Percent ELL	0.5	74.2	29.9	2.4	45.4	13.9	0.0	89.5	25.0
SSmean 2008	29.5	44.5	36.0	36.1	41.4	38.2	24.2	44.9	33.1
SSmean 2011	29.3	45.9	37.9	38.8	43.2	40.6	29.5	48.0	36.4
SS GROWTH	-2.1	5.0	1.8	-0.3	5.4	2.4	-1.0	11.4	3.4

Demographically, the schools were similar, with the exception of higher percentages of Native American and FRL students represented in the high schools. The mean scaled score growth for the seven high schools, 3.4 points, was also greater than the mean scaled score growth at the six middle schools, 2.4 points, and the 28 elementary schools, 1.8 points. One high school, however, had a scaled score growth of 11.4, more than two standard deviations beyond the mean. After removing this outlier from the high

schools, the mean scaled score growth was 2.0, more consistent with the growth at elementary and middle schools.

Across all three levels of schools, principals' self-assessments of the four leadership variables were all within two points of each other. Teachers' ratings of these same variables, however, were considerably higher at both the middle and high schools than at the elementary schools. The mean TEACHVISION score for elementary schools, for example, was 60.9, while it was 69.8 for the middle schools and 71.0 at the high schools. Similar gaps of between six to 10 points existed between the elementary and middle/ high schools for the other three teacher variables, INSTRUCT, MANAGE, and COLLAB. Some of this variation could be a function of the volatility of a small sample size; in future research, increasing the number of schools would allow exploration of these potential differences in teachers' perceptions of leadership across school levels and types.

Overall, from this analysis I am satisfied that the schools in my sample capture much of the diversity of New Mexico's schools. Given the relatively small numbers of schools in a breakdown by school level and school type, I present the remainder of the analysis aggregated by all school types.

Standards-Based Assessment Data

Also from New Mexico's Public Education Department (PED), I received mean standards-based assessment (SBA) scaled scores for each school for five school years, 2007 to 2011. PED calculated this variable as a mean of each student's SBA scaled score in both math and reading across each grade tested at that school. For a K-5 school, for example, each student's reading and math scaled scores in grades three to five were

combined into a total scaled score for that school, then divided by the number of students tested in each subject to arrive at the aggregate scaled score, SSMEAN. The scale for these SSMEAN scores ranged from 0 to 80, with a SSMEAN score of 40 being considered proficient (P. Goldschmidt, personal communication, October, 2011).

To calculate school-wide growth on the standards-based assessment, SSGROWTH, I subtracted each school's SY08 score (SSMEAN2008), the first confirmed year that each of the principals in this study was at their school for a full year, from its SY11 score (SSMEAN2011), the most recent year each of those principals was still present at that same school. As I discussed in Chapter Three, scaled score growth is a more valid and reliable indicator of school progress than change in the percentage of students proficient, as it captures variation within the proficiency bands and is vertically aligned (Ferguson, Hackman, Hanna, & Ballantine, 2010; Goldschmidt, Choi, Martinez, & Novak, 2010).

I present descriptive statistics for these standards-based scaled scores statewide as well as for the 41 schools in my analytic sample in Table 14.

	Analytic sample			Statewide		
	SSmean 2011	SSmean 2008	SS GROWTH	SSmean 2011	SSmean 2008	SS GROWTH
Mean	37.84	35.74	2.1	37.72	36.05	1.67
Min	29.26	24.23	-2.09	10.64	16.57	-19.66
Max	48.02	44.94	11.4	50.72	49.13	13.78
Range	18.76	20.71	13.49	40.08	32.56	33.44
Std. Dev.	4.46	4.44	2.44	4.21	4.15	2.64

One of the 41 schools in the study dropped 2.09 scaled score points from 2008 to 2011, while another increased 11.4 points over the same time span. Compared with the mean SSGROWTH for the 724 schools with data available from 2008 to 2011, 1.67, the mean SSGROWTH for the 41 schools in this study, 2.10, is 0.34 points, or 20% higher. While I cannot assert that this is a statistically significant difference based on my sample size, it does lead me to question how length of tenure could be contributing to this increase in scaled score growth. I collected a list of principals at their school at least four years, rather than a continuous variable of each New Mexico principal's number of years at their school statewide. With this information, however, future research could consider the correlation between each principal's length of time at a school and that school's scaled score growth when controlling for other factors known to impact the growth in student achievement.

As I documented in Chapters One and Two, researchers such as Coleman et al. (1966), Jencks et al. (1972), and others established a strong, negative statistically significant relationship between student performance as measured by standardized tests and socio-economic status. The same strong, inverse relationship exists in this data set—as the percentage of students qualifying for free and reduced lunch goes up (FRL), the school's scaled score average (SSMEAN2011) goes down ($r=-0.682$, $p<0.001$).

Growth as measured by scaled scores on a valid, reliable, standardized test, however, should not be a function of socioeconomic status (Braun, Chudowsky, & Koenig, 2010). This proved to be true in this data set as the relationship between percentage of students qualifying for free and reduced lunch (FRL) and scaled score growth (SSGROWTH) is not statistically significant ($r=0.158$).

Similarly, based on an analysis of estimated correlation coefficients, scaled score growth (SSGROWTH) does not appear to be related to other school-level demographic variables, such as ethnicity (% White, $r = -0.172$; % Black, $r = -0.100$; % Hispanic, $r = -0.027$; % Asian, $r = -0.143$; % Native American, $r = 0.167$), percentage of students with English language learner status ($r = 0.055$), and percentage of students with special education status ($r = -0.134$).

Finally, I estimated the correlation between scaled score growth (SSGROWTH) and mean scaled scores from 2008 (SSMEAN2008). I expected to see greater growth in lower performing schools than in higher performing schools (Baker, Barton, Darling-Hammond, Haertel, Ladd, Linn, Ravitch, Rothstein, Shavelson, & Shepard, 2011). While the Pearson correlation coefficient of -0.266 shows a low to moderate, negative relationship, meaning schools with lower mean scaled scores in 2008 experienced greater growth by 2011, the p-value of 0.092 does not reach statistical significance at the 0.05 level. I would like to test this relationship with a larger number of schools because of the policy implications of school growth models that weigh growth as a component of their calculations and the potential advantage given to lower performing schools.

From this analysis of the descriptive statistics for the schools in my analytic sample as well as the outcome variable, mean scaled score growth as measured by New Mexico's standards-based assessments, I can conclude that the schools in this analytic sample are similar to the total population of public K-12 schools in New Mexico. I can also conclude that scaled score growth does not correlate with any of the demographic variables, including the percentage of students qualifying for free and reduced lunch and English language learners, suggesting that it would not be a useful predictor in

multivariate analysis. In the next section, I more closely consider the relationships between the eight predictor variables of leadership effectiveness and student growth.

