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Leadership as Teaching: Mapping the Thinking of Administrators and Teachers

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LEADERSHIP AS TEACHING:
MAPPING THE THINKING OF ADMINISTRATORS AND TEACHERS

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LEADERSHIP AS TEACHING:
MAPPING THE THINKING OF ADMINISTRATORS AND TEACHERS

prepared by

MARY ELLEN STEELE-PIERCE

is approved in partial fulfillment of the requirements for the degree of
Doctor of Philosophy in Leadership & Change.

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ABSTRACT

Leading and teaching both involve processes that permit others to transform their thinking. Yet there has been little systematic, empirical research to connect the two. This exploratory study examines K-12 educational leadership asking: What are the similarities and differences in the ways school administrators think about "leading" compared to the ways teachers think about "teaching"? This mixed methods study offers an examination of whether administrators think about their work in terms of "the *vital* teaching role of leadership" (Burns, 1978, p. 425, italics original) by creating and comparing three sets of concept maps, one for teachers and administrators and one for each of the two groups disaggregated. Two participant samples provided the data. Focus group members generated 100 concept statements, and card sorting participants rated and categorized the concepts. Concept mapping (Trochim, 2005) produced maps with geographic clusters that revealed patterns of thinking. Clusters fell into two geographic segments: Personal and Extra-Personal. The concept of holding environment (Kegan, 1982, 1994; Heifetz, 1994) and its components, challenge and support, provided a construct for the maps' interpretations. Disaggregating the rating data and statistical analyses revealed areas of similarity and differences suggesting: 1) administrators and teachers strongly value the Personal (Support) aspects of their work; 2) both rate the Extra-Personal cluster "Create some tension" lower than other aspects of their work; 3) administrators rate the Extra-Personal (Challenge) aspects of their work higher than teachers; and 4) administrators rate the Extra-Personal clusters "Political awareness" and "Using evidence and data" significantly higher than teachers. Disaggregating the data to create separate maps for administrators and teachers reveals a dimension, the Intra-Personal, that appears only on the administrators' map. Disaggregated data show that administrators

rate the concept cluster "Challenge the Status Quo" least important of all other areas of their work. These findings can inform the work of school change agents and administrator development programs. Research recommendations include further disaggregating the respondent data; creating maps of business or political leaders' thinking using the 100 teaching concepts; and developing cognitive maps of individual administrators using think-aloud interviews during sorting and rating procedures.

ACKNOWLEDGMENTS

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Leaders shape and alter and elevate the motives and values and goals
of followers through the vital *teaching* role of leadership.
~ James MacGregor Burns

CHAPTER ONE
Introduction

The Research Problem

Leading and teaching both involve processes that permit others to transform their

thinking. Yet there is little systematic, empirical research to connect the two. Much has been

written on what effective school leaders should think about, including accountability,

management, discipline, instruction, student achievement, staff morale, and parent

involvement. However, little is known about what school leaders do think about their work,

especially as empowerment that permits transformative thinking (the ability to embrace

higher levels of complexity and to generate new learning). This dissertation examines K-12

educational leadership asking: What are the similarities and differences in the ways school

administrators think about "leading" compared to the ways teachers think about "teaching"?

My hypothesis was that similarities exist in how leaders and teachers think; that, at their best,

school administrators think and act as teachers, creating holding environments in which

adults may transform their thinking. Therefore, this mixed methods study provided an

empirical examination of the teaching role of leadership.

In K-12 public education, almost all administrators come from the teaching ranks;

however, little has been studied about an administrator's vital role as a teacher of teachers.

This exploratory research sought to chart this territory by examining and comparing the ways

in which both teachers and school administrators think about their work as change agents

through empowerment.

This inquiry related to major concerns within the field of leadership and organizational development. Much literature exists about the need for developing learning organizations to meet the complex and demanding challenges of the postmodern world (cf. Senge, 1990a). Public education faces these same challenges. Theories about learning organizations recognize the shortcomings of continuing to look at problem solving by way of hierarchical management modes (cf. Wheatley, 1999). Therefore, contemporary theorists and practitioners invite a different way of thinking about leading. This has generated an industry of publications, workshops, and seminars about effective leadership. Remaining at the core of this new attention, however, is a neglected observation of James MacGregor Burns, that is, "the vital *teaching* role of leadership" (1978, p. 425, italics original). This dissertation addressed that role by examining the question: What are the similarities and differences in the ways school administrators think about "leading" compared to the ways teachers think about "teaching"?

The Problem in Context

Two decades ago, in their report *A Nation at Risk*, the National Commission on Excellence in Education declared that K-12 public schools were drowning in a "rising tide of mediocrity" (1983, para. 1). Twenty years later, some critics would say that the tide has risen even higher. Years of school reform programs have resulted in no large-scale improvements in all of our youngest students' reading skills. In fact, only 32% of the nation's fourth graders read skillfully at grade level (No Child Left Behind, 2003). Additionally, there are no large-scale assurances that all teens who enter high school in the ninth grade will walk across the stage to receive their diplomas four years later (National Center for Education Statistics, 2003). It is true that there are many good schools and good classrooms. Yet even our good

schools fail some children at all levels. For instance, 30% of college freshmen need

remediation in reading, writing, and mathematics (ERIC Clearinghouse, 1999), and U.S.

businesses continue to report the challenge of finding entry level employees with skills in

problem solving, critical thinking, and collaboration (Murnane and Levy, 1996; Burkhardt

and Monsour, 2003). A crisis still exists.

       In 2001, the federal government created the No Child Left Behind Act (NCLB) to

address the crisis and to assure equity and quality for all school children. In 600 pages of

detail, this sweeping reform movement mandates what individual schools must do in order to

avoid governmental and financial sanctions. In January 2002, President Bush signed the Act

"designed to improve student achievement and *change the culture of America's schools*"

(*NCLB Desktop Reference*, 2002, p. 9, italics added).

       Yet governmental edicts alone do not stem the tide. And state house mandates do not

change school culture. Those within the schoolhouse do.

       I wonder about the culture we are creating in our public schools. The spirit and intent

of No Child Left Behind are important: that every child can read and think well, understand

and use mathematical concepts, and graduate from high school ready for a global,

information economy. This is a tall order. But, if school leaders focus only on the external

accountability of high-stakes testing, they have missed the mark. Contemporary education

leadership theorists (Barth, 2001; Elmore, 2000; Fullan, 2003; Lambert et al., 2002; Senge et

al., 2000; Wagner et al., 2005) propose that to meet the complex demands of school reform,

to ensure deep and significant change so that, in truth, no child is left behind, school leaders

can no longer rely on technical skills or management strategies. Merely running the school is

no longer enough. Creating rich and dynamic learning environments for children means

creating a rich and dynamic learning environment for the *adults* in the schools as well. While teachers are the child developers in the schoolhouse, school leaders must become the adult developers (Levine, 1989; Barth, 2001; Lambert et al., 2002; Drago-Severson, 2004).

Roland Barth, founder of Harvard's Principal Center, concurs both with the notion that schools must improve to better serve our children *and* that school leaders must better serve our adults. He warns that school leaders must be aware of what he calls "at-risk educators" as much as they are on the lookout for "at-risk students." An at-risk educator, Barth says, is one who "leaves school at the end of the day or the end of the year with little possibility of continuing learning" (2001, p. 21). He reminds readers of one major premise behind school reform efforts such as No Child Left Behind: that all children can learn. Though this phrase may have become cliché in education circles, Barth goes on to say:

> All educators can learn.… To hold low expectations for them and their capacity as learners is just as destructive and corrosive as believing that those youngsters on the other side of the tracks cannot learn. The question for the educator is not whether all humans can learn but what conditions we can devise so that they will learn. For only when the schoolhouse becomes a context for adult development will it become hospitable to student development. (2001, p. 29)

Barth's admonition rings true, but the admonition is simplistic. How can educational leaders create this kind of developmental place for both children and grown-ups? If educational leaders are to answer the call to "change the culture of America's schools," I propose that our job is not school reformation, but school transformation, and that the role of school leaders is not to in-form and re-form their followers, but to trans-form them.[1] How

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[1] It is important to notice the colloquial use of these words. I differentiate them as follows. To inform is to add to a person's body of working knowledge; therefore, in-forming followers would mean adding facts or skills that help them go about their work. To transform is to expand a person's way of thinking, specifically, the ability to embrace higher levels of complexity; therefore, trans-forming followers would mean building their capacity to think differently and to generate (their own) new learning. Reform, as in "education reform" or "health care reform," has come to suggest "change," particularly to "fix" a system that is functioning poorly. It suggests structural or technical change. The lens through which I view change in this dissertation is, instead, adaptive change as proffered by Heifetz (1994).

can leaders create the conditions for transformative, not just compliance-based, learning for the adults in school organizations? Within education leadership literature, this adult development on behalf of adaptive change is popularly called "capacity building" (Elmore, 2000; Fullan, 2003; Wagner et al., 2005). How do school leaders build capacity?

On Leading and Teaching

Since 1999, I have been assistant superintendent for teaching and learning of a 9,000 student K-12 public school district in southwest Ohio. I help lead an administrative staff of 30 principals, assistants, and instructional specialists who, in turn, lead a teaching staff of 600 teachers. In 1999, the senior leadership team began working with the Harvard Institute for School Leadership and, shortly thereafter, with the Graduate School of Education's Change Leadership Group (CLG). Our district was a beta site for the CLG's early work in building capacity in school leadership teams on behalf of assuring equity and quality for all students. As my colleagues and I worked with the CLG coaches, I was fascinated to watch our coaches at work. Their leadership style reminded me of how I thought good teaching should look. Whenever I practiced what I was learning from them, it always felt as though I was back in the classroom doing my best teaching. In my daily practice and in my reflection, I became more and more interested in the notion of teachers as leaders and leaders as teachers—and then became curious about how school leaders can work to transform teachers' thinking just as teachers work to transform students' thinking. Is it not all about creating cultures of learning, I wondered?

The CLG members talk of creating communities of practice within school organizations, adult communities that take seriously the idea of the learning organization. Within the past 15 years, a body of management and leadership literature has referred to the learning organization (Senge, 1990a; Vaill, 1996; Wheatley, 1999; Heifetz and Laurie, 2003; Tichy, 2002) and the need for organizations to develop environments conducive to continued learning and growth. Some educational leadership theorists also write about the urgency for schools to become learning organizations with leaders attending to the adult learning needs of teachers in order to best promote the learning needs of their students (Barth, 2001; Lambert et al., 2002; Drago-Severson, 2004).

What is still underdeveloped, however, is empirical study of the ways leaders think about capacity building and creating a culture of adult learning. For instance, in his earliest writing about learning organizations, Peter Senge (1990a, 1990b) used the image of leader as teacher. More recently, Noel Tichy (2002) writes about the virtuous cycle of teaching as an imperative for organizations. Ronald Heifetz and Donald Laurie (2003) also talk about the leader as teacher in bringing about adaptive change. Are these abstractions? Or are there similarities between how leaders think about their work and what they do, and how teachers think about their work and what *they* do?

Both Heifetz (1994) and Kegan (1982, 1994) recognize the "holding environment" as the crucible in which transformation occurs. They and others (Daloz, 1999; Drago-Severson, 2004; Fullan & Barber, 2005; Barber, 2002) write of the counter-components of challenge and support as the key elements in the alchemy of transformation. In a recent white paper about school transformation, members of the Bill and Melinda Gates Foundation (2005) pointed to Fullan's and Barber's notion of challenge and support as theoretical models for

leaders to promote changes in school culture. I am struck by the similarities between these models and that of pedagogical theorist Lev Vygotsky (1978), who writes of the zone of proximal development—the right balance of challenge and support—to promote student learning. Is this work similar?

This mixed methods study offered an empirical examination of the assumption that leaders have a vital role as teachers. Are there conceptual similarities in the thinking of teachers and administrators? What are some of the differences? Do administrators think about leading as a teaching process? In what ways do they think and act as teachers, creating holding environments in which adults may transform their thinking?

Organization of the Dissertation

Chapter Two: Literature Review

The purpose of this chapter was to place the dissertation within the context of previous research. I reviewed literature pertinent to the hypothesis that similarities exist in how leaders and teachers think. The lenses through which I filtered my inquiry were two teaching components, challenge and support, and how they apply to the work of leading as well as teaching. Therefore, this chapter reviewed four topics:

1. theorists' propositions of the teaching role of leadership,
2. two teaching counter-components: challenge and support,
3. empirical research on how teachers think, and
4. empirical research on how school administrators think.

Chapter two concludes with the argument that the literature provided a foundation for my research but was incomplete as a source of knowledge for addressing the research question:

What are the similarities and differences in the ways school administrators think about "leading" compared to the ways teachers think about "teaching"?

Chapter Three: Design, Methodology, and Rationale

Chapter Three describes in detail my thinking about creating dialectical, integrated mixed methods study and explains the rationale for my design and method. For this inquiry, my intention was not only to apply a methodology, but also to adapt methodologies to allow me to best gather and analyze the data from my sample. Chapter Three includes pertinent information about concept mapping. Because I am attracted to the sense of order of quantitative inquiry and to the nuance of interpretation of qualitative inquiry, my design employed mixed methods, using both quantitative and qualitative approaches. Data collection included focus groups and a cognitive categorization process call card sorting.

I began with a purposive sampling of participants—reputationally "master teachers" and "master administrators"—nominated by their colleagues (peers or supervisors). Seven master teachers and six master administrators participated in a focus group process to generate a list of concept statements about the thinking underlying their professional theories of action. These focus groups were conducted by an impartial facilitator to help alleviate any researcher bias. Afterwards, I followed a prescribed protocol to reduce the brainstormed list to 100 statements.

In phase two of the research, a second pool of teachers and administrators participated in a cognitive categorization activity called card sorting (Weller & Romney, 1988; Ryan & Bernard, 2000; Trochim, 1989). Individually, each participant created similarity clusters from the 100 concept statements presented to them. I tallied and entered these data into Concept Systems® software. The software calculated individual and group similarity matrices. This

served as the foundation for the multidimensional scaling that created a point map, graphing the concepts' similarities and differences. From the point map data, cluster analyses rendered cluster maps. From these analyses, I created conceptual maps: one each for the teacher, administrator, and combined groups. I convened a second focus group to discuss, interpret, and suggest names for the conceptual clusters on the maps.

Thus, phases one and three were constructivist to generate concepts while phase two was quantitative to help provide a mathematical measure for the conceptual similarities and differences. Phase four was my interpretative comparison of the teachers' and administrators' maps.

Chapter Four: Findings

In Chapter Four, I report the findings of my study—the concepts generated by the focus groups, the participants' importance rating data, and then visual representations of how the teachers and administrators rated and categorized the ideas. I created three sets of concept maps. These maps show that 16 of the statements rated *very important* or *extremely important* arrayed densely in one area of the map. Their accompanying data show that teachers and administrators strongly agree about providing support and showing personal regard. This suggests similarities in their thinking in the Personal aspects of their work.

On the other hand, the maps and their accompanying data show that teachers and administrators disagree about the importance of using evidence and data. This suggests dissimilarities in their thinking about Extra-Personal aspects of their work. A third area that emerges is the administrators' categorization around self-expression or self-disclosure. This suggests the administrators' awareness of an Intra-Personal dimension of their work.

Chapter Five: Discussion, Implications, and Recommendations

After presenting the study's findings, I returned to the context of the research problem to discuss implications of these findings and to make recommendations for further research. This chapter includes four sections that discuss teachers' and leaders' thinking, support and challenge, implications for practitioners and researchers, and the mapping process. I propose that the Personal dimensions of teachers' and administrators' work align with the holding environment component Support, while the Extra-Personal dimensions align with the holding environment component Challenge. I discuss how these dimensions (as well as the additional dimension, Intra-Personal, that appears on the administrators' map) may affect school leaders' work and implications for those who work with school principals or prepare aspiring administrators. Finally, I make recommendations for additional research on these topics, using this study as a launching point.

Scope of the Dissertation

Definition of terms

The following definitions denote and clarify my meaning as I use these terms throughout the dissertation.

1. *Thinking or Thought processes* are schemata that teachers and administrators hold about aspects of their work.

2. *Concept map.* A concept map is a visual display of the cognitive similarities and dissimilarities among ideas. The graphic representation is created by using multivariate statistical techniques: similarity matrices, multidimensional scaling and cluster analysis (Ryan and Bernard, 2000; Trochim, 1989). Though there are

numerous uses of the term concept mapping, this study's design is based on

Trochim's work (1989, 2005a, 2005b).

3. *Holding environment* is the metaphoric container in which leaders or teachers hold
their followers/students, by providing a balance of both challenge and support.
Originating in psychotherapy (Winnicott, 1965), the term is used by both Heifetz
(1994) and Kegan (1994) who suggest that the holding environment affords
transformative shifts in thinking.

4. *Challenge and Support.* Challenge means introducing conflict or provoking a
contradiction or disorienting dilemma in one's perspective (Dewey, 1910/1997;
Kegan, 1994; Heifetz, 1994; Daloz, 1999; Mezirow, 2000; Kegan and Lahey, 2001;
Tang, 2003; Drago-Severson, 2004). Support means engendering trust, fostering a
relationship in which the follower feels known and understood, and providing
structures for the follower's learning and growth (Vygotsky, 1978; Kegan, 1994;
Heifetz, 1994; Avolio, 1999; Daloz, 1999; Drago-Severson, 2004).

5. *Technical versus Adaptive Change.* Technical work is that for which there is a clear
problem and a clear solution. For technical work, people know what to do and who is
to do it. Technical change is reactive and structural. Adaptive work is required in
situations where either the problem or the solution (or both) is unclear. Adaptive
change requires new schemata. Senge (1990a, 1990b) calls this generative or
responsive because it demands developing new capacities—learning new values,
beliefs, and behaviors (Heifetz, 1994). Heifetz maintains that mobilizing adaptive
work is the work of the leader.

6. *Personal, Extra-Personal, and Intra-Personal.* Based on the findings of this study, I name three regions of the concept maps. The Personal are those aspects of work that focus on "you" or "us," with a relational, affective bent. The Extra-Personal are those aspects of our work that require us to think outside of our "selves," which may provoke challenge. The Intra-Personal are those aspects of self-expression or self-awareness that influence our work.

Delimitations and Limitations

Although there is insightful literature on leading as learning (for example, Senge, 1990a; Vaill, 1998), this study examined leading as *teaching*. This dissertation focused on K-12 educational leadership rather than business or political leadership. It examined teachers' and administrators' thinking from the perspective of cognitive psychology, not from a neuroscience or philosophical stance. By virtue of the focus prompts, it considered teaching that emphasizes adaptive (transformational) learning rather than technical (informational) learning or training. The lenses through which I filtered this work are two teaching components, challenge and support. My focus group members were a purposive sample, a group of teachers and leaders nominated by their supervisors and peers as professionals with the ability to reflect upon and articulate their thinking processes. However, the nomination and selection process may have played a role in how some participants responded (for example, their awareness of my professional role as a school administrator). Because this is an exploratory study, I recognize that I may have sacrificed the ability to generalize my findings. The findings are limited, for example, by the scope and size of my sample. Also, because I looked only at education professionals, my findings may not be transferable to the business world.

Assumptions

My assumptions in this study of teachers and school leaders stem from my practice as an administrator in K-12 public education and from my interest, study, and personal reflection and application of constructive-developmental theory, transformative learning, and leadership. I acknowledge the following assumptions that drive my work. I assume that

1. behaviors follow from and are informed by one's thinking,

2. the holding environment, though an abstraction, describes concrete actions and behaviors that promote shifts in thinking,

3. challenge and support are key factors in capacity building and thus in teaching and leading,

4. teachers and administrators have tacit knowledge about their roles in capacity building, and

5. it is possible both to qualify and quantify that knowledge.

Significance of this research

For the scholar-researcher, this study is important because the literature around the teaching role of leadership is still underdeveloped. Though there is a theoretical body of literature on adult development and creating cultures of change, there has been little empirical study outside of case study. This exploratory research brings light to this gap by mathematically measuring and comparing the thinking of teachers and school administrators, using variables created from their own words. This can offer a first step toward empirical comparisons of teaching and leading.

For the scholar-practitioner, this comparison is represented graphically—as a map. To change the culture of American schools, scholar-practitioners must chart the terrain of leading and teaching. For educational leaders seeking to transform their workplaces, it is critical to cross the bridge from theory to practice. This work may help inform both the daily practice and the professional development of educational leaders who want to create, strengthen, or sustain the adult learning communities in their schools.

Finally, although I did not set out to test the usefulness of my design for studying leaders' thinking, my inquiry offered some insights into how concept mapping might be used for future inquiries by education scholars as well as education professionals.

It is through teaching that leaders lead.
~ Eli Cohen and Noel Tichy

Cognitive perspectives remind us that
what administrators do depends on what they think.
Their overt behaviors are the result of covert thought processes.
~ Kenneth Leithwood and Philip Hallinger

CHAPTER TWO
Literature Review

Introduction

This dissertation examines K-12 educational leadership to determine similarities and differences in the ways school administrators think about "leading" compared to the ways teachers think about "teaching." In this chapter, I review literature pertinent to the hypothesis that similarities exist in how leaders and teachers think. The lenses through which I filter my inquiry are two teaching components, challenge and support, and how they apply to the work of leading as well as teaching. Therefore, this chapter reviews four topics:

1. theorists' propositions of the teaching role of leadership,

2. two teaching counter components: challenge and support,

3. empirical research on how teachers think, and

4. empirical research on how school administrators think.

Chapter two concludes with the argument that the literature provides a foundation for my research, but is inadequate and incomplete as a source of knowledge for addressing the research question: What are the similarities and differences in the ways school administrators think about "leading" compared to the ways teachers think about "teaching"?

Leader as Teacher: In Theory

Burns (1978) defines leadership as a reciprocal process of mobilizing people in order to realize goals. These goals may be independent or mutual. He views leadership as an interplay focusing on the needs and desires of both leader and follower. His theory examines the leader-follower relationship, the core of which is "the interaction of persons with different levels of motivations and of power potential, including skill, in pursuit of a common or at least joint purpose" (1978, p. 19). To him, power potential is not a quality or an entity; rather, it is an engagement between power holder and power receiver. It may be an exchange for mutual gain or transaction (a swap) which both parties experience either consciously or unconsciously. In this transactional interplay, both are conscious of the power resources of the other. This is the kind of leadership with which we are most familiar. It can be observed daily as a sort of commodities exchange—whether in the schoolroom (grades for work completed) or the school district (perquisites offered to employees based on seniority).

Less commonly, the exchange can be supportive and elevating. To this end, Burns writes that "leaders shape and alter and elevate the motives and values and goals of followers through the vital *teaching* role of leadership" (1978, p. 425). The exchange empowers the follower. This marks his definition of transforming leadership. However, he does not elaborate by describing or prescribing the teaching role. Therefore, it is unclear whether he is writing figuratively or literally. Later, leadership and management theorists such as Senge (1990a, 1990b), Heifetz and Laurie (1997), and Cohen and Tichy (1998) describe the leader more specifically as teacher.

Senge's (1990) groundbreaking work on systems thinking and the "learning organization" proposes that a leader's work includes three roles: designer, steward, and

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teacher. In this model, he describes the leader's teaching role as "help[ing] people *restructure their views of reality* to see beyond the superficial conditions and events into the underlying causes of problems, and therefore to see new possibilities for shaping the future" (1990b, p. 12). He writes of the importance of leaders understanding the concept of mental models, that is, the underlying assumptions that shape followers' behaviors and actions. He believes that leaders view reality on three levels: events, patterns of behavior, and systemic structure (1990a, 1990b), and that typical leaders focus their attention on visible events and behaviors rather than on the invisible assumptions that undergird and generate those events and behaviors (see Figure 2.1). "The role of leader as teacher starts with bringing to the surface people's mental models of important issues," Senge writes (1990b, p. 11).

Figure 2.1

Three levels of reality (Senge, 1990a, 1990b)

Systemic Structure
Mental Models and Assumptions
(Generative)

↓

Patterns of Behavior
(Responsive)

↓
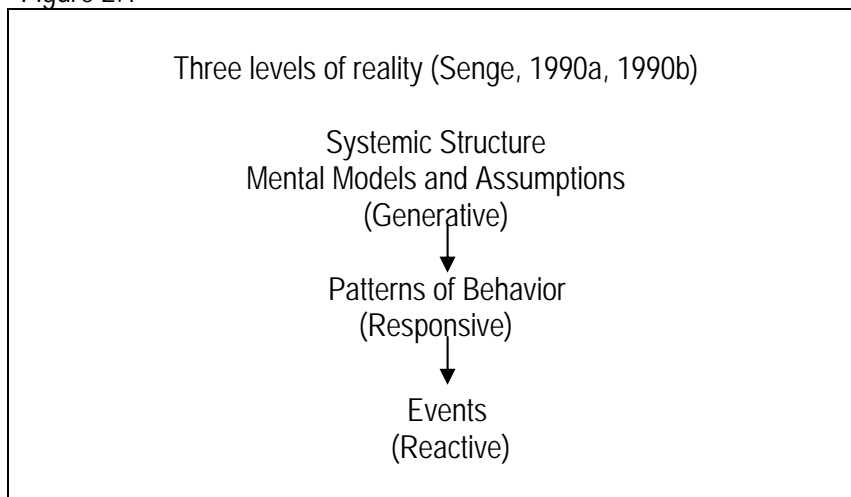
Events
(Reactive)

Although all three levels of reality are "true," leaders as teachers do not just respond to behavior or react to events, but work toward understanding the systemic structures that trigger them. Senge writes that

> contemporary organizations are predominantly reactive, or at best responsive—rarely generative. On the other hand, leaders in learning organizations pay attention to all three levels, but focus especially on systemic structure; largely by example, they teach people throughout the system to do likewise. (1990b, p. 12)

For Senge, therefore, the task for the leader as teacher means challenging assumptions without invoking defensiveness. To create this generative learning, the leader as teacher specifically helps members of the organization see its mental models. Senge suggests that this must be intentionally taught by engaging in three practices that help reveal underlying assumptions. These teaching processes come from the work of Argyris and Schön (1978). Leaders serve as teachers

1. by helping followers see leaps of abstractions, that is, seeing when they are treating generalizations as though they were actual data;

2. by learning to use and balance advocacy skills as well as inquiry skills, that is, not only advocating one's personal stance, but also actively seeking disconfirming data or other perspectives and encouraging others to test their views as well; and

3. by distinguishing espoused theory, views we think we hold, from theory-in-use, actions which belie our mental models.

Heifetz and Laurie (2003) write that the leader's role as teacher requires understanding the difference between adaptive and technical work. Heifetz (1994) defined leadership as a relationship in which one party has the power to hold the attention of another party and facilitate adaptive work. Technical work is that for which there is a clear problem and a clear solution. Adaptive work is required in situations where either the problem or the solution (or both) is unclear. For technical work, people know what to do and who is to do it. The problem and the solution are defined, and the capacity to change has already been developed. In Senge's terms, technical work is reactive. Adaptive work, on the other hand, is generative or responsive because it demands developing new capacities—learning new

values, beliefs, and behaviors (Heifetz, 1994). By their definition, helping followers develop new capacities is the teaching role of the leader.

Heifetz and Laurie (2003) propose that the leader as teacher must create a holding environment, "the organizational space in which the conflicts and stresses of adaptive work take place" (p. 7). Heifetz uses a pressure cooker metaphor to describe this. The leader regulates the pressure of the holding environment by turning the heat up or down, and by allowing steam to be released when necessary. With too much heat, the pressure cooker explodes. With too little, nothing cooks. "People cannot learn *new ways* when they are overwhelmed," Heifetz writes, "but eliminating the stress altogether eliminates the impetus for adaptive work. The strategic task is to maintain a level of tension that mobilizes people" (1994, p. 106). Heifetz and Laurie maintain that this balance occurs within relationships derived primarily from trust, a critical resource for the teacher as leader.

Cohen and Tichy (1998) propose that the crux of leadership is teaching. It is through leadership that the concept "learning organization" must be expanded into a new concept, the teaching organization. Teaching serves two purposes. First, it provides sustainability for the organization and assures that wisdom and lessons are not lost when one or two key leaders leave the organization. Vision and expertise are distributed at all levels of the organization. Second, they maintain that teaching sharpens the performance of the leader. Leaders do this by creating what Cohen and Tichy call "teachable points of view" (1998; see also Tichy, 2002). Having a teachable point of view means having the ability to make knowledge available to others, by first examining one's own ideas and beliefs, the mental models underlying that knowledge. This requires that leaders apply Senge's three teaching principles first to themselves. Then the leader must work to articulate those ideas succinctly, so

concisely that they can be communicated within two minutes. The goal is twofold: leaders

examine their own mental models in order to create congruence between their ideas and

actions, and then leaders model this to their followers so that they can do the same. The goal

is to support followers in developing their own teachable points of view. Tichy calls this

model the "virtuous teaching cycle" (see Figure 2.2).

Leithwood, Edge and Jantzi's studies of schools in seven countries (1999) led

Leithwood (2001) to create a four-part framework for school leadership in which he proposes

that leaders play four roles: salesperson, chairperson, strategic manager, and teacher. As

decentralization and site councils become more common in public education, school leaders

must often teach others who have never been entrusted with power and decision making how

to clarify their thinking and make defensible decisions. This is especially true for teachers

who have been a part of traditional or hierarchical power structures and also for parents and

community members, unschooled in education administration, who find themselves

responsible for decisions about budgets, personnel, and curricula. Leithwood maintains that it

is especially critical that school leaders advocate for and teach critical thinking and decision

making to those adults with "newly found voices" (2001, p. 3). However, he does not

prescribe how to do this.

Another education theorist, Drago-Severson (2000, 2004), does. Her ground breaking

research codifies the work of leader as teacher. Drago-Severson suggests that, by using a

constructive-developmental model to understand the meaning making of individual teachers

on a staff, an administrator can exercise leadership on behalf of promoting teacher growth.

Her work is built upon the foundation of constructive-developmental theory,

Figure 2.2

Leaders' skill at teaching:
Levels of teaching within an organization
(Tichy, 2002)

High	High	High	High

Depth of learning

Level of commitment and understanding by all those involved

Amount of time required

Capacity for continuous generation of leaders

Teach

Sell

Tell

Command

Low	Low	Low	Low

Teach	Leaders teach others to develop their own teachable points of view. Mutual learning takes place and becomes the source for confident action.
Sell	Leaders provide their teachable point of view; they persuade others that this is correct. May include giving pseudo-participation, several limited options to choose from – a cooptation model.
Tell	Leaders instruct the followers on their teachable points of view. Followers are expected to adopt this.
Command	Leaders give mandates and directives to followers – command and control.

especially as set forth by Kegan (1982, 1994). It is based on two epistemological principles:

constructivism and developmentalism. In order to use Drago-Severson's framework, it is

important to understand the theory upon which it is built. I describe it briefly, below.

Constructivists believe that humans are meaning makers, with inherent organizing

principles that consistently and actively (though not self-consciously) construct their reality.

Developmentalists believe that we evolve through "different eras of increasing complexity according to regular principles of stability and change" (Kegan, 1994, p. 199) and that these eras of increasing complexity are stages that are predictable, stable, and common among humans. Kegan maintains that adults face the demands of their work from the structure of "orders of consciousness" that form their world view. He proposes a framework of human knowing, which unfolds and expands as individuals change their view of what is self (or subject) and what is other (or object). Though there are five developmental stages proposed in this theory, three are most common in adulthood: stage two, instrumental; stage three, interpersonal or socializing; and stage four, institutional or self-authoring (Drago-Severson, 2004). Instrumental knowers think in concrete terms. People in this stage are subject to their own needs, interests, and wishes. Though they can control impulses, they operate from personal goals and agendas and, because they are subject or embedded in this worldview, they assume others operate the same way. To them, the world operates in dualistic, right-wrong, either-or, terms. Instrumental Knowers are external, behavior oriented thinkers (Popp and Portnow, 2001).

Socializing or stage three, interpersonal, knowers are able to examine and reflect upon their own needs and interests, but they achieve identity from and are subject to their relationships. In fact they are "inextricably tied to others for their sense of self" (Levine, 1989, p. 104). Because of this, they may find conflict unbearable and rely on niceness or the approval of others to stay in balance. The other may be a person, but it may also be an institution (such as the Catholic Church or the United States military) or a culture (for instance, Appalachian or Asian). When a socializing knower is confronted by two significant others with differing opinions, dissonance and internal conflict can result.

Fewer adults are self-authoring, or stage four institutional knowers. Adults who operate from a self-authorizing worldview achieve identity in autonomy and individuation, can appreciate varying perspectives of others, and do not see conflict as a threat to their relationships. In fact, they can even hold their own conflicting feelings. They are oriented to self standards and achievement. This is a strength of this stage; its accompanying weakness may be workaholism (Kegan, 1982). Nonetheless, Kegan (1994) maintains that adults must achieve stage four to deal with complex situations, the mental demands of modern life that adults increasingly face at work.

In Helping Teachers Learn (2004) Drago-Severson uses Kegan's three stages of knowing common to adulthood to provide a framework for principals to offer developmentally appropriate teaching to their staffs. She maintains that using a constructive-developmental model can offer the leader as teacher a way of understanding the developmental demands placed upon adults which call not only for a change in skills or knowledge, but also for a qualitatively different, more complex way of organizing and making sense of reality. Figure 2.3 shows the specificity Drago-Severson offers for providing developmentally appropriate activities for teachers at various stages of knowing. In addition, Drago-Severson (2000, 2004) identified four strategies for the work of leader as teacher: creating opportunities for teaming, providing leadership roles, promoting collegial inquiry, and mentoring. She calls these the four pillars of the learning-oriented leader.

Potentially, working within a team provides a safe environment in which people are encouraged to share their thinking, take risks, and explore both their own and others' perspectives. Learning to understand the viewpoints of others within the organization increases the potential for teachers to navigate situations when multiple perspectives are

present. Articulating one's perspective and examining another's allows an opportunity for people to reflect upon their ways of knowing. By creating collaborative groups and using teaming as support, the leader as teacher can help participants "release themselves from an embeddedness in their own perspective, an inability to see other people's meanings" (Drago-Severson, 2000, p. 15). A second strategy she proposes is to provide various leadership roles for the teacher. By delegating leadership responsibilities, the principal offers an opportunity for teachers to become "disembedded from their own particular job description" (Drago-Severson, 2000, p. 16). This challenge can help uncover unexamined assumptions that guide a teacher's actions and can offer a venue for testing out new ways of acting. It also works on behalf of distributing leadership over the organization. A third teaching strategy Drago-Severson recommends is collegial inquiry. Intentionally arranging varied conversations promotes a teacher's capacity for becoming a more reflective practitioner. Sharing ideas about work with colleagues allows teachers to hear, confront, challenge, and support their own or another's ideas, and unveil their internal assumptions—promoting double loop, rather than single loop, learning (from the work of Argyris and Schön, 1978; Senge, 1990a). The final teaching strategy Drago-Severson recommends to leaders is mentoring, particularly a veteran partnered with a novice, though the relationship can be reciprocal. She argues that a mentoring relationship provides the holding environment that allows teachers to share their expertise, consider various points of view, and manage change.

