A DETERMINATION OF THE RELIABILITY AND CONSTRUCT VALIDITY OF THE LEADERSHIP CAPACITY SCHOOL SURVEY

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by

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Dr. Barbara Crossland
This work is dedicated to my mother and father
with love and gratitude for their constant support and encouragement.
It is also dedicated to Craig, who believed in me without fail
and supported me in all that I chose to pursue.
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The completion of this dissertation marks the end of a seven-year personal and professional journey. Always reaching for a new star, I decided to enroll in the Educational Leadership and Policy Analysis Doctoral Program at the University of Missouri – Columbia at the age of 47. For the first time in my life I moved away from home for the summer and lived in Columbia, MO as a university student. That summer was the beginning of my great adventure.

Over the past seven years I have experienced great personal and professional successes and setbacks. A bout with ovarian cancer, a rare lung disorder, and the death of my life partner were balanced by being the recipient of a Fulbright Scholarship, guiding my school to Missouri Gold Star status, and being supported by the love of my family and friends. Of the many lessons that I have learned throughout this experience, the most important is expressed in Ecclesiastes 3:1-8, “To everything there is a season, a time for every purpose under the sun.”

Not only did I realize my own personal strengths over these last few years, but my weaknesses and vulnerabilities were magnified ten-fold. It didn’t take long to realize that this educational quest of mine was not an independent venture, but one that would require the help and support of many others.

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CHAPTER 1

INTRODUCTION TO THE STUDY

Chapter one provides background information that reinforces the need for this case study. A conceptual framework that supports the concept of leadership capacity is discussed. A statement of the problem, research questions and corresponding null hypotheses are also presented. Limitations of the study and assumptions made by the researcher are introduced. Definitions of key terms used throughout the study are provided. Chapter one ends with justification of the significance of the study and anticipated benefits of this research.

Background Information

The philosophy and principles of leadership capacity were extensively documented over the past several years (Blankstein, 2004; Collins, 2001; Deming, 1986; Lambert, 1995, 1998, 2003). Lambert (1998, 2003) contended that the development of leadership capacity leads to school improvement and improved student achievement. If one accepts Lambert’s contention to be true, it behooves school leaders to assess the presence of leadership capacity in their own schools as an indicator of school improvement potential.

Lambert developed a survey, The Leadership Capacity School Survey (LCSS, 2003, Appendix A), designed to measure the perceived presence of leadership capacity in schools. School leaders worldwide already use the LCSS (Lambert) as a self-assessment tool to measure the perceived presence of leadership capacity in their schools (Lambert, 2005). The reliability and construct validity of the LCSS (Lambert) from a research perspective, however, had not yet been established (Lambert, personal communication,
2006). Although the reliability and validity of a number of other surveys that measure quality practices in schools have been determined (Detert & Jenni, 2000; Short & Rinehart, 1992), none of those surveys specifically measure the phenomenon of leadership capacity. This lack of knowledge posed a problem for educators who depended upon the LCSS (Lambert, 2003) to provide a valid and reliable measure of the presence of leadership capacity in their schools from a research perspective. If leadership capacity was to serve as one measurable indicator of school improvement potential, it was imperative that the psychometric properties of the LCSS (Lambert) be determined (Detert & Jenni, 2000).

*Leadership Capacity*

Leadership capacity was defined by Lambert (1998) as “broad-based skillful participation in the work of leadership” (p. 12). According to Lambert (2003), “high” leadership capacity was characterized by six critical features: (a) broad-based, skillful participation in the work of leadership, (b) shared vision resulting in program coherence, (c) inquiry-based use of information to inform shared decisions and practice, (d) roles and responsibilities that reflect broad involvement, collaboration, and collective responsibility, (e) reflective practice and innovation as the norm, and (f) high or steadily improving student achievement.
Figure 1. Lambert (2003) identified six critical features of leadership capacity. Through the development of leadership capacity, schools were equipped to perform the system-changing transformations necessary for improvement (Enderlin-Lampe, 2002; Lambert, 1998; Schlechty, 2001).