Correlation Analysis

I examined the relationships between the four teacher variables and the four principal variables with the scaled score growth by conducting a series of correlation analyses. First, I calculated the Pearson correlation coefficient between each variable and SSGROWTH, as can be seen in Table 15.

		SSGROWTH
PRINVISION	Pearson Correlation	.222
	Sig. (2-tailed)	.162
PRININSTRUCT	Pearson Correlation	.064
	Sig. (2-tailed)	.689
PRINMANAGE	Pearson Correlation	-.059
	Sig. (2-tailed)	.714
PRINCOLLAB	Pearson Correlation	-.120
	Sig. (2-tailed)	.454
TEACHVISION	Pearson Correlation	.077
	Sig. (2-tailed)	.634
TEACHINSTRUCT	Pearson Correlation	.054
	Sig. (2-tailed)	.736
TEACHMANAGE	Pearson Correlation	.138
	Sig. (2-tailed)	.389
TEACHCOLLAB	Pearson Correlation	.147
	Sig. (2-tailed)	.358

Given my sample size, 41 schools with teacher, principal, and student data, none of my correlations are statistically significant, meaning I am unable to generalize relationships beyond my data set (Vogt, 2007). Of my eight variables, three showed positive, low to moderate correlations to SSGROWTH: PRINVISION (0.22), TEACHMANAGE (0.14), and TEACHCOLLAB (0.15). Three variables showed low,

positive correlations with SSGROWTH: PRININSTRUCT (0.06), TEACHVISION (0.08), and TEACHINSTRUCT (0.05). Two variables showed low, negative correlations to SSGROWTH: PRINMANAGE (-0.06) and PRINCOLLAB (-0.12), meaning that for my 41 schools, higher scores on these variables actually correspond to lower SSGROWTH scores.

Second, I calculated the Pearson correlation coefficients between the eight predictor variables, as can be seen in Table 16.

Table 16
Correlations between Eight Predictor Variables

		PRIN VISION	PRIN INSTRUCT	PRIN MANAGE	PRIN COLLAB	TEACH VISION	TEACH INSTRUCT	TEACH MANAGE
PRIN VISION	Pearson							
PRIN INSTRUCT	Pearson	.801**						
PRIN MANAGE	Pearson	.388*	.353*					
PRIN COLLAB	Pearson	.476**	.501**	.297				
TEACH VISION	Pearson	.321*	.185	-.063	.313*			
TEACH INSTRUCT	Pearson	.287	.191	-.069	.311*	.974**		
TEACH MANAGE	Pearson	.300	.162	-.073	.261	.958**	.922**	
TEACH COLLAB	Pearson	.284	.140	-.135	.271	.968**	.938**	.960**

*p = .05
**p = .01

The following pairs of variables have strong, positive correlations at the 0.01 level of significance: PRININSTRUCT and PRINVISION, TEACHINSTRUCT and TEACHVISION, TEACHMANAGE and TEACH VISION, TEACHCOLLAB and TEACHVISION, TEACHCOLLAB and TEACHINSTRUCT, and TEACHCOLLAB and TEACHMANAGE.

Additionally, two pairs of variables have moderate, positive correlations at the 0.01 level of significance: PRINCOLLAB and PRINVISION as well as PRINCOLLAB and PRININSTRUCT. Finally, several pairs of variable have moderate correlations at the 0.05 level of significance: PRINMANAGE and PRINVISION, PRINMANAGE and PRINCOLLAB, TEACHVISION and PRINVISION, TEACHVISION and PRINCOLLAB, and TEACHINSTRUCT and PRINCOLLAB.

Not surprisingly, many of these correlations are within principal variables (i.e. PRININSTRUCT correlating with PRINVISION) and teacher-rated variables (i.e. TEACHINSTRUCT and TEACHVISION). Correlations between scores on these subscales indicate that principals who rate themselves as relatively strong or weak in one leadership domain tend to have similar perceptions of their performance in others; the same is true of teachers' ratings of principals' leadership characteristics.

Part of my rationale behind surveying both principals and teachers, however, was to determine the relationship between each of these parties' perception of each other and their relationships to students' scaled score growth. As I highlighted in Table 16, PRINVISION and TEACHVISION have a positive, statistically significant, moderate correlation (Pearson = 0.321, $p = 0.01$). TEACHVISION and PRINCOLLAB have a positive, moderate correlation ($r = 0.313$) at the 0.05 level. Finally, TEACHINSTRUCT and PRINCOLLAB also have a positive, moderate correlation ($r = 0.313$) at the 0.05 level. Based on these statistically significant, positive correlations between these three pair of principal and teacher variables, I can conclude that there are relationships between teachers' perceptions of principals' effectiveness in these areas and principals' own assessments of their leadership in these areas.

When I consider how each questionnaire is structured and the items associated with each variable (Appendix F), they appear to be asking teachers and principals to reflect on similar practices. Within VISION, for example, principals are asked to rate their own abilities to motivate teachers around a collective sense of purpose and, on the flip side, teachers are asked how effectively their principals have defined that mission and encouraged them to work toward it. One possible explanation for the lack of a strong correlation between these two perspectives for some of the pairs of variables might be the “halo effect,” whereby teachers do not tend to discriminate between the facets of a principal’s role (Watson, 1985). As can be seen in Tables 7 and 9, based on average scores and standard deviations for principals and teachers, it appears that principals’ scores range more widely between variables, while teachers’ scores tend to be higher and more tightly clustered.

Analysis of Schools with the Greatest Growth

While for the 41 schools in the analytic sample I did not observe statistically significant correlations between the eight variables and scaled score growth, I did observe a range in growth that might provide insight into the particular leaderships at these schools. To determine if any demographic elements or leadership characteristics appeared to contribute to this growth, I first identified 12 schools whose scaled score growth was greater than 3.4 points, twice the statewide mean of 1.67. As can be seen in Table 17, demographically, these schools are similar to the larger sample, with higher rates of students qualifying for free and reduced lunch, higher percentages of Native American students, and lower percentages of students qualifying for special education. The principals’ self-ratings at these 12 schools are also lower, on average, than the scores

for the overall analytic sample. The same is true for TEACHVISION and TEACHINSTRUCT, although the scores for TEACHMANAGE and TEACHCOLLAB are each approximately one point higher for this sub-sample. What does stand out for these schools that made greater growth are lower starting points—these schools’ 2008 scaled scores averaged 33.88, 1.86 points less than the analytic sample’s average of 35.74. This further supports the earlier finding that schools with lower scaled scores have greater capacity for growth than schools with higher scaled scores.