Figure 2.3

	Supports Needed	Challenges Experienced
	Supports and Challenges for Different Ways of Knowing, adapted from Drago-Severson, E. (2004). *Helping teachers learn.* Thousand Oaks: CA: Corwin Press, pp. 167-168	
Stage 2: "Instrument al"	▪ Give clear expectations and guidelines ▪ Use step-by-step directions ▪ Have an explicitly stated timetable ▪ Provide explicit prompts (questions) Establishing rules for engaging in conversation or dialogue with colleagues ▪ Explicitly state reasoning or argument behind perspectives ▪ Establishing concrete outcomes	▪ Learning about multiple perspectives through dialogue ▪ Developing abstract thinking and transferability of ideas, opinion ▪ Moving beyond "right answers" toward open-ended discussion that could broaden perspectives ▪ Beginning to hypothesize and starting to test out alternative ideas and the analysis of outcomes
Stage 3: "Socializing"	▪ Explicitly encourage to express perspectives and *acknowledge* various points of view ▪ Create a context of acceptance and a sense of belonging ▪ Share perspectives in pairs before sharing them with a larger group ▪ Emphasize that differences of opinion do not jeopardize friendships/relationships ▪ Pose reflective questions that address feelings about issues or changes	▪ Considering one's own perspective and sharing it before learning about the perspectives of others ▪ Articulating what should be done to support them ▪ Understanding that conflict is okay and can serve to help everyone learn and grow ▪ Voicing assumptions and testing new thinking and behaviors in a supportive context
Stage 4: "Self-authoring"	▪ Allow some freedom in the inquiry process ▪ Create opportunities within teams for teachers to demonstrate their own competencies ▪ Within the context of collaboration, allow teachers to pursue self-generated goals ▪ Engage in dialogue that enables testing of thinking and sharing perspectives ▪ Offer feedback that further develops current competencies ▪ Provide opportunities for teachers to critique proposed ideas and to offer feedback to authorities and team members ▪ Create spaces within reflective conversations for these teachers to pose their own questions and respond to them	▪ Considering ideas and perspectives that are in opposition to their own ▪ Seeing commonalities in perspectives through dialogues with others ▪ Working with colleagues who have perspectives on issues or situations that are in opposition to their own ▪ Encouraging teachers not to be wedded to any one particular way of completing a task (i.e., their way) ▪ Welcoming alternative standards for and approaches to problem-solving processes that are in opposition to their own preferred way

The four initiatives proposed by Drago-Severson promote adult development by way of "moving aspects of one's thinking from subject to object, where the aspect of thinking can be seen and looked at rather than understood in a manner limited to the way we see" (2000, p. 17). In other words, it is moving from an inability to examine an idea or deeply held assumption (self) to an ability to examine and even question the held assumption (movement to object).

Summary

Part One of the literature review sets the theoretical stage for researching the question, "Do similarities exist in how school administrators think about 'leading' compared to how teachers think about 'teaching?'" An overview was given of the teaching role of leadership as proposed by leadership theorists Burns, Senge, Heifetz and Laurie, Tichy, and education theorists Leithwood and Drago-Severson. Drago-Severson's work, based on constructive-developmental theory, is the most prescriptive of the models. She specifically uses the teaching components of challenge and support to provide the framework for learning-oriented leadership. Part Two of the literature review examines the theoretical background of these two components.

Challenge and Support: In Theory

Psychologists propose that, without the dual components of challenge and support, growth does not occur. This paradoxical combination comes from child psychology and psychoanalytic theory, from the concept of holding environment. As a psychoanalytic term, holding environment comes from the work of Winnicott (1965) and stems from a mother's literal and symbolic holding of her infant. Winnicott describes the complementary

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relationships needed for an infant's development. Though a mother's early holding of her child is necessary, she cannot hold the baby indefinitely. Though she may hold the infant well, literally and symbolically, she must also provide the kinds of challenges that allow the child to grow and move on. During these challenges, the mother remains in place to recognize and sustain the child's growth. Similarly, a psychotherapist creates a space for the client to examine, to reflect upon, and to make progress toward resolving difficult problems (Heifetz, 1994). Heifetz defined the holding environment as a state in which "one party has the power to hold the attention of another party and facilitate adaptive work" (1994, p. 105). In a leader-follower relationship, adaptive work requires a balance between support (holding on) and challenge (letting go). In adult developmental theory Kegan (1982) describes holding environments as "the psychosocial environments which hold us (with which we are fused) and which let go of us (from which we differentiate)" (1982, p. 116).

Optimally, such environments provide a balance of challenge and support that mobilizes rather than paralyzes people. Psychologist Csikszentmihalyi (1988) spent years measuring quantitatively what constitutes the optimal mobilizing experience. He found that peak performance occurs when people experience a ratio of high challenge equaling their highest level of skill. However, disparate ratios result in boredom (low challenge, high skill), apathy (low challenge, low skill), or anxiety (high challenge, low skill). He illustrates his findings using a four-cell grid which demonstrates the ratio of challenge to skill (Figure 2.4).

Figure 2.4

Effects of Support and Skill on Development (Csikszentmihalyi, 1988)
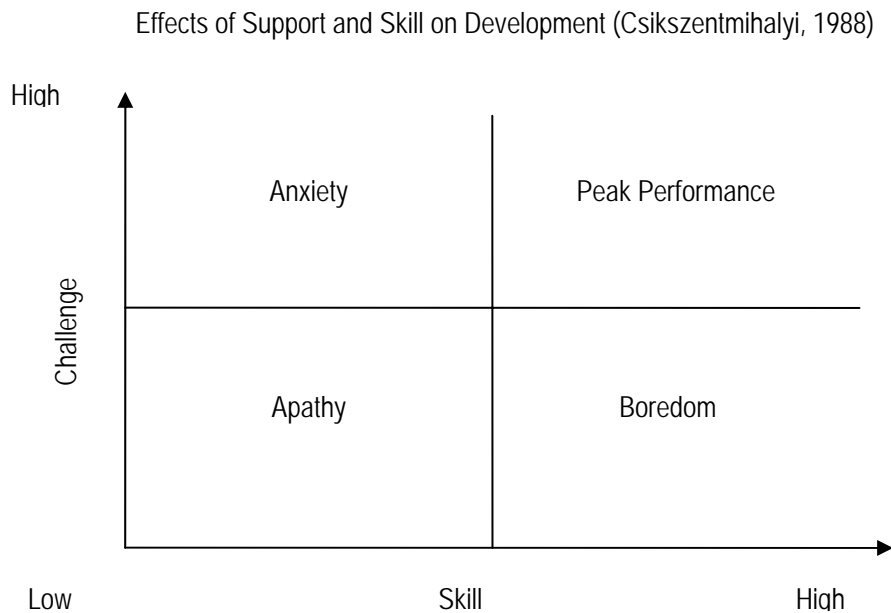
Daloz (1999) studied mentoring and teaching relationships extensively and, as a result, took Csikszentmihalyi's four-cell grid one step further. He posits matching support to skill, and illustrates the optimal balance of challenge with *support* in a similar four-cell grid. His matrix suggests what occurs when the ratio of challenge and support is off balance. When both challenge and support are low, say, in a laissez-faire style of leading, little learning occurs. He calls this stasis. When support is high but challenges are few, as in a highly nurturing style, learners may feel good about themselves (confirmation) but miss the opportunity for integration with the world outside. Too much challenge without support will cause anxiety and retreat to set in. Tang (2003) confirmed this proposition in her study of student teachers' professional learning within their field experiences. She elaborated on Daloz's model by adding the elements of tension and dissonance contrasted with equilibrium and resonance (see Figure 2.5).

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Figure 2.5

Effects of Support and Challenge (from Daloz, 1999, and Tang, 2003)

High

Challenge

Retreat	Growth
Tension *Dissonance*	*From Tension to Equilibrium* *From Dissonance to Resonance*
Stasis	Confirmation
	Equilibrium *Resonance*

Low   Support   High
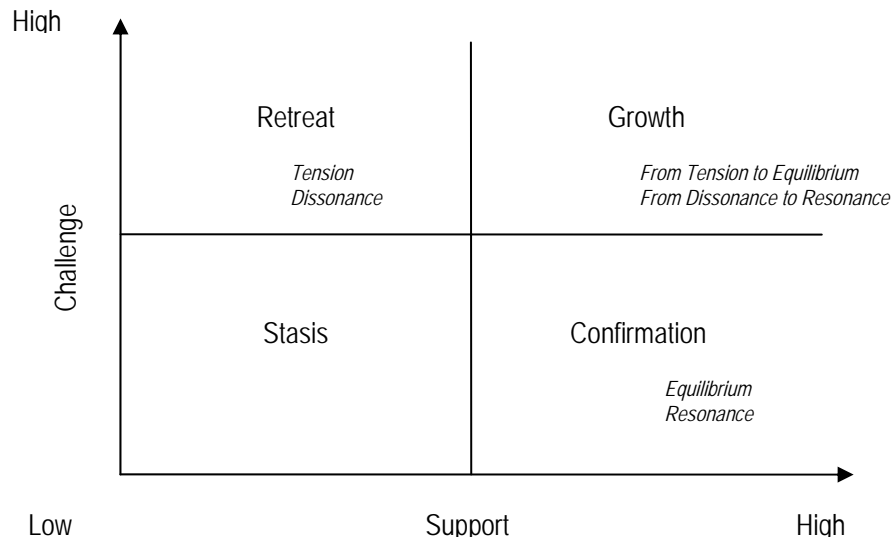
While Daloz's and Tang's models apply to the individual, Barber (2000, 2002) creates an analogous grid to demonstrate the organizational effects of challenge and support, specifically in education reform. Too much challenge without support? Conflict and demoralization set in. When administrators hold a laissez-faire leadership belief—when both challenge and support are low—stagnation and under performance result among the adults in the schoolhouse. When support is high but challenges are few, as in a highly nurturing style, complacency sets in and school reform progress is slow and uneven. Barber confirms that rapid progress and high performance occur when the leader sets high expectations and provides an appropriately high level of support (Figure 2.6).

Figure 2.6

Effects of Support and Challenge on Public Education (Barber, 2002)
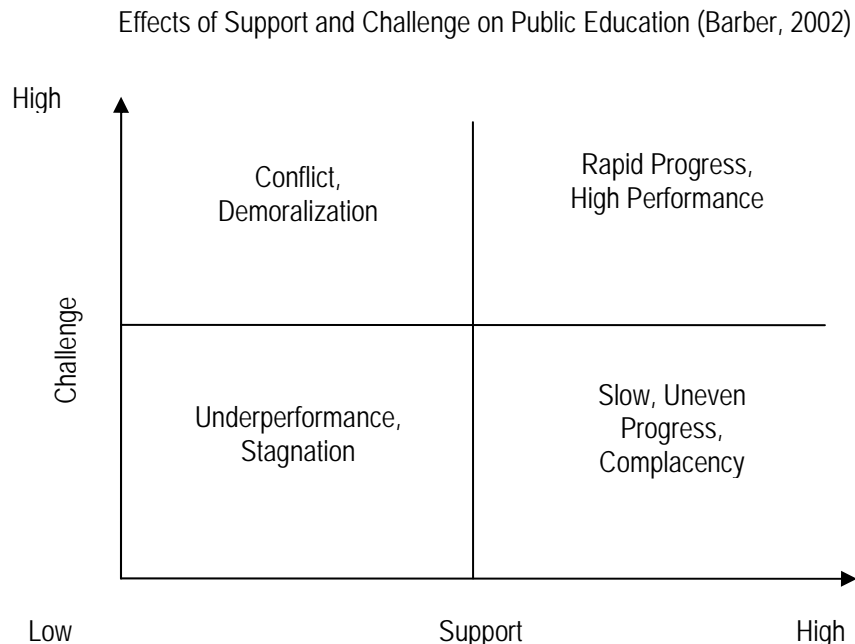
These theories suggest that, with the right holding, adaptive learning can occur. Kegan (1982) proposes that this requires movement from one epistemological stage to the next. This requires adaptation to move on to a new way of thinking. Kegan calls the three phases of this growth confirmation, contradiction, and continuity. This movement does not occur in giant leaps, but generally more slowly and even fitfully.[2] Brookfield (2000) calls this two-steps-forward-one-step-back rhythm of learning incremental fluctuation. This reflects Piaget's (1954) idea about the series of assimilations and accommodations that precede and accompany growth. We spend time in the in-between spaces as much as we are solidly situated within a developmental stage. In fact, Kegan maintains that it is the environment *between* stages that offer the rich places of growth and adaptation. Constructive-

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[2] Given the descriptions of the various stages in Kegan's Subject-Object theory, it might be tempting to view these states as static and assume that transformation means a leap of sorts from one stage of consciousness to the next. This is not so. Developmentalists believe humans evolve according to regular principles of stability and change. Development has an inherent motion within. It is a process in which people evolve along a continuum between the stages. Lisa Lahey et al. (1988) created the Subject-Object Interview to ascertain not five but 21 epistemological distinctions along the way. What is transforming, then, from a constructivist-developmental viewpoint is one's structure of knowing. The stages are theoretical only. They are rarely static.

developmentalists call this space the growing edge (for example, Berger, 2002; Drago-Severson, 2004). This aligns with the pedagogical construct of working within the zone of proximal development (Vygotsky, 1978). Teachers must work not in the arena of the student's current developmental level, but at the edge of the student's development capacity. For Vygotsky, the zone of proximal development is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or collaboration with more capable peers" (1978, p. 86).

To summarize, challenge means introducing conflict, provoking a contradiction or disorienting dilemma in one's perspective (Dewey, 1910/1997; Kegan, 1994; Heifetz, 1994; Daloz, 1999; Mezirow, 2000; Kegan and Lahey, 2001; Tang, 2003; Drago-Severson, 2004). Support means engendering trust, fostering a relationship in which the follower feels known and understood, and providing structures for the follower's learning and growth (Kegan, 1994; Heifetz, 1994; Avolio, 1999; Daloz, 1999; Drago-Severson, 2004).

Support as confirmation: Engendering trust

Daloz defines support as "the activity of holding, of providing a safe space where the student can contact her need for fundamental trust, the basis of growth" (1999, p. 209). The key component to building trust, he maintains, is listening, "actively engaging with the student's world and attempting to experience it from the inside….How does she see the world, make sense of diversity and complexity? What are the forces holding and propelling her life?" (p. 209). This ability to know how the learner sees the world may be a prerequisite

to proffering support. Kegan uses the metaphor of a bridge to describe the need to know not only the destination, but foremost, the starting point:

> One wishing to facilitate transformational learning, would do well to know and respect where [the learner] is coming from, not just where it may be valuable for him to go. A constructive-developmental perspective on transformational learning creates an image of this of learning over a lifetime as the gradual traversing of a succession of increasingly more elaborate bridges. Three injunctions follow from this image. First, we need to know which bridge we are on. Second, we need to know how far along the learner is in traversing that particular bridge. Third, we need to know that, if it is to be a bridge that is safe to walk across, it must be well anchored on both sides, not just the culminating side. We cannot overattend to where we want the student to be—the far side of the bridge—and ignore where the student is. (2000, pp. 60-61)

Bass and Avolio (1988) call this individualized consideration. Before any other technical or professional supports can be put in place, affective and psychosocial supports must be established. To do so, the leader must know the follower. In their extensive quantitative studies of leaders, Bass and Avolio (1988) delineate factors that differentiate transformational from transactional leadership. They name one factor individualized consideration, that is, paying personal attention to followers' needs, setting examples and assigning tasks on an individual basis, and treating each follower with respect as an individual (Avolio and Bass, 2004). Kegan writes that, from the learner's perspective, support means simply "being taken seriously, acknowledged, attended to, and treated as a responsible, self-governing adult" (1994, p. 294). This one-on-one relationship is critical. How is that relationship built? Avolio (1999) found that it requires a consistency of meeting agreements and expectations over time (p. 13). Similarly, Heifetz suggests that trust comes from leaders' predictability: in their values (for example, what do leaders stand for in this organization?) and in their skills (for instance, what set of competencies can followers rely on leaders to bring to the relationship?). In the pressure cooker world that Heifetz and Laurie describe, inner discipline—which they also calls poise—is crucial:

A leader has to have the emotional capacity to tolerate uncertainty, frustration, and pain. He has to be able to raise tough questions without getting too anxious himself. Employees as well as colleagues and customers will carefully observe verbal and nonverbal cues to a leader's ability to hold steady. He needs to communicate confidence that he and they can tackle the tasks ahead. (1997, p. 128)

Bryk and Schneider (2002) called this factor competence. Their quantitative study of relational trust in schools found four factors that account for teachers' feeling trust in their leaders. Each was based on the teachers' perceptions of their leaders' competence, respect, personal regard for others, and integrity. Tschannen-Moran and Hoy's meta-analysis of trust in schools found three factors: competency, reliability, and integrity. This is important in the principal-teacher relationship with its power asymmetry. Teachers feel vulnerable. Trust can be fostered by reducing this sense of vulnerability as much as possible (Daloz, personal communication, April 15, 2005). Bryk and Schneider agree. "Any actions taken by the principal that reduce teachers' sense of vulnerability are highly salient," they maintain (2002, p. 29).

With a foundation of trust, leaders can prompt followers to tackle the tasks ahead by providing preliminary structures to do so. From a pedagogical construct, this is called scaffolding, the provision of providing sufficient supports when concepts and skills are being first introduced (Wood, Bruner, & Ross, 1976). These supports, including resources, probing questions, and direct guidance, are gradually removed as students develop autonomous learning strategies. Providing specific guidance, steps, and sequencing offers an initial safety net, especially for those who are still instrumental or socializing knowers (Daloz, 1999; Drago-Severson, 2004). This scaffolding affords a kind of support that keeps followers from a sense of being "thrust into the cold" as Daloz calls it. He warns that those leading adults must "resist the quite understandable temptation to thrust all students into the cold at once

simply because some have profited from that treatment." (1999, p. 211). This aligns with the

pedagogical construct of working within the learner's zone of proximal development

(Vygotsky, 1978).

In summary, a supportive leader paces the work to regulate the followers' distress

(Heifetz, 1994). This support is built on a foundation of trust and individualized

consideration (Kegan, 1982; Bass & Avolio, 1996; Avolio, 1999; Brookfield, 2000; Bryk &

Schneider, 2002). Leaders who support their followers provide appropriate information,

positive expectations and short-term, achievable goals (Csikszentmihalyi, 1988; Daloz, 1999;

Alderton, 1999; Tang, 2003).

Challenge as contradiction: Introducing conflict

Providing support is one role of the leader as teacher, and it offers the confirmation

component of the holding environment. The second component of the holding environment is

contradiction. Challenge arises "when a discontinuity or dissonance occurs" (Martin, 1996, p.

49). Recall that when Heifetz advocates pacing, he writes of regulating but not eliminating

distress. Theorists such as Evans (1996), Elmore (2000) and Fullan (2001, 2003) concur.

Challenge is the counter-component of support. While support draws close the

relationship between the leader and follower, challenge requires the distance or

differentiation of authority. Pressure implies the use of power (Evans, 1996) and the leader as

teacher must be comfortable with the idea that followers will sometimes be uncomfortable.

Daloz explains:

> Just as support calls the mentor to conform his boundaries to those of the student,
> challenge peels them apart. It means opening a distance in the relationship, drawing
> the student outward to fill the gap, straining him to move to accommodate his inner
> structures to the new environment created by his mentor's distancing. (1999, p. 216)

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Dewey writes that learning requires a "willingness to endure a condition of mental unrest and disturbance" (1910/1997, p. 13). Challenge, therefore is a situation that intentionally provokes a state of mental unrest or confusion, what Festinger called cognitive dissonance (Atherton, 2003). From a cognitive science perspective, adaptive change—or modification of schemata—occurs "when learners encounter anomalous data, that is, situations that challenge their previously constructed schema (Copeland, Birmingham, DeMeulle, D'Emidion-Caston, & Natal, 1994, p. 192).

One role of the leader as teacher, then, is to disorient people. "Instead of quelling conflict, leaders have to draw the issues out," Heifetz and Laurie write. "Instead of orienting people to their current roles, leaders must disorient them so that new relationships can develop." (1997, p. 125). Disorientation is a cornerstone of Mezirow's theory of transformative learning (1991, 2000). This theory includes ten phases that an adult faces in the developmental change of meaning transformation. Four of the phases could be categorized as challenges, defined by experiencing distress or cognitive dissonance: experiencing a disorienting dilemma; examining the self with feelings of fear, anger, guilt, or shame; critically assessing one's assumptions; and exploring options for new roles, relationships, and actions (2000, p. 22). Mezirow (1991) writes that transformation of meaning perspectives begins when we "encounter experiences, often in an emotionally charged situation, that fail to fit our expectations and consequently lack meaning for us, or we encounter an anomaly that cannot be given coherence either by learning within existing schemes or by learning new schemes" (p. 94). This is the disorienting dilemma.

Cranton (1994) counters that the phases set forth by Mezirow may not be linear or hierarchical, but that a general pattern occurs within the process. If this cognitive dissonance

is followed by intentional self-examination, transformative learning may occur. One commonality is that this examination is rarely provoked alone or performed alone. Transformative theorists agree that, though the transformation is personal, the process of transformation is highly interpersonal. Seminal education thinkers such Dewey, Piaget, and Vygotsky believed that learning is a social, interpersonal phenomenon. This is confirmed by contemporary neuroscience and research on learning and the brain (National Research Council, 2000; Dickmann & Blair, 2002).

Theorists propose that disorientation and examination can be provoked by requiring accountability and setting high standards (Daloz, 1999; Elmore, 2000; Kegan, 1994; Csikszentmihalyi, 2003); by offering alternative perspectives (Cranton, 1994; Daloz, 1999; Drago-Severson, 2004); and by affording means for critical reflection on assumptions (Merriam, 2004; Mezirow, 2000; Kegan and Lahey, 2001; Drago-Severson, 2004; and Hicks, Berger, and Generett, 2005). Avolio and Bass (1996) call this combination of behaviors intellectual stimulation. They have identified it as one of the four factors of transformational leadership. Through intellectual stimulation, the leader provides ideas that enable followers to examine and recognize their own beliefs and values, to rethink old situations in new ways, and to look at problems from many angles.

Challenge and support from a constructive-developmental perspective

Challenge, however, is not a one-size-fits-all proposition (Kuhnert, 1994; Martin, 1996). In his examination of leadership from a constructive-developmental perspective, Kuhnert (1994) notes that challenge is dependent upon the follower's developmental stage. He maintains that the only way to develop followers is to understand how they view the world and then help them in confronting experiences that illustrate the limitations of that

view. "From the viewpoint of organizational growth and maturity," Kuhnert writes, "the development of employees who are able to become self defining or transformational… is fundamental to long range survival. In other words, leaders must aspire to more than just getting others to follow: They must see the development of their associates as their personal responsibility" (1994, p. 23).

Daloz notes, "In an appropriate mix [of challenge and support] development can occur. Just what that is, of course, depends on the particular needs of the student" (1999, p. 208). The particular needs of the adult student are not only about personality style, but epistemological state. This is why challenge is contextual and relative to one's developmental level. As mentioned earlier, Drago-Severson codifies this idea for school leaders, using three stages of knowing adulthood (instrumental, socializing, and self-authoring) to provide a framework for principals to understand developmentally-appropriate challenges and supports for individual teachers (Figure 3). Similarly, Berger (2002, 2004) writes of carefully considering and constructing teacher development programs with the teachers' developmental levels in mind. Tang (2003) argues that that the appropriate mix of challenge and support has implications for teacher education programs and field placements. Samaras and Gismodi (1998) describe a teacher education program designed on the Vygotskian tenet of the zone of proximal development.

However, what might seem a simple model is complicated by the intersection of the leader/teacher's developmental level with the follower/student's. In their longitudinal study of followership from a developmental perspective, Dvir and Shamir (2003) note, too, that any study of leadership must account for the relationship between leader and follower and recognize the effect of the developmental position of the follower on the relationship.

Likewise, both Steeves (1997) and Avolio (1999) recognize that developmental fit between leader and follower has ramifications for the leaders' providing challenges in the workplace. Kegan and Lahey (1984) offer a series of speculations surrounding the leader-follower (or teacher-student) relationship from a constructive-developmental perspective.

1. Followers are generally dissatisfied with leaders who operate from a meaning making state that is less developed than their own. If, for instance, a leader's loyalty is to his personal goals and agendas (stage three, socializing), but the follower's is to self-exploration (stage four, self-authoring), the follower is apt to feel frustrated.

2. On the other hand, leaders who are developmentally beyond their followers are vulnerable to having their purposes and actions translated into meanings which they did not intend. The basic forms of these translations, however, can be anticipated, and stage four leaders can predict and even expect these misunderstandings.

3 How a follower experiences support from a leader differs depending on the follower's developmental position. Leaders who can provide *support in forms the followers experience as support* will be more effective. (Kegan & Lahey, 1984).

Given these possibilities, the intersection of different ways of knowing creates a multi-faceted interplay that makes researching leadership with challenge and support as variables an extraordinarily complex endeavor. How do teachers think about the complex work of providing challenge and support to build student capacity? How do leaders think about the complex work of providing challenge and support to build teacher capacity? The following sections of the literature review turn to empirical research in these two areas, teachers' and school administrators' thought processes.

Dewey proposes (1910/1997) that there are four forms of thought. "In its loosest sense," he writes, "thinking signifies everything that, as we say, is 'in our heads' or that 'goes through our minds'" (1910/1997, p. 2). In a narrower sense, thinking includes those things "in our heads" that are not directly perceived—on a continuum from imagination to deliberations and considerations. Narrower still, thinking means belief or knowledge that is "marked by acceptance or rejection of something as reasonably probable or improbable" (p. 4) whether or not that knowing comes consciously or unconsciously. (From a constructivist perspective, that would be the difference between object, that which we hold, and subject, that which holds us.) Conscious inquiry, reflection upon our beliefs, is what Dewey considers the highest form of thought. He claims that "thinking in its best sense is that which considers the basis and consequences of beliefs" (1910/1997, p. 5). Discourse or research on "thinking" or "thought processes" cover a vast domain from ancient philosophy to contemporary cognitive psychology and, recently, neuroscience. I have limited this review to cognitive psychology, and to teachers' and administrators' cognitive perspectives.

Schulman (1986) notes that the cognitive psychology of learning has focused on thinking from the learner's—not the teacher's—perspective. Most research on teachers' thinking is less than three decades old. No research on, or reference to, teachers' thought processes appears in the American Educational Research Association's second edition of the *Handbook on Research on Teaching* (1976). Jackson's work *Life in Classrooms* (1968) was the first to describe the thinking that underlies teacher behavior. Prior to this, research on teaching was almost exclusively quantitative, focusing on teacher behaviors rather than teacher cognition (Clark & Peterson, 1986). Jackson's work was conceptually important

because it proposed descriptive research during an era of correlational and experimental designs. Jackson maintained that glimpsing into what he called the hidden side of teaching—teacher cognition—might increase understanding of behaviors.

During the National Conference on Studies in Teaching in 1974, the National Institute of Education convened panels to produce research plans in ten areas of interest. Experts in human information processing, anthropology of education, and classroom interaction research formed Panel Six, Teaching as Clinical Information Processing (Clark & Peterson, 1986). In their report, the panel argued that research on teachers' thought processes is crucial because

> it is obvious that what teachers do is directed in no small measure by what they think. Moreover, it will be necessary for any innovations in the context, practices, and technology of teaching to be mediated through the minds and motives of teachers…. [Therefore,] the question of the relationships between thought and action becomes crucial. (National Institute of Education, 1975, p. 1)

As a result of the Panel Six report, the Institute for Research of Teaching was formed at Michigan State University, initiating a program of research on teachers' thought processes.

Clark and Paterson (1986) created a model that suggested three types of thought processes that teachers use: preactive and postactive thinking, specifically planning and reflection; interactive thinking, specifically decision making during the teaching process; and beliefs and theories teachers hold about their work. Fang (1996) argued that these distinctions are more conceptual than empirical because the categories of preactive, interactive, and postactive thinking are based on Jackson's propositions about the phases of teaching. Fang maintains that the research falls into two groups: teachers' decision making and teachers' theories and beliefs. The first focuses on judgments about classroom management, activities, and organization (whether during planning, in the classroom, or later reflecting and course

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correcting); the latter, on the knowledge and assumptions upon which teachers' decisions are made. From their review of the research, Clark and Paterson (1986) classified empirical studies on teachers' thought processes into four categories: planning, decision making during teaching, attributions for causes of student performance, and implicit theories of teaching and learning. This more closely aligns with Fang's model of decision making (action orientation) versus belief systems (cognitive orientation). In Dewey's framework action orientation would be thinking as consideration and deliberation, and cognitive orientation would be thinking as beliefs and, perhaps, reflection.

In the following sections of the literature review, I first consider the methods used to research teachers' thinking, and then report examples of research findings from the empirical study of teachers' thinking.

Researching Teachers' Thought Processes

Research in this area falls into five methods of inquiry: (a) think aloud, (b) stimulated recall, and (c) journal keeping, all of which fall under a category called process tracing; (d) policy capturing; and (e) repertory grid technique (Clark & Peterson, 1986; Shavelson, Webb, & Burstein, 1986; Armour-Thomas, 1989; Fang, 1996). However, studies are often supplemented by field observations and interviews, and behavioral and contextual descriptions (Clark & Peterson, 1986). Process tracing describes the group of methods which requires teachers' verbal reports of their thinking. The first is the think aloud protocol. Some researchers give teachers a task, such as lesson planning, and ask them to think aloud as they are completing the task (for example, Yinger & Clark, 1985). The think aloud session is audio taped, transcribed, and coded by the researcher to discern themes and sequences of cognitive processes used during the task (Shavelson, Webb, & Burstein, 1986). Realistically,

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however, researchers cannot conduct think aloud protocols during actual teaching episodes. In order to understand students' thinking during the interactive phase of teaching, Bloom (1954) created a method he called stimulated recall. This protocol was adapted for the study of teachers' thinking during the interactive phase of their work. The investigator plays a recording of teachers' actual classroom events for them to recall and to comment on what they were thinking at the time of the actual incident.

Although retrospective studies are sometimes criticized (Fang, 1996), Bloom felt that with enough cues "a subject may be enabled to relive an original situation with vividness and accuracy if he is present with a large number of cues or stimuli which occurred during the original situation" (1953, p. 161). Investigators may choose to stop the recording at pre-selected intervals or they may allow the participant to choose when to stop. Similarly, investigators may ask a set of structured questions, or they may allow the teacher to offer an open-ended commentary. Like think aloud protocols, stimulated recall sessions are audio taped, transcribed, and coded for themes and sequences in teachers' thought processes. Retrospective interviews following a teaching episode and journal keeping are two other methods of process tracing (Yinger, 1985; Fang, 1996). Interviews or journal entries are then subject to content analysis and coded for themes in teacher's thought processes (Yinger & Clark, 1985). Journal entries may be open-ended or may be responses to specific prompts, and, in some cases, the researchers may enter into written dialogue with the teacher (Fang, 1996).

Because teachers are assumed to have implicit theories or rules of thumb that guide them (called policies by researchers), another method of analyzing teacher judgment is called policy capturing (Shavelson, Webb, & Burstein, 1986). Teachers are given hypothetical

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situations or vignettes, and then asked to evaluate or assess them using a Likert scale (Clark & Peterson, 1986). Teachers' responses are subjected to regression analysis to identify the policies that guide their thinking. Sometimes these analyses are compared with others' thinking, such as experts' or students'. This narrower form of policy capturing is called lens modeling (Shavelson, Webb, & Burstein, 1986). Critics argue that policy capturing has reliability and validity threats, first, because the responses reflect hypothetical situations and not necessarily the complexities of decision making in the classroom, and also because findings from a Likert score may not be generalizable to the broader domain they are meant to represent (Fang, 1996). Shavelson, Webb and Bernstein note that "teachers' classroom decisions usually are not 'once and for all, '" (1986, p.77) as suggested by a Likert score, but are much more contextual and, therefore, complex in nature.

Similar criticisms are leveled at the repertory grid, a technique in which participants are presented with individual cards with printed statements or scenarios representing constructs determined by the researcher (Clark & Peterson, 1986). Participants are asked to indicate whether the statement on the card represents their thinking or beliefs. Either visually or by factor analysis, the responses are arrayed in a grid to show relationships among the constructs. Fang argued that the limitation of this method is that it is based on hypothetical situations and the data "collected via this method reflect what would be done rather than what is actually done in actual instructional settings" (1996, p. 57). Munby (1982), however, involved teachers in generating the constructs, which ameliorates some of the criticism about the ideas or scenarios not occurring in actual instructional settings.

Nonetheless, Kagan (1990) criticized the research on teacher thinking on several grounds: the construct of thinking is vague and imprecise; cognition can only be inferred, not

observed directly; and its methods for studying thinking are time consuming. Artiles (1996) adds that research on teacher thinking cannot be conducted without consideration of teacher context, especially sociocultural. Elbaz (1992) argues that researchers in this domain must recognize their own perspectives and assumptions and, although understanding teachers' thinking is important, she warns that the researcher is at "risk of taking teachers' stories out of their hands" (p. 39).[3]

Teachers' Thought Processes: Beliefs and Decision Making

Fang (1996) calls the study of teachers' beliefs the missing paradigm in the research on teacher thinking. He notes that "beliefs make up an important part of teachers' general knowledge through which teachers perceive, process, and act upon information in the classroom" (p. 49). He writes that their implicit beliefs can

> take many forms. They can be embodied, among others, in the teacher's expectations of his/her students' performance or in the teacher's theories about a particular subject area's learning and teaching. Regardless of the forms they take, a teacher's beliefs or philosophy can affect teaching and learning in one way or the other. (Fang, 1996, p. 50)

Researchers have sought to determine, however, whether teachers' theories and beliefs about teaching were actually consistent with their teaching behaviors. Fang reports that a substantial number of studies show that teachers possess theoretical beliefs about teaching and that these beliefs, in turn, influence their classroom practices (for example, Fang, 1996; Brophy &Good, 1974; Longberger, 1992; Johnson, 1992). Other research shows the opposite, that there is often inconsistency between teachers' beliefs and teachers' actions (for example, Kinzer, 1988; Readance, Konopak & Wilson, 1991). Fang (1996) notes that this may occur because participants may respond according to what they think should be done

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[3] Because of this, it was especially important in this study to ask a group of teachers to generate the statements about teaching, not to rely solely on administrators' connotations of teachings.

rather than what they, in fact, do. Berger (2002) suggests that this may be an example of teachers' "espoused theories" as opposed to their "theories in use" (from Schön, 1982).