**Relationship to school improvement.** Although the focus of this study was not on student achievement, high or steadily improving student achievement is one of the six critical features of a school with high leadership capacity (Lambert, 2005). The building of leadership capacity is a concept firmly linked to improved and sustained student performance (Newmann & Wehlege, 1995). A review of school improvement literature supported the premise that the hard work of school improvement is very much dependent on school leadership (Blankstein, 2004; Collins, 2001; Fullan, 2005; Schein, 1992; Short, Greer, & Melvin, 1997; Sparks, 2005).

In a meta-analysis of research on educational leadership, Waters, Marzano, and McNulty (2004) attested to the fact that leadership had a high predictive influence on the academic success of students. While the role of the school principal remained paramount
(Barth, 1990), educational improvement of the magnitude needed to meet the high standards of accountability for school improvement in today’s results-oriented world can not be accomplished without the skillful involvement of the entire faculty (Blankstein, 2004; DuFour, 2004; Elmore, 2000; Fullan, 2001; Hargreaves & Fink, 2004; Lambert, 2003; Sparks, 2005). Such skillful participation in the work of school improvement requires leadership that builds the collective capacity of school faculties to learn and work together towards a shared sense of purpose (Blankstein, 2004; DuFour & Eaker, 1998). “Leadership capacity” is a concept said to make a tremendous difference in organizations; leadership capacity contributes to sustainable school improvement and a high performance culture (Lambert, 1998; Senge, 1990; Sparks, 2005).

It is important for school leaders to know when they have achieved the level of leadership capacity needed to improve and sustain high levels of student achievement. The LCSS, developed and revised by Lambert (1998, 2003), was designed to assess the presence of the phenomenon of leadership capacity in a school. Although used throughout the world, the reliability and construct validity of the LCSS (Lambert) had not yet been established (Lambert, personal communication, 2006, Appendix B). This research study, therefore, sought to determine the reliability and construct validity of the LCSS.

Previous reform efforts. Following 50 years of widespread public concern regarding the achievement of America’s students, the improvement of American education remained at the forefront of public policy analysis (DuFour & Eaker, 1998). A succession of school improvement initiatives attempted to identify an improvement formula that would result in significant and sustained gains in student achievement.
Previous initiatives failed to significantly change America’s schools to meet the unprecedented external expectations for high levels of student achievement and sustainable improvement (Detert & Jenni, 2000; Fullan, 1997; Murphy & Lick, 2005; Preskill & Torres, 1999; Sparks, 2005).

School leaders can learn from the successes or failures of past improvement efforts and researchers cited numerous reasons for the failure of previous reform efforts. Many change efforts failed because organizational leaders did not take into consideration the complexities of organizational life: the organization’s culture, the complexities of the change process, and the way that people work and learn (Preskill & Torres, 1999). In addition, previous efforts often focused on methods and processes (DuFour & Eaker, 1998). Current research asserts that a focus on results, namely improved student achievement, provides greater promise of sustained school improvement (DuFour & Eaker, 1998; Washov & Mojkowski, 2006). Sparks (2005) believed that significant advances in schooling could only be attained through considerable changes in school leadership, particularly the development of a high performance culture led by principals and teachers. The building of leadership capacity within America’s schools addressed all of these concerns and offered hope for sustained school improvement (Enderlin-Lampe, 2002; Lambert, 2003; McLaughlin, 1995).

Researchers affirmed that only through the building of leadership capacity can schools be equipped to perform the system-changing activities necessary for the transformation of America’s schools (Enderlin-Lampe, 2002; Lambert, 2003; McLaughlin, 1995). Lambert (2003) defined leadership capacity as “broad-based, skillful participation in the work of leadership” (p. 4) and she asserted that leadership capacity
provided a pathway to sustained substantive school improvement. At the heart of Lambert’s conception of leadership was the importance of building reciprocal rather than dependent relationships (Lambert, 2003).

Professional learning communities. Lambert (2003) also contended that leadership was intricately tied to learning with and from others. Through the development of leadership, a school builds the capacity to function as a professional learning community (DuFour & Eaker, 1998). Professional learning communities are capable of sustaining quality leadership when key individuals leave the school (McLaughlin, 1995). Further research asserted that professional learning communities provide an avenue to lasting school improvement (DuFour & Eaker, 1998). Fellow researchers agreed and supported the premise that the building of leadership capacity is vital to the creation and sustainability of a successful learning community (Hord, 1997; Huffman & Hipp, 2004; King & Newmann, 2001; Sparks, 2001).