Table 17
Descriptive Statistics for 12 Schools with SSGrowth > 3.4 points

	Analytic sample (n=41)		Schools with SS Growth > 3.4 (n=12)			Std. Deviation
	Mean	Mean	Minimum	Maximum	Range	
PRINVISION	29.58	29.02	25.00	32.00	7.00	2.03
PRININSTRUCT	36.42	34.50	29.00	38.00	9.00	2.43
PRINMANAGE	30.13	28.83	23.00	32.00	9.00	3.13
PRINCOLLAB	95.25	88.97	72.00	98.28	26.28	8.39
TEACHVISION	63.81	63.43	44.76	80.00	35.24	9.99
TEACHINSTRUCT	68.56	67.55	48.72	85.00	36.28	10.35
TEACHMANAGE	59.38	60.55	47.32	75.00	27.68	8.03
TEACHCOLLAB	50.76	51.49	36.20	65.00	28.80	7.47
Percent White	27.44	21.35	.00	46.34	46.34	17.10
Percent Black	1.9	2.35	.00	10.81	10.81	3.18
Percent Hispanic	56.86	53.82	.00	95.57	95.57	32.62
Percent Native American	12.76	22.02	.00	100.00	100.00	34.76
Percent FRL	73.52	83.57	40.58	100.00	59.42	21.69
Percent Sped	13.81	11.47	3.66	17.09	13.44	4.63
Percent ELL	21.24	23.82	.00	89.47	89.47	25.82
SSmean2011	37.84	38.74	29.46	45.46	15.99	4.22
SSmean2008	35.74	33.88	24.23	41.12	16.88	4.91
SSGROWTH	2.1	4.85	3.54	11.40	7.87	2.16

Impact of Gender on Principal Ratings

Finally, I tested whether principals' gender influenced their own perceptions of the four leadership variables, teachers' perceptions of those same four leadership variables, or scaled score growth. Hallinger, Bickman, and Davis (1996) found that teachers perceive female principals to be more active in curriculum and instruction, most likely captured in the INSTRUCT variable and that principal gender has an effect where female principals are perceived by teachers to be more active in curriculum and instruction than male principals are (p. 542). Similarly, Ballou and Podgursky (1995) found that "male principals generally receive lower evaluations than female principals" and that "female teachers consider male principals as significantly less helpful than female principals" (pp. 249-250). In contrast, Andrews (1989) found that gender was not a statistically significant predictor of the teachers' perceptions of the principal (p. 217).

For the 41 principals in this analytic sample, 23 identified themselves as female, 14 male, and 4 did not respond. As can be seen in Table 18, principals' own ratings of vision, instruction, management, and collaboration were nearly identical across genders. Teachers' ratings, however, were consistently three to four points higher for male principals than for female principals. Given the sample size, the one-way analysis of variance (ANOVA) in these rating differences was not statistically significant.

Table 18
Principal Gender Analysis

	Female Principals' Mean (n=23)	Male Principals' Mean (n=14)	F	Sig.
PRINVISION	29.0	29.4	.178	.676
PRININSTRUCT	35.5	35.7	.024	.878
PRINMANAGE	28.9	30.1	1.135	.294
PRINCOLLAB	95.2	94.7	.014	.906
TEACHVISION	62.3	66.2	1.992	.167
TEACHINSTRUCT	67.1	71.0	2.129	.153
TEACHMANAGE	58.2	61.6	2.217	.145
TEACHCOLLAB	49.5	52.8	2.219	.145
SSmean2008	35.6	35.4	.020	.889
SSmean2011	37.3	38.3	.477	.494
SSGROWTH	1.6	2.9	2.343	.135

Conclusions

As a result of the analysis presented in this chapter, I reached the following conclusions. First, the instruments used to survey both the principals and teachers are reliable and valid. Based on the one-way analysis of variance (ANOVA), I concluded that the questionnaire I used to survey teachers, adapted from the CALDES (Borden, 2011), distinguished principals from each other (Jaeger, 1993). Also, for both instruments, estimates of Cronbach's alpha coefficients exceeding 0.70 led me to conclude that seven of the eight sub-scores I calculated had high degrees of internal consistency. I presented an analysis of the principal variable that fell below this mark and consider options for improving this reliability coefficient in Chapter Four.

Second, I concluded that the schools in this analytic sample, the principals in those schools, and the teacher respondents were similar to the larger population of schools, principals, and teachers in New Mexico. The 41 schools were distributed across grade-level ranges and types, including elementary, middle, high schools, charter schools, and alternative schools. Additionally, they ranged in size and geographically were spread between rural and urban settings. The students in those schools had similar demographic features, as well, including ethnic backgrounds, percent qualifying for free and reduced lunch, percent qualifying for special education services, and percent of English language learners. The teachers, as well, mirrored what we know about the larger workforce in the state, including length of time teaching, ethnicity, and gender. Overall, these teachers' perceptions of their principals' vision, instruction, management, and collaboration were fairly high and consistent. Finally, with the exception of serving in their schools for longer than average in the state, the principals, too, are similar to other school leaders in New Mexico. These 41 principals' perceptions of their leadership in the areas of vision, instruction, and collaboration correlated with the number of years they had been at their schools, indicating that these areas of leadership have the potential to improve with time. Overall, these similarities across schools, teachers, and principals led me to conclude that the sample I selected has minimal bias and, when statistically significant, the results can be generalized across the state (Vogt, 2007).

Third, I concluded that for the 41 schools in this analytic sample, the mean scaled score growth as measured by change in standards-based assessment scores from 2008 to 2011 is not correlated with socio-economic status, percent of English language learners, or student ethnicity. An established body of research links student achievement to SES

and other outside influences students bring with them to schools (Charters, 1963; Lee & Burkam, 2002; Sastry & Pebley, 2010; Teddlie & Stringfield, 1993). Without randomized experiments, getting past what I described in Figure 3 as “Student-level effects” in my model of influences to school improvement, however, has proven challenging (Braun, Chudowsky, & Koenig, 2010). In this analytic sample, calculating the value a school adds in scaled score growth appears to have a leveling effect in measuring the role the school plays (Ferguson, Hackman, Hanna, & Ballantine, 2010).

Finally, I identified three statistically significant correlations between the principals’ perceptions of themselves and the teachers’ perceptions of the principals. From these positive, moderate correlations, I concluded that the two instruments appear to be measuring similar leadership characteristics. With increasing attention being given to 360-degree evaluation of principals, including self-assessment as well as feedback from staff the principal supervises, identifying a link between these data sources is critical to the reliability of this process (Condon & Clifford, 2010; Porter, Polikoff, Goldring, Murphy, Elliott, & May, 2010). In the final chapter, I consider further policy implications, answer the research question, and explore additional areas for improving principal leadership in the state of New Mexico.