Elbaz (1983) called teachers' implicit theories their "practical knowledge" which mediates between thought and action. In her model, she names three components of teachers' practical knowledge: their rules of practice, their principles, and their images. A rule of practice is a "brief, clearly formulated statement of what to do or how to do it in a particular situation frequently encountered in practice" (1983, p. 132). A practical principle, "more inclusive and less explicit" (p. 133) than a rule of practice, is the teacher's purpose that drives decision making. It is derived from a formal theory or from intuition arising from experience or, more likely, a combination of the two. A rule of practice is more easily articulated than a practical principal. Elbaz found that it is through reflection that teachers uncover and use their practical principles. The third level of teacher beliefs, "the least explicit and most inclusive of the three" (p. 134), Elbaz calls image: personal, deeply held mental pictures that represent an ideal. Teachers' images of good teaching, for instance, may not be congruent with their rules of practice. Marland and Osborne (1990) found through ethnography and process tracing that teachers have elaborate and complex theories of action and, while the structure of lessons and general patterns of teaching behavior may be congruent with one's theory of action, actual teaching behaviors are shaped by interactive (on-the-spot) thinking and have, in fact, no congruence with their theories of action. They found that interactive thinking is strongly problem avoidance and teacher reaction, driven by mental images.

Martinez, Sauleda, and Huber (2001) proposed that one way people carry their images is through metaphors, "essential mechanisms of the mind" (p. 965). Metaphors provide an awareness of similarities between seemingly disparate objects. They found that

beliefs about teaching can be uncovered by examining teachers' metaphors. For example, "teaching is like tuning an instrument" reveals a behavioristic orientation; "learning is a detective who looks for things and into things" indicates a constructivist perspective; or "teaching is like a tourist guide who negotiates a route with the tourists" shows a social/situative bent (Martinez, Sauleda & Huber, 2001).

Teachers' ideas of their professional roles are the focus of attribution research. In their review of literature on teacher beliefs, Clark and Peterson suggest that "the most important beliefs that teachers have about students are those that deal with teachers' perceptions of the causes of students' behavior or, in other words, teachers' attributions for the causes of student performance" (1986, p. 281). An assumption underlying attribution theory is that, if teachers do not see the relationship between their behavior and student success (or failure), they are less likely to work to improve student achievement. Therefore, attribution theorists have sought to learn the factors affecting teachers' beliefs about responsibility for student success. Clark and Peterson hypothesized that "a person's causal attributions will be affected by whether the person is an actor in the situation (one of the participants in the social interaction) or an observer (i.e., an onlooker who is uninvolved in the social interaction)" (p. 282). They explain that actors generally fall into one of two patterns: ego enhancing, teachers who take credit for student success or and fail to accept responsibility for student failures; or counter defensive, those who accept responsibility when a student fails and gives students credit when they succeed. Whether teachers are ego enhancing or counter defensive shapes their student treatment, classroom interactions, goal setting for and feedback to students, and expectations (Brophy, 1982). Research on teachers' expectations, differential treatment, and the effects of self-fulfilling prophecies led to the

creation of Teacher Expectations Student Achievement, an extensive national staff development program to help teachers understand how their beliefs affect their students (Cotton, 1989).

Copeland, Birmingham, DeMeulle, D'Emidion-Caston, and Natal (1994) found that the thinking that drives decision making changes as teachers gain experience. They create more schema, more mental linkages, and more complex linkages. Their comparison of laics (no education in pedagogy), neophytes, apprentices, and master teachers found that master teachers "found more causal relationships between teacher actions and student actions," "made meaning by linking pedagogical processes employed by the teacher to academic goals," and "focus on a consideration of educational purpose which casts learning as an interactive process… that supports the assistance of the child as a learner" (Copeland et al., 1994, p. 177). This supports a link between the complexity of teachers' beliefs and their decision making.

Hannay and Seller maintain that decision making is an exploration of "'what is' in order to examine 'what should be'" (1990, p. 240) and that practical knowledge as proposed by Elbaz is integral to the process. Their study of teachers' thinking in a curriculum writing process found that teachers encountered three phases in their decision making: (a) cut and paste, that is, using others' ideas and materials to develop their document, shifting and reorganizing content; (b) cognitive dissonance, noticing incongruities between their teaching images and the change desired, becoming dissatisfied with the status quo, questioning their rules of practice, and requiring logical arguments to support a change; and finally, (c) assimilation, establishing new images and rules of practices based on new criteria.

Olson (1981) studied the gap between curriculum design and teacher implementation and discovered that teachers will modify their curricula in practice to make it align with their beliefs. Munby's work (1982) was likewise founded on the influence of teacher beliefs on decision making. Because decision making research rarely took into account teachers' implicit theories and beliefs, Munby sought to have individual teachers create decision making constructs and to elicit personal belief constructs in their own terms. Through factor analysis of their associations of the two, he proposed that the "idiosyncratic" nature of teachers' implementation of a curriculum or strategy rests on their belief systems. Decision making, he maintains, cannot be studied or understood independently from implicit beliefs. Au's study (1992) concurs. She followed a novice teacher's evolution in thinking and noted the influence of internalized rules, principles, and images on classroom decision making. She found that expert teachers "possess sophisticated principles and images" that allow them to "analyze problems in depth and to develop better applications or solutions" (p. 285). As a result, Au proposes that beliefs and behaviors cannot be understood apart from one another.

Summary

The purpose of this portion of the literature review was to offer an illustrative, not exhaustive, overview of research on teachers' thinking from a cognitive psychology perspective. Prior to the 1970s, most teacher research was quantitative and focused on teacher behaviors rather than the thinking underlying those behaviors. Jackson (1968) suggested that researchers seek to understand the hidden side of teaching—teacher cognition. Schulman (1986) noted that the cognitive psychology of learning focused on the learner, not the teacher. In 1975, Panel Six, commissioned by the National Conference on Studies in

Teaching, recommended an intensified study of teacher cognition in order to better understand teacher behavior. Early on, researchers used process tracing methods to capture teachers' thinking. These were either introspective (think aloud protocols or stimulated recall) or retrospective (journal keeping or interviews). Although they were more systematic and mathematical, studies that used policy capturing or repertory grid methods were not based on teachers' actual experiences, but on hypothetical scenarios. Research on teacher thought processes might be divided into two broad categories: decision making and belief systems. Researchers maintain that one domain cannot be understood without the other.

These methods and findings provide a foundation to move toward a study on administrators' thinking. To determine similarities and differences in the ways school administrators think about "leading" compared to the ways teachers think about "teaching" requires an examination of administrators' thinking as well. The next section turns to the research on administrators' thought processes.

Empirical Research on Administrators' Thinking

Studies on school administrators' thinking have not kept pace with the research on teachers' thinking. The field of research on how school leaders think about their work is far narrower. For example, an ERIC search using the identifiers "thought processes," "cognition," or "thinking" yielded 238 articles about teachers. Limited to peer-reviewed empirical research, the yield was 168 articles. When the "teacher" identifier was replaced with "administrator," "principal," or "leader," the search fell to 14 results. This example is intended to be illustrative, not an exhaustive representation. However, it is noteworthy for two reasons. First, because methods used to study teacher cognition can be identically

applied to administrators, and also because the evolution of the research on administrators'

thinking followed, chronologically and conceptually, a path similar to that of teachers'

thinking. Like studies of teachers and teaching, early studies of administration focused on

behavior: what effective administrators do, more specifically, what administrators in

"effective" schools do (Cuban, 1993). However, while a significant body of research

developed on the cognitive psychology of teachers and teaching, the same did not hold true

for educational leadership and leading.

Instead, Cuban contends, school leadership research sprang from a more general,

managerial leadership focus on organizational development. Leithwood and Duke (1999)

agree. They write that, in order to

> facilitate the empirical study of schools as organizations, school leaders, and school
> effects, a number of scholars have tried either to conceptualize leadership in general
> and school leadership in particular, or they have endorsed an already existing concept
> of leadership. (p. 45)

Educational leadership was more often viewed through the lens of leading for organizational

change or school effects (such as student achievement). Therefore, research on

administrators' thought processes did not reach a similar breadth or depth as research on

teachers' thought processes. Yet Leithwood and Hallinger (1993) note that "cognitive

perspectives remind us that what administrators do depends on what they think—their overt

behaviors are the result of covert thought processes" (p. 299). The research that does exist

was guided by the methods used in studying teachers' thinking. Studies of administrators'

thought processes focus on their decision making with a particular interest in problem

solving expertise. This section offers an overview of some of those findings.

Administrators' Thought Processes: Decision Making and Problem Solving Expertise

Allison and Allison's (1993) study on problem solving and expertise used think aloud responses to a problem analogue, a case study based on an actual event, to compare novice and experienced principals' schema for handling a problem situation. Two factors that emerged were the complexity of participant's schemata (background knowledge and mental images) and the ability to view problems from a broad as well a narrow perspective. Allison and Allison recognize that problem analogues, even those based on actual situations, cannot elicit all the contextual elements and nuances of everyday practice. Nonetheless, their data revealed that, the more experience a participant had in a school setting that a participant had (whether that experience was administrative or not), the more detailed and complex the schemata used for decision making. Expertise, in their view, arose from a repertoire that combined detailed and complex schemata with the ability to analyze problems from both broad and narrow vantage points.

Dana and Pitts (1993) used metaphors as a framework to understand administrators' problem solving. Their action research used Schön's idea of reflective practice (1987) to study the construct of metaphors in decision making. They found that "actions guided by the use of metaphors of management may be inconsistent with actions guided by metaphors of leadership" (1993, p. 334). Their grounded theory prompted two assertions. First, that metaphors served as powerful images that may inhibit principals' ability to effect change in their schools. Second, that by engaging in intense and intentional reflective coaching, principals may be able to change their thinking by changing the metaphors that underlie their decision making.

Similarly, Hart's (1993) study of principals' problem solving centered on reflective coaching as a means of changing principals' thinking. Focusing on their problem solving strategies, Hart used a design studio format for principals and their coaches over a two-year period. She gathered data from scripted observations as well as journal transcripts from both principals and coaches. These included problem descriptions and written action plans. Coding categories came from both practice and theory: inductive, using data from the participants, and deductive, from theory. Hart found that coaches used advocacy (by telling stories, by making direct recommendations, and by directing principals to current theory or research) more often than they used inquiry (questioning). "By their own account, coaches found questioning toward problem analysis and knowledge application more difficult than offering direct answers" (p. 348). Hart found that principals' thought processes fell prey to many typical errors such as seeking irrelevant or unhelpful data, selectively ignoring important information, not coming to warranted conclusions based on evidence, and closing the problem solving prematurely.

Similar to (but not based on) Elbaz's construct of teachers' practical knowledge is Nestor-Baker and Hoy's (2001) study of superintendents' tacit knowledge or practical intelligence. Their data came from structured interviews with 22 reputationally successful superintendents and 22 other ("typical") superintendents. The structured interviews encouraged "respondents to consider thoughts about their behavior that may not be easily articulated but that the respondents employ to make sense of certain happenings" (p. 94). Data were compared using dissimilarity matrices and cluster analyses. Nestor-Baker and Hoy found that successful superintendents carried a significantly higher amount of schemata or tacit knowledge content than typical superintendents.

The reputationally successful—those who can be considered as expert performers—have larger amounts of if-then scenarios to draw on in navigating the superintendency, allowing them a seemingly intuitive orientation to the tasks at hand. (2001, p. 123)

Leithwood and Steinbach (1995) sought to analyze the thought processes of expert performers, and launched a series of studies to help better understand administrators' expertise and how it develops. They defined expertise as threefold: holding a complex knowledge and skill set, reliably applying this knowledge and skill toward accomplishing goals, and having a record of goal accomplishments which meet the standards accepted by the field of practice. To analyze administrators' thought processes, they used think aloud methods (using case problems or actual problems the administrators were experiencing), stimulated recall protocols, or a combination of the two. To study and evaluate the development of expertise, they created an experimental program in which they compared changes in administrators' expertise with that of a control group. They concluded that experts' thinking differs from non-experts in the following ways:

1. Expert administrators define problems and find problems that have the greatest potential to influence change in the school or district. Their problem naming is embedded in their vision for the organization and in the social contexts of the school and community.

2. Expert administrators anticipate constraints, select which constraints to work on, and view crises as sub-problems rather than hurdles.

3. Expert administrators hold an explicit sense of their beliefs and values and can articulate them. Leithwood and Steinbach call this the most significant result of their research.

Bolman and Deal (1993) examined administrators' problem naming and problem solving from an epistemological perspective, focusing not on what administrators' think, but how they think. They argue that any theory of administrators' thinking must consider the complexity of the school leaders' work world and include "the rational and meta-rational features of complex social environments" as well as the "cognitive maps" (schemata) needed to navigate these environments (p. 22). They use their earlier research on leaders' thinking, from both rational and meta-rational viewpoints, in which they posited four structures of thinking: human resources, structural, political, and symbolic (Bolman & Deal, 1991). Bolman and Deal (1993) used an action research project with 350 principals to move their theory into practice. They based their research on three assumptions about adult transformative learning: individual reflection, group reflection, and activating "inert knowledge" (similar to the constructs of tacit knowledge and practical knowledge). Further, they divided each of the four frames into two categories yielding eight leadership characteristics: analytic and organized action, from structural thinking; supportive and participative action, from human resources thinking; powerful and adroit action, from political thinking; and inspirational and charismatic action, from symbolic thinking (Figure 2.7). Such an epistemological model may help inform analyses and interpretations of empirical findings about administrators' thinking.

Finally, and apropos to my dissertation question, Reitzug and Cornett wrote that "efforts have not been made to explore links between teacher thinking literature and administrator thinking" (1990, p. 181). They surmised that, because teachers' and administrators' work lives are similar, they could develop a model of administrators' thought processes based on models of teachers' thinking. Like other researchers of teachers' thought

Figure 2.7

Eight Epistemological Dimensions of Leadership (Bolman and Deal, 1993)	
Structural Dimensions	Human Resource Dimensions
Analytic - Thinks clearly and logically - Approaches problems through careful analysis - Approaches problems with facts and logic - Pays strict attention to detail **Organized** - Very well organized - Develops and implements clear policies - Provides clear, consistent goals and direction - Strongly believes in clear structures and systems	**Supportive** - Shows support and concern for others - Shows concern for others' feelings - Is consistently responsive to others - Gives Recognition for work well done **Participative** - Fosters involvement in decisions - Listens well - Is open to new ideas - Highly participative manager
Political Dimensions	Symbolic Dimensions
Powerful - Able to mobilize people and resources - Highly persuasive and influential - Effective in getting support and cooperation - Develops alliances for a strong base of support **Adroit** - Very skillful negotiator - Responds well to organizational conflict - Politically sensitive and skillful - Knows how to win when against opposition	**Inspirational** - Inspires other to do their best - Communicates a strong vision - Generates loyalty - Raises enthusiasm **Charismatic** - Leads with an emphasis on culture - Highly imaginative and creative - Generates new, exciting possibilities - Highly charismatic

processes, Reitzug and Cornett posited a reciprocal relationship between beliefs and actions, in other words, that beliefs lead to actions with results that influence future beliefs. The key to informed action, they believe, is reflection.

> When reflection suggests that there is administrator belief-action congruency, beliefs are likely to be strengthened and more strongly shape future action. In cases of belief-action incongruency, either beliefs or actions are likely to be modified. In any case, the ultimate result is informed action (p. 184)

From this idea, and incorporating research on teachers' thinking, Reitzug and Cornett created a model of administrator theorizing (Figure 2.8), upon which they designed a principal preparation program.

Figure 2.8

Relationship between beliefs and action in administrator theorizing

Reitzug & Cornett, 1990
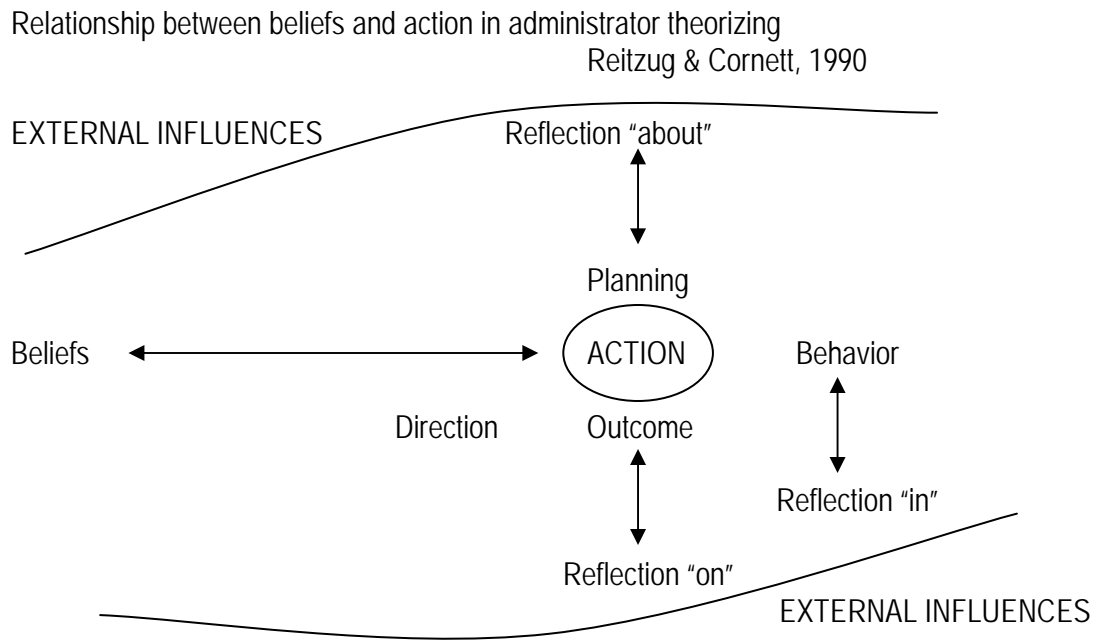
The framework has face validity, but remains theoretical. "We do not argue for the empirical validity of the model," they write, "but consider it a heuristic device to assist us and future researchers in conceptualizing administrator thought processes." However, no later research appears to have been undertaken to validate it.

Summary

Research on administrators' thought processes has been more influenced by the studies of leadership and organization development (Cuban, 1993; Leithwood & Steinbach, 1995; see also for example, Bolman & Deal, 1993). Although methods to analyze teachers' thought processes could be applied to studying administrators' thinking, the research on administrators' thought processes is underdeveloped. Studies have focused chiefly on administrators' problem solving and expertise. Further, any research directly comparing teachers' and administrators' teaching, to the best of my knowledge, is extremely limited.

Chapter Two Summary

This dissertation examines K-12 educational leadership and asks: What are the similarities and differences in the ways school administrators think about "leading" compared to the ways teachers think about "teaching"? Operating from the perspective of Burns's call for attention to the "vital *teaching* role of leadership" (1978, p. 425), I filter my inquiry through the lenses of two teaching components, challenge and support, and how they apply to the work of leading as well as teaching. Therefore, four areas formed the structure of this literature review: the theory of leader as teacher; the dual components of challenge and support; a summary overview of the vast territory of empirical research on teachers' thinking from a cognitive psychology perspective; and an examination of the far smaller field of empirical research on administrators' thinking. This literature provides a powerful foundation for my research. It presents current theories about the teaching role of leadership and provides the theoretical background for the constructs of challenge and support, elements I

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use for my data analysis and interpretation. This dissertation offers an empirical examination of these theoretical constructs.

Further, this literature review gives a summary of the history of and illustrative findings from the research on teacher thinking while it reveals the dearth of similar research on administrator thinking. This body of research is insufficient as a source of knowledge for addressing the research question: What are the similarities and differences in the ways school administrators think about "leading" compared to the ways teachers think about "teaching"? Reitzug and Cornett (1990) write that "the failure of researchers to explore implications of teacher thinking research to administrator thinking and behavior is surprising given the similarities between teachers' and administrators' work lives" (p. 181). I agree. Furthermore, little research exists that *compares* the thinking of teachers with the thinking of administrators, and none at all, to the best of my knowledge, to the intersection of leader as teacher. This dissertation research begins to fill that gap.

Compared with knowledge claims produced in a single-method study,
[a] multiplistic, mixed-method set of knowledge claims is likely to be
more pragmatically relevant and useful, and more dialectically insightful
and generative, even if accompanied by unresolved tensions.
~ Jennifer Greene and Valerie Caracelli

CHAPTER THREE
Research Design and Methodology

Rationale for Mixed Methods

The purpose of this exploratory study was to discern similarities and dissimilarities in

teachers' and administrators' thinking, especially about their work as change leaders.

Because there has been little research addressing this topic, it adds a systematized empirical

study to the body of educational change leadership literature. Currently, studies in the area of

educational change leadership, that is, working with adults to effect school improvement, are

either theoretical (for instance, Evans, 1996; Barth, 2001; Lambert et al., 2002; Fullan, 2003;

Barber & Phillips, 2000) or qualitative, specifically case study (for example, Levine, 1989;

Drago-Severson, 2000, 2004; Elmore 2000; Wagner, 2000; Davis, Darling-Hammond,

LaPointe, & Meyerson, 2005; Wagner, Kegan, & Lahey et al., 2005). Some literature exists

in the business arena that examines the teaching role of leadership (Senge, 1990a, 1990b;

Cohen & Tichy, 1998; Heifetz & Laurie, 2003; Tichy, 2002). However, these works, also,

are theoretical or qualitative. These kinds of studies, based on interviews and observations,

provide an in-depth understanding of particular cases or theories of successful change

leadership.

In addition, a large body of quantitative research exists that measures leadership

success by correlating leadership practice with student achievement (for example, Friedkin &

Slater, 1994; Balcerek, 2000; Ewing, 2001; Hurwitz, 2001; Bryk & Schneider, 2002) or

measures teachers' perceptions of successful leadership behavior (for example, Brooks, 1986; Thomas, 1997; Floyd, 1999; Lee, 2005). Waters, Marzano, & McNulty (2003) have conducted meta-analyses in the area of effective school leadership, examining 70 correlational studies, with the dependent variable being student achievement. These studies provide measures of and correlations among leadership behaviors or perceptions of leadership behaviors and successful *student* growth. However, I seek to examine school leadership focusing on leaders as teachers or agents of *adult* change. As noted, those works emphasizing adult growth have used qualitative analyses. Therefore, I sought another way of investigating my research problem.

The depth and nuance afforded by qualitative examination may be strengthened by including the measurement and systematization afforded by quantitative analysis. According to Greene, Benjamin, and Goodyear (2001), mixing methods allows the researcher to better understand the phenomenon at hand in three ways: by enhancing validity and credibility of inferences and offsetting biases; by allowing for more comprehensive findings that capture various facets and dimensions of a phenomenon; and by offering more insightful understandings, reconciling or reframing findings that conflict with or challenge one another. Green and Caracelli propose that using a mixed methods approach leads to "more comprehensive, insightful and logical results than either paradigm [interpretivist or postpositivist] could obtain alone," (1997, p. 10). They note that mixing methods allows for recognition of both "particularity *and* generality," "closeness *and* distance," and "integrative synthesis *and* componential analysis" (1997, p. 13, italics added).

Green and Caracelli also differentiate between an investigative decision based on practicality and expediency and one based on philosophical claims. When investigators

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choose mixed methods because they value the different knowledge claims that underscore qualitative and quantitative research, Green and Caracelli call the decision and method dialectical. They further differentiate dialectical designs as either coordinated or integrated. In the coordinated approach, the investigator collects data using both quantitative and qualitative strategies, then analyzes and synthesizes the findings at the end of the study to draw conclusions. In an integrated approach, the researcher uses a variety of methods at planned and scheduled points during the study so they become interactive (Greene & Caracelli, 1997).

This mixed methods study offered a dialectical, integrated examination of the question: What are the similarities and differences in the ways school administrators think about "leading" compared to the ways teachers think about "teaching"? I used focus groups and discussion to determine how and what participants think, as well as statistical analyses of the concepts generated and categorized by participants. I tapped into teachers' and administrators' meaning making to generate 100 statements that serve as the foundation of the study. I then employed Concept Systems® software to structure the concepts using similarity matrices and multidimensional scaling (Weller and Romney, 1988; Abdi, 2003; Trochim, 2005). Based on the scatter plot created by this method, a cluster analysis (Ryan and Bernard, 2000; Trochim, 2005) allowed me to create a conceptual map of the teachers' and administrators' thinking. Finally, I used the participants' feedback, my experience with the process and the data, and my review of the literature to settle on cluster labels and to further interpret regions and topography of each map.

Conducting this kind of map analysis, according to Ryan and Bernard, "combines the intuition of human coders with the quantitative methods of network analysis" (2000, p. 777).

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This mixed methods design was appropriate for this study because it "incorporates the need both to explore and to explain" (Creswell, 2003, p. 208). Using an integrated mixed methods approach allowed me to systematically create maps that represent how teachers and administrators think about their work—and then compare the thinking of the two groups using generality *and* particularity, distance *and* closeness.

Concept Mapping

Concept maps, also referred to as cognitive maps, mind maps, or mental maps, are visual representations of a person's or a group's thinking (Ryan and Bernard, 2000). Though concept mapping has numerous theorists including Novak (1998), Carley and Palmquist (1992), and Rico (2000), the construct that I used for this dissertation was based on the research and theory of William Trochim of Cornell University (2005a, 2005b). In Trochim's model, concept mapping entails "a structured process, focused on a topic or construct of interest, involving input from one or more participants, that produces an interpretable pictorial view (concept map) of their ideas and concepts and how these are interrelated" (2005a, section 1). That they are called maps is not solely metaphoric. Ryan and Bernard (2000) call them "directly analogous to physical maps" and explain the map analogy:

> Consider a table of distances between all pairs of cities on a map. Objects (sites) that are very dissimilar have high mileage between them and are placed far apart on the map; objects that are less dissimilar have low mileage between them and are placed closer together. (p. 777)

To structure and draw the maps for this research, I used Concept Systems® software developed by Trochim to run the data analyses necessary to represent the data mathematically and to depict graphically how the data are similar and dissimilar. In order to

construct a concept map, ideas must first be generated and then the interrelationships among them articulated. In Trochim's model, there are five steps necessary to this construction: 1) developing the focus and selecting the participants; 2) collecting data by generating statements through brainstorming; 3) collecting data by categorizing the statements using a card sort; 4) representing the data mathematically, creating first a point map (scatter plot) and then a cluster map, via multidimensional scaling and cluster analysis; and 5) interpreting the maps by revisiting the statement list and the cluster lists and, finally, naming the various concepts represented by the cluster map (Trochim, 2005a).

Participants

Samples

In order to use Trochim's model and to answer the research question, "What are the similarities and differences in the ways school administrators think about 'leading' compared to the ways in which teachers think about 'teaching,'" I used two different sample groups, one for concept generating (a purposive sample) and the other for concept categorizing (a convenience sample). I used two separate samples for several reasons. First, I wanted the concept generating group to have participants known for their ability to reflect on their work and articulate their thinking, and also I wanted the group to be small enough to manage reasonably and allow everyone to have voice. Second, I needed a larger representation of teachers and administrators for the concept categorizing activities to reflect the thinking of educators mathematically and to yield reliable card sorting and rating results.

Concept generating purposive sample.

For the concept generating activities, there were 13 participants—seven master teachers and six master administrators—who participated in two separate focus groups, the purpose of which was to generate a list of statements that represent teachers' and administrators' thinking. I established five to seven as an optimal focus group number for this study for three reasons:

1. Participants needed to meet a specific list of criteria (Appendix B): educators recognized by their peers as having the ability to reflect upon and articulate their personal theories of action. The quality of my findings rested on the quality and specificity of the ideas generated by the focus groups.

2. This was a manageable number for the facilitator—to establish rapport with the members and to allow that all voices in the group could be represented in a 90-minute session (Morgan, 1996).

3. This was an exploratory study. At this point, exploration was more important than explanation. Nonetheless, the smaller number of focus group members was countered by the larger number of concept categorizing participants.

Card sorting convenience sample.

For categorizing the concepts, there were 56 participants: 30 teachers and 26 administrators. This number was appropriate because 30 participants are optimal for .90 reliability in card sorting (Weller and Romney, 1988). With a group of 30 and another group of 26, I was able to generate three concept maps (teacher, administrator, and total group), each one with recognized reliability.

Recruitment

       Recruiting the concept generating participants.

       Participants for the focus groups were determined by nomination from their peers or supervisors. I sent 25 nomination letters (see Appendix B) to building, district, or county administrators within the Greater Cincinnati area. Twenty educators were nominated. I informed the nominees of the scope of this study and the time commitment; first, a 90-minute focus group session with a follow-up activity also lasting 90 minutes, a commitment of one-and-a-half to three hours. Thirteen (seven teachers and six administrators) agreed to participate.

       Recruiting the concept categorizing participants.

       For the concept categorizing activities, I wanted a broader representation of teachers and administrators for two reasons. First, I wanted a larger number of educators' thinking represented beyond that of the 13 focus group members. Second, I needed a larger sample to yield reliable card sorting results. Therefore, I used a second sample for this phase of the study.

       Participants for the card sorting and rating activities phase of this study were a convenience sample (that is, a sample of educators who were available to participate, not randomly selected). I sought representation from urban, suburban, and rural districts. Because I was asking for a voluntary time commitment for this activity, I recruited participants by contacting principals, teacher groups, and university professors whom I knew professionally. In this telephone contact, I explained the purpose of the research and the scope of this data gathering activity, including a 30- to 45-minute time commitment. After the first few rounds of people participated in the card-sorting activity, I used a snowball

technique to garner more respondents, asking participants to recommend other potential participants (Vogt, 1999). Because the data collection occurred during June and July (and summer workshops and university classes were taking place), I easily reached my quota of 30 teachers. However, it was more difficult to find administrators available to participate. By the time I had 26 administrators participate in the card sorting, the snowball technique reached its inertia. I stopped recruiting, satisfied that the total number would yield satisfactory results with three maps representing 56, 30, and 26 participants.

Anonymity, Privacy, and Confidentiality

Because the research used nominations for recruitment and focus groups for data-gathering, total anonymity of participants was not possible. However, confidentiality and privacy were assured in the following ways.

1. Focus group data were generated by brainstorming and consensus. These aggregate data were not linked to individual participants. Each focus group concept statement was labeled by number, numerals 1 to 50 representing teacher-generated ideas and numerals 51 to 100 respresenting administrator-generated ideas. This identification was for my use for map production and interpretation, and teacher or administrator identifiers were not used in the card deck.

2. For the card sorting activity, participants' names were not used. Each card sorting participant completed a demographic form with indicating gender, years of experience, occupation (teacher or administrator), grade levels served, and type of district (rural, suburban, or urban). These data were for aggregate and data analysis purposes.

3. For the card sorting data collection, participants' series of card stacks were secured by rubber bands and placed in envelopes with their demographic data forms affixed. These data were used to enter demographic and card sort information into Concept Systems® software.

4. I led the discussion for the final debriefing of the computer-generated concept maps, and the facilitator took process notes. Participants completed a brief written reflection at the end of this activity. However, group members were not identified as individuals in the research, and reflection excerpts included in Chapter Five are identified by pseudonym.

5. Participants' notes were not collected.

Data Collection

This study required two means of data collection: focus groups for concept generating and card sorting and rating for concept categorization. As noted, these data came from two separate samples.

Focus Group to Generate Concepts

Teachers and administrators who volunteered from the recruitment process participated in a 90-minute focus group. There were two separate groups, seven teachers in one group and six administrators in the other. I observed and audio taped the statement generating focus group; however, I served as auditor only. An experienced group facilitator led the sessions. For this role, I selected a facilitator known for her interpersonal skill at establishing rapport with adults in group settings, her experience leading brainstorming activities, and her ability to elicit responses to open-ended questions. Her experience as a

public school educator (with 16 years teaching experience including six years as an adjunct university professor and three years as an instructional coach) helped her establish credibility and rapport with the group quickly.

The facilitator worked with a scripted protocol. After a warm-up and introductory activity, the facilitator led a series of schema building prompts. She asked group members to generate ideas in response to prompts such as, "*Think of a specific instance when you held high expectations for your students/teachers. Think about what you did and why you decided to do it that way. Jot down a few notes to help you remember.*" The teachers and administrators had identical protocols, except that the teachers' script asked them to think about their work with students and the administrators' script asked them to think about their work with adults. The facilitator took care to allow meanings to be constructed by the participants. Contexts or meanings were not defined or prescribed by the facilitator. See Appendix D for the complete script and protocol.

The facilitator allowed time for individual reflection and note-making and then ample time for group brainstorming to generate a list of concept statements. Weller and Romney (1988) write that this is critical to the process. They emphasize brainstorming

> is extremely important and assures that the domain is defined by the informants in their language. Without free listing, the items may reflect the ideas of the researcher rather than the informants. This step is so important that we suggest that it not be omitted or delegated. (p. 11)

The facilitator recorded the brainstorming responses, using chart paper posted on the walls so that all participants could see all the statements. The goal for the focus group was to brainstorm as many statements as possible. Theoretically, the number of statements that can be generated is unlimited (Weller and Romney, 1988; Trochim, 2005). For card sorting, however, 100 is the limit of statements for practicality's sake (Trochim, 1989). Therefore, for

this study approximately 50 statements per group were sought, with the goal of a final

statement list of 100 ideas. However, the facilitator allowed the idea generating to continue

until the lists reached saturation. For the teachers, this occurred at 76 statements and, for the

administrators, at 84 statements.

Once brainstorming had reached saturation, the facilitator asked the group to review

the statements for clarity. The group reviewed its work to assure that:

> each statement [was] consistent with what was called for in the brainstorming prompt
> and [was] detailed enough so that every member of the group can understand the
> essential meaning of the statement. (Trochim, 1989, p.5)

The facilitator asked the group to seek clarity for all statements and also to revise or refine

any concepts that were unclear to any members of the group (eliminating, for instance, site-

specific or idiosyncratic language that could not be recognized or defined by other

educators). When consensus was reached, the group dismissed. The facilitator gave the chart

lists to me for transcription. Using a Concept Systems® protocol, these 150 total statements

were later reduced to 100 statements for the third phase of data gathering, the card sorting

and rating activity that categorizes concepts.

Pilot focus group.

In January 2006, the facilitator and I conducted two pilot groups to refine the focus

group protocol and process. A third pilot group occurred in May 2006. All together, 18

educators (teacher and administrator volunteers from my school district) participated in the

three practice activities. I observed the process and debriefed with the practice participants

afterward. Following the brainstorming session, I asked the pilot participants to give

feedback on the prompts and on the process in order to revise and clarify the prompts and the

instructions. The facilitator and I later debriefed and made adjustments to the brainstorming structure and directions.

Card Sorting to Categorize Concepts

Interrelationships among the concepts can be discerned by card sorting (also called pile sorting), a data collection technique that helps distinguish cognitive similarities and dissimilarities. To prepare for card sorting, I reviewed the transcribed statements from the two focus group lists. These lists are shown in Figures 4.4 and 4.4 in Chapter Four. Because I needed to reduce the list of 150 ideas to 100, I followed the Concept Systems® protocol for statement reduction. I eliminated duplicate or near-duplicate statements, eliminated statements that did not directly answer or relate to the focus prompt, assured that each statement represented only one idea, and edited language for parallel construction and syntax. The final list, Figure 4.6 in Chapter Four, provided the foundation for building the concept maps. Using the Concept Systems® software program to generate 1¾ by 3¼ inch cards, I printed and cut multiple sets from card stock, creating one deck of cards for each sorting participant. These cards are shown in Appendix F.