Although research linked leadership capacity to school improvement, many schools pursued reform efforts that proved to be unsuccessful, failing to address the issue of leadership as capacity-building (Blankstein, 2004; NASSP, 2001; Schmoker, 2004). The building of leadership capacity in many schools was often left to chance (Eaker, PLC Conference, 2004). In spite of research, schools that functioned as learning communities, where leadership capacity was fostered, were rare (DuFour & Eaker, 1998; Elmore, 2000).

Influence on school culture. The influence of leadership on school culture was clearly documented over the past several years (Deal & Peterson, 1999; Giancola & Hutchison, 2005; Schein, 1985; Sparks, 2001). Schools that function as professional
learning communities, where the building of leadership capacity is embedded within a trusting environment, demonstrate ongoing study, practice, and commitment to continuous improvement within a collaborative and cooperative school culture (DuFour & Eaker, 1998). Such collaborative cultures are paramount to the establishment of professional learning communities (Fullan, 1997; Eastwood & Lewis, 1992; McLaughlin, 1995; Newmann & Wehlage, 1995). High leadership capacity schools, characterized by high performing collaborative teams, are also guided by common visions, values, and goals (Lambert, 2003). Based on this knowledge, many schools are now investigating the benefits of building leadership capacity as they develop cultures that recognize and promote the collective talents and strengths of their staffs (Protheroe, 2004).

Conceptual Underpinnings of the Study

The works of Lambert (1998, 2002, 2003) formed the conceptual basis for this study. Lambert’s work was grounded in social constructivism. Social constructivism is a theory of knowledge that emphasizes the importance of culture and context as individuals and groups construct knowledge and create their own realities (Berger & Luckmann, 1966; Kim, 2001). Lambert’s (1995) constructivist view of leadership is closely related to transformational leadership and is intricately linked to organizational learning theory (Argyris & Schon, 1978; Senge, 1990) and cultural change theory (Sergiovanni, 1992; Fullan, 2002). Lambert’s definition of leadership evolved over time to redefine leadership as capacity-building (Lambert, 1998). Lambert (2003) contended that six critical features of leadership were necessary in order to attain a high level of leadership capacity. They were: (a) broad-based, skillful participation in the work of leadership, (b) shared vision resulting in program coherence, (c) inquiry-based use of information to inform shared
decisions and practices, (d) roles and responsibilities that reflect broad involvement, collaboration, and collective responsibility, (e) reflective practice and innovation as the norm, and (f) high or steadily improving student achievement. These six critical features formed the six constructs or subscale categories of the LCSS (Lambert, 2003).

This case study research methodology was also grounded in psychometric theory (Spearman, 1904; Thurstone, 1927). Psychometrics was defined as the field of study concerned with the theory and technique of educational and psychological measurement, which included the measurement of “latent traits” that were not directly observable such as knowledge, abilities, attitudes, and personality traits (Thurstone, 1959). The field was primarily concerned with the study of differences between individuals and between groups of individuals and involved two major research tasks, the construction of instruments and procedures for measurement and the development and refinement of theoretical approaches to measurement (Ludlow, 2004). For the purpose of this study, Lambert’s LCSS (2003) was the measurement instrument under investigation.

Statement of the Problem

The LCSS (Lambert, 2003) is used nationally and internationally as a self-assessment tool to measure the perceived presence of leadership capacity in schools. The reliability and construct validity of the LCSS (Lambert) however, had not yet been established (Lambert, personal communication, 2006). This lack of knowledge posed a problem for educators who strove to measure the perceived presence of leadership capacity in their schools from a research perspective. If leadership capacity is to serve as a measurable indicator of school improvement potential, then reliable and valid measures of this best practice must be identified (Detert, 2000). Determination of the reliability and
construct validity of the LCSS (Lambert) may be useful to other researchers and practitioners as they use this survey tool to measure the presence of leadership capacity in schools from a scientific perspective.

Purpose of the Study

The purpose of this quantitative case study was to determine the reliability and construct validity of Lambert’s LCSS (2003) and all reduced forms. The establishment of the psychometric properties of this survey instrument will contribute to its use by researchers and practitioners who strive to measure the phenomenon of leadership capacity from a research perspective.