Chapter Five

Interpretation, Discussion, and Conclusion

The purpose of this thesis is to examine the work of K-12 principals in New Mexico to answer the research question, “What are the relationships between principal implementation of the ISLLC standards of vision, culture, management, and collaboration and student performance in New Mexico public schools?” Over the course of collecting data, a series of filters narrowed my sample size: the number of principals present at their schools for the last four consecutive school years, the number of principals and teachers from the same school who responded to my questionnaires, and the availability of standards-based assessment data for four consecutive years. As a result, I was able to analyze principal leadership at 41 of the 827 K-12 schools in New Mexico. While these 41 schools includes traditional, charter, and alternative elementary, middle, and high schools, the generalizability and statistical significance of my results are limited (Vogt, 2007). I am treating this research as an exploratory investigation of the performance of two survey instruments as well as the standards-based student growth outcome variable and using this understanding to discuss how these variables could be used in multivariate research in the future.

In Chapter One I reviewed what we already know about what makes some schools more effective than others. Historically, the thinking around the importance of schools in students’ lives has shifted from the Coleman Report’s assertions in the late 1960s that schools do not matter to a recognition that high quality teachers, schools, and districts do have a measureable impact on student performance, particularly for the most

needy students (Coleman et al., 1966; Jencks et al., 1972; Edmonds, 1979; Teddlie and Stringfield, 1993).

In Chapter Two I surveyed the research around each of these influences of school effectiveness, from teachers to school cultures to district administration to statewide policy-makers. I synthesized this research to develop a model describing the factors contributing to student academic growth, presented in Figure 3.

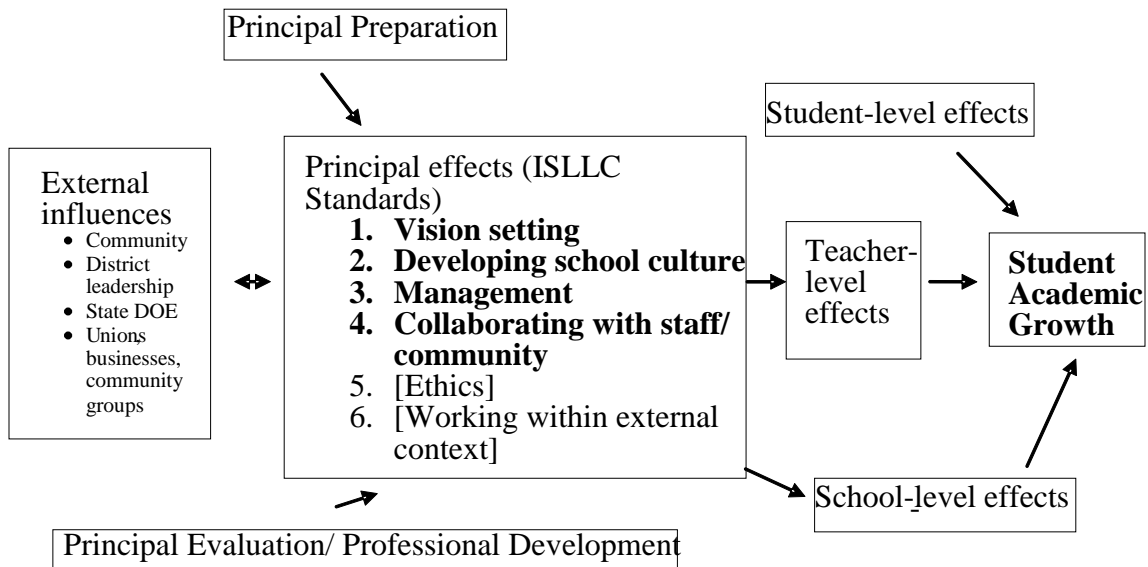


Figure 3. School improvement effects model

Given my background and interest in the role of principals, I focused on what we know about what strong leaders do to make a difference. In my model, principals indirectly influence student performance through their shaping of school-level effects and teacher effects. I described the complexity of challenges confronting school improvement and defined the importance of transformational leadership (Louis, Leithwood, Wahlstrom, & Anderson, 2010). Many transformational leadership practices, including distributing leadership throughout the organization, overlap in a variety of

models put forth by researchers such as Waters, Marzano, and McNulty (2003) and Ferguson, Hackman, Hanna, and Ballantine (2010).

The Interstate School Leaders Licensure Consortium standards (ISLLC standards), developed by the Chief State School Officers in 2008, capture these practices in six standards. I decided to test the relationship between four of those characteristics—vision-setting, instructional leadership, management, and collaboration with the community—and student growth as measured by changes in standards-based scaled scores in New Mexico’s K-12 schools.

In Chapter Three I described the research methods I used to test these relationships. My goal was to survey teachers—those most directly influenced by effective leadership (Valentine & Bowman, 1988)—as well as principals themselves. To do this, I identified two instruments that fit well with my research questions and had high rates of reliability and validity. I slightly revised each instrument and distributed those questionnaires electronically to 329 principals who had been at their schools since at least the 2008 school year until the 2011 school year. I also asked those principals to forward the teacher version to their staff. Finally, I collected an aggregated reading and math standards-based assessment mean scaled score for each school in New Mexico for each school year from 2008 to 2011.

In Chapter Four, I described the processes for analyzing these data. My first step was to construct a data set that included four composite variables for each principal, PRINVISION, PRININSTRUCT, PRINMANAGE, and PRINCOLLAB; four composite variables from the teachers at each school, TEACHVISION, TEACHINSTRUCT, TEACHMANAGE, and TEACHCOLLAB; and a variable to measure scaled score

student growth on the New Mexico standards-based assessment, SSGROWTH. I presented the descriptive statistics associated with each component within my data set and looked at the correlations between my eight possible predictor variables and the potential outcome variable as well as correlations within those predictor variables. This chapter is divided into four sections: a) answering the research question, b) policy implications, c) directions for future research, and d) conclusions.

Answering the Research Question

Review of the hypothesized model

One critical aspect of my hypothesized model that I was able to test through this research is the effectiveness of scaled score growth (SSGROWTH) as a potential outcome variable. Given the attention focused on value-added models in current research, I was interested to see the relationship between a school's scaled score growth and other demographic factors known to impact student performance. As previous research would suggest, the mean scaled score for any given year had a statistically significant, strong, negative correlation of -0.682 ($p < 0.01$) with the percentage of students qualifying for free and reduced price lunch (FRL) at a school. Scaled score growth (SSGROWTH), however, did not correlate with the FRL percentage: the estimated correlation coefficient between those two variables was 0.158 with $p = 0.130$. Similarly, in my data set, scaled score growth did not correlate with student ethnicity, English language learner status, or special education status. This led me to believe that using growth as a possible outcome variable in future regression modeling would preclude the requirement to include the set of demographic variables that have been

traditionally seen in the literature (Charters, 1963; Lee & Burkam, 2002; Sastry & Pebley, 2010; Teddlie & Stringfield, 1993).