The card sorting and rating activity took approximately 30 minutes. I led this activity with volunteers, in groups as small as two participants and as large as 25. I gave participants the following written instructions and verbally prompted them as well.

The purpose of this activity is to look for similarities among ideas.
THERE ARE TWO PARTS. YOU CAN DO THEM IN EITHER ORDER.

- Read through each card and rate each idea on this 1-6 scale. Just go with your first impression. Jot down your rating in the corner of each card. Use this scale:

This idea is
6 extremely important to me
5 very important to me
4 somewhat important to me
3 not particularly important to me
2 not very important to me
1 not at all important to me
when I think about my work

- SORT these cards into a series of stacks. Categorize the statements in whatever way makes sense to you.

There are two restrictions:
- There must be more than one stack at the end of your sorting.
- Each card cannot be its own stack.

Here, too, the participants were the meaning makers. I provided clarification for the card sorting instructions, but did not provide denotations or connotations for any of the concept-statements. See Appendix E for the complete card sorting and rating protocol.

Following the rating and sorting, individual card piles were rubber banded to secure them and placed in a participant envelope, sealed, and returned to me. For my record keeping and data entry, I later identified each envelope by number only (T1, T2, T3…, A1, A2, A3...). Once all the card sorting and rating were completed, I entered the card data into the Concept Systems® software for statistical analysis.

Data Analysis

Quantifying the data

Card data were analyzed using binary similarity matrices, multidimensional scaling, and cluster analysis to create three cluster maps, one for the teacher group, one for the administrator group, and one for the combined group.

Binary similarity matrices.

When the card sorting and rating were complete, results were tabulated and combined across all participants, creating a binary square symmetric similarity matrix for each card sorter. Although these computations can be calculated manually, for this study they were completed using the Concept Systems® software. The program enters each statement number into a square table with as many rows and columns as statements. Values entered into each cell are zero or one: "1" for statements placed (sorted) together, and "0" for statements not placed together. A similarity matrix was completed for every card sort participant. When this was completed, each of the individual matrices were added together to create a combined similarity matrix, also with as many rows and columns as statements. For the combined similarity matrix, each cell's value indicates the total number of times a pair of statements was placed together. A high value indicates that many participants paired the statement and implies conceptual similarity. A low value indicates that two statements were seldom paired and implies conceptual distance (Trochim, 1989). With samples between 30 and 40, such as this study's, card sorting has demonstrated a high degree of reliability, generally reaching >.90 (Weller and Romney, 1988).

Multi-dimensional scaling and cluster analysis.

One method for creating cognitive maps calls for applying multidimensional scaling to the data's tabulated similarities (Bernard & Ryan, 2000). The goal of the analysis is to suggest distances or similarities graphically by representing units "as points on a map such that their Euclidean distances on the map approximate the original similarities" (Abdi, 2003, p. 2). Similar to factor analysis, in which similarities between variables are expressed as their correlations, multidimensional scaling detects underlying dimensions that "allow the researcher to explain observed similarities or dissimilarities (distances) between the investigated objects" (Hill and Lewicki, 2006, section 1). Multidimensional scaling allows the researcher to analyze any kind of similarity or dissimilarity represented by a matrix. In this case, the combined similarity matrix represents the card sorting activity. The Concept Systems® software runs the calculations. Each of the statements, then, is represented as a point map on an x-y axis, in which x represents the group similarity data and y represents the calculated fitted differences. Two things are important to note: first, that the fitted distances are not actual distances, but numbers representing distances, and second, that the axis can be rotated in any direction, that is, there is no "true" north or south (Kruskall & Wish, 1978).

In the final computation, cluster analysis, the multidimensional scaling data (the point map) are partitioned on an X-Y axis, into a series of clusters with no overlapping points. (Trochim, 1989). The number of clusters is arbitrary. Because the cluster analysis algorithm starts by considering each statement as its own cluster then combines two clusters at a time until, by the end, there is only one cluster, various numbers of clusters can be created. Trochim recommends that the researcher look at many possible solutions and determine, given the research problem, which groups of statements make the most sense when clustered.

This is a matter of subjectivity and discretion. The Concept Systems® computes the various cluster solutions. Examining the various possibilities and deciding on a final, logical final number of clusters was up to my interpretation.

The software program created the cluster map, in which all the teacher and administrator statements were depicted with similar statements grouped. Naming and interpreting these clusters was the goal of the final round of data analysis.

Interpreting the Maps

I invited focus group participants to give feedback about the cluster maps created from their concept statements. One month after our initial meetings, I invited them to return to meet with the facilitator and me a second time—this time, however, as a combined group—to examine the cluster maps generated by the quantitative analysis of the card sorting data. This final focus group session took two hours. I began by explaining the process by which the maps were created: how their focus group statements served as the foundation for card sorting, how the data were analyzed mathematically to look for similarities and dissimilarities among the concepts, and how this produced the final maps. The goal was for the participants to suggest names for the clusters. They reviewed the 100 statements generated by their combined grouped and then examined how they had been categorized and clustered. They discussed similarities and dissimilarities among the groups, suggesting names for each of the clusters.

Finally, by using the list of concept statements, comparing the structures of the maps, reviewing the focus group's feedback and dialogue, and returning to previous literature on leader as teacher and challenge and support, I compared the thinking of the teachers and administrators in this study. In Chapter Four of the dissertation, I describe my findings.

My philosophic claim for this research design was dialectic, appreciating and applying the strengths of both a quantitative and qualitative approach. Concept mapping is a mixed methods technique that, although measurement oriented or objective, is also interpretation oriented or subjective. This is akin to the interpretation required in factor analysis. Using multivariate analysis as the means for data reduction implies a more rigorous or objective reading of the data and, therefore, generalizability than typically conceded to qualitative interpretation (Rizzo, 1998). However, it is important to be aware that the ability to generalize is implied though not statistically assured.

Reliability of Concept Mapping

Card sorting provides the initial raw data for quantitative analysis. Weller and Romney's research on card sorting suggests that more informants are required to yield more stable results. Their review of the literature (1988) shows that medium-sized samples, 30 to 40, generally reach reliability >.90. This study's sample of 30 teachers and 26 administrators falls within that range.

Multidimensional scaling was used to analyze the results of the card sorting. In multidimensional scaling, stress value is used as the reliability rating. Stress value is a means of representing goodness of fit of the distances represented on the map compared to their values in the similarity matrix. It is determined by calculating the sum of the squared deviations between the values in the group similarity matrix and point map values. The Concept Systems® software tabulated the data's multidimensional scaling stress value.

The lower the stress value, the more reliable the point map representation. In psychometric measurements, a stress value of <.10 is desirable. Trochim's analysis (1993) of

38 concept mapping projects found a median stress value of .285, with a range from .155 to

.352. However, Trochim explains that

> stress measures the degree to which the distances on the map are discrepant from the values in the input similarity matrix. High stress values imply that there is a greater discrepancy and that the map does not represent the input data as well; low stress values imply a better fit. Some (mainly those who work with extremely well-behaved data like the perception of the similarities of colors or sounds) argue that it is desirable to have a stress value of .10 or lower, but this will seldom be attained in concept mapping. However, it should be recognized that their low stress value expectations are based on experience with much better controlled psychometric testing environments—not usually the case in concept mapping. (Concept Systems®, 2005b, section 3)

Because this study sought to break ground and not provide a mathematically

definitive answer to the research question, it did not offer a "controlled psychometric testing

environment." Statistically, this was a limitation of the study. This can be expected, however,

from an exploratory study using a mixed methods design—with the intent both to explain and

explore.

Validity of Concept Mapping

In quantitative research, internal validity means the trustworthiness of the findings as

they apply to a given sample and context (Jaeger, 1993). The internal validity strength of

concept mapping rests in the use of the participants' own language to name the variables, as

well as their later interpretation of the cluster analysis. Both help attend to potential

researcher bias. As previously noted, the external validity or generalizability of the results of

this study will be implied, but not statistically assured.

In qualitative research, internal validity is called credibility, and objectivity is called

confirmability (Lincoln & Guba, 1985). The fit between respondents' views and the

researcher's reconstruction of those views Lincoln and Guba call credibility, parallel to

internal validity. Because of the focus groups' participation in the concept generating as well

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as the cluster naming, the credibility of this data should be high. Establishing the fact that the data and their interpretations are not merely figments of the researcher's imagination Lincoln and Guba call confirmability, parallel to objectivity. Again, because of the use of participants' own words and categorizations to create the concept maps, the confirmability of this study should be high.

Summary: Structure of the Dissertation Design

This study took a dialectical, integrated mixed methods approach to examine the problem of the teaching role of leadership and answer the question: What are the similarities and differences in the ways school administrators think about "leading" compared to the ways teachers think about "teaching"? This study used two samples of participants. The first was a purposive sample of seven teachers and six administrators nominated by their colleagues or supervisors as being reflective and articulate about their work. The second sample was a convenience sample of approximately 30 teachers and 26 administrators representing urban, suburban, and rural school districts.

The study began with two focus groups, a teacher group and an administrator group, the purpose of which was to generate statements that represent their thinking about their work. These focus groups were led by an experienced facilitator who followed an identical protocol for each session (Appendix D).

Their 150 total statements were reduced by a protocol and then used for a concept categorization activity, card sorting and rating, with the second participant sample. The data generated from the card sorting activity was arranged by binary similarity matrix, group similarity matrix, multidimensional scaling, and cluster analysis. These functions were

computed using Concept Systems® software. This statistical analysis allowed me to generate

three cognitive maps: one for the teacher group, one for the administrator group, and one for

the groups combined.

These maps were shown to a subset of the original focus group participants who met

in a joint session led by me. I explained the process by which the data were clustered and the

maps created. They offered their inferences about the maps by discussing and suggesting

names for the statement clusters. I used the physical maps (from quantitative data) as well

participant input (from the qualitative data) to interpret the maps and report my findings,

conclusions, and recommendations.

I was comforted during the focus group by the similar experiences that we all shared.
It was interesting to see how individuals emphasized different strategies.
~ David, elementary school assistant principal

This makes some things at work make sense for me.
For us, it's about our own world inside the classroom.
Yes, this makes sense. It's all about what's personal.
~ Susan, high school teacher

CHAPTER FOUR
Results of the Study

Introduction

The purpose of this exploratory study was to compare the thinking of teachers and

administrators to examine the "teaching role of leadership." I sought to explore that role by

investigating similarities and differences in the ways school administrators think about

"leading" compared to the ways in which teachers think about "teaching." This mixed

methods study included three phases: first, generating 100 concept statements; then,

categorizing and rating the statements in order to discern similarities among the ideas and to

represent the similarities as clusters; and finally, interpreting and naming the clusters. This

chapter presents the findings of these three phases. The outcome was a series of maps,

graphic representations of the concepts and their relationships to one another as determined

by 30 teachers and 26 administrators in their sorting and rating responses. The first set of

maps represents categorization by all respondents with comparisons between how the

teachers and administrators rated the importance of each idea. A second set of maps uses the

same 100 statements, but represents how the terrain differs when only teachers or

administrators categorize and rate the statements. Figure 4.1 shows the sequence of the

mapping process and an index of the maps.

Figure 4.1: Graphic organizer for Chapter Four -- sequence of operations and map building

Step	What	Who	Product
1	Select the focus	Researcher	Focus questions and prompt: Appendix D and Appendix E

2	Generate the statements
	  ▪ Brainstorming
	
	  ▪ Statement reduction
		(Purposive)
		7 teachers
		6 administrators
		
		Researcher
			Brainstormed statements: Figures 4.4 and 4.5
			
			100 statements: Figure 4.6

3	Structure the statements
	  ▪ Rate the statements
	  ▪ Sort the statements
		(Convenience)
		30 teachers
		26 administrators
			Sorting activity and protocol: Appendix F

4	Representing the statements
	  ▪ Binary square similarity matrices
	   Multidimensional analysis
	
	  ▪ Cluster analysis
		Researcher using Concept Systems® software	Point map: Figure 4.7
			
			Cluster maps: Figure 4.8

5	Interpreting the maps
	  ▪ Statistical analysis
	
	  ▪ Focus group discussion
	
	Comparing data, reviewing observation notes, and member checking
		Researcher using Excel statistics pack & Concept Systems® Software
		
		(Purposive)
		3 teachers
		3 administrators
		
		Researcher
			Comparison tables: Table 4.1 and Appendix G Within-cluster correlations: Figures 4.14 to 4.17
			
			Cluster maps with labels: Figures 4.9 and 4.10 for All respondents Figure 4.18 Teachers only Figure 4.19 Administrators only

Index and Sequence of Maps

Figure 4.7: Point map for all respondents

Figure 4.8: Cluster map for all respondents

Figure 4.9: Cluster map for all respondents with labels

Figure 4.10: Cluster map for all respondents with labels and regions

Figure 4.11: Comparison map for all respondents with teacher and administrator topography

Figure 4.18: Cluster map for teachers-only with labels and regions

Figure 4.19 Cluster map for administrators-only with labels and regions

Participants

Two sets of participants provided the data for this inquiry. The first was a purposive sample of teachers and school administrators who had been nominated by their colleagues or supervisors as "master teachers" or "master administrators." Twenty educators were nominated; 13 (seven teachers and six administrators) agreed to participate in a 90-minute focus group. The teacher focus group consisted three females and four males—two elementary school teachers, two middle school teachers, and three high school teachers. The teacher focus group's average (mean) experience in education was 19.25 years; the range was nine to 29 years. The administrator focus group consisted of three females and three males—two superintendents, one elementary school principal, one elementary assistant principal, one high school principal, and one curriculum supervisor. The administrator focus group's average (mean) experience in education was 22.17 years; the range was 11 to 35 years. The two focus groups' participants created the list of 100 statements from which the concept maps were drawn.

The second set of participants was a convenience sample of 56 educators—30 teachers and 26 administrators. This sample (Figures 4.2 and 4.3) included teachers who were taking summer courses at a nearby university or local educators who were recruited and volunteered to participate in a 30-minute data gathering activity that included card sorting and rating. Participants in the convenience sample averaged 17.86 years (mean) experience in education, ranging from one year to 39 years. Thirty females and 26 males represented high school, middle school, and elementary grade levels. Although participants were mostly from suburban districts (69.6 %), rural (17.9%) and urban (10.8%) schools were also represented. Participants in this sample categorized and rated the statements generated by the focus

groups. Of the 30 teachers in the card sorting sample, 17 were female and 13 were male. The

teacher card sorting group's mean experience in education was 12.95 years; the range was

one to 35 years, with a median of eight years. Of the 26 administrators in the card sorting

sample, 13 were female and 13 were male. The administrator card sorting group's mean

experience in education was 23.5 years; the range was 5.5 to 39 years, with a median of 25

years.

Figure 4.2: Card sorting and rating: all participants' categorical data (n = 56)

Role			
	Administrator	26	46.43%
	Teacher	30	53.57%
School demographic			
	Rural	10	17.86%
	Suburban	39	69.64%
	Urban	6	10.71%
	Did Not Respond	1	1.79%
Grade Level			
	Elementary	17	30.36%
	Middle School/Junior High	7	12.50%
	High School	17	30.36%
	K-12 (Serving District or County)	13	23.21%
	Did Not Respond	2	3.57%
Gender			
	Female	30	53.57%
	Male	26	46.43%

Figure 4.3: Card sorting and rating: all participants experience in education (n = 56)
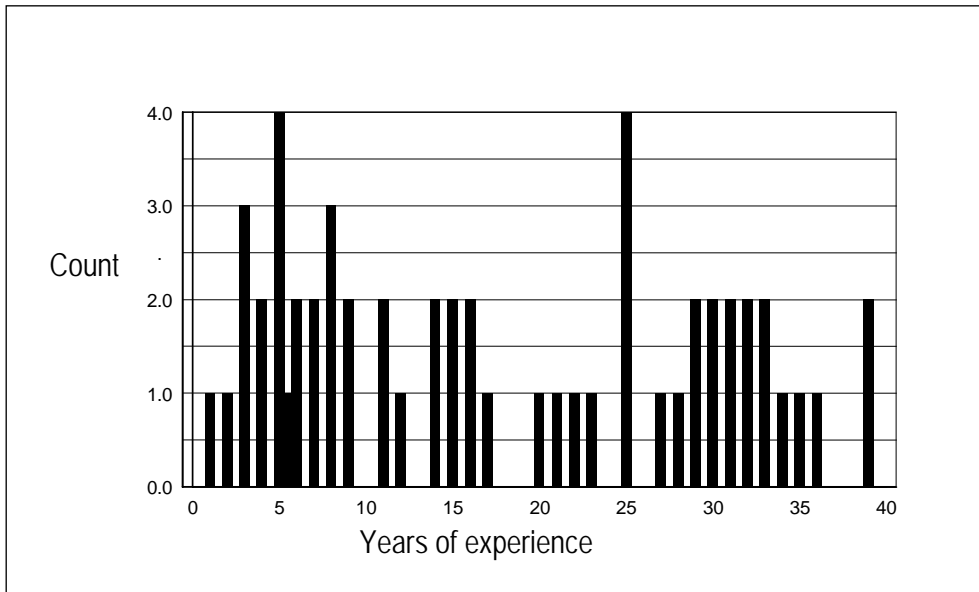
Data Gathering Processes

The teacher focus group and the administrator focus group met one week apart. Both

groups were led by a facilitator who had participated in three pilot groups to refine the

statement generating process. The purpose of the focus groups was to generate a list of ideas

that represented the teachers' and administrators' thinking about various goals and strategies

for certain aspects of their work. Each focus group lasted 90 minutes. Each session began

with four writing prompts to cue memory and create schema to help generate ideas. These

prompts were created with the lens of challenge and support in mind, and they were used and

refined with the pilot groups. The writing prompts were identical for each group. Teachers

were asked to think about their students. Administrators were asked to think about their

teachers.

1. *Think of a very specific instance when you did something to help your [students/
   teachers] see another perspective or think another way about a problem or an issue.
   Think about what you did and why you chose to do that. Jot down a few notes to help
   you remember.*

2. *Think of a very specific instance when you held high expectations for your [students/ teachers]. Think about what you did and why you decided to do it that way. Jot down a few notes.*
3. *Think of a very specific instance when you did something to support your [students/teachers] during a challenge or steep learning curve they were facing. Again, think about what you did and why you chose to do it that way. Jot down a few notes to help you remember.*
4. *Think of a very specific time when you did something to help your [students/ teachers] think critically about a problem or an issue. What did you do? Why did you do that? Again, jot down a few notes.*

Following this 30-minute exercise to create schema, the facilitator led a brainstorming activity in which she recorded on chart paper the participants' responses to the focus question: *Thinking of these scenarios, what words or phrases describe your goals and strategies for your work?* She prompted for clarification and specificity, and checked with the participants to ensure that she had captured their thinking accurately as she recorded the statements. Because it was important to delve into their rationales (why) as well as their actions (what), the facilitator recorded their responses on t-charts divided vertically into two columns: *what* and *why*. The group continued to generate ideas until the brainstorming reached saturation. For the teacher focus group, this occurred at 76 statements. For the administrator focus group, this occurred at 84 statements. Following the brainstorming, the facilitator asked the groups to check their responses to ensure that each addressed the prompt question and to eliminate any jargon or idiosyncratic language. Figures 4.3 and 4.4 show the original focus groups' brainstormed list of 150 statements.

The maximum number of statements for card sorting is generally 100 (Weller & Romney, 1988; Trochim, 1989). Because this study used two focus groups to brainstorm ideas and, therefore, generated more than 100 statements, I followed a statement reduction protocol recommended by Concept Systems®. The purpose of this idea synthesis was to

obtain a list of unique ideas with only one idea represented in each statement; ensure that each statement is relevant to the focus of the project; and reduce the statements to a manageable number for the stakeholders to sort and rate (Katy Hall, Concept Systems®, personal communication, June 27, 2006).

I followed the protocol to synthesize, combine, and eliminate duplicate ideas, and then to create parallel syntax and verbiage. Concepts not relevant to the focus statement were eliminated. In the accompanying statement list (Figure 4.5), those ideas that appeared in some form on both the teacher administrator lists are indicated in italics. The final 100 statements were each printed on card stock and cut to business card size. All card sorting participants were given a "deck" of 100 cards, each representing a single statement from the teachers' and administrators' list of ideas. These decks were used for the card sorting and rating activity (see Appendix E).

Figure 4.4: Teacher Focus Group Statements

Teacher focus group brainstormed statements in alphabetical order

1. Allow curriculum decisions/choice
2. Allow others to become the experts
3. Allow private response options, e.g., write notes
4. Allow text choice
5. Allow/provide job shadowing
6. Answer their questions
7. Anticipate problems
8. Assure classroom management
9. Be able to plan appropriately
10. Begin from and work at the place where they are
11. Break down tasks
12. Bring in experts
13. Build community
14. Build confidence
15. Build rapport
16. Build relationship outside of instructional day
17. Build self-esteem
18. Build tolerance
19. Build trust
20. Challenge preconceived notions
21. Change plans when needed/be flexible
22. Change their ideas
23. Clarify expectations
24. Consider learning styles
25. Create a safe space
26. Create community
27. Engage them
28. Ensure success
29. Focus on just 1 to 3 things people need to work on
30. Force people to see other perspectives
31. Foster ownership
32. Give choice
33. Give everyone a chance to lead
34. Give everyone an opportunity to be heard
35. Give individuals processing time
36. Give teaching or leading roles so others "become the experts"
37. Grade together
38. Have them make their own decisions

39. Help them change their views
40. Help them see both sides of an issue
41. Help them to be reflective in order to choose
42. Help them understand the political space
43. Hold high expectations
44. Invite former students as guest speakers
45. Learn to be active members of a democracy
46. Let them know what's expected
47. Make it fun
48. Make sure everyone can contribute
49. Makes criticism easier to take
50. Meet individuals' needs
51. Provide "cheerleading"
52. Provide a connection to the real world
53. Provide feedback immediate or daily
54. Provide routines & rituals
55. Provide small intervention groups
56. Publish/share "outside the room"
57. Put the work "out there" (make it public)
58. Role play
59. See, feel, and hear what is going on
60. Show respect for individuals
61. Show that the work is worthwhile
62. Show you are interested
63. Surprise with the unexpected
64. Take people out of their comfort zones
65. Talk about why I do what I do
66. Talk with colleagues
67. Teach responsibility
68. Teach tolerance
69. Turn & talk (one-to-one discussion)
70. Understand critical interpretations
71. Use group work
72. Use inquiry-based instruction
73. Use real-world documents
74. Use rubrics
75. Value time, use time wisely
76. Work with individuals

Figure 4.5: Administrator Focus Group Statements

Administrator focus group brainstormed statements in alphabetical order

1. Achieve more buy-in from them
2. Ask questions in one-to-one conversations
3. Asking them to change their behavior, in a pointed way
4. Be consistent (the same message in writing, speaking, every possible medium)
5. Be informed by their perspectives
6. Be open
7. Be ready to handle someone's learning
8. Build credibility
9. Capacity building
10. Celebrate with them
11. Change someone's way of thinking
12. Clarify the issue for myself
13. Combat the idea that "it's always been done that way"
14. Communicate the same message to everyone
15. Conduct action research
16. Confront behavior (individually or as a group)
17. Confront them with the facts
18. Consistently communicate high expectations
19. Convince them they can do a good job, that you believe in them
20. Counsel
21. Debrief
22. Do whatever is necessary to remove barriers
23. Don't always reveal everything you are thinking
24. Eliminate the idea of a hidden agenda
25. Empower them
26. Engage group in an organizer or strategy
27. Establish a support system
28. Find common ground from which to make decisions
29. Generating a system to gather data
30. Have a lot of dialogue (talking, two-way communication)
31. Help people find their own answers
32. Help people know your expectations and your non-negotiables
33. Help them know what it looks like as a leader
34. Help see us as people, not "role" or "title"
35. Increase their learning so that their challenge goes away
36. Initiate celebration
37. Know I empathize with the difficulty of the task
38. Learn "with" them
39. Let people see that mistakes are okay
40. Listening
41. Make it a natural and normal occurrence
42. Make my thinking transparent
43. Make myself vulnerable; show myself as a learner
44. Make someone comfortable, even out of their comfort zone
45. Make them feel safe
46. Meet the needs of kids
47. Meet the needs of staff
48. Meet with small groups
49. Model risk-taking
50. Model, show models of expectations
51. Ownership
52. Passion
53. People fear change; give a support system so they'll feel braver.
54. Politics
55. Present and review data
56. Present the picture to them
57. Put someone else in the situation
58. Reconnect with values/purpose
59. Show I'm a learner too
60. Show it's important that I know what's going on
61. Show that it's part of your skill set to do things differently to reach a goal
62. Show that you appreciate what they do
63. Show your human side
64. Stay highly visible
65. Structure an engagement or activity
66. Support data-based decision making
67. Support differentiated instruction
68. Teach efficacy
69. To allow others to take the lead
70. To change a way of thinking that is detrimental
71. To engage them in their own ownership
72. To get someone to change their way of thinking
73. To help me understand why so that I can support them
74. To help people think about the *issue*, not blame others
75. To help someone see a bigger perspective
76. To increase performance
77. To keep people on their toes
78. To show public support
79. To support people to become self-reflective
80. Trust
81. Trustworthiness
82. Use brain research
83. Use humor
84. Use tools and processes, protocols, graphic organizers

Figure 4.6: Final 100 Statements

Final 100 Statements: Synthesized from the 76 teacher focus group ideas
and the 84 administrator focus group ideas

1.   Allow private response options for communication to me
2.   Allow/provide job shadowing
3.   Answer their questions
4.   Anticipate problems
5.   Be their cheerleader/offer encouragement
6.   Begin from and work at the place where they are (start where they are)
7.   *Break down tasks (into manageable chunks or steps)*
8.   Bring experts in (from within or outside the school)
9.   Build/expect/teach tolerance for others
10. Build rapport
11. Build relationship(s) outside the instructional day
12. *Build trust*
13. Challenge preconceived notions
14. Change plans when needed/be flexible
15. Clarify expectations
16. Consider learning styles
17. *Create a safe space*
18. *Create community*
19. Critically analyze/interpret text or information
20. Engage them, provide a "hook"
21. Ensure success
22. Find ways that force/ require people to see other perspectives
23. *Foster ownership & buy-in*
24. Give choice(s)
25. Give everyone a chance to lead
26. Give everyone an opportunity to be heard
27. Give individuals processing time
28. Grade together
29. Help them see both sides of an issue
30. Meet individual needs
31. *Promote active membership within the community/democracy*
32. Provide a connection to the real world
33. Provide immediate and frequent feedback
34. Provide routines/ rituals/procedures
35. *Put their work "out there," show public support*
36. Role play
37. Show I am interested, that I appreciate what they do
38. Show respect for individuals
39. Show that the work is worthwhile
40. Surprise with the unexpected
41. *Take people out of their comfort zones*
42. Talk about why I do what I do
43. Talk with colleagues
44. Teach/expect/model responsibility and accountability
45. "Turn & Talk" (one-to-one discussion)
46. Use inquiry-based instruction
47. Use real-world documents
48. Use rubrics
49. Value their time; use time wisely
50. *Work with individuals*

Statement reduction: Similar ideas were combined. Statements not directly addressing the focus prompt were eliminated. Syntax and verbiage were made parallel. Statements 1 to 50 appeared in some form in the teacher focus group list. Statements 51 to 100 appeared in some form in the administrator list. Ideas in italics appeared for both groups and, therefore, were combined.

51. Ask questions in one-to-one conversations
52. Be consistent (in what I write, speak, and convey in other ways)
53. Be open ("transparent thinking")
54. Become informed by their perspectives
55. Celebrate with them
56. Clarify the issue for myself
57. Combat the idea that "it's always been done that way"
58. Communicate the same message to everyone
59. Conduct action research
60. Confront behavior (individually or as a group)
61. *Consistently hold and communicate high expectations*
62. Convince people they can do a good job, that you believe in them
63. Create my own repertoire: tools, processes, protocols, graphic organizers
64. Do keep some things private (don't reveal everything you are thinking)
65. Do whatever it takes to remove barriers
66. Eliminate the idea of a hidden agenda
67. Empathize/be empathetic regarding the difficulty of the task
68. Empower them
69. Engage the group in an "organizer" or "strategy" activity
70. Establish credibility
71. *Establish or offer a support system so they'll feel braver*
72. Express my own passion, enthusiasm
73. Find common ground from which to make decisions
74. Generate a system to gather data
75. *Have a lot of dialogue (two-way communication)*
76. *Help change their ways of thinking*
77. Help people examine the issue, not blame others
78. Help people find their own answers, make their own decisions
79. Help them see me as human, not as a "role" or "title"
80. Keep people on their toes
81. Listen
82. *Meet with small groups*
83. *Make them feel safe*
84. *Model risk taking; make myself vulnerable (mistakes are okay)*
85. Pointedly ask people to change their behavior
86. Present the "big picture"
87. Promote and support self-reflection
88. *Political awareness/understand the politics*
89. Reconnect with the purpose/values/rationale
90. *Review data*
91. *Show models of my expectations*
92. *Show that I'm a learner too*
93. Show that it's part of my skill set to do things differently to reach a goal
94. Stay highly visible
95. Support data-based decision making
96. Support differentiated instruction
97. Teach efficacy
98. Understand that people fear change
99. Use brain research
100. *Use humor; make it fun*

Once the statements were printed onto card decks, participants from the convenience sample engaged in an activity to rate and categorize the ideas. The 56 participants followed a two-step protocol (Appendix F) in which they rated each of the statements based on a six-point Likert scale with "6" indicating *Extremely important to me* and "1" indicating *Not at all important to me*. Participants then arranged the cards into piles categorizing them "in any way that makes sense to you." The process took between 15 and 45 minutes to complete depending on the participant. The typical time was 30 minutes.

Following the rating and card sorting activity, I entered into the Concept Systems® software all participant data: their demographic information, their rating for each of the 100 statements, and how each of the 100 statements was sorted, that is, how many piles were created and in which pile each statement was placed. Given the prompt to arrange the cards "in any way that makes sense to you," the arrays varied widely among the participants, from two stacks to 23 stacks.[4]

Building the Maps

Once I had completed the data entry, I began to build the maps using the Concept Systems® software. The 56 data sets from the rating and card sorting activity were used to compute the individual and group bisimilarity matrices needed to compare distances between and among the ideas. These functions were calculated by the software. The program performed multidimensional analyses using an algorithm to create a scatter plot that physically denotes points on a "map." Each point represents the best fit of the distances between each of statements as categorized by the card sorting. Figure 4.7 shows the distances

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[4] I noted that 11 of the 56 participants (19.6%) arranged their cards by rating, that is, creating six stacks, one for each of the points on the 1 to 6 importance scale. Because the purpose of the mapping is to show similarities among ideas—and not just their weight— I used the data from these participants for the rating analyses, but excluded them from the cluster mapping. I later included their importance ratings in my computations to create the "stacked" cluster maps with ratings (see, for instance, Figure 4.11).

between each of the statements as a point map. In multidimensional scaling, stress value is the statistical measure to represent the goodness-of-fit of the statements within the map. The stress value of this study's point map is .327. This measure falls within the acceptable range for concept mapping (Trochim, 1993).[5]

Figure 4.7: Point Map for All Respondents, Representing Distances (dissimilarities) Among the 100 Ideas.

Each point represents one of the statements. For example, #7: *Break down tasks (into manageable chunks or steps)*

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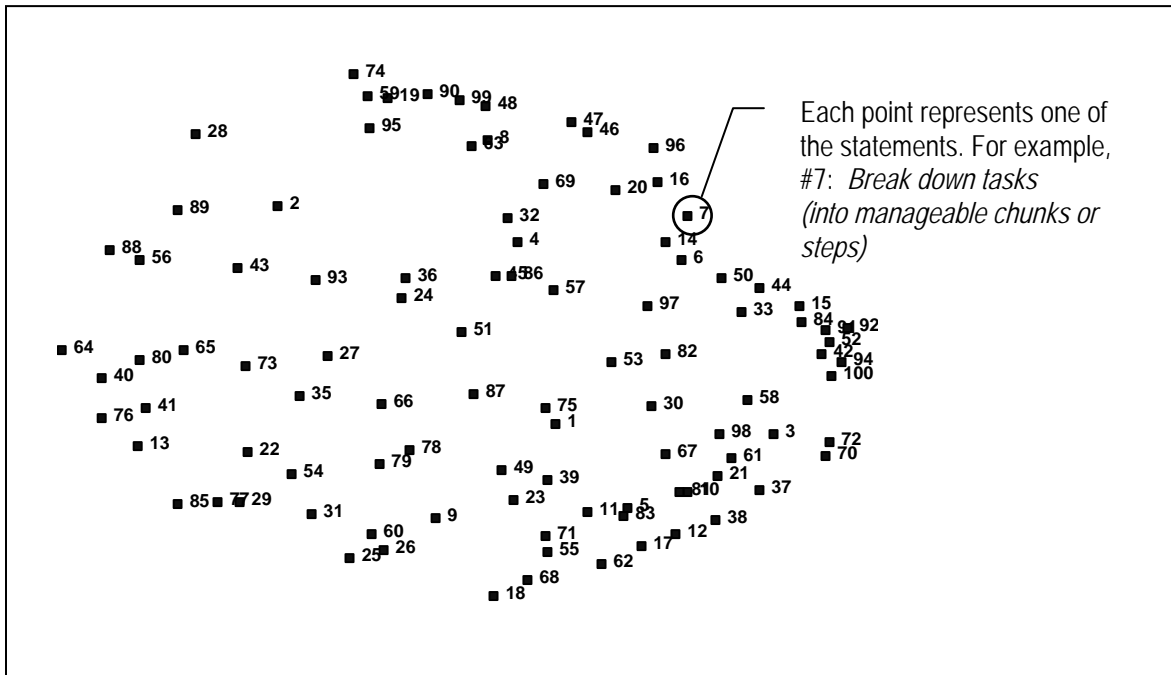
[5] Stress value is a means of representing goodness of fit of the distances represented on the map compared to their values in the similarity matrix. It is determined by calculating the sum of the squared deviations between the values in the group similarity matrix and point map values. Trochim's study of stress value in concept mapping (1993) indicated a median stress among 38 projects of .285, with a range of .155 to .352. My point map's stress value of .327 is considered high. This may be expected in an exploratory study. Later work with concept mapping (Concept Systems®, 2005) suggests that high stress values (.25 or greater) may imply complexity in the similarity matrices or variability in the way the statements are sorted. Trochim suggests that this "noise" or variability may present some challenges in interpreting the map or naming the clusters. Given that the range of sorted categories in this study went from two to 23, a higher stress value may be expected. This may explain the challenges experienced in my reconvened focus group as we worked to name each cluster. I discuss this later under *Naming the Clusters.*

Each statement is represented by its number on the map. The closer the points, the more often the statements were categorized together by the participants. The further apart the numbers, the fewer times the statements were sorted together. For instance, statement #64 (*Do keep some things private*) is the furthest away on the from statement number #92 (*Show that I'm a learner too*), indicating their quantitative dissimilarity. Statements # 42 (*Talk about why I do what I do*) and #52 (*Be consistent in what I write, speak, and convey in other ways*), sorted together frequently, and so are placed tightly on the map, suggesting their quantitative similarity.