Research Questions and Null Hypotheses

Five research questions provided the focus for inquiry. The research questions and corresponding null hypotheses were:

*RQ1a.* Can constructs be identified for the LCSS (Lambert) overall with an eigen value = 1.0 or greater (Green & Salkind, 2003; SPSS, 2006)?

*H₀₁a.* Constructs cannot be identified for the LCSS (Lambert) overall with an eigen value of 1.0 or greater.

*RQ1b.* Can identified constructs be compared to Lambert’s suggested constructs with an eigen value of 1.0 or greater?

*RQ1c.* Can identified constructs be reduced to produce a valid short form?

*H₀₁c.* The constructs cannot be reduced to produce a valid short form.

*RQ2.* What is the reliability of the LCSS (Lambert) overall and all reduced forms by summary and subscale with a correlation of 0.70 or above (Cronk, 2004; Green & Salkind, 2003)?
H₂: The LCSS (2003) and all reduced forms are not reliable by total and subscale using a correlation of 0.70 or above.

RQ3. What are the summary statistics (N, mean, sd) for the perceptions of the phenomenon of leadership capacity final form and subscale as measured by the LCSS (Lambert, 2003)?

Limitations and Assumptions

This case study was limited to one select school district in the state of Missouri. Participants in this case study were restricted to full-time faculty of twenty-five elementary, middle, and high schools that comprised the selected case study school district in April of 2007. Participation in the study was voluntary and contingent upon the willingness of participants to complete and return an on-line survey. All participants had district-issued and controlled email addresses and therefore it was assumed that all participants would have access to the survey.

It was assumed that leadership capacity was a socially constructed phenomenon within an organization as defined by Lambert (2003), and therefore leadership capacity was a measurable construct. It was also assumed that leadership capacity was present in all schools to some degree. It was assumed that participants would respond honestly to survey questions and that those responses would be true representations of the leadership capacity present in their schools.

This case study was bounded by time. Respondents were given one week to respond to the survey. The survey was conducted in May of 2007, a very busy time in the case study district’s school year. It was hoped that these facts would not lower the
response rate. It was assumed that those who would normally respond to such a survey would continue to do so, regardless of their busy schedules.

Definition of Key Terms

For the purpose of this study, the following definitions of key terms were provided to clarify the meanings and conceptual frameworks within which they were used. Most definitions were developed for the purpose of this study by the primary investigator. Other definitions were based on the works of other researchers.

1. Broad-based skillful participation. Broad-based, skillful participation referred to the shared leadership of principals, teachers, parents, and students working together cooperatively and constructively towards a shared sense of purpose (Lambert, 2003).

2. Capacity-building. Capacity building was defined as investing in and training individuals to work together in order to sustain a culture of success in spite of transitions, challenges, or changes in leadership.

3. Collaboration. Collaboration was defined as working interdependently toward a common goal.

4. Constructivist leadership. Constructivist leadership was leadership that provides opportunities for people to be engaged in processes that created the conditions for learning and finding common ground for teaching and learning (Lambert, 2002).

5. Faculty. Faculty referred to building level administrators and teachers (including counselors) who worked full-time in the surveyed case study schools.

6. High leadership capacity. This term was used to describe those schools that were characterized by collaborative, skillful work that resulted in high or steadily improving levels of student achievement. The descriptors of a school with “high”
leadership capacity composed the six critical features (subscales) measured by the LCSS (Lambert, 2003).

7. Inquiry. Inquiry was defined as an ongoing process for investigating, understanding, and questioning organizational issues in order to construct new knowledge and inform future action.

8. Leadership. Leadership was defined as “…the reciprocal learning processes that enable participants to construct and negotiate meanings leading to a shared purpose of schooling” (Lambert, 1998, p.1).

9. Leadership capacity. Leadership capacity was defined by the score that participating schools received overall and by subscale on Lambert’s LCSS (2003). A low score represented a low degree of leadership capacity whereas a high score represented a high degree of leadership capacity.

10. Leadership Capacity School Survey (LCSS). The LCSS was a survey developed by Lambert in 1998 and revised in 2003 for the purpose of measuring the leadership capacity present in a school.

11. Low leadership capacity. This term was used to describe those schools characterized by low degrees of participation, functioning with low degrees of skill, resulting in poor or short-lived student achievement.