Review of the Survey Instruments

A second focus for this exploratory research had to do with the validity and reliability of the two survey instruments I selected to collect data to test the relationships between the predictor variables in my hypothesized model. While both instruments had previously been applied in other settings to answer different research questions, I wanted to know how well each instrument distinguished between principals in New Mexico along my four sets of variables.

Based on the one-way analysis of variance (ANOVA), I concluded that for each of the four teacher-rated variables there were statistically significant differences between sub-scores across schools, meaning each questionnaire reliably distinguished the four leadership characteristics between the principals in this sample (Jaeger, 1993).

Similarly, based on my analysis of estimates of Cronbach's alpha reliability coefficients, I concluded that each of my survey instruments had very high internal consistency. Within each sub-scale, as well, the estimates of Cronbach's alpha reliability coefficients were generally high, although I did identify several items on each instrument that were ambiguously worded. By removing these items, I was able to raise the reliability coefficients for particular variables. If I were to use these instruments again, I would either not include those items or reword them to improve each instrument's overall performance.

One indicator, however, principals' assessment of their management characteristics (PRINMANAGE), had a Cronbach's alpha reliability coefficient below

the acceptable standard of 0.70 (Vogt, 2007). After analyzing the eight items this variable comprised, I concluded that it is possible that two characteristics were embedded in this single variable.

Correlation Analysis

To see how my variables related to each other and determine if each variable gave me distinct information about the principal being rated, I analyzed the correlations between and among my eight variables (Vogt, 2007). Statistically significant correlations exist among the four variables that measure the principals' perceptions of their leadership characteristics as well as among the four variables that measure teachers' perceptions of their principals' leadership characteristics.

Three pair of principal and teacher variables, PRINVISION and TEACHVISION, TEACHVISION and PRINCOLLAB, and TEACHINSTRUCT and PRINCOLLAB had statistically significant, moderate, positive correlations with each other. I therefore concluded that the similar content of the items of these two instruments appears to measure similar attributes of effective leadership. Lack of statistical significance between some pairs of principal and teacher variables could be a function of the sample size.

Moving Toward a Regression Model

Based on this exploratory study, I was able to reach conclusions about: 1) scaled score growth on New Mexico's standards-based assessments as an outcome variable, 2) the validity and reliability of the two survey instruments I chose to assess four variables of school leadership effectiveness, and 3) the relationships between those eight variables and implications for measuring school leadership effectiveness. Finally, I gained an

understanding of how these eight variables could potentially be used to fit a nested multiple regression model to predict student growth as measured by New Mexico's standards-based assessments.

Policy Implications

Many states, including New Mexico, are contemplating or using student achievement data to measure teacher, principal, and school effectiveness (Otterman & Gebeloff, 2012). As I noted in Chapter Four, how growth is weighted in value-added model designed to measure the performance of schools, principals, or teachers can create incentives or disincentives to working in lower-performing schools (Baker, Barton, Darling-Hammond, Haertel, Ladd, Linn, Ravitch, Rothstein, Shavelson, & Shepard, 2011). In this analytic sample, I found a negative, moderate correlation between schools' mean scaled scores in 2008 and the amount of growth to 2011 ($r = -0.266$), meaning schools that started out lower-performing experienced greater growth. To improve the statistical significance of the estimated correlation, however, I would like to calculate this estimate with a larger number of schools. Depending on the results of the analysis, this could serve as a policy lever to attract school leaders or teachers to these lower-performing schools, particularly if additional financial incentives are also attached.

In general, studies of principal effectiveness have bearing in three areas: how to best prepare principals for the profession, how to evaluate those principals in the field, and how to provide on-going, high-quality training. While the same implications hold true for this study, given the exploratory nature of this research, I am unable to comment on specific characteristics of principal effectiveness that New Mexico needs to focus on through its preparation programs, evaluation methods, and professional development.

Instead, in this section, I explore general opportunities for improving school leadership. As the research from Chapters One and Two indicates, improved leadership should indirectly affect student growth as measured by standards-based assessments.

Leadership Preparation Programs

The first step in the cycle of improving principal effectiveness is preparation, although the data to evaluate the effectiveness of principal preparation programs appears to be lacking (Young, Fuller, Brewer, Carpenter, & Mansfield, 2007). Forty-six states have adopted leadership standards and many use those standards to evaluate leadership training programs (Wallace Foundation, 2004). The Council of Chief State School Officers (2008) considers standards as essential to developing effective pre-service training programs and concludes that “incorporating clear and consistent standards and expectations into a statewide education system can be a core predictor of strong school leadership” (p. 4). As I noted in Chapter Three, the National Policy Board for Educational Administration and the Educational Leadership Constituent Council recently aligned these standards for administrative preparation programs (NPBEA, 2011).

In a study of principal preparation, Darling-Hammond, Meyerson, and Orr (2007) concluded that programs with exemplary attributes are likelier to produce graduates who go on to exhibit leadership practices associated with effective schools. Those attributes include:

- Selectivity – two-thirds of graduates initially screened and identified as promising leadership candidates by their districts had tuition and costs subsidized;
- Curricula focused on instructional improvement and transformational leadership;
- Close integration of coursework and fieldwork;

- Strong ties to the communities they serve; and
- Well-crafted internships.

According to teachers, principals prepared through the higher quality programs were more likely “to encourage professional collaboration, facilitate professional development for teachers, and encourage staff to use evaluation results in planning curriculum and instruction” (Darling-Hammond et al., p. 53).

Exemplary programs for school leaders cost from \$20,000 to \$42,000 per participant; in district-run programs, this adds between \$10 to \$80 in per pupil expenditures (Darling-Hammond, 2007). These costs, however, are offset through increases to successful entry into the principalship as well as long-term continuity. Only 20% to 30% of participants in typical administrator preparation programs become principals within a few years of graduation and fewer than half ever become school administrators. In contrast, 60% of the 2002-2004 graduates from the exemplary programs in the Stanford study were principals in 2005, and 81% of 2004-2007 graduates from the NYC Leadership Academy were principals in 2008 (Darling-Hammond, 2007).