My next step was to create a cluster map from the statement points on the point map. Cluster analysis partitions the statements on the map into groups. The software has the capability of calculating any number of groups from one (all statements forming a single cluster) to 100 (each statement as its own cluster). Selecting a variety of mapping options from the software program, I created and reviewed a series of possible clusters showing how the statements might be grouped in proximity. I compared a number of possible configurations ranging from six to 15 clusters and reviewed the statements in each cluster possibility. I determined that 13 clusters provided a satisfactory set of statements. That is, I felt that there was enough similarity among the statements within each set that a conversation could take place about their commonalities. This decision represents my interpretation, akin to the judgment required in factor analysis. One number of clusters is not "better" than another—it represents my own meaning making after carefully examining ten options. Figure 4.8 shows the concept map that is beginning to emerge with 13 clusters, still unnamed, overlaid on the point map.

Figure 4.8: Point Map with 13 Clusters Overlaid
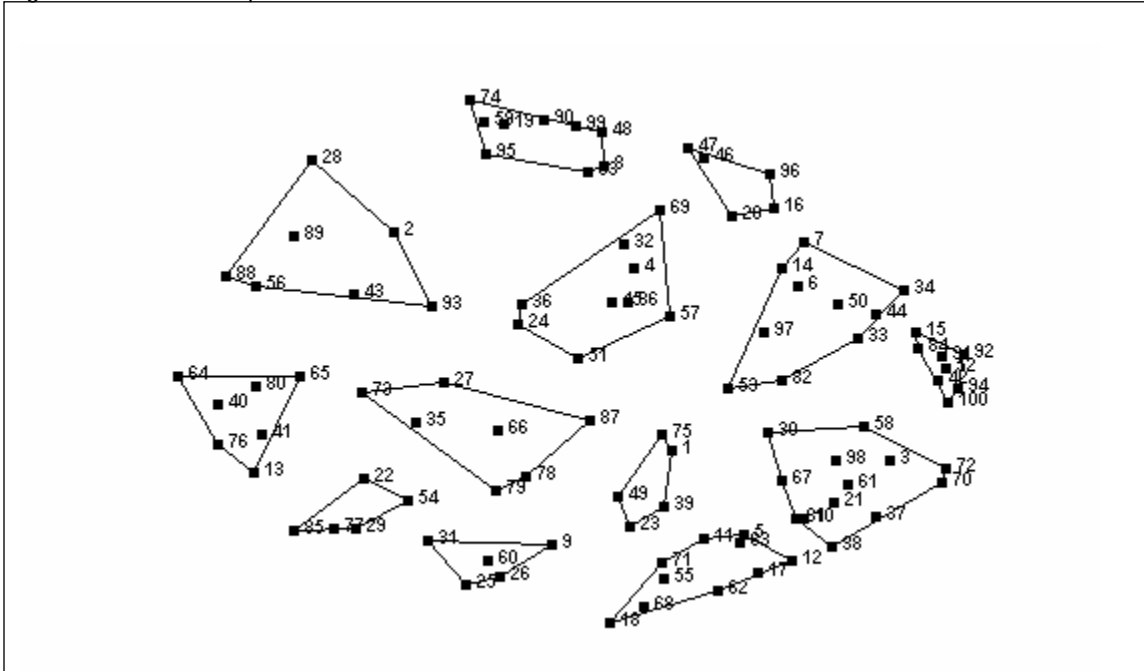
Naming the Clusters

In preparation for naming the clusters, I printed copies of the All Respondent Map including a key listing the statements within each cluster. The focus group reconvened one month following its initial statement generating sessions. Because my data gathering occurred during summer break, fewer members were available to participate. However, five of the original members were available and they were joined by an administrator who had participated in the card sorting. This smaller group was representative of the original focus group with three females and three males, including three elementary representatives, two high school representatives, and a K-12 (central office) representative. There were three administrators and three teachers. The focus group gathered for a two-hour session.

I began by reviewing the process by which they had generated the statements, then I explained the statement reduction protocol and my process. I gave them an opportunity to

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examine the list of 100 statements. I explained to them the statement rating and card sorting

undertaken by the convenience sample. I showed them the mathematically-created point

map, and then overlaid the point map with the 13 clusters. A large scale version of the 13-

cluster map was drawn on a white board. Then I presented to them the map with the list of 13

cluster statements (Figure 4.8). I invited the participants to read and review the cluster

statements individually, to take notes, and to write down commonalities among the ideas in

each cluster. I asked them to suggest a possible name for each of the 13 clusters.

After 20 minutes, individuals reported to the larger group and their ideas were

recorded on the whiteboard. Each of the 13 clusters was discussed; however, few of the

clusters were readily named. Much of the ensuing discussion centered on anomaly

statements, that is, those that did not have a quick or obvious connection with the others. For

example, Cluster 6 consisted of five statements that appear connected or related:

> \# 16 *Consider learning styles*
> \# 20 *Engage them, provide a "hook"*
> \# 46 *Use inquiry-based instruction*
> \# 47 *Use real-world documents*
> \# 96 *Support differentiated instruction*

"Engagement strategies" or "active engagement" seemed logical choices as a cluster name.

On the other hand, a grouping such as Cluster 7 contained one sentence that did not seem to

fit easily with the others:

> *#8 Bring experts in (from within or outside the school)*
> *#19 Critically analyze/interpret text or information*
> *#48 Use rubrics*
> *#59 Conduct action research*
> *#63 Create my own repertoire: tools, processes, protocols, graphic organizers*
> *#74 Generate a system to gather data*
> *#90 Review data*
> *#95 Support data-based decision making*
> *#99 Use brain research*

The group became puzzled by what it later branded "outlier" statements, those that had been sorted frequently with nearby statements, but for which the group could not readily see a connection. Though they understood that there was a mathematical relation, they expressed frustration over what seemed to them illogical pairings or they argued that the statements should not have been paired with those close by. I reminded them that other individuals would not have had the context of the statement generation process or the same kind of ownership of "their" statements as the focus group members had.[6] I also reminded them of the card sorting prompt: "Categorize the statements *in whatever way makes sense to you*," and that the other participants would be making meaning from their own perspectives. The group finally agreed to seek ideas that could serve as the "glue" to hold all the statements together. I recommended that they might also work backward by seeking a word or phrase for which each of the statements might be seen as the means to an end. This "end" would become the cluster name. Finally, the group decided to ignore outlier statements if they began to hinder or bog down their decisions.

After the group completed its cluster discussion, I collected each individual's notes to help inform my cluster naming. I later reviewed, examined and compared the focus group participants' notes with my observation notes and chose 13 cluster names. To finalize each name, I used the "means to an end" question: To what end might each of these statements be a means? Finally I worked to make parallel the syntax and verbiage of each cluster name. This process is similar to factor analysis and factor naming. I moved from being reporter to interpreter. Using the participants' feedback, my experience with the process and the data, I created the final cluster labels:

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[6] In Chapter Five, I discuss this phenomenon that the teacher focus group exhibited and about which some teachers expressed strong opinions.

Cluster 1 "Provide support"
Cluster 2 "Value the person"
Cluster 3 "Show personal regard"
Cluster 4 "Create the learning environment"
Cluster 5 "Manage the learning"
Cluster 6 "Engage with strategies"
Cluster 7 "Use evidence and data"
Cluster 8 "Offer connections"
Cluster 9 "Use a wide angle lens"
Cluster 10 "Create some tension"
Cluster 11 "Help clarify thinking"
Cluster 11 "Seek new perspectives"
Cluster 13 "Promote active membership"

To continue the move from point map to cluster map to concept map, I added these labels to

the 100 statements categorized by cluster. Figure 4.9 shows the penultimate concept map.

Figure 4.9 Penultimate map: 13 mathematical clusters plus label names

Concept Map for All Respondents
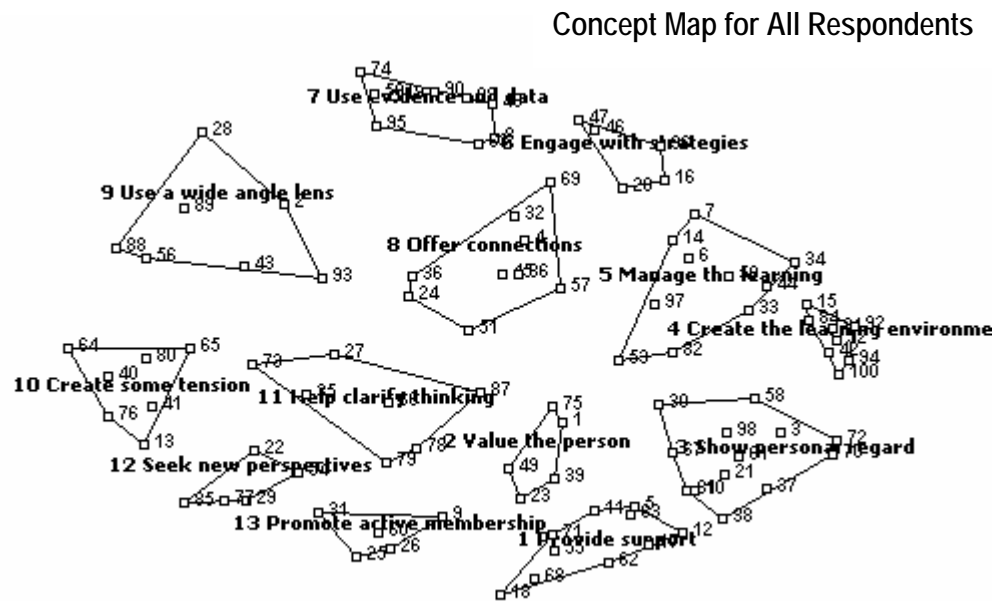
Cluster Key for All Respondents (statement numbers in parentheses)

Cluster 1: Provide support
Be their cheerleader/offer encouragement (5)
Build relationship(s) outside the instructional day (11)
Build trust (12)
Create a safe space (17)
Create community (18)
Celebrate with them (55)
Convince people they can do a good job, that you
   believe in them (62)
Empower them (68)
Establish a support system so they'll feel braver (71)
Make them feel safe (83)

Cluster 2: Value the person
Allow private response options for communication to me
   (1)
Foster ownership & buy-in (23)
Show that the work is worthwhile (39)
Value their time; use time wisely (49)
Have a lot of dialogue (two-way communication) (75)

Cluster 3: Show personal regard
Answer their questions (3)
Build rapport (10)
Ensure success (21)
Meet individual needs (30)
Show I am interested, that I appreciate what they do (37)
Show respect for individuals (38)
Communicate the same message to everyone (58)
Consistently hold & communicate high expectations (61)
Empathize/be empathetic regarding the difficulty of the
   task (67)

Cluster 3 continued
Establish credibility (70)
Express my own passion, enthusiasm (72)
Listen (81)
Understand that people fear change (98)

Cluster 4: Create the learning environment
Clarify expectations (15)
Talk about why I do what I do (42)
Be consistent (in what I write, speak, and convey in other
   ways) (52)
Model risk taking; make myself vulnerable (mistakes are
   okay) (84)
Show models of my expectations (91)
Show that I'm a learner too (92)
Stay highly visible (94)
Use humor; make it fun (100)

Cluster 5: Manage the learning
Begin from and work at the place where they are (start
   where they are) (6)
Break down tasks (into manageable chunks or steps) (7)
Change plans when needed/be flexible (14)
Provide immediate and frequent feedback (33)
Provide routines/ rituals/procedures (34)
Teach/expect/model responsibility and accountability
   (44)
Work with individuals (50)
Be open ("transparent thinking") (53)
Meet with small groups (82)
Teach efficacy (97)

Cluster 6: Engage with strategies
Consider learning styles (16)
Engage them; provide a "hook" (20)
Use inquiry-based instruction (46)
Use real-world documents (47)
Support differentiated instruction (96)

Cluster 7: Use evidence and proof
Bring experts in (from within or outside the school) (8)
Critically analyze/interpret text or information (19)
Use rubrics (48)
Conduct action research (59)
Create my own repertoire: tools, processes, protocols,
    graphic organizers (63)
Generate a system to gather data (74)
Review data (90)
Support data-based decision making (95)
Use brain research (99)

Cluster 8: Offer connections
Anticipate problems (4)
Give choice(s) (24)
Provide a connection to the real world (32)
Role play (36)
"Turn & Talk" (one-to-one discussion) (45)
Ask questions in one-to-one conversations (51)
Combat the idea that "it's always been done that way"
    (57)
Engage the group in an "organizer" or "strategy" activity
    (69)
Present the "big picture" (86)

Cluster 9: Use a wide angle lens
Allow/provide job shadowing (2)
Grade together (28)
Talk with colleagues (43)
Clarify the issue for myself (56)
Political awareness/understand the politics (88)
Reconnect with the purpose/values/rationale (89)

Cluster 9 continued
Show that it's part of my skill set to do things differently
    to reach a goal (93)

Cluster 10: Create some tension
Challenge preconceived notions (13)
Surprise with the unexpected (40)
Take people out of their comfort zones (41)
Do keep some things private (don't reveal everything you
    are thinking) (64)
Do whatever it takes to remove barriers (65)
Help change their ways of thinking (76)
Keep people on their toes (80)

Cluster 11: Help clarify thinking
Give individuals processing time (27)
Put their work "out there," show public support   (35)
Eliminate the idea of a hidden agenda (66)
Find common ground from which to make decisions (73)
Help people find their own answers, make their own
    decisions (78)
Help them see me as human, not as a "role" or "title"
    (79)
Promote and support self-reflection (87)

Cluster 12: Seek new perspectives
Find ways that require people to see other perspectives
    (22)
Help them see both sides of an issue (29)
Become informed by their perspectives (54)
Help people examine the issue, not blame others (77)
Pointedly ask people to change their behavior (85)

Cluster 13: Promote active membership
Build/expect/teach tolerance for others (9)
Give everyone a chance to lead (25)
Give everyone an opportunity to be heard (26)
Promote active membership within the community/
    democracy (31)
Confront behavior (individually or as a group) (60)

Completing the Map

At this point, I chose to move even further from reporter to interpreter and cartographer. To complete the concept map, I examined the cluster map as if it were actual geographic terrain. I studied the terrain—the placement and arrangement of the clusters, their distances and proximities. I returned to my inquiry's lens of challenge and support. Through this perspective, five regions came into view. Beginning in the lower corner of the map, what I call the southeast, three clusters formed a region I called *Honoring The Individual.* This included Cluster 1 "Provide support," Cluster 2 "Value the person," and Cluster 3 "Show personal regard." The northeast corner of the map included three clusters pertaining less to the personal and more to the work itself, but still from an interpersonal aspect: Cluster 4 "Create the learning environment," Cluster 5 "Manage the learning," and Cluster 6 "Engage with strategies." I named this region *Moving the Learning Forward.*

The northwest quadrant of the map was oriented more toward the external and extrapersonal, which I entitled *Shifting the Focus: Internal to External.* Its clusters included Cluster 7 "Use evidence and data," Cluster 8 "Offer connections," and Cluster 9 "Use a wide angle lens." In the southwest section of the map, the goals of teachers and administrators moved toward adaptive work. This section I called *Provoking New Thinking* incorporating Cluster 10 "Create some tension," Cluster 11 "Help clarify thinking," and Cluster 12 "Seek new perspectives." Finally, a small solitary cluster of the map fell in the south central region. The statements in this stand-alone cluster—Cluster 13 "Promote active membership"— served the goal of *Creating Community*. I depicted these regions in my final drawing of the All Respondents Map, Figure 4.9. This map presents the point map, overlaid with the 13 mathematical groupings with clusters labeled and, finally, regions drawn. I discuss these

regional perspectives and interpretation in Chapter Five, and so I return to the research

question: What are the similarities and differences in the ways school administrators think

about "leading" compared to the ways in which teachers think about "teaching"? The next

two sections of Chapter Four examine the similarities and dissimilarities among the data

points within the All Respondents Map.

Figure 4.10: Final Map: point map with 13 mathematical clusters and label names, plus region markers

Concept Map for All Respondents
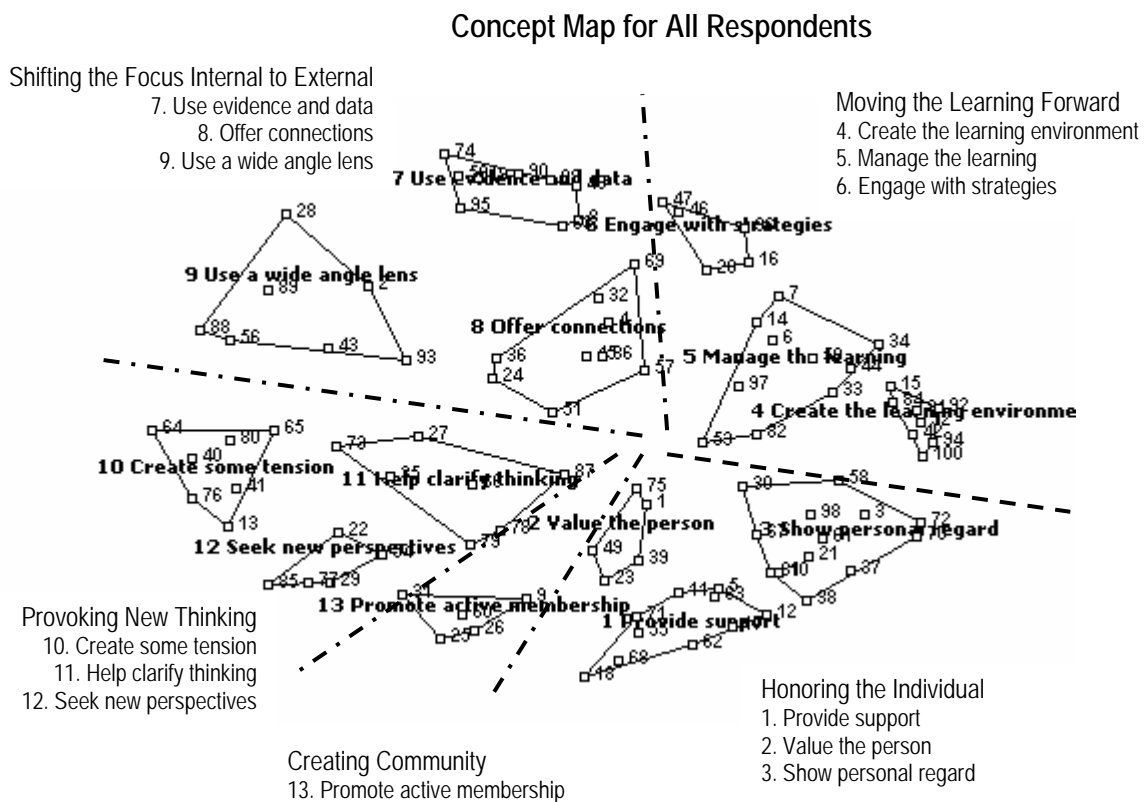
Comparing data from the Concept Map for All Respondents

Although the All Respondents Map is complete, the Concept Systems® software also

allows a graphic representation of the importance of the clusters, depicting the mean of each

cluster as layers of depth on the map. Figures 4.10 and 4.11 offer visual comparisons

between the teacher sample and the administrator sample, and suggest that each group has its

own topography, giving a fuller picture of the two groups' thinking. In addition, I conducted

a t-test on each of the 100 statements to contrast the average ratings of the teachers and the

administrators. From this work, I created a rating means table for all statements (Appendix

G) and, from it, extrapolated a rating means table for statements with statistically significant

differences (Table 4.1). To compare the thinking of the two groups, I will refer to the

topography maps of the two groups' thinking as well as to the data from the statement means

table in Appendix G, and also to the statistically significant data in Table 4.1.

Table 4.1: Statistically Significant Comparison Ratings for Teachers And Administrators

#	MEAN TEA	STD TEA	MEAN ADM	STD ADM	p	STATEMENT
4	4.60	1.22	5.19	0.90	*	Anticipate problems
19	3.90	1.47	5.12	0.86	***	Critically analyze/interpret text or information
21	4.83	1.05	5.50	0.81	**	Ensure success
23	4.60	1.48	5.38	0.85	*	Foster ownership & buy-in
32	5.40	0.56	4.62	1.60	*	Provide a connection to the real world
39	5.20	1.00	5.73	0.53	*	Show that the work is worthwhile
40	3.80	1.47	2.92	1.26	*	Surprise with the unexpected
56	4.47	1.20	5.35	1.02	**	Clarify the issue for myself
57	4.30	1.49	5.23	1.18	*	Combat the idea that "it's always been done that way"
58	4.30	1.39	5.35	0.94	**	Communicate the same message to everyone
59	3.30	1.37	4.23	1.39	*	Conduct action research
65	4.23	1.14	5.00	1.06	*	Do whatever it takes to remove barriers
66	4.27	1.36	5.12	1.07	*	Eliminate the idea of a hidden agenda
70	5.13	0.82	5.65	0.75	*	Establish credibility
73	4.27	1.26	5.08	0.84	**	Find common ground from which to make decisions
74	3.63	1.35	5.42	0.86	***	Generate a system to gather data
76	3.97	1.50	4.69	1.01	*	Help change their ways of thinking
88	3.33	1.37	4.92	1.06	***	Political awareness/understand the politics
89	4.27	1.20	5.08	1.02	**	Reconnect with the purpose/values/rationale
90	4.07	1.23	5.65	0.80	***	Review data
95	4.03	1.30	5.69	0.55	***	Support data-based decision making
97	4.27	1.36	5.00	1.10	*	Teach efficacy
98	4.30	0.99	5.00	1.13	*	Understand that people fear change
99	3.63	1.54	4.73	1.15	**	Use brain research

* $p < .05$
** $p < .01$
*** $p < .001$

Figure 4.11   Comparison of Teachers' and Administrators' Concept Topography

Topography Map for All Respondents with TEACHER Ratings

Shifting the Focus Internal to External
7. Use evidence and data
8. Offer connections
9. Use a wide angle lens

Moving the Learning Forward
4. Create the learning environment
5. Manage the learning
6. Engage with strategies

Provoking New Thinking
10. Create some tension
11. Help clarify thinking
12. Seek new perspectives

Creating Community
13. Promote active membership

Honoring the Individual
1. Provide support
2. Value the person
3. Show personal regard

Layer	Value
1	3.97 to 4.23
2	4.23 to 4.48
3	4.48 to 4.74
4	4.74 to 4.99
5	4.99 to 5.25

Topography Map for All Respondents with ADMINISTRATOR Ratings

Shifting the Focus Internal to External
Internal to External:
7. Use evidence and data
8. Offer connections

Moving the Learning Forward
4. Create the learning environment
5. Manage the learning
6. Engage with strategies

Provoking New Thinking
10. Create some tension
11. Help clarify thinking
12. Seek new perspectives

Creating Community
13. Promote active membership

Honoring the Individual
1. Provide support
2. Value the person
3. Show personal regard

Layer	Value
1	4.14 to 4.40
2	4.40 to 4.65
3	4.65 to 4.90
4	4.90 to 5.15
5	5.15 to 5.40

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Similarities

To discern similarities, I compared statement ratings, cluster topography, cluster statistics and significance. I began with a look at the ratings. There are a number of similarities between the two groups. Nearly 25% of the time (24 out of 100 statements), both groups similarly rate an idea as *Very Important* (≥ 5 to 5.5 on the importance rating).

Table 4.2: Statements Similarly Rated *Very Important* (≥ 5) for Teachers And Administrators

#	STATEMENT	MEAN TEA	MEAN ADM
33	*Provide immediate and frequent feedback*	5.13	5.12
43	*Talk with colleagues*	5.13	5.46
70	*Establish credibility*	5.13	5.65
49	*Value their time , use time wisely*	5.20	5.19
75	*Have a lot of dialogue (two-way communication)*	5.20	5.50
39	*Show that the work is worthwhile*	5.20	5.73
5	*Be their cheerleader , offer encouragement*	5.23	5.00
7	*Break down tasks (into manageable chunks or steps)*	5.23	5.04
55	*Celebrate with them*	5.23	5.19
18	*Create community*	5.23	5.23
78	*Help people find their own answers , make their own decisions*	5.27	5.08
92	*Show that I'm a learner too*	*5.27*	5.31
3	*Answer their questions*	5.27	5.38
15	*Clarify expectations*	5.27	5.58
14	*Change plans when needed , be flexible*	5.30	5.46
68	*Empower them*	5.30	5.54
100	*Use humor , make it fun*	5.33	5.38
72	*Express my own passion, enthusiasm*	*5.40*	5.23
83	*Make them feel safe*	5.40	5.54
52	*Be consistent (in what I write speak, and convey in other ways)*	5.43	5.54
17	*Create a safe space*	5.47	5.27
26	*Give everyone an opportunity to be heard*	5.47	5.35
44	*Teach/expect/model responsibility and accountability*	5.57	5.46
62	*Convince people they can do a good job, that you believe in them*	5.67	5.46

An examination of how these points fall on the map shows a prominent pattern. Twenty-one of the 24 Very important ideas cluster on the south-to-east or right hand section of the map, notably in Cluster 1 "Provide support," Cluster 2 "Value the person," Cluster 3 "Show personal regard," Cluster 4 "Create the learning environment," and Cluster 5

"Manage the learning." In addition, both groups similarly ranked six of the 100 ideas as

Extremely Important (≥ 5.5).

Table 4.2: Statements rated *Extremely important* (≥ 5.50) for teachers and administrators

#	STATEMENT	MEAN TEA	MEAN ADM
37	*Show I am interested, that I appreciate what they do*	5.50	5.58
61	*Consistently hold and communicate high expectations*	5.60	5.68
10	*Build rapport*	5.63	5.62
81	*Listen*	5.70	5.50
12	*Build trust*	5.80	5.69
38	*Show respect for individuals*	5.83	5.88

Five of these six statements fall into Cluster 3 "Show personal regard" and one in the

neighboring Cluster 1 "Provide support." Figure 4.12 shows how densely situated these

similarly rated statements are. This pattern provides key information as I seek to discern

similarities in the ways school administrators think about "leading" compared to the ways in

which teachers think about "teaching."

Figure 4.12: 30 points rated *Very Important* or *Extremely Important* by teachers as well as administrators
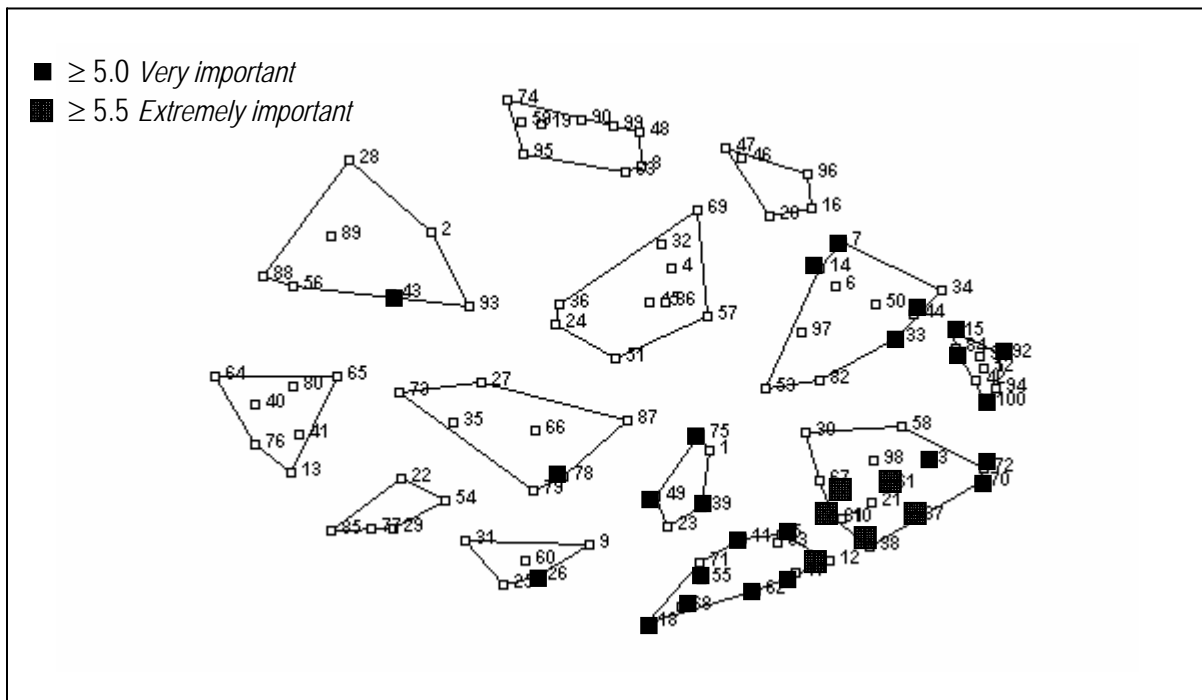
I also looked at those statements that both groups agreed were *Not Important*. There are fewer statements that both teachers and administrators agree are unimportant; only six of the 100 statements fall into the < 4 range for both groups. Figure 4.13 shows the terrain in which these fall, the left or western section of the map.

Table 4.4: Statements similarly *Not Important* (≤ 4) for teachers and administrators

#	STATEMENT	MEAN TEA	MEAN ADM
28	*Grade together*	2.97	3.15
85	*Pointedly ask people to change their behavior*	3.53	3.73
36	*Role play*	3.57	3.00
2	*Allow/provide job shadowing*	3.67	3.65
80	*Keep people on their toes*	3.70	3.23
40	*Surprise with the unexpected*	3.80	2.92

Figure 4.13   Six points rated *Not Important* by teachers as well as administrators
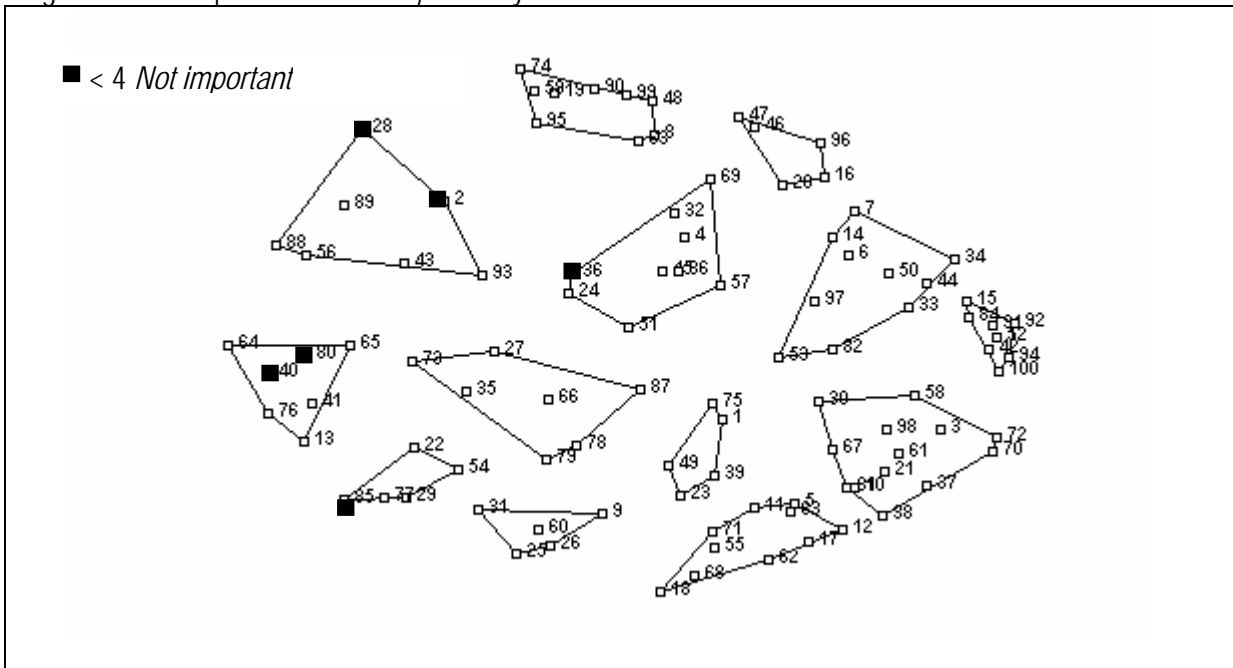
Another way to see similarities among these importance ratings is to look at the two maps in Figure 4.11 to compare how the clusters stack up against one another. Highly rated

statements create more depth as shown in the topographical maps. Both show the similarities in the "depth" of importance in certain areas. In all six clusters of the two south-to-east regions *Honoring the Individual* and *Moving the Learning Forward,* both teachers and administrators show equal depth of importance. Similarly, a comparison of the topographical maps shows the "thinness" of importance in the west-to-north areas, particularly Cluster 9 "Use a wide angle lens," albeit not as dramatic as the density of importance in the south-to-east terrain.

Finally, after I determined and marked where the teachers' and administrators' similarly-rated statements fell on the map, I also looked at how the statements were plotted *within* each cluster. This provided me another way to look for parallels. The Concept Systems® software allowed me to create graphs that show the correlation of statements by teacher and administrator rating *inside* each cluster. Three of the clusters show a very strong linear correlation among the statement ratings within the cluster.

Cluster 1 "Provide support" (10 statements, 5.25, 5.22, *r* .93, *p* < .001) [7]
Cluster 4 "Create the learning environment" (8 statements, 4.94, 5.11, *r* .95, *p* < .01)
Cluster 12 "Seek new perspectives" (5 statements, 4.45, 4.72, *r* .97, *p* < .01)

Figures 4.14, 4.15, and 4.16 depict these linear correlations. The x-axis represents the teachers' average statement rating; the y-axis represents administrators' average statement rating. The axes' ranges are the low and high ratings of each group. The groups' means are shown as dotted lines. The intersection of each of the averages is marked with the statement number. These three clusters show three additional areas in which the teachers' and administrators' thinking is congruent.

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[7] The comparison set in parentheses represents the average of *all* the statements within the cluster. The teacher means of all statements is shown first, followed by the administrator means. The correlation coefficient is calculated by the Concept Systems® software using the Pearson correlation value.