Performance Evaluation

For those principals who have entered the profession, performance evaluation is an often under- or misused opportunity to provide meaningful feedback. As described by the Chief Council of State School Officers (2008), evaluation is an area “ripe for additional development and leadership by states” (p. 17). Instead of critical components like clarity around expectations, adequate justification for assessments, and direction for growth and improvement (Heck & Marcoulides, 1996), school districts often use

idiosyncratic and inconsistent measures for principal performance assessments (Goldring, Cravens, Murphy, Porter, Elliott, & Carson, 2009).

Condon and Clifford (2010) reviewed eight principal evaluation instruments that were considered psychometrically sound based on reliability and validity criteria: the Change Facilitator Style Questionnaire (1998), the Diagnostic Assessment of School and Principal Effectiveness (1992), the Instructional Activity Questionnaire (1987), the Leadership Practices Inventory (2002), the Performance Review Analysis and Improvement System for Education (1985), the Principal Instructional Management Rating Scale (1985), the Principal Profile (1986), and the Vanderbilt Assessment of Leadership in Education (2006). As I described in Chapter Three, of these eight, the VAL-ED had the highest reliability, 0.98, and had content, construct, and concurrent validity. I considered using VAL-ED for this research project because it was designed to align with the ISLLC standards and solicits input from teachers, principals, and district-level administrators (Porter, Polikoff, Goldring, Murphy, Elliott, & May, 2010). While cost and the effort required for each participant prohibited me from using this instrument, I suspect this approach has the potential to meaningfully evaluate principals. Similar to the concepts underlying my current project, the creators of VAL-ED intend to conduct a longitudinal study to investigate the relationship between principals' effectiveness on the VAL-ED and value-added to student achievement. Such a study could go a long way in moving from meaningful principal evaluation to the final policy opportunity, professional development.

Professional Development

Assuming the presence of a meaningful evaluation process, the systematic alignment to ongoing, targeted training is critical to avoid changes in practice that have little to no effect on student success (Porter et al., 2010). From my own experience as a principal, training options are hit and miss, rarely tied to specific student needs identified through the evaluation cycle.

A stronger nexus between evaluation and professional development could take the form of a crosswalk between areas identified for improvement and specific strategies. In Chapter Two, I defined transformational leadership as “providing direction” and “exercising influence” (Louis, Leithwood, Wahlstrom, & Anderson, 2010, p. 9). This closely aligns with the VISION variable I assessed in both the teacher and principal questionnaires through items such as, “Most teachers in our school share a similar set of values, beliefs, and attitudes related to teaching and learning.” Principals scoring lower on this variable could benefit from focused professional development. One crosswalk between identified needs and potential strategies is presented in Table 19.

Table 19
Strategies for Improving Principal Effectiveness Based on Identified Needs (Marzano, 2000)

Variable	Strategies for:
Opportunity to learn	<ul style="list-style-type: none"> • aligning the curriculum and achievement tests • designing assessments aligned with the curriculum • ensuring that the curriculum is covered
Time	<ul style="list-style-type: none"> • increasing the amount of allocated time • decreasing absenteeism and tardiness
Monitoring	<ul style="list-style-type: none"> • setting school-wide achievement goals for students • collecting and reporting data on student achievement
Pressure to achieve	<ul style="list-style-type: none"> • communicating the importance of students' academic achievement • celebrating and displaying student achievement
Parental involvement	<ul style="list-style-type: none"> • involving parents in policy decisions • strategies for gaining parental support for policy decisions
Climate	<ul style="list-style-type: none"> • identifying and communicating school rules and procedures • implementing and enforcing school rules and procedures
Leadership	<ul style="list-style-type: none"> • articulating leadership roles • transferring and communicating key information • group decision-making
Cooperation	<ul style="list-style-type: none"> • developing consensus around key issues • increasing the frequency and quality of informal contacts among staff members • establishing and implementing behavioral norms among staff

This professional development can take many forms. Darling-Hammond (2008), for example, describes two types, formal mentorship as well as principal leadership academies. If carefully constructed, each of these has the potential to impact student achievement. Additionally, some districts have designated leadership coaches, modeled along the lines of content or pedagogical coaches, to work with principals around specific leadership strategies (Robertson, 2008).

Directions for Future Research

As is often the case with research, this work has produced more questions than answers. One obvious starting point is to expand the scope of my study to increase the

sample size. Given the current state of standardized testing, whereby each state has its own specific set of longitudinal standards-based assessment data, improving response rates within a single state is critical to increasing statistical power. This could be accomplished by administering the questionnaires earlier in the year and having more direct contact with both the principals and teachers in the data set. Beyond this sample size issue, additional areas for investigation include the relationship between a principal's tenure at a school and scaled score growth, the impact of alternative approaches to measuring student growth, and methods of refining the construction of variables of effectiveness.

The first area, how long a principal remains at a school and student achievement at that school, could be analyzed through linear regression with the addition of a continuous variable, "Number of Years." Based on my preliminary findings, I suspect there is a positive, statistically significant relationship between time and student achievement, but I am uncertain if, similar to the length of superintendent tenure, effects diminish after a certain point in time (Alsbury, 2008).

Second, the student growth variable I created, calculating the difference between mean scaled scores over a four-year interval, is simplistic compared with many value-added modeling efforts currently underway. As I considered in Chapter Four, growth might be uneven between low performing versus high-performing schools (Baker et al., 2011) and I would like to further investigate this with a larger data set as well as more longitudinal data. Also, while I concluded that it may not be necessary to include demographic variables when using scaled score growth, it is worth testing the impact of additional elements within my outcome variable. These modifications could include:

- disaggregating my scaled score by math and reading results;
- disaggregating scaled score growth by grade-level or for cohorts of students within a school; and
- incorporating factors for teacher licensure and experience levels for each school.

Finally, measuring change in standards-based assessment scores might not capture the leadership success of a principal at a school consistently performing at or above expected levels. In my study, for example, I used school year 2008 as year one, but this was not necessarily the first year that each of my principals was present at their school. Some schools might have already made considerable improvements, not reflected in a change from 2008 to 2011, while others might have led schools that for other reasons were already performing at higher-than-expected levels for this entire time span. To avoid this possibility, I am interested in fitting a regression model that includes variables that influence scaled scores, such as the percentage of students qualifying for free and reduced lunch and the percentage of English language learners. I would then calculate residual values between actual student performance and predicted scores. These residual values for a given year or series of years could prove to be a better mechanism for determining which schools are “beating the odds” (Bryk et al., 2010; Chenoweth, 2007; CPE, 2005; Ferguson et al., 2010; Orr et al., 2005; Reeves, 2003; Strand, 2010).

Both survey instruments are the third area for improvement. Based on the estimates of Cronbach’s alpha reliability coefficients, I removed several items to improve the variable sub-scales. Additional data collection with these instruments would allow for better understanding of how the items in each sub-scale hold together.

Conclusions

I began by asserting, “Leadership matters.” I set out to see if I could determine how to measure specific leadership practices for a group of principals in New Mexico that affect student growth in reading and math on the standards-based assessments. After reviewing the literature, designing the study, collecting data, and analyzing that data from various angles, I am able to conclude that it is possible to measure dimensions of leadership that have been shown to matter in school improvement. I also have a better understanding about leadership behaviors that have been described as making the most difference, albeit indirectly, on student performance. Those practices include setting a widely-shared vision; developing a school culture and instructional program conducive to student learning and staff professional development; ensuring effective management of the organization, operation, and resources for a safe, efficient, and effective learning environment; and collaborating with faculty, families, and community members.

While I am unable to draw many statistically significant conclusions about effective principal leadership in New Mexico, I gained insight into the value of scaled score growth as a measurement of school improvement, and I refined my thinking around how to define growth in future research efforts. I also learned about constructing predictor variables in survey research and identified a possible methodology, factor analysis, for creating variables that hold together with minimal overlap (Vogt, 2009). Most importantly, I am able to take away a more sophisticated understanding of what transformational leadership truly comprises and how to use survey research methods to get at teachers’ and principals’ identification of those elements. It is ambitious, but I am

hopeful that these contributions nudge forward the collective understanding of educational leadership for the betterment of students in New Mexico and beyond.

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Appendix A: Teacher Questionnaire

The principal at my school: (5= Completely Agree; 4=Agree; 3=Undecided; 2=Disagree; 1= Completely Disagree)

1. clearly communicates what is expected of me as a teacher
2. does not see all students as capable of learning
3. does not maintain high standards of student conduct
4. mobilizes support to help me achieve academic goals
5. has low expectations of me as teacher
6. does not encourage the use of different instructional strategies
7. is ignorant of instructional resources
8. consults with others
9. gives me a sense of the overall purpose of our school
10. uses clearly communicated criteria for judging my performance
11. is an ineffective disciplinarian
12. does not maintain communication with parents
13. does not arouse enthusiasm or commitment
14. does not encourage me to discuss instructional concerns with him/ her
15. does not respect my time as a scarce resource
16. treats me as a colleague
17. is unreceptive to new ideas
18. challenges me to re-examine my basic assumptions about teaching and learning
19. is a "visible presence" to staff
20. plans the school's activities without consulting others
21. maintains a positive attitude
22. does not visit the classroom to observe my teaching
23. delegates authority
24. treats me with respect
25. encourages us to work toward the same goals
26. leads formal discussion with teachers concerning instruction
27. minimizes disruptions of the teaching and learning process
28. has the support of parents
29. takes the long view of how things might be in this school
30. evaluates my performance to help me improve my teaching
31. coordinates resources to maintain an attractive school building
32. encourages me to use my own judgment outside the classroom
33. uses test results to recommend changes in the instructional program
34. encourages me to plan curriculum content that teaches students to inquire, think, and communicate
35. encourages me to express my ideas
36. does not plan ahead
37. is not an important instructional resource
38. is unconcerned about order and discipline in our school
39. does not communicate with local community groups
40. makes me proud to be part of the school staff

41. is unaware of student progress in relation to instructional objectives
42. assures the safety of staff
43. develops plans for cooperation and involvement of the community
44. does not excite me with his/ her ideas for the school
45. encourages articulation of the curriculum
46. does not supervise the work of non-teaching staff
47. does not involve me in planning inservice activities
48. asks no more of me than what is absolutely essential to get my work done
49. recognizes my professional achievements
50. does not promote pride in the school's appearance
51. directly involves me in determining instructional policy
52. has an achievable dream for our school
53. does not emphasize cooperation among teachers
54. is effective at maintaining school records and other paperwork
55. prioritizes tasks and operates according to these priorities
56. is aware of effective educational practices
57. is not supportive of my efforts to maintain discipline
58. is unclear about his/ her intentions
59. provides me opportunities to develop my knowledge and skills
60. is efficient in implementing administrative procedures
61. communicates with all personnel the importance of their role in school operations
62. does not provide the support I need to improve my performance

Demographic data:

63. How many years have you worked as a teacher? ___years
64. How many years have you worked in this school as a teacher? ___years
65. What is your average class size? ____students
66. Your teaching assignment: Full-time/ Part-time
67. Your gender: Female/ Male
68. Please indicate your race/ ethnicity (mark all that apply): African-American (Non-Hispanic), Asian, Hispanic, Pacific Islander, Native American, White (Non-Hispanic), Other: _____)

Appendix B: Principal Questionnaire

In your current role as principal, to what extent to you feel able to: (very little, little, somewhat, great, very great)

1. motivate teachers
2. generate enthusiasm for a shared vision for the school
3. manage change in your school
4. create a positive learning environment in your school
5. facilitate student learning in your school
6. raise student achievement on standardized tests

To what extent do you agree or disagree that the following statements reflect your practices (strongly disagree, moderately, slightly, slightly agree,...):

8. I rely frequently on systematically collected evaluation data about my school in my decision making.
9. I use data about student achievement to help make most decisions in my school.
10. I encourage my teachers to make use of data in their decision making.
11. I have an effective working relationship with parents' groups in my school.
12. I know how to effectively integrate parent input into my decision making process.
13. It is important to develop parent leaders in my school.

To what extent do you agree or disagree with the following statements about conditions in your school (strongly disagree, moderately, slightly, slightly agree,...):

14. Disruptions of instructional time are minimized.
15. The school schedule provides adequate time for collaborative teacher planning.
16. Most teachers in our school share a similar set of values, beliefs, and attitudes related to teaching and learning.
17. There is ongoing, collaborative work among teachers in our school.
18. Teachers in our school have sustained conversations about teaching practices.
19. Teachers have a significant role in school-wide decision making.
20. Our school improvement plan drives teachers' professional development.
21. Students feel safe in our school.
22. We continually examine curriculum materials to eliminate cultural bias.
23. We provide opportunities for students to discuss the effects of intolerance on their lives.
24. Administrators and staff model cultural sensitivity in relationships with parents, teachers, and students.
25. Our student assessment practices reflect our curriculum standards.
26. We are able to provide a coherent program for students across the grades.
27. Our school provides a broad range of extracurricular/ co-curricular (e.g., plays, athletics, musical) activities for students.
28. Our school provides after school academic support activities.
29. Teachers in this school have a sense of collective responsibility for student learning.
30. Teachers often observe each other's classrooms.