Figure 4.14   Cluster 1 "Provide support" 10 statements (5.25, 5.22, *r* .93, *p* < .001)
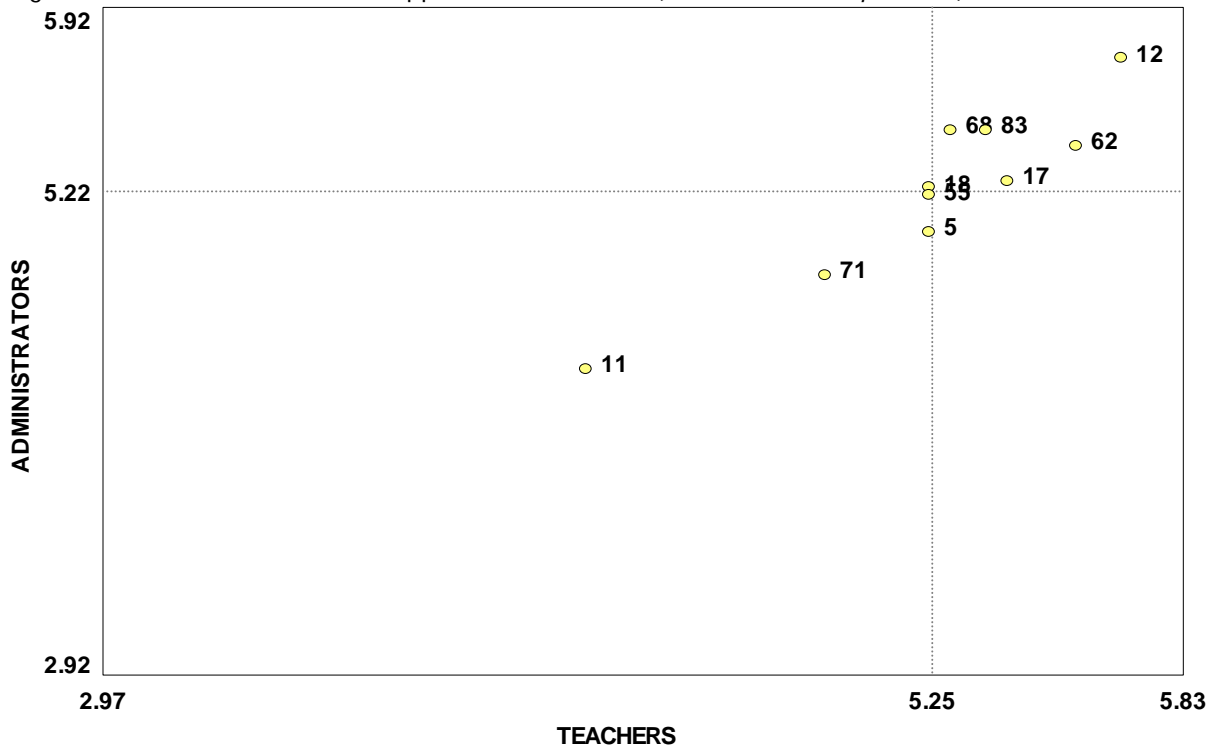
Figure 4.15   Cluster 4 "Create the learning environment" 8 statements (4.94, 5.11, *r* = .95, *p* < .01)
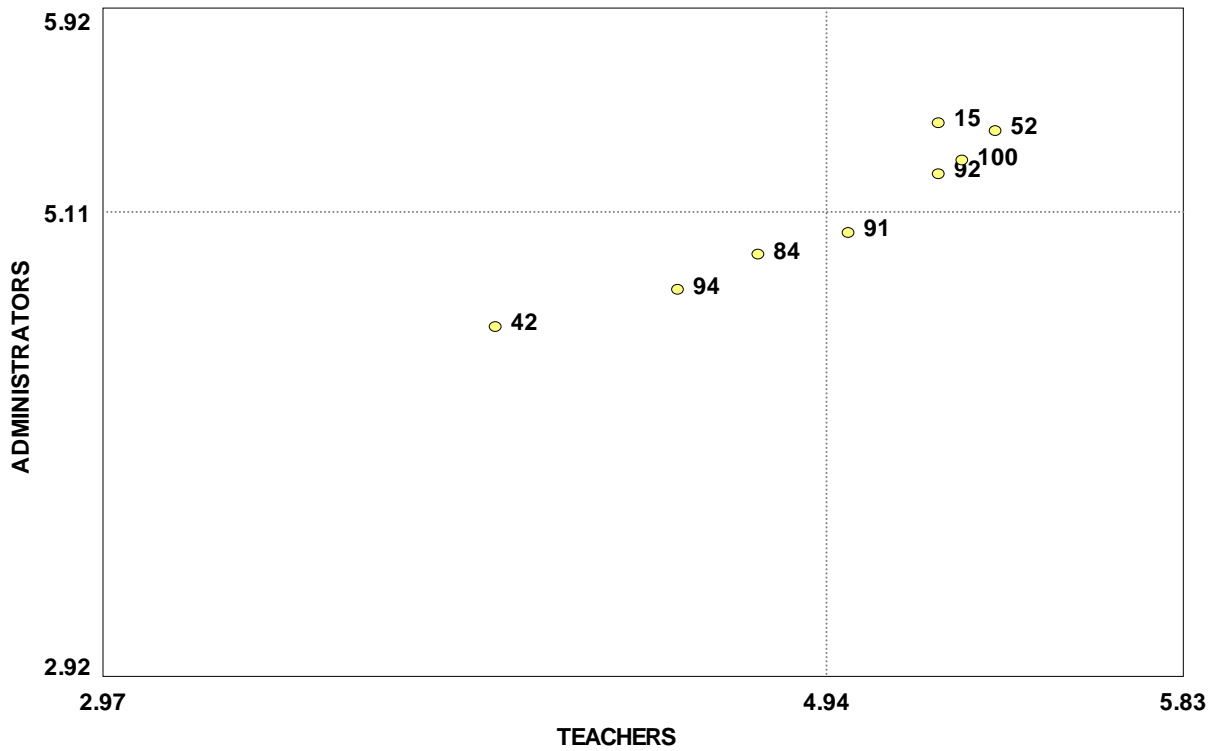
Figure 4.16: Cluster 12 "Seek new perspectives" (4.45, 4.72, r .97, p < .01)
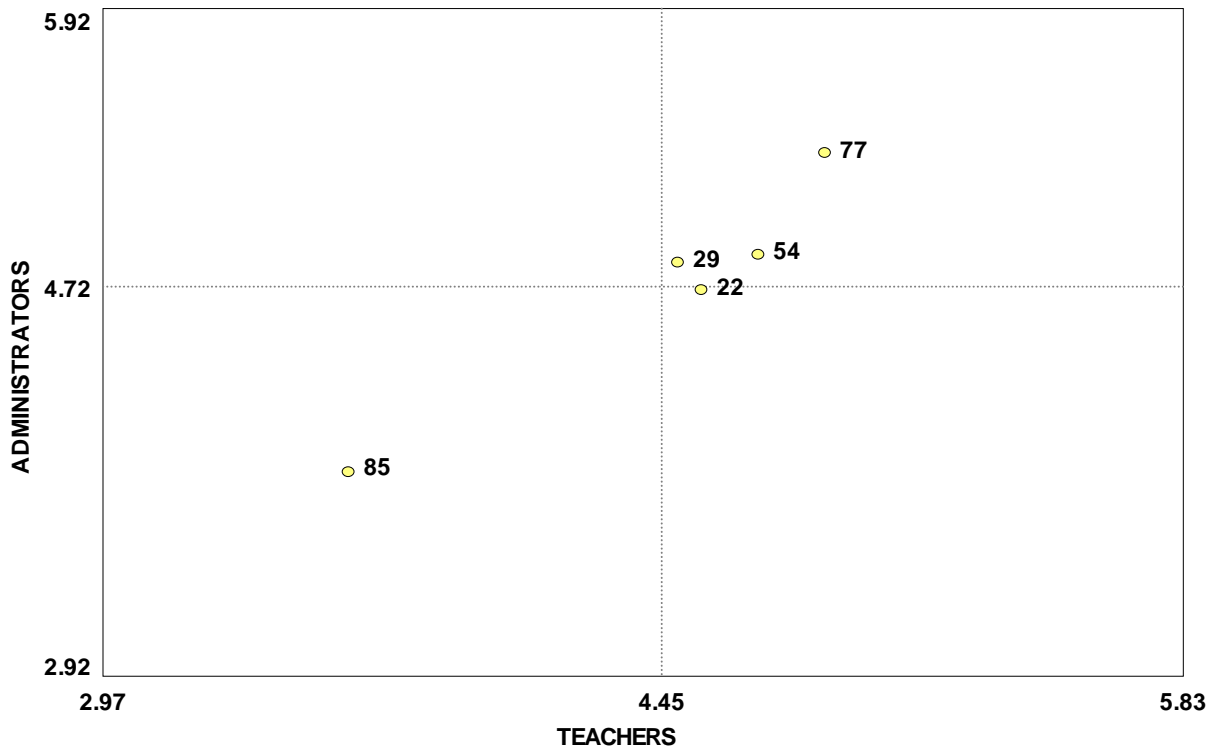
Dissimilarities

To continue my search for similarities and dissimilarities in the ways school administrators think about "leading" compared to the ways in which teachers think about "teaching," I returned to the comparison ratings to determine where and how they might *differ*.

It is striking to note that, when comparing the individual statement data, only five of the 100 statements had differences in which the teachers ranked the statement as *Not Important* (< 4.00 on the Likert scale), while the administrators rated the statement as *Important* (> 4.00 on the Likert scale). All five of these differences were statistically significant. Statement #88 *Political awareness/understand the politics* (3.33, 4.92, $p < .001$)

fell into Cluster 9 "Use a wide angle lens." The four others that the teachers rated as *Not*

Important but administrators rated as *Important* fell into fell into Cluster 7 "Use evidence and

data":

#19 *Critically analyze/interpret text or information* (3.90, 5.12, *p* <.001)
#59 *Conduct action research* (3.30, 4.23, *p* < .05)
#74 *Generate a system to gather data* (3.63, 5.42, *p* < .001)
#99 *Use brain research* (3.64, 4.73 *p* < .01)

Because half of the eight statements in Cluster 7 were so dissimilar, I examined their linear

graph to look within this cluster. Figure 4.17 offers a visual depiction of the disparities

between teachers and administrators in this area. The very weak correlation (*r* .17, *ns)* is of

less interest to me than the graphic depiction that participants, in this case, are "all over the

map" when it comes to thinking about using evidence and data in their work.

Figure 4.17 Cluster 7 "Use evidence and data" 9 statements (3.97, 4.96, *r* .17, *ns*)
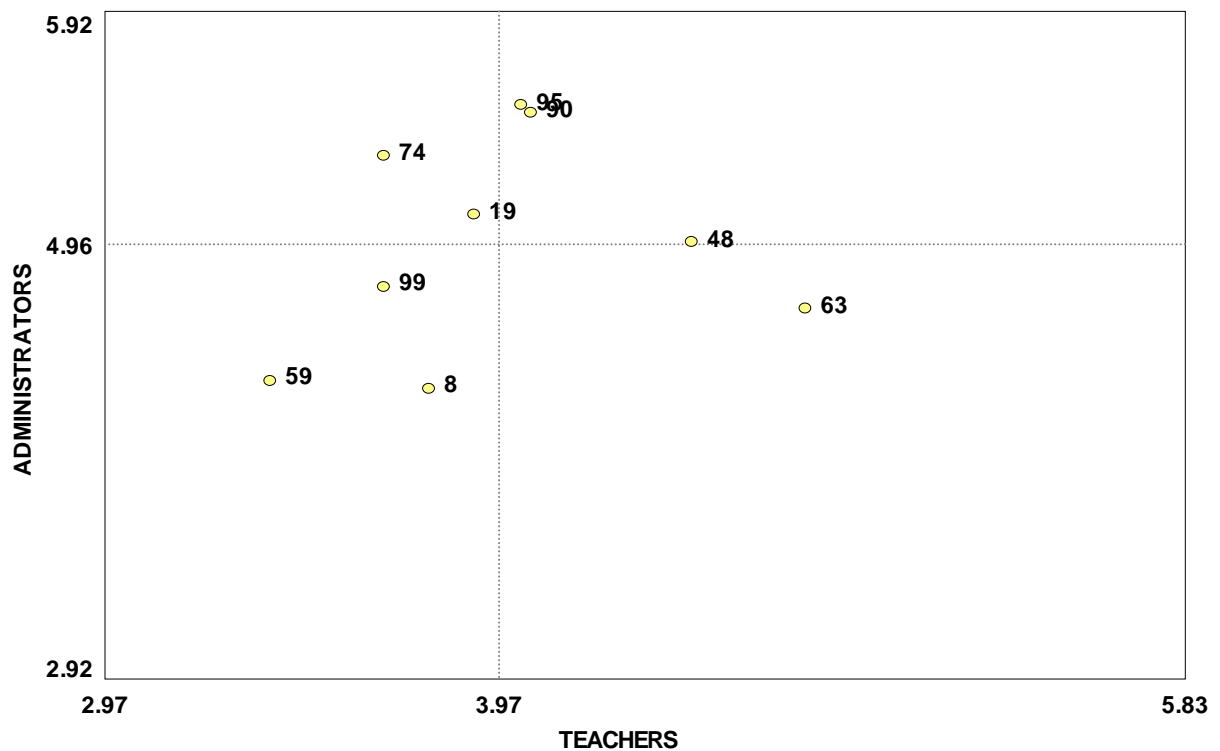
Finally, just as I used Figure 4.10 to look for similarities in how the clusters "stack up" against each other, I returned to it to look for dissimilarities. Cluster 7 "Use evidence and data," for instance, appears as only one layer deep for teachers and four layers deep for administrators. Statistically, the difference between the means of the two clusters is significant (3.97, 4.96, $p < .05$). This, of course, could be expected from the differences shown above for statements within this cluster. The disparity in their thinking about data suggests a fundamental difference in the teachers' and administrators' world view. I discuss this in Chapter Five.

Note also that four other clusters stack up differently in the topographical maps:

Cluster 2 "Value the person" (4.97, 5.29, $p < .05$)
Cluster 9 "Use a wide angle lens" (3.98, 4.57, $p < .05$)
Cluster 11 "Help clarify thinking" (4.58, 5.04, $p < .05$)
Cluster 12 "Seek new perspectives" (4.45, 4.72, *ns*)
Cluster 13 "Promote active membership" (4.95, 4.80, *ns*)

It is important to recognize that, with the exception of Cluster 7, the five other clusters that differ in depth vary by no more than one layer. Nonetheless, the topographical maps offer one good way to compare the groups.

Teacher and Administrator Maps

For a final way to compare the two groups' thinking, I created two new maps using teacher data only and administrator data only to see what other similarities or differences might appear in their mindscapes. In addition to comparing the groups based on the data for all the participants, I disaggregated the data to create separate maps for each of the two groups. Therefore, I followed the same format and process to create a point map and cluster map for the teachers by using only their rating and sorting data. I did the same for the

administrators. Because I had determined 13 to be the most satisfactory cluster breakdown for the All Respondents Map, I chose to use 13 clusters for each of the new maps in order to be consistent in my comparisons. I created and printed the two maps and, likewise, printed a key for the cluster statements for each group. These I gave to the reconvened focus group.

Following the focus group's discussion of the All Respondents Map, I used the second half of the group members' time to have them take a look at the teacher map and the administrator map. The group broke into triads, the three teachers in one and the three administrators in the other. They worked to suggest words or phrases that might inform naming the clusters on their group's map. I reiterated their decision to acknowledge "outlier" statements and reminded them that the individuals who sorted and rated would not have had the context of the statement generation process, or the same kind of ownership that the focus group members had of "their" statements. The group members used two questions to guide their thinking: what ideas might serve as the "glue" to hold all the statements together and to what end might these statements be seen as a means. After 40 minutes, I collected their notes and asked them to write a brief reflection[8] on the activities of concept generating and cluster naming.

Just as I had with the All Respondents Map, I later reviewed, examined and compared the focus group participants' notes with my observation notes and chose 13 cluster names. To finalize each name, I used the "means to an end" question: To what end might each of these statements be a means? As with the cluster naming for the All Respondents Map, I worked to make the syntax and verbiage parallel. The resultant clusters, cluster titles, and corresponding statements are shown in Figures 4.19 and 4.20.

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[8] I discuss some of their reflections in Chapter Five.

After I completed this process, I shared the maps with a teacher and an administrator

from the earlier focus groups to get their feedback and to see if my interpretation had face

validity. Could they see their worldview reflected in their maps?

Susan (teacher):	Aaaaah. This makes some things at work make sense for me. For us, it's about our own world inside the classroom. Yes, this makes sense. It's all about what's personal.
David (administrator):	The names are sufficiently descriptive, yet not too jargony. This looks great. I've been doing a lot of reading lately on the principals' standards. I was trying to compare the groups (clusters) with the standards. There seems to be a good fit. (David later created and sent to me a comparison chart with the standards to compare with the concept map. I discuss this in Chapter Five.)

Figure 4.18

Concept Map for Teachers

Using Resources
7. Objective sources
8. Evidence and data

Moving the Learning Forward
4. Environment for learning
5. Decision-making rationale
6. Project management

Shifting Perspectives
9. Lens changing
10. Others' perspectives

Honoring the Individual
1. Personal regard
2. Meeting needs
3. Confidence building

Creating Community
11. Individual connections
12. Involvement
13. Empowerment

Layer	Value
1	4.08 to 4.33
2	4.33 to 4.59
3	4.59 to 4.85
4	4.85 to 5.10
5	5.10 to 5.36

8 Evidence and data   7 Objective sources   9 Lens changing   6 Project management   5 Decision-making rationale   4 Environment for learning   11 Individual connections   2 Meeting needs   3 Confidence building   10 Others' perspectives   1 Personal regard   12 Involvement   13 Empowerment

Key to Teacher Map (statement numbers in parentheses)

Teacher Cluster 1: Personal Regard
Answer their questions (3)
Be their cheerleader/offer encouragement (5)
Build rapport (10)
Build trust (12)
Create a safe space (17)
Provide immediate and frequent feedback (33)
Show I am interested, that I appreciate what they do (37)
Show respect for individuals (38)
Consistently hold and communicate high expectations (61)
Empathize/be empathetic regarding the difficulty of the task (67)
Have a lot of dialogue (two-way communication) (75)
Listen (81)
Meet with small groups (82)
Make them feel safe (83)

Teacher Cluster 2: Meeting needs
Begin from and work at the place where they are (start where they are) (6)
Meet individual needs (30)
Role play (36)
Communicate the same message to everyone (58)

Teacher Cluster 3: Confidence building
Build relationship(s) outside the instructional day (11)
Clarify expectations (15)
Ensure success (21)
Work with individuals (50)
Express my own passion, enthusiasm (72)
Show models of my expectations (91)

Teacher Cluster 4: Learning environment
Break down tasks (into manageable chunks or steps) (7)
Provide routines/rituals/procedures (34)
Establish credibility (70)
Show that I'm a learner too (92)
Stay highly visible (94)
Use humor; make it fun (100)

Teacher Cluster 5: Decision-making rationale
Change plans when needed/be flexible (14)
Consider learning styles (16)
Talk about why I do what I do (42)
Teach/expect/model responsibility and accountability
  (44)
Use inquiry-based instruction (46)
Be consistent (in what I write, speak, and convey in other
  ways) (52)
Keep people on their toes (80)
Model risk taking; make myself vulnerable (mistakes are
  okay) (84)
Support differentiated instruction (96)
Teach efficacy (97)
Understand that people fear change (98)

Teacher Cluster 6: Project management
Anticipate problems (4)
Be open ("transparent thinking") (53)
Combat the idea that "it's always been done that way"
  (57)
Eliminate the idea of a hidden agenda (66)
Engage the group in an "organizer" or "strategy" activity
  (69)
Present the "big picture" (86)
Show that it's part of my skill set to do things differently
  to reach a goal (93)

Teacher Cluster 7: Objective sources
Bring experts in (from within or outside the school) (8)
Use real-world documents (47)
Use rubrics (48)
Use brain research (99)

Teacher Cluster 8: Evidence and data
Allow/provide job shadowing (2)
Critically analyze/interpret text or information (19)
Talk with colleagues (43)
Clarify the issue for myself (56)
Conduct action research (59)
Create my own repertoire: tools, processes, protocols,
  graphic organizers (63)
Generate a system to gather data (74)
Review data (90)
Support data-based decision making (95)

Teacher Cluster 9: Lens changing
Challenge preconceived notions (13)
Engage them; provide a "hook" (20)
Grade together (28)
Surprise with the unexpected (40)

Teacher Cluster 9 continued:
Take people out of their comfort zones (41)
Do keep some things private (don't reveal everything you
  are thinking) (64)
Do whatever it takes to remove barriers (65)
Help them see me as human, not as a "role" or "title"
  (79)
Political awareness/understand the politics (88)
Reconnect with the purpose/values/rationale (89)

Teacher Cluster 10: Others' perspectives
Find ways that require people to see other perspectives
  (22)
Help them see both sides of an issue (29)
Promote active membership within the community/
  democracy (31)
Put their work "out there," show public support (34)
Become informed by their perspectives (54)
Help people examine the issue, not blame others (77)
Help people find their own answers, make their own
  decisions (78)
Pointedly ask people to change their behavior (85)
Find common ground from which to make decisions (73)
Help change their ways of thinking (76)

Teacher Cluster 11: Individual connections
Allow private response options for communication to me
  (1)
Build/expect/teach tolerance for others (9)
Give individuals processing time (27)
Provide a connection to the real world (32)
Value their time; use time wisely (49)

Teacher Cluster 12: Involvement
Give choice(s) (24)
Give everyone a chance to lead (25)
Give everyone an opportunity to be heard (26)
Show that the work is worthwhile (39)
Ask questions in one-to-one conversations (51)

Teacher Cluster 13: Empowerment
Create community (18)
Foster ownership & buy-in (23)
"Turn & Talk" (one-to-one discussion) (45)
Celebrate with them (55)
Confront behavior (individually or as a group) (60)
Convince people they can do a good job, that you
  believe in them (62)
Empower them (68)
Establish or offer a support system so they'll feel braver
  (71)
Promote and support self-reflection (87)

Figure 4.19

Concept Map for Administrators

Moving the Work Forward
6. Engagement
7. Proactivity and initiative
8. Proven methods
9. Evidence and data

Honoring the Individual
4. Others' perspectives
5. Individual needs

Layer	Value
1	4.04 to 4.31
2	4.31 to 4.59
3	4.59 to 4.86
4	4.86 to 5.13
5	5.13 to 5.41

Being a Change Agent
10. Manage change
11. Challenge the status quo
12. Political awareness

Building the Community
1. Relationships
2. Safety
3. Appreciation

Expressing Myself
13. Self-disclosure

Key to Administrator Map (statement numbers in parentheses)

Admin Cluster 1: Relationships
Build rapport (10)
Build trust (12)
Show I am interested, that I appreciate what they do (37)
Show respect for individuals (38)
Be open ("transparent thinking") (53)
Help them see me as human, not as a "role" or "title" (79)
Listen (81)
Use humor; make it fun (100)

Admin Cluster 2: Sense of Safety
Allow private response options for communication to me (1)
Create a safe space (17)
Promote active membership within the community/ democracy (31)
Eliminate the idea of a hidden agenda (66)
Empower them (68)
Make them feel safe (83)

Admin Cluster 3: Appreciation
Answer their questions (3)
Be their cheerleader/offer encouragement (5)
Build/expect/teach tolerance for others (9)
Put their work "out there," show public support (35)
Talk with colleagues (43)
Value their time; use time wisely (49)
Celebrate with them (55)
Convince people they can do a good job, that you believe in them (62)
Establish a support system so they'll feel braver (71)

Admin Cluster 4: Others' Perspectives
Find ways that require people to see other perspectives (22)
Give everyone an opportunity to be heard (26)
Help them see both sides of an issue (29)
Become informed by their perspectives (54)
Find common ground from which to make decisions (73)
Help people examine the issue, not blame others (77)
Help people find their own answers, make their own decisions (78)

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Admin Cluster 5: Individual Needs
Begin from and work at the place where they are (start where they are) (6)
Give individuals processing time (27)
Meet individual needs (30)
Work with individuals (50)
Meet with small groups (82)

Admin Cluster 6: Engagement Strategies
Engage them; provide a "hook" (20)
Give choice(s) (24)
Role play (36)
"Turn & Talk" (one-to-one discussion) (45)
Ask questions in one-to-one conversations (51)
Engage the group in an "organizer" or "strategy" activity (69)
Promote and support self-reflection (87)
Teach efficacy (97)

Admin Cluster 7: Proactivity and initiative
Change plans when needed/be flexible (14)
Ensure success (21)
Foster ownership & buy-in (23)
Give everyone a chance to lead (25)
Teach/expect/model responsibility & accountability (44)
Do whatever it takes to remove barriers (65)
Empathize/be empathetic regarding the difficulty of the task (67)
Have a lot of dialogue (two-way communication) (75)

Admin Cluster 8: Proven methods
Bring experts in (from within or outside the school) (8)
Consider learning styles (16)
Provide a connection to the real world (32)
Use inquiry-based instruction (46)
Use real-world documents (47)
Support differentiated instruction (96)
Use brain research (99)

Admin Cluster 9: Evidence and data
Allow/provide job shadowing (2)
Critically analyze/interpret text or information (19)
Grade together (28)
Use rubrics (48)
Conduct action research (59)
Create my own repertoire: tools, processes, protocols, graphic organizers (63)
Generate a system to gather data (74)
Reconnect with the purpose/values/rationale (89)
Review data (90)
Support data-based decision making (95)

Admin Cluster 10: Change management
Break down tasks (into manageable chunks or steps) (7)
Clarify expectations (15)
Provide immediate and frequent feedback (33)

Provide routines/rituals/procedures (34)
Take people out of their comfort zones (41)
Combat the idea that "it's always been done that way" (57)
Consistently hold and communicate high expectations (61)
Help change their ways of thinking (76)

Admin Cluster 11: Challenge the status quo
Challenge preconceived notions (13)
Surprise with the unexpected (40)
Confront behavior (individually or as a group) (60)
Keep people on their toes (80)
Pointedly ask people to change their behavior (85)
Present the "big picture" (86)

Admin Cluster 12: Political Awareness
Anticipate problems (4)
Create community (18)
Communicate the same message to everyone (58)
Political awareness/understand the politics (88)
Show models of my expectations (91)
Show that it's part of my skill set to do things differently to reach a goal (93)
Understand that people fear change (98)

Admin Cluster 13: Self-disclosure
Build relationship(s) outside the instructional day (11)
Show that the work is worthwhile (39)
Talk about why I do what I do (42)
Be consistent (in what I write, speak, and convey in other ways) (52)
Clarify the issue for myself (56)
Do keep some things private (don't reveal everything you are thinking) (64)
Establish credibility (70)
Express my own passion, enthusiasm (72)
Model risk taking; make myself vulnerable (mistakes are okay) (84)
Show that I'm a learner too (92)
Stay highly visible (94)

Comparing the Teacher and Administrator Maps

A visual examination shows that the teachers' map weighs heavily in the south and southeastern regions that I named *Creating the Community* (with the clusters "Individual connections," "Involvement," and "Empowerment"), *Honoring the Individual* (with the clusters "Personal regard" and "Confidence building"), and *Moving the Learning Forward* (with the clusters "Environment for learning," "Decision-making rationale," and "Project management"). As Susan acknowledged, the teachers' concept map reveals far more interest in the interpersonal aspects of their work. Cluster 1 "Personal regard" and Cluster 11 "Individual connection" indicated the greatest depth of teacher attention with five layers each. The statements which fell into these two top-rated clusters reflect the depth of the teachers' personal interest in their students. The teachers' mean ratings are indicated in parentheses.

Teacher Cluster 1 "Personal regard"
#3 *Answer their questions* (5.27)
#5 *Be their cheerleader/offer encouragement* (5.23)
#10 *Build rapport* (5.63)
#12 *Build trust* (5.80)
#17 *Create a safe space* (5.47)
#33 *Provide immediate and frequent feedback* (5.13)
#37 *Show I am interested, that I appreciate what they do* (5.50)
#38 *Show respect for individuals* (5.83)
#61 *Consistently hold and communicate high expectations* (5.60)
#67 *Empathize/be empathetic regarding the difficulty of the task* (4.57)

Teacher Cluster 11 "Individual connections"
#1 *Allow private response options for communication to me* (4.47)
#9 *Build/expect/teach tolerance for others* (5.27)
#27 *Give individuals processing time* (5.03)
#32 *Provide a connection to the real world* (5.40)
#49 *Value their time; use time wisely* (5.20)

Though the card raters and sorters did not know where the ideas came from, it is noteworthy but not surprising that teachers rated highly statements that had been created by other teachers. Fourteen of these 15 statements[9] originally came from the ideas generated by the teacher focus group. Would a similar phenomenon occur on the administrators' map?

It did not. The administrators' topographical map showed more depth in all regions of the map. In fact, all but Cluster 11 "Challenge the status quo" had three or more layers of importance. Five of the 13 clusters on the administrators' map showed their depth of interest as five layers (> 5.13) deep: Cluster 1 "Relationships," Cluster 2 "Safety," Cluster 3 "Appreciation," Cluster 7 "Proactivity and initiative" and Cluster 13 "Self-disclosure." The number in parentheses is the administrators' mean rating.

Administrator Cluster 1 "Relationships"
#10 *Build rapport* (5.62)
#12 *Build trust* (5.69)
#37 *Show I am interested, that I appreciate what they do* (5.58)
#38 *Show respect for individuals* (5.88)
#53 *Be open ("transparent thinking")* (4.69)
#79 *Help them see me as human, not as a "role" or "title"* (4.69)
#81 *Listen* (5.50)
#100 *Use humor; make it fun* (5.38)

Administrator Cluster 2 "Sense of Safety"
1 *Allow private response options for communication to me* (4.42)
17 *Create a safe space* (5.27)
#31 *Promote active membership within the community/democracy* (4.58)
#66 *Eliminate the idea of a hidden agenda* (5.12)
#68 *Empower them* (5.54)
#83 *Make them feel safe* (5.54)

Administrator Cluster 3 "Appreciation"
#3 *Answer their questions* (5.38)
#5 *Be their cheerleader/offer encouragement* (5.00)
#9 *Build/expect/teach tolerance for others* (4.92)
#35 *Put their work "out there," show public support* (4.88)
#43 *Talk with colleagues* (5.46)

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[9] Statement #61 was one of the statements that was derived from both focus groups and combined during the statement reduction.

#49 Value their time; use time wisely (5.19)
#55 Celebrate with them (5.19)
#62 Convince people they can do a good job, that you believe in them (5.04)
#71Establish a support system so they'll feel braver (4.77)

Administrator Cluster 7 "Proactivity and initiative"
#14 Change plans when needed/be flexible (5.46)
#21 Ensure success (5.50)
#23 Foster ownership & buy-in (5.38)
#25 Give everyone a chance to lead (4.38)
#44 Teach/expect/model responsibility & accountability (5.46)
#65 Do whatever it takes to remove barriers (5.00)
#67 Empathize/be empathetic regarding the difficulty of the task (5.04)
#75 Have a lot of dialogue (two-way communication) (5.50)

Administrator Cluster 13 "Self-disclosure"
#11 Build relationship(s) outside the instructional day (4.27)
#39 Show that the work is worthwhile (5.73)
#42 Talk about why I do what I do (4.50)
#52 Be consistent (in what I write, speak, and convey in other ways) (5.54)
#56 Clarify the issue for myself (5.35)
#64 Do keep some things private (don't reveal everything you are thinking) (4.62)
#70 Establish credibility (5.65)
#72 Express my own passion, enthusiasm (5.23)
#84 Model risk taking; make myself vulnerable (mistakes are okay) (4.88)
#92 Show that I'm a learner too (5.31)

As I read the statements in the administrators' top-rated clusters, two things became

apparent: first, that half of the ideas that the administrators rated highly came from the

teachers' focus group list (21 of the 41 statements). Second, like the teachers' top ratings,

these ideas were personal. However, a new element appeared with enough proximity to form

its own cluster—the intra-personal. Cluster 13 "Self-disclosure" reveals what one

administrator called in her notes "show my human-ness," if not a deeper level, perhaps a

more self-aware level of openness.

Returning to a review of the administrators' thinking, their topographical map depicts

four clusters showing four layers of importance: Cluster 4 "Others' perspectives," Cluster 5

"Individual needs," Cluster 10 "Manage change" and Cluster 12 "Political awareness." A

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picture begins to emerge of a leader's world view in which the personal remains very important, but the scope of work and, therefore, perspective about the work begins to expand. These ideas show a range of interest from the intra-personal and the personal to extra-personal. This is noteworthy but not surprising, given that the administrators' world extends beyond the classroom and, in addition, administrators surpass teachers in years of experience (by ten years, on average, in this study).

If I were to divide the teachers' map in half diagonally from the lower left to the upper right, the north and western regions would show the areas of least interest or importance to teachers in their daily work. The regions that I called *Using Resources* (Cluster 7 "Objective sources" and Cluster 8 "Evidence and data") and *Changing Perspectives* (Cluster 9 "Lens changing" and Cluster 10 "Others perspectives") indicate "thin" interest from teachers as they think about their work. The only area of the administrators' map that appears "thin" is Cluster 11 "Challenge the status quo." This surprised me. If it is true that growth comes from both challenge and support, it appears that school administrators have far more interest in supporting their teachers than in challenging them. I address this issue in Chapter Five.

Summary

This exploratory mixed methods study began with two brainstorming sessions by a group of seven master teachers and a group of six master administrators. Both groups, nominated by their supervisors or peers, agreed to participate in a 90-minute focus group. From their work, 153 statements were generated in response to the focus prompt, "What words or phrases describe your goals or strategies for your work?" Using a protocol, I reduced the list to 100 statements. Each of these statements was rated and categorized by a convenience sample of 30 teachers and 26 administrators. Based on these ratings and card sorts, a multidimensional analysis was calculated using Concept Systems® software and I created a series of concept maps: one for all respondents, one for teachers and one for administrators. The original focus group members were invited back to help me interpret and name the 13 clusters on each map. Three teachers and three administrators participated. I used the participants' feedback, my experience with the process and the data, and my review of the literature to settle on final cluster labels and to further interpret regions and topography of each map. I used these qualitative data along with statistical analyses of the convenience sample's statement ratings to help inform my thinking about the teaching role of leadership.

I found some dramatic similarities in the thinking of the two groups in the *personal* arenas of their work, as well as dramatic differences especially in the area of *extra-personal* aspects of their work. Administrators also added an *intra-personal* dimension to their work that was not as evident in the teachers' categorization. In Chapter Five, I discuss these findings and their implications for practice and future research.

These findings suggest there is a teaching role to leadership. Wittingly or not,
each school leader assumes this role. How much better it is to take with us a map,
not to point *the* way, but to let us see the depth and expanse of
an entire territory in order to begin navigating our way through it.

CHAPTER FIVE
Discussion

Introduction

When I embarked upon my inquiry, my intended role was explorer and cartographer.

I sought to qualify and quantify the thinking of teachers and leaders through a series of

conceptual maps. The maps are drawn. As I examine and interpret them, I am aware of their

inability to depict precisely a complex, interior terrain. My attraction to the dialectic is

reflected in both the process and the product of this study. My discussion in Chapter Five,

therefore, focuses on a number of dualities/partnerships:

1. The research problem in theory and in practice

2. Teachers' and leaders' thinking

3. Support and Challenge

4. Implications for practitioners and researchers

5. The mapping process: working within a mixed methods design

The Research Problem in Theory and in Practice

Even the problem which piqued my curiosity to launch a study of the teaching role of

leadership was twofold. One element was theoretical and abstract. The other was practical

and workbound. Neither stood alone.

The theoretical side of the research problem centered on my thinking that leading and teaching both involve processes that permit others to transform their thinking. However, there was little systematic, empirical research to connect the two. Nearly three decades ago, James MacGregor Burns proposed that there is a "*vital* teaching role of leadership" (1978, p. 425). Since then, a body of management and leadership literature speaks of the need for organizations to develop environments conducive to continued learning and growth. In that same vein, some educational theorists write about the importance of schools attending to adult learning in order to best promote student learning (Levine, 1989; Barth, 2001; Lambert et al., 2002; Drago-Severson, 2004). What was still underdeveloped, however, was empirical study of the ways leaders think about capacity building and creating a culture of adult growth. In the past decade, leadership theorists such as Senge (1990a, 1990b), Heifetz and Laurie (2003), and Leithwood (2001) have written about the leader as teacher. Most recently, Tichy (2002) created a model around the teaching cycle of leadership. A number of management theorists have proffered the psychological construct of holding environment— an intentional balance of support with challenge for this to happen (Kegan, 1982, 1994; Heifetz, 1994; Daloz, 1999). In education, Fullan and Barber (2005), for instance, write of the requisites of challenge and support for leaders to effect changes in their school cultures. Drago-Severson (2004), an education theorist, broke ground with her codification of the work of the learning-oriented leader, offering specific models for helping teachers to learn based on adult developmental theory and the counter-components of challenge and support.

Each of these theorists' powerful works was based on case studies of exemplars of leadership. Might these cases and theories be generalizable to and functional for a much broader population, specifically public school leaders? Drago-Severson's important work

speaks to leaders in a language with which they may be unfamiliar: the language of

constructive developmental theory. My findings validate Drago-Severson's use of the

holding environment and its counter-components of challenge and support. For practitioners,

my findings speak to public school leaders using their own language. As a public school

administrator, I see the daily struggle of principals and school leaders as they seek to find

balance between serving their students and families and meeting the mandates of state and

federal policies, especially within the edicts of the No Child Left Behind Act. This sweeping

federal law claims to reform public education by "chang[ing] the culture of America's

schools" (*NCLB Desktop Reference*, 2002, p. 9). I argued that statehouse mandates do not

change the culture of public education. Those within the schoolhouse do.

Yet the practitioners who deal with the daily challenges of K-12 education are

expected to manage well (keep things running smoothly within the school) *and* lead well

(mobilize people toward adaptive change). Based on what I have seen and practiced in 15

years as a systems-level leader, however, I know that mobilizing people means supporting

them and challenging them *at the same time*. In my role as an assistant superintendent of a

public school district of 9000 students and 600 teachers, I am in a position to see teachers

working with students of all ages, principals working with teachers, and district level leaders

working with principals. I've seen extraordinary teachers and leaders *and* mediocre teachers

and leaders (yes, and bad teaching and leading too). My observation has been that, in good

leadership (leadership which is effective in mobilizing change), there are elements of good

teaching. I've seen principals support their staffs by listening for meaning, providing

appropriate resources and training, recognizing and celebrating successes small and large,

and giving frequent and informative feedback. I've seen them challenge their staffs as well—

by setting exceedingly high expectations for their teachers, asking provocative questions, providing hard data and expecting their teachers to analyze and use that data in their decision-making, and creating intentional conversations around changing instruction.

This inquiry afforded an opportunity to examine my assumptions about what I see occurring in my workplace in a larger arena. At the same time, it afforded an empirical examination of a theoretical assumption—that leaders have a vital role as teachers. This dissertation addressed those assumptions by examining the question: What are the similarities and differences in the ways school administrators think about "leading" compared to the ways teachers think about "teaching"? The answers, both mathematical and visual, indicate that these theoretical constructs are supported in practice. The findings shed light on teachers' and leaders' attitudes about these constructs. Though their thinking diverges and there are some stark contrasts, there are some powerful similarities. They first emerged in the groups' brainstorming sessions.

Teachers' and Leaders' Thinking

The foundation of this study was the list of statements created by the two focus groups' brainstorming. Both groups responded to the same focus prompt: "What phrases or words describe your goals and strategies for your work?" Even before I began any statistical analyses of the data, comparing the participants' responses began to shed light on the thinking of teachers and leaders. A review of the lists suggests that only a rare few of the statements were distinctly role-related—*grade together*, for instance, generated by the teacher focus group. From the beginning, I was struck by the commonalities in the responses of the two groups. In fact, as I worked to reduce the two lists to 100 statements, 21 duplicate or nearly identical ideas came up. They were

#7 *Break down tasks (into manageable chunks or steps)*
#12 *Build trust*
#61 *Consistently hold and communicate high expectations*
#17 *Create a safe space*
#18 *Create community*
#71 *Establish or offer a support system so they feel braver*
#23 *Foster ownership & buy-in*
#75 *Have a lot of dialogue (two-way communication)*
#76 *Help change their ways of thinking*
#83 *Make them feel safe*
#82 *Meet with small groups*
#84 *Model risk taking; make myself vulnerable (mistakes are okay)*
#88 *Political awareness/understand the politics*
#31 *Promote active membership in the community/democracy*
#35 *Put their work "out there," show public support*
#90 *Review data*
#91 *Show models of my expectations*
#92 *Show that I'm a learner too*
#41 *Take people out of their comfort zones*
#100 *Use humor; make it fun*
#50 *Work with individuals*

What strikes me about these commonalities is that, with the possible exception of #88

Political awareness, none of the statements might be identified as solely the domain of one

group. These statements alone make a powerful assertion about the similarity of teachers'

and leaders' goals and strategies. I can imagine the list within a leadership text, article, or

workshop as surely as within a text, article, or workshop aimed at creating master teachers.

As a practitioner, I can imagine using this list as a springboard for discussion and reflection

for aspiring or practicing administrators. As a researcher, I see value in returning to these

lists for further in-depth interviewing or for textual analysis. For this study, however, my

goal was to create structured conceptualizations of teachers' and administrators' thinking.

Using the 100 concepts as the basis for a second round of data gathering, I turned to a

different group of teachers and administrators who rated and sorted the statements. The

intended outcome was a series of concept maps. The sorting activity allowed a mathematical

depiction of how the participants envisioned the ideas as alike or not. Each statement formed

the points on the maps, calculated by algorithm. The rating activity helped contrast the

teachers' and administrators' thinking topographically (by visual examination) and

mathematically (by statistical examination). These data served as rich sources of information.

For instance, my topographical examination in Chapter Four depicted a heavy

"geographic" clustering of 30 ideas that the two groups rated as either *Very Important* or

Extremely Important (Figure 5.1). As previously noted, these 30 ideas are

> *Very Important* (≥ 5 on the Likert scale)
> #3 *Answer their questions*
> #52 *Be consistent (in what I write speak, and convey in other ways)*
> #5 *Be their cheerleader, offer encouragement*
> #7 *Break down tasks (into manageable chunks or steps)*
> #56 *Celebrate with them*
> #14 *Change plans when needed, be flexible*
> #15 *Clarify expectations*
> #62 *Convince people they can do a good job, that you believe in them*
> #17 *Create a safe space*
> #18 *Create community*
> #68 *Empower them*
> #70 *Establish credibility*
> #72 *Express my own passion, enthusiasm*
> #26 *Give everyone an opportunity to be heard*
> #75 *Have a lot of dialogue (two-way communication)*
> #78 *Help people find their own answers, make their own decisions*
> #83 *Make them feel safe*
> #33 *Provide immediate and frequent feedback*
> #92 *Show that I'm a learner too*
> #39 *Show that the work is worthwhile*
> #43 *Talk with colleagues*
> #44 *Teach/expect/model responsibility and accountability*
> #100 *Use humor; make it fun*
> #49 *Value their time, use time wisely*
> *Extremely Important* (≥ 5.5 on the Likert scale)
> #10 *Build rapport*
> #12 *Build trust*
> #61 *Consistently hold and communicate high expectations*
> #81 *Listen*
> #37 *Show I am interested, that I appreciate what they do*
> #38 *Show respect for individuals*

Most of these ideas fall into the south-to-east region of the map with particular density (especially among the six *Extremely Important* ideas) in the two clusters I had entitled "Value the person" and "Show personal regard." This southeastern region of the map I identify as Personal, because of its focus on "you" or "us," with a relational, affective bent. Given the counter-components of the holding environment, I propose that these Personal statements constitute ways in which teachers and leaders support others. This has powerful implications on school leaders' practice. Initially, this led me to believe that teachers and leaders are far more invested in supporting than challenging others, creating relationships and safety over provoking new thinking, what education theorist Richard Elmore in his lectures and keynote addresses often calls "the land of nice."

Figure 5.1: 30 Points Rated *Very Important* or *Extremely Important* by Teachers As Well As Administrators
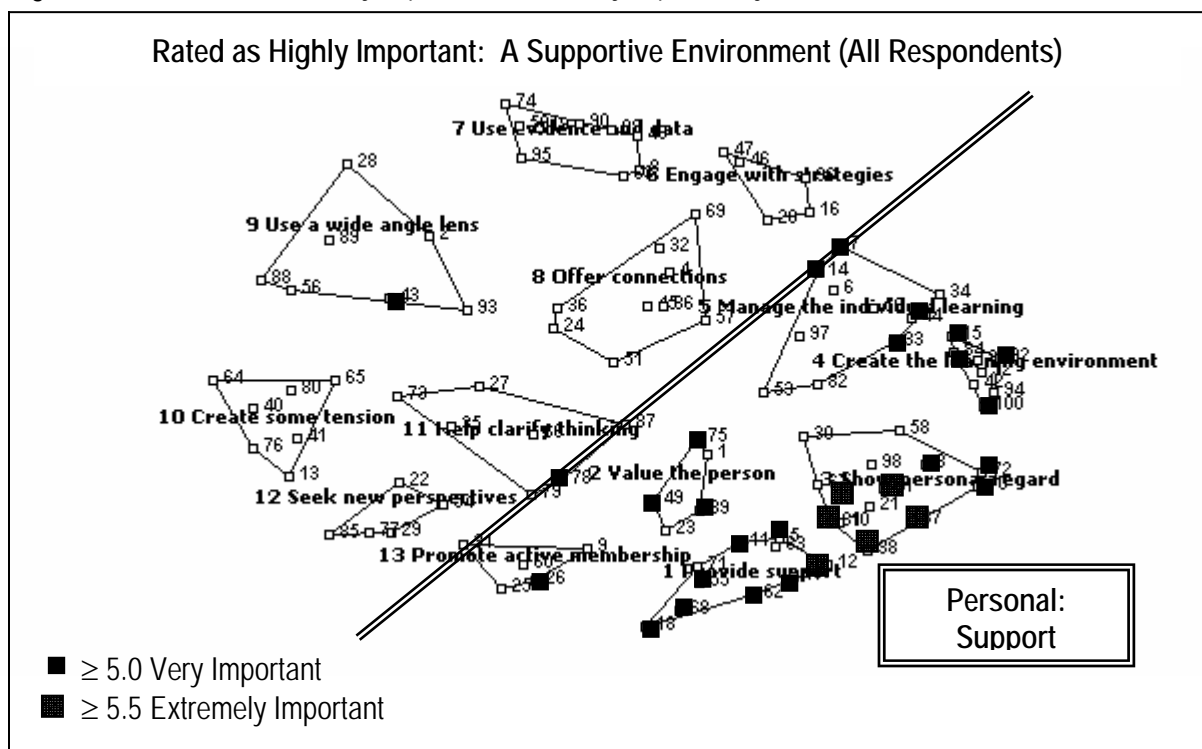
This map shows the view of *Very Important* and *Extremely Important* ranking comparisons between the two groups. Because this is an exploratory story, however, I wanted

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to see if the map would remain the same if I took the rating down one level to "4 *Somewhat Important*." How do the teachers and administrators compare when I examine any common pairing ≥ 4.0[10] on the Likert scale? Figure 5.2 shows the difference in the terrain. Matching the ≥ 4 statements with their points on the map shows that the Personal is not, in fact, the sole similarity in the thinking of teachers and administrators. This gives a broader depiction of similarities in their thinking. These comparisons show agreement within all 13 clusters. This map gives, literally, a wider view of the teaching role of leadership. The focus shifts beyond the Personal, that which feels supportive, and into the west-to-north regions that I identify as Extra-Personal, that which takes us outside of ourselves and has the potential to provoke challenge. This marks the dual roles of teaching and leading—the "soft" and the "hard" aspects—and represents the essence of support versus challenge.

Figure 5.2: 86 Points Rated *Important* ≥ 4.0 by Teachers and Administrators

Recognized as Important: A Holding Environment, Support with Challenge (All Respondents)

Extra-Personal: Challenge

Personal: Support

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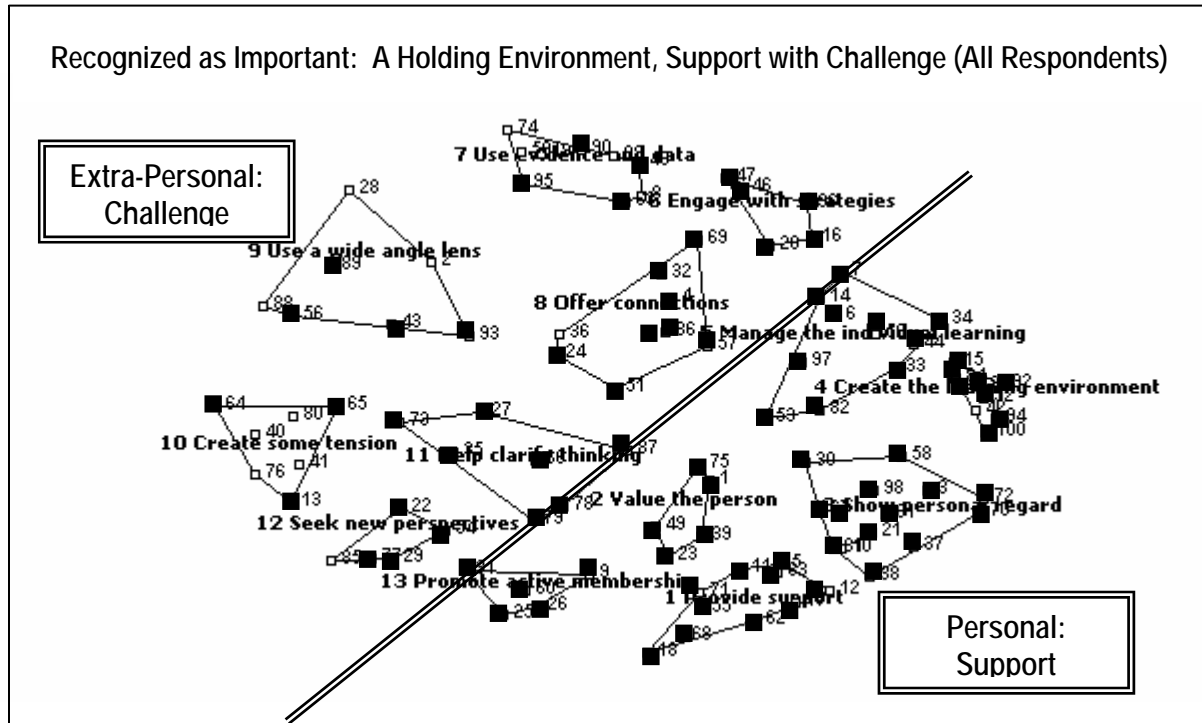
[10] The rating prompt was, "When I think about my work, this idea is..." The three "important" rating options were 4, *Somewhat important to me*; 5, *Very important to me*; and 6, *Extremely important to me*.

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Support and Challenge

This map, then, depicts the holding environment, the abstract space of balancing challenge with support for optimal experience and evolution. Do school teachers and administrators—consciously or unconsciously—recognize, use, and value these counter-components of growth? According to Figure 5.2, the answer appears to be yes. But when the standard is raised to qualities that are *Very Important* or *Extremely Important*, the Extra-Personal side drops off. What is it that accounts for such a substantial difference?

At least part of the answer lies in the disaggregated data. Disaggregating the thinking of teachers and administrators reveals some interesting differences in their views of what it means to support and challenge others. This can be seen by examining the rating and sorting distinctions between the two groups, either by looking at the statistically significant differences or by viewing the teacher-only and administrator-only maps.

A statistical comparison suggested a powerful distinction. Comparisons of teachers' and administrators' ratings of the 100 statements revealed that 24 were significantly different statistically. Allowing for false positives, typically five per cent, 24 percent is noteworthy. Of these, six indicated areas that teachers found *Not Important* while administrators saw them as *Important* (Table 5.1). These provide critical insights into the differences between teachers' and administrators' thinking. All six of these fall into the Extra-Personal (Challenge) side of the map and, as previously noted, four fall within Cluster 7, "Use Evidence and Data." Given the wider range of the administrators' constituency, I am not surprised to see the difference in political awareness. However, in an era that is highly data-driven, as required by state and federal mandates, these strongly different opinions—perhaps a teacher reaction or backlash toward these mandates—profoundly affect the leaders' work. The leader is in a tight spot. No

Child Left Behind *is* public education's current political milieu. Teachers rate political

awareness as unimportant to their work. No Child Left Behind *demands* a high level of data

awareness. Teachers rate data as unimportant to their work. How can school leaders'

construct conversations around these issues when teachers do not agree that they are

important? Awareness of difference of opinion can help administrators understand why it is

so important to create supports (and, I would suggest, scaffolding) for their teachers around

gathering, analyzing, and using data.

#	MEAN TEA	STD TEA	MEAN ADM	STD ADM	p	STATEMENT
						Table 5.1: Areas of Disagreement, with Statistically Significant Differences in Responses
19	3.90	1.47	5.12	0.86	***	Critically analyze/interpret text or information
59	3.30	1.37	4.23	1.39	*	Conduct action research
74	3.63	1.35	5.42	0.86	***	Generate a system to gather data
76	3.97	1.50	4.69	1.01	*	Help change their ways of thinking
88	3.33	1.37	4.92	1.06	***	Political awareness/understand the politics
99	3.63	1.54	4.73	1.15	**	Use brain research

* $p < .05$
** $p < .01$
*** $p < .001$

Returning to the topographical distinctions between the teachers' and administrators'

ratings (Figure 5.3) suggests that the administrators may have a deeper awareness of the need

to challenge as well as support their followers, with more depth (layers of importance)

showing up on both sides of the map. This is further amplified by the dramatic difference in

the teachers' significantly lower rating of Cluster 7 "Use evidence of data" (with its

composite statements #8 *Bring experts in,* #19 *Critically analyze or interpret text or*

information, #48 *Use rubrics*, #59 *Conduct action research*, #63 *Create a repertoire of tools,*

processes, protocols, and graphic organizers, #74 *Generate a system to gather data*, #90

Review data, #95 *Support data-based decision making*, and #99 *Use brain research*).

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Figure 5.3   Comparison of Teachers' and Administrators' Personal and Extra-Personal Topography

Topography Map for All Respondents with TEACHER Ratings
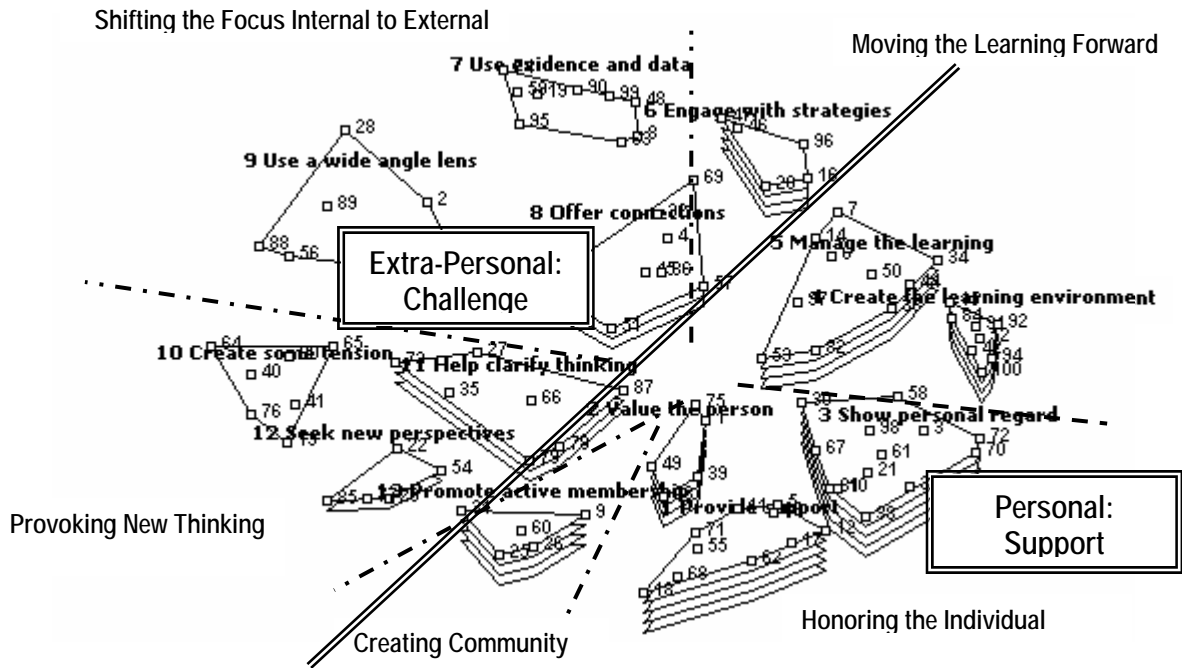
Topography Map for All Respondents with ADMINISTRATOR Ratings
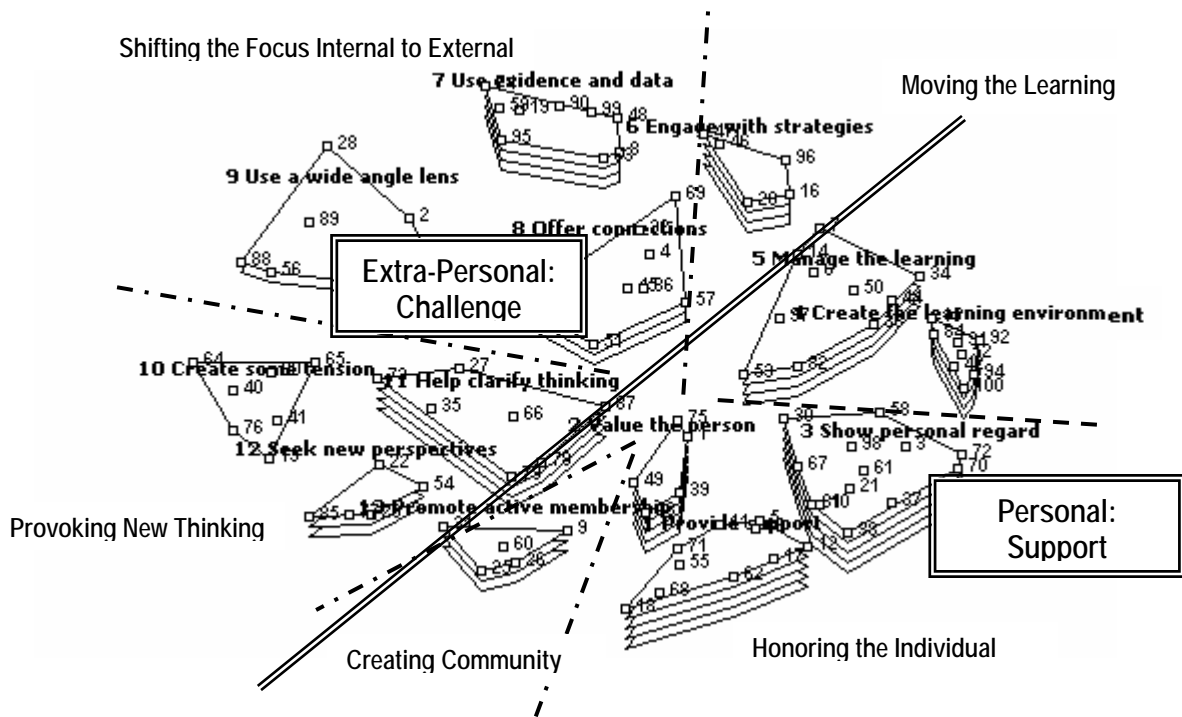
In fact, of the six statistically significant comparisons in which teachers and administrators disagreed, four were from this cluster: *Critically analyze or interpret text or information*, *Conduct action research*, *Generate a system to gather data*, and *Use brain research.* This reveals a markedly different worldview, and suggests an area of which school leaders must be aware as they work to mobilize their staffs. Using evidence and data provides powerful leverage for school improvement (indeed, it is the foundation of No Child Left Behind). School leaders would be wise to be aware of their teachers' opposing point of view regarding its importance.

Interestingly, while administrators rate "Use evidence and data" high as part of their leadership strategy, they, like teachers, rate Cluster 10 "Create some tension" low. I was surprised to see this cluster (with its composite statements #13 *Challenge preconceived notions*, #40 *Surprise with the unexpected*, #41 *Take people out of their comfort zones*, #64 *Keep some things private*, #65 *Do whatever it takes to remove barriers,* #75 *Help change their ways of thinking*, and #80 *Keep people on their toes*) show conspicuously thin on both teachers' and administrators' maps. I propose that most of these statements would fit the characteristics of a disorienting dilemma or cognitive dissonance, considered prerequisite to transformative learning (Dewey, 1910/1997; Kegan, 1994; Heifetz, 1994; Daloz, 1999; Mezirow, 2000; Kegan and Lahey, 2001; Tang, 2003; Drago-Severson, 2004). Yet neither group's rating supports this concept. Why do both teachers and administrators eschew causing discomfort? Because, I maintain, that education is normatively a nurturing vocation. Furthermore, no matter how great the intent or understanding, it takes courage to challenge others' thinking and behavior. This is especially true for school administrators who have traditionally functioned in a culture that Elmore (2000) calls loosely coupled, in which school

leaders are expected to buffer their teachers from outside influences and, ironically, maintain the status quo. This is supported by Kegan and Lahey's theory of immunity to change (2001), which maintains that stasis is, in fact, natural within a larger system of competing commitments (whether personal or organizational).

Looking again at the cluster distinctions between the teachers' and administrators' sorting of the statements (Figures 5.4 and 5.5) suggests that teachers have a far greater investment in the nurturing side of the balance. In fact, on the map created using teacher data only, the regions that fall into the Extra-Personal (Challenge) terrain are notably thin: Cluster 6 "Project management," Cluster 7 "Objective sources," Cluster 8 "Evidence and data," Cluster 9 "Lens changing," and Cluster "Others' perspectives." This imbalance may be a reflection of the isolated nature of teaching and the effect of loose coupling. That is, having been buffered from external challenges themselves, teachers are less likely to challenge the status quo within their own environments. Comparing the Extra-Personal terrain on the teacher map with the administrator map reinforces the conclusion that the leaders' worldview encompasses a deeper understanding or experience of the necessity of challenge as a companion to support. In fact, administrator data sorted without the teacher data yields a cluster that the administrators in the reconvened focus group named "Political awareness." Its component statements include #4 *Anticipate problems*, #18 *Create community*, #58 *Communicate the same message to everyone*, #88 *Political awareness/understand the politics*, #91 *Show models of my expectations*, #93 *Show that it's part of my skill set to do things differently to reach a goal*, and #93 *Understand that people fear change*.

Figure 5.4

Concept Map Using Teacher Data Only

Using Resources

Extra-Personal:
Challenge

8 Evidence and data   90 7 Objective sources

Moving the Learning Forward

9 Lens changing

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5 Decision making rationale

6 Project management

4 Environment for learning

11 Individual connections   2 Meeting needs   3 Confidence building

10 Others' perspectives

1 Personal regard

Personal:
Support

12 Involvement   13 Empowerment

Shifting Perspectives

Honoring the Individual

Creating Community

Figure 5.5

Concept Map Using Administrators Data Only

Moving the Work Forward

8 Proven methods

9 Evidence and data

6 Engagement   5 Individual needs

Honoring the Individual

Extra-Personal:
Challenge

4 Others' perspectives

10 Change management   7 Proactivity and initiative

11 Challenge the status quo

3 Appreciation

2 Safety

Personal:
Support

12 Political awareness

13 Self disclosure   1 Relationships

Being a Change Agent

Building the Community

Intra-Personal:
Buffering the Two

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In addition to *political* awareness, administrators reveal a *personal* awareness that shows up only when their data are disaggregated and sorted alone. I named this cluster "Self-disclosure," based on the reconvened focus group's proposal "Show my humanness," suggesting to me an Intra-Personal aspect of self-expression or self-awareness. It shows up in the south-central region of their map (Figure 5.5), as a bridge or foundation between the regions of Support and Challenge. Its statements include #11 *Build relationship(s) outside the instructional day*, #39 *Show that the work is worthwhile*, #42 *Talk about why I do what I do*, #52 *Be consistent (in what I write, speak, and convey in other ways)*, #56 *Clarify the issue for myself*, #64 *Keep some things private,* #70 *Establish credibility*, #72 *Express my own passion, enthusiasm*, #84 *Model risk taking; make myself vulnerable*, and #92 *Show that I'm a learner too.*

To what might these differences be attributed? Their wider constituency to whom to answer —hundreds of children and their families, a staff of teachers and support personnel, their geographic and political community, a board of education and central office—forces administrators to think and work more globally. The sense of self-expression may come from role identification, whether that self-image is "manager," "leader," or "boss." Equally, it may come from a lack of collegiality and support that often accompanies school administration. As public as the role of school principal may be, it is an even more isolating profession than teaching. Whereas teachers have many other colleagues on staff, school administrators, especially principals, usually do not. As they are buffeted by opposing forces, administrators hold onto a sense of self. Their self-disclosure may be a form of self-*support* when administrators find themselves in the crossroads of competing commitments—between community building (Support) and change agency (Challenge).

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Implications for Practice and Theory

Implications for Practitioners

There are a number of implications for current practice and future research. As a district level leader, I have the opportunity to work with school administrators directly, whether formally in an evaluative capacity or informally in a coaching role. I also have the opportunity to work with groups of administrators in professional development venues such as district gatherings or theme-related workshops and seminars. How might those such as I who teach or coach leaders use these findings? Two opportunities come to mind.

1. These findings offer common ground for conversations between administrators and teachers. Moving problem solving from reactive and responsive to systemic and generative requires that school leaders see and help others understand how all components within the system are related. Assumptions born of hierarchical or contractual (union versus management) cultures are hard to dislodge or leverage. An appreciation of the similarities in their work and commonalities in their thinking can help administrators move conversations from reactive or responsive to systemic. Administrators can find many areas of common thinking as entry ways to conversation or collaboration. One final look at the findings reveals six statements that I call the Big Six. These ideas carried twofold clout—they showed up on both groups' original brainstormed lists *and* they were rated *Very Important* or *Extremely Important* by both groups. The Big Six ideas are

> #7 *Break down tasks (into manageable chunks or steps)*
> #12 *Build trust*
> #17 *Create a safe space*
> #18 *Create community*
> #61 *Consistently hold & communicate high expectations*
> #75 *Have a lot of dialogue (two-way communications)*

These ideas provide a powerful entrée into areas that both groups agree upon and value highly in their work. This offers leaders the opportunity to discuss with their staffs what these ideas—perhaps now so overused that they have become cliché—really mean in practice. What assumptions do we hold about these ideas? How can returning to these concepts affect teachers' and administrators' efforts, individual and collaborative, to increase their students' learning and strengthen their school cultures?

2. These finding also provide discussion points or curricular components for administrator professional development, principal preparation programs, or entry-level administrator support. Staff developers, graduate level instructors, and mentors can use the statements, the maps, or the data comparisons as part of their administrator development programs. The clusters from the administrator map (Figure 5.5) have strong face validity when compared with national standards for school leaders. This was pointed out by David, one of the participants in the administrator focus group, who responded to my member checking by offering a comparison between research of effective principal practices[11] (Waters, Marzano, & McNulty, 2003) and the concept maps' clusters. Of 21 statistically derived factors of effective school leadership, the concept maps run parallel to ten of them.

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[11] This meta-analysis was published by Mid-Continent Research for Education and Learning (MCREL).

Figure 5.6 MCREL (2003) Leadership Factors Parallel to Administrator-Only Map

MCREL Factor	Administrators' Clusters or Regions
Culture: The extent to which the principal fosters shared beliefs and a sense of community and cooperation.	"Building the Community" which includes Cluster 1 Relationships, Cluster 2 Safety, and Cluster 3 Appreciation
Focus: The extent to which the principal establishes clear goals and keeps those goals in the forefront of the school's attention	Cluster 7 Proactivity and initiative
Visibility: The extent to which the principal has quality contact and interactions with teachers and students.	Cluster 13 Self-disclosure
Contingent rewards: The extent to which the principal recognizes and rewards individual accomplishments.	Cluster 3 Appreciation
Input: The extent to which the principal involves teachers in the design and implementation of important decisions and policies.	Cluster 4 Others' perspectives
Affirmation: The extent to which the principal recognizes and celebrates school accomplishments and acknowledges failures.	Cluster 3 Appreciation
Relationship: The extent to which the principal demonstrates an awareness of the personal aspects of teachers and staff.	Cluster 1 Relationships and Cluster 5 Individual needs
Change agent: The extent to which the principal is willing to and actively challenges status quo	"Being a Change Agent" which includes Cluster 10 Manage change, Cluster 11 Challenge the status quo, and Cluster 12 Political awareness
Ideals/Beliefs: The extent to which the principal communicates and operates from strong ideals and beliefs about schooling.	Cluster 13 Self-disclosure
Monitors/Evaluates: The extent to which the principal monitors the effectiveness of school practices and their impact on student learning.	Cluster 9 Evidence and data
Situational awareness: The extent to which the principal is aware of the details and undercurrents in the running of the school and uses this information to address current and potential problems.	Cluster 12 Political awareness

Suggestions for Future Research

This study provided a first step for an empirical comparison of the intersection of teaching and leading and fills a gap in the scholarly literature. Concept mapping provided a useful platform for this exploration. Its mixed methods design helped me to explore and begin to explain the landscape of school leadership—with the "particularity and generality," "closeness and distance," and "synthesis and analysis" suggested by Greene and Caracelli (1997, p. 13). This exploratory study serves as a launching point for future research. I recommend and look forward to additional study in the following areas.

1. It would be important to examine my assumption that the Personal equates to Support and the Extra-Personal relates to Challenge. This might be accomplished by a series of interviews with teachers about how they experience their leaders' expression of the concepts and clusters on the map. Or it might be accomplished by in-depth interviews with administrators to help discern differences between espoused theory and theory in use (Argyris & Schön, 1978; Senge, 1990a) of these concepts.

2. It would be informative to disaggregate the respondent data further. It is possible to run another quantitative analysis of the data to see if there is a difference in the Personal and Extra-Personal between elementary and secondary teachers, between males and females, between suburban and urban, and between educators with different years of experience. These variables were not included in this study. It would be useful, for instance, to ascertain if the balance of support and challenge might be gender-related and, if so, what implications in practice there might be. Or, does support and challenge increase in importance or change in other ways given more teaching or leading experiences? If so, can the ability to create a holding environment be taught or developed?