31. Do you have a school site council or building leadership team (No- Skip to Stakeholders, #xx; Yes)
32. Is your school site council or building leadership team elected (Yes/ No)?
33. Who serves on your school site council or building leadership team (School administrators, Community members, Teachers, Parents, Support staff, Other- please specify:)

To what extent do you agree or disagree with the following statements about your school site council or building leadership team? Our school site council/ building leadership team (strongly disagree...strongly agree)

34. Has a significant role in making decisions about curriculum.
35. influences how money is spent in this school.
36. has a significant role in hiring and/or dismissal of school staff.
37. encourages parents to provide leadership in this school.

Stakeholders

How much <i>influence</i> do the following groups have in your school?					How <i>satisfied</i> are you with this level of influence?				
	None	Low	Moderate	High		NA	Nat at all	Somewhat	Very
38. Unions					39.				
40. Businesses					41.				
42. Parents					43.				
1. Community					45.				
Describe your <i>working relationship</i> with the following groups:					How <i>accountable</i> do you feel toward these groups?				
46. Unions					47.				
48. Businesses					49.				
50. Parents					51.				
52. Community					53.				

To what extent do the following statements describe relations between your school and other groups (not at all, very little extent, little extent, some extent, great extent, very great extent)

54. Unions are involved in setting directions for our school improvement efforts.
55. Local business groups are involved in setting directions for our school improvement efforts.
56. Community groups are involved in setting directions for our school improvement efforts.
57. Parents are involved in setting directions for our school improvement efforts.
58. My school solicits input from community groups when planning curriculum.

59. My school includes community leaders and organizations when making important decisions.
60. It is a priority for me to form relationships with organizations external to my school.
61. Our school regards parents as partners in their child's education.

Demographics

62. How many years have you worked as a principal? ____years
63. How many years have you worked *in this school* as a principal? ____years
64. Including you, how many principals has your current school had in the past 10 years? ____principals
65. How many students are enrolled in your school? ____students
66. How many students are enrolled in your district? ____students
67. Your title: Principal/ AP
68. Your position: Full-time/ Part-time
69. Your gender: Female/ Male
70. Please indicate your race/ethnicity (mark all that apply): African-American (Non-Hispanic), Asian, Hispanic, Pacific Islander, Native American, White (Non-Hispanic), Other: _____)

Appendix C: Principal Invitation Letter

Dear Principals,

30 January 2011

My name is Michael Weinberg and I am currently a doctoral student at the University of New Mexico completing my dissertation in Educational Leadership. As a principal for the past six years, I am interested in learning more about the characteristics of effective principals in New Mexico. I realize how valuable your time is and I very much appreciate your willingness to participate in this study.

I am attaching a link for you, as well as a second letter with a link for the teachers in your school. The questionnaire I am asking you to complete on Survey Monkey is designed to provide you the opportunity to record your observations of your activities as a school leader. There are no right or wrong answers and this should not require you to prepare any data or other information. You should respond to each item according to your own experiences and the entire process will likely take less than 15 minutes.

Please complete all pages of this questionnaire. You will not record your name or any other information that will identify you individually. The results will be reported anonymously by school.

The second link is for your teachers. It asks similar questions to those on your questionnaire and will take about the same amount of time for them to complete. Again, their responses will be linked anonymously to their school.

I am hopeful that with your help, I can make a contribution to our understanding of what great leaders do to help students improve. If you are interested, I would be happy to share the results of my study with you.

Thank you, in advance, for your help, and please contact me at michaelweinberg@hotmail.com with any questions or feedback.

With regards,

Michael Weinberg

Link to Principal Questionnaire: [Insert Link Here]

Dear Teachers,

My name is Michael Weinberg and I am currently a doctoral student at the University of New Mexico completing my dissertation in Educational Leadership. As a teacher and principal for the past 14 years, I am interested in learning more about the characteristics of principals in New Mexico. I realize how valuable your time is and I very much appreciate your willingness to participate in this study.

I am including a link to the teacher's questionnaire [insert link]. You should respond to each item according to your own experiences and the entire process will likely take less than 15 minutes.

I am hopeful that with your help, I can make a contribution to our understanding of what school leaders do to help students improve.

Thank you, in advance, for your help.

Appendix D: Educational Leadership Policy Standards (ISLCC) Standards

1. Setting widely shared vision for learning
2. Developing a school culture and instructional program conducive to student learning and staff professional development.
3. Ensuring effective management of the organization, operation, and resources for a safe, efficient, and effective learning environment
4. Collaborating with faculty and community members, responding to diverse community interests and needs, and mobilizing community resources
5. Acting with integrity, fairness, and in an ethical manner
6. Understanding, responding to, and influencing the political, social, legal, and cultural context (Council of Chief State School Officers, 2008, p. 3)

Appendix E: Number of Teacher Respondents by School

School	Number of teacher respondents/ school	Total teachers at school	% response
1	1	10	10%
2	18	40	45%
3	12	28	43%
4	1	29	3%
5	6	43	14%
6	43	40	108%
7	13	38	34%
8	8	32	25%
9	5	10	50%
10	3	13	23%
11	7	38	18%
12	11	23	48%
13	9	34	26%
14	13	31	42%
15	2	12	17%
16	7	14	50%
17	8	19	42%
18	12	16	75%
19	8	29	28%
20	3	7	43%
21	59	61	97%
22	3	16	19%
23	4	45	9%
24	8	27	30%
25	3	18	17%
26	2	23	9%
27	11	27	41%
28	11	15	73%
29	17	33	52%
30	11	34	32%
31	8	47	17%
32	10	23	43%
33	16	20	80%
34	16	20	80%
35	13	24	54%
36	23	49	47%
37	1	47	2%
38	15	19	79%

39	4	11	36%
40	4	15	27%
41	8	24	33%
Total	437	1104	40%

Appendix F: Questionnaires by ISLCC Standard

Table 21

Questionnaire Items by ISLCC Standard

Instrument	Standard 1: Vision	Standard 2: Culture	Standard 3: Management	Standard 4: Collaboration
Teacher Questionnaire	Item 6, 9, 27, 34, 38, 39, 45, 49, 50, 52, 56, 67, 69, 70, 83, 87, 94	Item 7, 8, 11, 12, 13, 17, 19, 29, 31, 44, 46, 47, 53, 55, 57, 58, 72	Item 5, 16, 26, 32, 33, 35, 41, 61, 65, 73, 76, 86, 89, 91, 95	Item 18, 40, 42, 48, 51, 54, 62, 79, 86, 88, 90, 20, 24
Principal Questionnaire	Item 1, 2, 16, 20, 31, 8, 9	Item 3, 5, 10, 17, 18, 25, 26, 32, 26	Item 4, 14, 15, 21, 27, 28, 37, 38, 64	Item 11, 12, 13, 19, 22, 23, 24, 40, 57, 58, 59, 60, 61, 62, 63, 65