3. Of the 24 statistically significant comparisons in the teachers' and administrators' thinking, 17 are areas of agreement (Table 5.2). In every case but one (#32 *Provide a connection to the real world*), administrators rate ideas significantly higher than teachers. Why? Is this espoused theory? Is it a reflection of their political awareness, causing them to give a "correct" answer? Their consistently higher ratings suggest a worldview in which they deem almost every idea important, and suggest why it is so challenging for many administrators to prioritize and manage their own work lives. This leads to an additional research path.

Table 5.2: Areas of Agreement, with Statistically Significant Differences in Responses

#	MEAN TEA	STD TEA	MEAN ADM	STD ADM	p	STATEMENT
4	4.60	1.22	5.19	0.90	*	Anticipate problems
21	4.83	1.05	5.50	0.81	**	Ensure success
23	4.60	1.48	5.38	0.85	*	Foster ownership & buy-in
32	5.40	0.56	4.62	1.60	*	Provide a connection to the real world
39	5.20	1.00	5.73	0.53	*	Show that the work is worthwhile
56	4.47	1.20	5.35	1.02	**	Clarify the issue for myself
57	4.30	1.49	5.23	1.18	*	Combat the idea that "it's always been done that way"
58	4.30	1.39	5.35	0.94	**	Communicate the same message to everyone
65	4.23	1.14	5.00	1.06	*	Do whatever it takes to remove barriers
66	4.27	1.36	5.12	1.07	*	Eliminate the idea of a hidden agenda
70	5.13	0.82	5.65	0.75	*	Establish credibility
73	4.27	1.26	5.08	0.84	**	Find common ground from which to make decisions
89	4.27	1.20	5.08	1.02	**	Reconnect with the purpose/values/rationale
90	4.07	1.23	5.65	0.80	***	Review data
95	4.03	1.30	5.69	0.55	***	Support data-based decision making
97	4.27	1.36	5.00	1.10	*	Teach efficacy
98	4.30	0.99	5.00	1.13	*	Understand that people fear change

$^{*} p < .05$
$^{**} p < .01$
$^{***} p < .001$

4. It would be enlightening to delve more deeply into master administrators' thinking—those who participated in the initial focus group, for instance—to create individual concept maps. This could be accomplished by creating a think aloud process with

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individuals, asking them to talk through their thinking processes—how and why and what they know—as they sort the 100 statements. A series of semi-structured interviews could reveal specific applications and examples of the various Personal and Extra-Personal concepts.

5. Since cluster analysis is akin to factor analysis, it would help to validate this study's findings by elaborating on the comparison with factors created by MCREL (Mid-Continent Research for Education and Learning) in their meta-analysis of effective leadership. It would also be helpful to compare this study's results with state and national leadership standards such as Interstate School Leaders Licensure Consortium (ISLLC) and various states' administrator standards and professional organizations' standards such as the Association of Elementary School Principals (NAESP) or National Association of Secondary School Principals (NASSP).

6. Because all the administrators in this study are public school leaders, they began their careers as teachers. Certainly, this influences the teaching role of leadership for school administrators. What about business or political leaders who come from non-education backgrounds? An important next step for this line of research is to apply the concept mapping process to leadership outside of education. A launching point would be to have executive or political leaders rate and sort the 100 statements to see how (and if) they conceptualize the Personal, Extra-Personal, and Intra-Personal.

Mixed Methods and Concept Mapping

In addition to the contextual implications of this inquiry, there are also methodological implications. The concept mapping process afforded me the integrated, dialectical perspective I sought for my inquiry. The Concept Systems® program provided me a platform with which to create the cognitive maps I sought. Experiencing the process and using the Concept Systems® platform gives me an appreciation for the strengths and an understanding of the limitations of this approach; adds peripheral, unintended outcomes to my findings; and introduces still more questions for my research. The following highlights my observations—an eclectic list—about the process of concept mapping.

1. The quality of the focus statements is critical. "Your findings can only be as good as your focus statements," my statistics consultant repeatedly advised me. Therefore the advance work for the focus group data gathering was critical. My facilitator and I conducted three pilot groups in preparation for this study. After each, we debriefed and met with my statistics consultant, who had extensive marketing experience with cluster analysis. We entered the statement generating groups well prepared. This is critical to the outcome of the final cluster (factor) analysis. Therefore, I recommend giving the utmost attention to how the focus statements are generated and, later, reduced.

2. Teachers have powerful ownership of their ideas. One surprise in both the pilot groups and in the reconvened teacher-administrator focus group was the intensity of the participants' ownership of their words. For instance, when I asked the teachers to reduce their own statement list, I encountered animated resistance. "All these ideas are important," they insisted. "We don't want to change anybody's ideas. We wouldn't do that to students." Therefore, I elected to complete the statement reduction on my own. Nonetheless, I

encountered the same animated resistance among some of the teachers in my final

reconvened focus group when they saw how others had sorted and how the software program

had clustered "their" ideas. Because a different group had sorted and rated the ideas, they felt

less connected and committed to the cluster naming outcome. Therefore, I recommend

concept mapping as a research method in an action research or participatory research project

in which the teachers have an authentic investment in the outcome. This same phenomenon

did not occur with the administrator groups, either in the pilot or in the research setting. The

administrators were more interested in what others thought and in making connections

among the ideas.

3. The focus group environment has the potential to serve as a catalyst to provoke

participants' thinking. In the pilot groups as well as both research groups, participants

commented on the power of the 90-minute written reflection and brainstorming activity.

Feedback in each instance was positive. For example,

> The first time we met had meaning for me. It was a genuine, authentic conversation
> among engaged and experienced professionals. Hearing their ideas and examining my
> own was very helpful and stimulated good/valuable reflection.
> "Dorothy," high school teacher

> I could hardly keep up with my writing because my thoughts were coming so fast.
> Then I thought the discussion was good. Teachers were "in synch," so to speak. We
> kept building on each others' thoughts. I enjoyed this stage.
> "Erin," high school teacher

> It made me think about my own teaching and what I value in my classroom.
> Whenever someone would say something I'd find myself thinking of specific
> instances in my class. I sometimes found that I thought of an idea in a completely
> different way than someone else. I thought the questions were thought provoking.
> "Mitch," elementary teacher

> I was comforted during the focus group by the similar experiences that we all shared.
> It was interesting to see how individuals emphasized different strategies—presumably
> based on their personalities and personal preferences.
> "David," elementary assistant principal

It really made me think about what I do and why I do it. Principals need more time for this kind of discussion and reflection.
"Nora," elementary principal

In this case, the research process served an authentic purpose that sparked focus group participants' energy and reflection. "I left the room with more energy than I came in with," said Dorothy.

Strengths and limitations of concept mapping

I found concept mapping a powerful way to link theory and practice. As I've previously noted, it offers a tool for examining an issue using both quantitative and qualitative means. Most noteworthy is that it uses the participants' own language and although the data analyses are statistical, the outcome is visual, not a chart or table, but a graphic. In every case where I have shown a map from this study to others—whether they be educators or not—they have been intrigued by the map and the process. The maps consistently spark conversation about the cluster factors and about the mapping process. The outcome of the method is "user friendly," whether the user is a participant or practitioner. However, the method also allows researchers access to a wealth of data for statistical analyses. The data set from this study can easily serve as a launching point for future research.

The method has its limitations, both qualitative and quantitative. First, it is important to remember that the ratings are by self-report. Are the responses normative or, in fact, behavioral? Did some participants' awareness that I, the researcher, am also a school administrator influence their responses? Whether the respondents' ratings represent espoused theory or theory in use is beyond the scope of this study. Also, I note that using a Likert scale for gathering opinion does not account for the variability and relativity among respondents

and that my measure does not calibrate one respondents' meaning of the importance ratings to another respondents' meaning.

Furthermore, though the maps' stress values (measures of statistical reliability) fall into the acceptable range for concept mapping, they are higher than expected in psychometric environments. Trochim (1993) writes that high stress values may imply complexity in the similarity matrices or variability in the way the statements are sorted. Given that the range of sorted categories in this study went from two to 23, a higher stress value may be expected. I also note that the range and scope of the sample may limit the results to the participants in the study. This is a limitation of the method and of the study. However, this dissertation is intended as exploratory, not statistically generalizable.

Embarking on Terra Nova

This inquiry represents a journey into terra nova. The purpose of the study was to break ground. First of all, little research exists that compares the thinking of teachers with the thinking of administrators and none at all, to the best of my knowledge, to the intersection of leader as teacher. Second, applying concept mapping to education leadership was groundbreaking. This form of structured conceptualization has been used in the health care industry and in other business and technical applications, but it is not widely known in the field of education. Most personally, delving into the territory of mixed methods and quantitative inquiry was a trek into "new land" for me. At times, I felt exhilarated by my exploration and discoveries. At times, I traveled quickly and covered a lot of ground. At times, I felt disoriented and lost. I had to travel slowly, lose time, or backtrack.

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As a researcher, my goal was to create a series of cognitive maps. The process offered statistical evidence of the teaching role of leadership, and the maps visually and powerfully depict the thinking of teachers and administrators. As a practitioner, I am reminded of the familiar adage *the map is not the journey*. Each school leader undergoes a unique and personal trek, driven by many individual and contextual variables. This study explored the landscape of leading and teaching using educators' own language. I believe this is its greatest value. It charts the territory of the complex, everyday life of educators. One look at the data suggests that school administrators, like teachers, feel more comfortable creating and supporting relationships than challenging and changing thinking. Another view indicates that leaders and teachers similarly value a broad range of strategies, both Personal and Extra-Personal, for mobilizing cognitive change. Still another reveals a cluster unique to leaders, an Intra-Personal perspective on change agency that provides a buffer between support and challenge. These findings suggest that there is a teaching role to leadership. Wittingly or not, each school leader assumes this role. How much better it is to take with us a map, not to point *the* way, but to let us see the depth and expanse of an entire territory in order to begin navigating our way through it.

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APPENDICES

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Appendix A
Ethics Committee
IRB Approval

June 15, 2006

Dear Mary Ellen,

As Chair of the Institutional Review Board (IRB) for Leadership and Change, Antioch University, I am granting you approval to conduct your dissertation research study titled:

The Teaching Role of Leadership: Mapping the Thinking of Administrators and Teachers.

Your study is approved based on the information provided in your amended and revised Ethics Application including the Informed Consent.

Your study is approved from June 15, 2006 through June 14, 2007. If your data collection should extend beyond this time period, you are required to submit a Request for Extension Application to the IRB.

Your study will be overseen by Dr. Jon Wergin, Chair of your Dissertation Committee. Any variation in procedure in the treatment of the participants must be reported to me and subsequently approved by the IRB through your submission of a revised Ethics application and Informed Consent.

Congratulations! I wish you the best in your very interesting research project.

Sincerely,

Carolyn Kenny, Ph.D.
Chair, IRB Committee
Professor of Human Development and Indigenous Studies
Leadership and Change Program
Antioch University
Office Tel/Fax: 805-569-1265

Appendix B: Recruitment Letter

June 2006

Dear

I am assistant superintendent for West Clermont Schools in Cincinnati, Ohio, and a doctoral candidate at Antioch University. This summer I'll be completing the research for my dissertation. I am researching leadership behaviors in the field of education and I would like to talk with people who are recognized by their colleagues and/or their supervisors as masters at their craft.

I'd appreciate your help identifying individuals whom I can approach to participate in this study and who fit the following profile:

"Master Teacher"
- has at least three years experience in a teaching position
- has demonstrated the ability to reflect on his or her work
- has demonstrated the ability to articulate his or her thinking to others
- is recognized by his or her students or colleagues as someone who empowers students
- is recognized by his or her students or colleagues as someone who promotes higher order thinking
- is recognized as someone who affects significant change(s) within his or her students
                                        - OR -
"Master Administrator"
- has at least three years leadership experience in an administrative position
- has demonstrated the ability to reflect on his or her work
- has demonstrated the ability to articulate his or her thinking to others
- is recognized by his or her students or colleagues as someone who empowers adults
- is recognized by his or her students or colleagues as someone who promotes higher order thinking among adults
- is recognized as someone who affects significant change(s) within his or her followers

Would you please consider recommending to me either a teacher or a school administrator (or both) from your recent experience who fits these profiles and whom I may approach to participate in this study? If so, please contact me by telephone at 513.943.5018, or email at msteele-pierce@phd.antioch.edu. In the meantime, if you have any questions or want further information on the length and scope of this study, please contact me. Thank you.

Sincerely,

Mary Ellen Steele-Pierce
Assistant Superintendent for Teaching and Learning
West Clermont Local Schools, Cincinnati, Ohio
Doctoral Candidate, Ph.D. in Leadership and Change
Antioch University, Yellow Springs, Ohio

Appendix C: Informed Consent for Focus Group

Please circle appropriate identifiers:
Male | Female
Elementary | Middle/Junior | High School | All (K-12)
Teacher | Administrator
School demographic: Urban | Suburban | Rural
Total years experience in public education _____

To: Research Participants
From: Mary Ellen Steele-Pierce
Date: June 2006
Re: Focus Group for Dissertation Research

The purpose of this research is to learn more about how educators (teachers and administrators) think about certain aspects of their work. The purpose of this focus group is to generate a list of goals and strategies that educators have for empowering others and promoting changes in their thinking. This focus group will last approximately 90 minutes, as will a second follow-up session. This study is being conducted by Mary Ellen Steele-Pierce, Ph.D. candidate, Antioch University, Yellow Springs, Ohio. Participants in this research will receive no direct benefit to themselves, nor should they experience any harm or discomfort from their participation. If you have any questions regarding your rights, please contact Dr. Carolyn Kenny, Professor of Human Development and Indigenous Studies, Ph.D. in Leadership and Change, Antioch University, ckenny@phd.antioch.edu, 805-569-1265.

Focus Group Consent

I agree to participate in an audio recorded focus group for a study about how educators think about certain aspects of their work, including goals and strategies for empowering others and promoting changes in their thinking. I understand that I will be asked about my thinking and my experience as a teacher or administrator. I understand that I do not have to answer any questions I choose not to answer. I understand that the data compiled from this focus group will not be identified by individual name and that any excerpts taken from this activity, written or spoken, will disguise all names of persons and places to preserve my anonymity and privacy. I understand that I will not receive feedback about the focus group, but that I can request a copy of the findings following its completion. I also understand that should I feel like discontinuing my part in the focus group, for any reason, I may do so at any time.

Signature of Participant _____   Date_____

Appendix D: Protocols for Statement Generating

Protocol for Statement Generating: Teachers

Needed:
Chart paper and chart markers
Audio recorder
T-charts for note making (8½x11 paper divided vertically. Left header "What?" Right header "Why?")

Acknowledge that you will be reading a script, and why it's important to read verbatim (because you'll be gathering data from several sources and you need to assure each group is asked the same questions). Acknowledge your experience that for some people this may sound formal or feel intense (... like a standardized test).

You are participating in a focus group to learn more about how expert teachers think about certain elements of their work. In the next 60 minutes we'll be tapping your expertise in order to generate a series of statements about your work.

Here is our procedure. I'll give you one question at a time and allow a few minutes for you to jot down some ideas. Then we'll have some discussion to uncover your thinking and to tap into your expertise.

We're seeking to create a concise list that best captures a variety of ideas about what you do but especially about why you do it. We'll work to generate phrases or words that describe your goals for your work. I'll serve as recorder to write down your thinking on chart paper, and we'll have an opportunity at the end to review and edit our list.

Do you have any questions? ... *allow wait time ...*

If you're ready, we'll begin. You'll begin by listening to some prompts and jotting down some notes just to help you keep track of your ideas. I have some t-charts that you may use as a graphic organizer for your list making. These notes are for your own use. We won't be collecting them.

Let participants know that they'll have about 4-5 minutes to think about and respond to each prompt. Remind them that given the variety of ways people think, they should refrain from talking so it doesn't disturb other people. Assure them there will be plenty of time for talking at the end of their note making.

5. Think of a very specific instance when you did something to help your students see another perspective or think another way about a problem or an issue. Think about what you did and why you chose to do that. Jot down a few notes to help you remember.
    . . . . *allow appropriate time for reflection and note making* . . . .

6. Think of a very specific instance when you held high expectations for your students. Think about what you did and why you decided to do it that way. Jot down a few notes.

. . . . allow appropriate time for reflection and note making . . . .

7. Think of a very specific instance when you did something to support your students during a challenge or steep learning curve they were facing. Again, think about what you did and why you chose to do it that way. Jot down a few notes to help you remember.

. . . . allow appropriate time for reflection and note making . . . .

8. Think of a very specific time when you did something to help your students think critically about a problem or an issue. What did you do? Why did you do that? Again, jot down a few notes.

. . . . allow appropriate time for reflection and note-making . . . .

Now, looking at your notes and thinking about some very specific experiences, let's generate a concise list that captures a variety of ideas about your thinking. As you think about these scenarios, <u>what phrases or words describe your goals and strategies for your work</u>?

At the end of the brainstorming, recap the goal for the session and then assist the group in reviewing and if necessary revising the list.

1. You are participating in a research project to learn more about how school teachers think about certain aspects of their work. We are working to generate a concise list to describe your goals and strategies for your work.

2. First, let's look at the list to eliminate any phrases that do not directly represent the teacher (that is, are about what students do, not what teachers think or do)

3. Now let's check our language for clarity, that is, so that jargon or idiosyncratic word use is made clear or eliminated. The purpose is to help ensure that other educators can look at the list and have a relatively clear understanding of what the concepts mean.

When the group reaches consensus on the final list of statements, thank the group for their work. The researcher will explain next steps.

Protocol for Statement Generating: Administrators

Acknowledge that you will be reading a script, and why it's important to read verbatim (because you'll be gathering data from several sources and you need to assure each group is asked the same questions). Acknowledge your experience that for some people this may sound formal or feel intense (... like a standardized test).

You are participating in a focus group to learn more about how expert school administrators think about certain elements of their work. In the next 60 minutes we'll be tapping your expertise in order to generate a series of statements about your work.

Here is our procedure. I'll give you one question at a time and allow a few minutes for you to jot down some ideas. Then we'll have some discussion to uncover your thinking and to tap into your expertise.

We're seeking to create a concise list that best captures a variety of ideas about what you do but especially about why you do it. We'll work to generate phrases or words that describe your goals for your work. I'll serve as recorder to write down your thinking on chart paper, and we'll have an opportunity at the end to review and edit our list.

Do you have any questions? ... *allow wait time* ...

If you're ready, we'll begin. You'll begin by listening to some prompts, and jotting down some notes just to help you keep track of your ideas. I have some t-charts that you may use as a graphic organizer for your list making. These notes are for your own use. We won't be collecting them.

Let participants know that they'll have about 4-5 minutes to think about and respond to each prompt. Remind them that given the variety of ways people think, they should refrain from talking so it doesn't disturb other people. Assure them there will be plenty of time for talking at the end of their note making.

1. Think of a very specific instance when you did something to help your teachers see another perspective or think another way about a problem or an issue. Think about what you did and why you chose to do that. Jot down a few notes to help you remember.
   . . . . *allow appropriate time for reflection and note making* . . . .

2. Think of a very specific instance when you held high expectations for your teachers. Think about what you did and why you decided to do it that way. Jot down a few notes.
   . . . . *allow appropriate time for reflection and note making* . . . .

3. Think of a very specific instance when you did something to support your teachers during a challenge or steep learning curve they were facing. Again, think about what

you did and why you chose to do it that way. Jot down a few notes to help you remember.

 . . . . *allow appropriate time for reflection and note making* . . . .

4. Think of a very specific time when you did something to help your teachers think critically about a problem or an issue. What did you do? Why did you do that? Again, jot down a few notes.

 . . . . *allow appropriate time for reflection and note-making* . . . .

Now, looking at your notes and thinking about some very specific experiences, let's generate a concise list that captures a variety of ideas about your thinking. As you think about these scenarios, <u>what phrases or words describe your goals and strategies for your work</u>?

At the end of the brainstorming, recap the goal for the session and then assist the group in reviewing and if necessary revising the list.

1. You are participating in a research project to learn more about how school leaders think about certain aspects of their work. We are working to generate a concise list to describe your goals and strategies for your work.

2. First, let's look at the list to eliminate any phrases that do not directly represent what a school leader does or thinks

3. Now let's check our language for clarity, that is, so that jargon or idiosyncratic word use is made clear or eliminated. The purpose is to help ensure that other educators can look at the list and have a relatively clear understanding of what the concepts mean.

When the group reaches consensus on the final list of statements, thank the group for their work. The researcher will explain next steps.

Appendix E: Protocol for Card Sorting

This study is being conducted by M.E. Steele-Pierce, Ph.D. candidate, Antioch University, Yellow Springs, Ohio. Your participation is voluntary, and you may stop the activity at any time for any reason.

The purpose of this study is to see how a group of ideas about education are similar and dissimilar.

This is an individual, not a group or partner activity. You'll be working by yourself on this procedure. It will take you about 25-30 minutes [the range has been 15 minutes to 45 minutes] to complete. There are no right or wrong answers, just your own opinion.

The purpose of this activity is to look for similarities among ideas.
THERE ARE TWO PARTS. YOU CAN DO THEM IN EITHER ORDER.

- Read through each card and rate each idea on this 1-6 scale. Just go with your first impression. Use this scale:

This idea is
6 extremely important to me
5 very important to me
4 somewhat important to me
3 not particularly important to me
2 not very important to me
1 not at all important to me
when I think about my work.

- SORT these cards into a series of stacks. Categorize the statements in whatever way makes sense to you.

   There are two restrictions:
   - There must be more than one stack at the end of your sorting.
   - Each card cannot be its own stack.

When you are finished, please fasten each stack together securely with the paper clips or rubber bands provided. Put the cards back in your envelope. Please check the envelope to be sure you've marked your demographic data.

THANK YOU FOR YOUR HELP

Allow private response options for communication to me

[1]

Allow/provide job shadowing

[2]

Answer their questions

[3]

Anticipate problems

[4]

Be their cheerleader/offer encouragement

[5]

Begin from and work at the place where they are (start where they are)

[6]

Break down tasks (into manageable chunks or steps)

[7]

Bring experts in (from within or outside the school)

[8]

Build/expect/teach tolerance for others

[9]

Build rapport

[10]

Build relationship(s) outside the
instructional day
[11]

Build trust
[12]

Challenge preconceived notions
[13]

Change plans when needed/be flexible

[14]

Clarify expectations
[15]

Consider learning styles
[16]

Create a safe space
[17]

Create community
[18]

Critically analyze/interpret text or
information
[19]

Engage them, provide a "hook"
[20]

Ensure success

[21]

Find ways that require people to see other perspectives

[22]

Foster ownership & buy-in

[23]

Give choice(s)

[24]

Give everyone a chance to lead

[25]

Give everyone an opportunity to be heard

[26]

Give individuals processing time

[27]

Grade together

[28]

Help them see both sides of an issue

[29]

Meet individual needs

[30]

Promote active membership within the community/democracy

[31]

Provide a connection to the real world

[32]

Provide immediate and frequent feedback

[33]

Provide routines/rituals/procedures

[34]

Put their work "out there," show public support

[35]

Role play

[36]

Show I am interested, that I appreciate what they do

[37]

Show respect for individuals

[38]

Show that the work is worthwhile

[39]

Surprise with the unexpected

[40]

Take people out of their comfort zones

[41]

Talk about why I do what I do

[42]

Talk with colleagues

[43]

Teach/expect/model responsibility and accountability

[44]

"Turn & Talk" (one-to-one discussion)

[45]

Use inquiry-based instruction

[46]

Use real-world documents

[47]

Use rubrics

[48]

Value their time, use time wisely

[49]

Work with individuals

[50]

Ask questions in one-to-one conversations

[51]

Be consistent (in what I write, speak, and convey in other ways)

[52]

Be open ("transparent thinking")

[53]

Become informed by their perspectives

[54]

Celebrate with them

[55]

Clarify the issue for myself

[56]

Combat the idea that "it's always been done that way"

[57]

Communicate the same message to everyone

[58]

Conduct action research

[59]

Confront behavior (individually or as a group)

[60]

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Consistently hold and communicate high expectations

[61]

Convince people they can do a good job, that you believe in them

[62]

Create my own repertoire: tools, processes, protocols, graphic organizers

[63]

Do keep some things private (don't reveal everything you are thinking)

[64]

Do whatever it takes to remove barriers

[65]

Eliminate the idea of a hidden agenda

[66]

Empathize/be empathetic regarding the difficulty of the task

[67]

Empower them

[68]

Engage the group in an "organizer" or "strategy" activity

[69]

Establish credibility

[70]

Establish or offer a support system so
they'll feel braver

[71]

Express my own passion, enthusiasm

[72]

Find common ground from which to
make decisions

[73]

Generate a system to gather data

[74]

Have a lot of dialogue (two-way
communication)

[75]

Help change their ways of thinking

[76]

Help people examine the issue, not
blame others

[77]

Help people find their own answers,
make their own decisions

[78]

Help them see me as human, not as a
"role" or "title"

[79]

Keep people on their toes

[80]

Listen

[81]

Meet with small groups

[82]

Make them feel safe

[83]

Model risk taking; make myself
vulnerable (mistakes are okay)

[84]

Pointedly ask people to change their
behavior

[85]

Present the "big picture"

[86]

Promote and support self-reflection

[87]

Political awareness/understand the
politics

[88]

Reconnect with the
purpose/values/rationale

[89]

Review data

[90]

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Show models of my expectations
[91]

Show that I'm a learner too
[92]

Show that its part of my skill set to do
things differently to reach a goal
[93]

Stay highly visible
[94]

Support data-based decision making
[95]

Support differentiated instruction
[96]

Teach efficacy
[97]

Understand that people fear change
[98]

Use brain research
[99]

Use humor; make it fun
[100]

Appendix G: Table of Statement Rating Data

Comparison of Teacher Sample and Administrator Sample Statement Ratings

Statement Number, Mean, Standard Deviation, P-Value, Probability, and Statement Text

#	MEAN TEA	STD TEA	MEAN ADM	STD ADM	P Value	*p*	STATEMENT
1	4.47	1.41	4.42	0.90	0.8895		Allow private response options for communication to me
2	3.67	1.42	3.65	1.44	0.9735		Allow/provide job shadowing
3	5.27	1.05	5.38	0.85	0.6444		Answer their questions
4	4.60	1.22	5.19	0.90	**0.0417**	*	Anticipate problems
5	5.23	0.94	5.00	0.89	0.3448		Be their cheerleader/offer encouragement
6	5.07	1.11	4.85	1.12	0.4644		Begin from and work at the place where they are (start where they are)
7	5.23	0.68	5.04	1.08	0.4306		Break down tasks (into manageable chunks or steps)
8	3.77	1.19	4.19	1.02	0.1562		Bring experts in (from within or outside the school)
9	5.27	1.34	4.92	0.89	0.2578		Build/expect/teach tolerance for others
10	5.63	0.56	5.62	0.64	0.9117		Build rapport
11	4.23	1.38	4.27	1.51	0.9269		Build relationship(s) outside the instructional day
12	5.80	0.41	5.69	1.19	0.6638		Build trust
13	4.77	1.14	4.46	1.33	0.3649		Challenge preconceived notions
14	5.30	0.65	5.46	0.65	0.3571		Change plans when needed/be flexible
15	5.27	0.69	5.58	0.70	0.1029		Clarify expectations
16	5.07	1.14	4.85	1.19	0.4842		Consider learning styles
17	5.47	0.90	5.27	0.92	0.4218		Create a safe space
18	5.23	1.17	5.23	1.18	0.9935		Create community
19	3.90	1.47	5.12	0.86	**0.0004**	*	Critically analyze/interpret text or information
20	5.07	1.14	4.92	1.23	0.6545		Engage them, provide a "hook"
21	4.83	1.05	5.50	0.81	**0.0100**	*	Ensure success
22	4.57	1.10	4.69	1.01	0.6586		Find ways that require people to see other perspectives
23	4.60	1.48	5.38	0.85	**0.0170**	*	Foster ownership & buy-in
24	4.80	1.03	4.50	0.95	0.2619		Give choice(s)
25	4.07	1.62	4.38	1.30	0.4185		Give everyone a chance to lead
26	5.47	0.78	5.35	1.26	0.6750		Give everyone an opportunity to be heard
27	5.03	1.00	5.27	0.83	0.3383		Give individuals processing time
28	2.97	1.35	3.15	1.32	0.6025		Grade together
29	4.50	1.22	4.85	0.92	0.2346		Help them see both sides of an issue
30	4.97	1.33	4.46	1.39	0.1722		Meet individual needs
31	4.47	1.31	4.58	1.03	0.7253		Promote active membership within the community/democracy
32	5.40	0.56	4.62	1.60	**0.0241**	*	Provide a connection to the real world
33	5.13	0.82	5.12	0.95	0.9405		Provide immediate and frequent feedback
34	4.97	1.16	4.50	1.48	0.1995		Provide routines/ rituals/procedures
35	4.33	1.30	4.88	1.07	0.0870		Put their work "out there," show public support
36	3.57	1.55	3.00	1.33	0.1458		Role play
37	5.50	0.68	5.58	0.64	0.6661		Show I am interested, that I appreciate what they do

#	MEAN TEA	STD TEA	MEAN ADM	STD ADM	P Value	p	STATEMENT
38	5.83	0.46	5.88	0.43	0.6692		Show respect for individuals
39	5.20	1.00	5.73	0.53	**0.0150**	*	Show that the work is worthwhile
40	3.80	1.47	2.92	1.26	**0.0199**	*	Surprise with the unexpected
41	3.80	1.54	4.08	1.16	0.4479		Take people out of their comfort zones
42	3.83	1.70	4.50	1.24	0.0973		Talk about why I do what I do
43	5.13	1.01	5.46	0.95	0.2150		Talk with colleagues
44	5.57	0.57	5.46	0.71	0.5463		Teach/expect/model responsibility and accountability
45	4.10	1.45	4.73	1.15	0.0750		"Turn & Talk" (one-to-one discussion)
46	4.57	1.22	4.85	1.26	0.4042		Use inquiry-based instruction
47	4.77	1.07	4.77	1.48	0.9942		Use real-world documents
48	4.53	1.01	4.96	1.25	0.1685		Use rubrics
49	5.20	1.16	5.19	1.20	0.9807		Value their time, use time wisely
50	5.03	0.93	4.92	0.89	0.6524		Work with individuals
51	4.53	1.17	4.81	1.47	0.4478		Ask questions in one-to-one conversations
52	5.43	0.77	5.54	0.90	0.6450		Be consistent (in what I write, speak, and convey in other ways)
53	4.67	1.09	4.69	1.23	0.9349		Be open ("transparent thinking")
54	4.73	0.83	4.88	0.86	0.5081		Become informed by their perspectives
55	5.23	0.77	5.19	1.06	0.8710		Celebrate with them
56	4.47	1.20	5.35	1.02	**0.0044**	*	Clarify the issue for myself
57	4.30	1.49	5.23	1.18	**0.0117**	*	Combat the idea that "it's always been done that way"
58	4.30	1.39	5.35	0.94	**0.0016**	*	Communicate the same message to everyone
59	3.30	1.37	4.23	1.39	**0.0151**	*	Conduct action research
60	4.87	1.04	4.54	1.56	0.3663		Confront behavior (individually or as a group)
61	5.60	0.67	5.46	1.33	0.6349		Consistently hold and communicate high expectations
62	5.67	0.48	5.04	1.68	0.0765		Convince people they can do a good job, that you believe in them
63	4.87	1.14	4.62	1.10	0.4046		Create my own repertoire: tools, processes, protocols, graphic organizers
64	4.20	1.10	4.62	1.33	0.2121		Do keep some things private (don't reveal everything you are thinking)
65	4.23	1.14	5.00	1.06	**0.0116**	*	Do whatever it takes to remove barriers
66	4.27	1.36	5.12	1.07	**0.0118**	*	Eliminate the idea of a hidden agenda
67	4.57	0.97	5.04	1.04	0.0866		Empathize/be empathetic regarding the difficulty of the task
68	5.30	1.09	5.54	0.71	0.3293		Empower them
69	4.10	1.37	4.54	1.21	0.2091		Engage the group in an "organizer" or "strategy" activity
70	5.13	0.82	5.65	0.75	**0.0159**	*	Establish credibility
71	4.93	1.34	4.77	0.95	0.5956		Establish or offer a support system so they'll feel braver
72	5.40	0.77	5.23	1.31	0.5657		Express my own passion, enthusiasm
73	4.27	1.26	5.08	0.84	0.0061	*	Find common ground from which to make decisions
74	3.63	1.35	5.42	0.86	**2.26E-07**	*	Generate a system to gather data
75	5.20	1.06	5.50	0.58	0.1896		Have a lot of dialogue (two-way communication)
76	3.97	1.50	4.69	1.01	**0.0363**	*	Help change their ways of thinking
77	4.93	1.01	5.42	1.03	0.0792		Help people examine the issue, not blame others
78	5.27	0.64	5.08	0.98	0.4025		Help people find their own answers, make their own decisions
79	4.33	1.37	4.69	1.35	0.3292		Help them see me as human, not as a "role" or "title"

#	MEAN TEA	STD TEA	MEAN ADM	STD ADM	P Value	p	STATEMENT
80	3.70	1.49	3.23	1.77	0.2930		Keep people on their toes
81	5.70	0.47	5.50	0.91	0.3166		Listen
82	4.70	1.24	4.65	1.32	0.8938		Meet with small groups
83	5.40	0.93	5.54	0.76	0.5432		Make them feel safe
84	4.73	1.26	4.88	1.11	0.6341		Model risk taking; make myself vulnerable (mistakes are okay)
85	3.53	1.50	3.73	1.71	0.6506		Pointedly ask people to change their behavior
86	4.90	1.03	5.35	1.06	0.1166		Present the "big picture"
87	4.57	1.45	5.15	0.88	0.0699		Promote and support self-reflection
88	3.33	1.37	4.92	1.06	**9.66E-06**	*	Political awareness/understand the politics
89	4.27	1.20	5.08	1.02	**0.0085**	*	Reconnect with the purpose/values/rationale
90	4.07	1.23	5.65	0.80	**4.39E-07**	*	Review data
91	5.00	1.02	5.00	1.30	1.0000		Show models of my expectations
92	5.27	0.83	5.31	0.68	0.8394		Show that I'm a learner too
93	4.00	1.34	4.35	1.29	0.3304		Show that it's part of my skill set to do things differently to reach a goal
94	4.50	1.33	4.69	1.57	0.6261		Stay highly visible
95	4.03	1.30	5.69	0.55	**1.41E-07**	*	Support data-based decision making
96	4.93	1.05	5.38	1.06	0.1164		Support differentiated instruction
97	4.27	1.36	5.00	1.10	**0.0299**	*	Teach efficacy
98	4.30	0.99	5.00	1.13	**0.0179**	*	Understand that people fear change
99	3.63	1.54	4.73	1.15	**0.0037**	*	Use brain research
100	5.33	1.12	5.38	0.70	0.8362		Use humor; make it fun