12. Reflective practice. Reflective practice referred to the process of exploring, reviewing, understanding, and evaluating the content, process, or premise of an idea in order to learn.
13. **Social constructivism.** Social constructivism was a sociological theory of knowledge that explained the ways in which groups participated in the creation of their own realities (Berger & Luckmann, 1966).

14. **Sub-scale scores.** There were six subscale scores that reflected the six critical features of schools with high leadership capacity (Lambert, 2003). They were: (a) broad-based, skillful participation in the work of leadership, (b) shared vision resulting in program coherence, (c) inquiry-based use of information to inform decisions and practice, (d) roles and responsibilities that reflect broad involvement, collaboration, and collective responsibility, (e) reflective practice/innovation as the norm, and (f) high or steadily improving student achievement.

15. **Vision.** Vision was defined as the unifying force that provided direction and gave focus for participants who worked collaboratively for a common good.

**Significance of the Study**

This study determined the reliability and construct validity of the LCSS (Lambert, 2003) and all reduced forms. The new knowledge gained through this research provided school practitioners and researchers with information regarding the reliability and construct validity of a school leadership capacity assessment tool, the LCSS (2003).

This case study contributed to the ever-growing body of research in the field of leadership capacity and psychometric theory. The study justified the use of the LCSS (Lambert, 2003) score as a reliable and valid measure of perceptions of the presence of leadership capacity in schools. The differences in school scores obtained through the future use of the LCSS (Lambert) can now provide schools with unique opportunities to
learn from one another through dialogue, reflection, and the sharing of best practices (Christie, 2004).

Researchers concurred that by studying what goes on in high-achieving schools one can define effective practices. The effectiveness of leadership capacity within a school can be gauged by looking at what goes on in schools with high leadership capacity and identifying that school’s effective practices (Cawelti, 1995). In addition, this research supports the use of the results from the LCSS (Lambert, 2003) as a way of identifying the need for professional development in schools. It was imperative that the investigator took advantage of the opportunity to establish the reliability and construct validity of this survey in order to determine its effectiveness as a psychometric tool capable of measuring the perception of the phenomenon of leadership capacity in schools. The knowledge gained provides guidance for both practicing and aspiring school leaders who strive to improve their schools through the development of leadership capacity.

Summary

The purpose of this case study was to determine the reliability and construct validity of Lambert’s LCSS (2003) and all reduced forms. This was accomplished by surveying faculty perceptions of the presence of the phenomenon of leadership capacity in twenty-five public elementary, middle, and high schools in a select Missouri school district. Overall summary and subscale scores of the six critical features of leadership capacity were determined in order to establish the reliability and construct validity of the LCSS (Lambert). The LCSS (Lambert) instrument was also refined through data reduction methods.
Chapter one provided an introduction to the study and offered the works of Lambert (1998, 2002, 2003) as the conceptual framework for this research. It was noted that Lambert’s work was grounded in social constructivism (Berger & Luckmann, 1966) and that Lambert’s (2002) constructivist view of leadership was intricately linked to organizational learning theory (Argyris & Schon, 1978; Senge, 1990) and cultural change theory (Fullan, 2002; Sergiovanni, 1992). It was also stated that Lambert’s theories have evolved over time and that Lambert redefined leadership as capacity-building (Lambert, 1998). Furthermore, Lambert (2003) developed a tool, the LCSS, to measure perceptions of the presence of leadership capacity in schools, but the reliability and construct validity of the LCSS had not yet been established. This lack of information led to the development of five research questions and corresponding null hypotheses to determine the psychometric properties of the LCSS (Lambert). Limitations of the study and assumptions were introduced, as were the definitions of key terms necessary for understanding. Chapter one ended with the significance of the study as one worthy of research.

Chapter two begins with a brief history of school improvement literature that supported the need for a tool such as the LCSS (Lambert, 2003) to assess leadership capacity. Social constructivism is introduced as the conceptual underpinning that supported Lambert’s (1998) leadership capacity theory. Next, a discussion of leadership and the relationship of constructivist leadership and transformational leadership to leadership as capacity-building is presented. The phenomenon of leadership capacity, as defined by Lambert (2003) is discussed and the six characteristics of schools that possess high leadership capacity are individually explored. The six characteristics are: (a) broad-
based, skillful participation in the work of leadership, (b) development of a shared vision that results in program coherence, (c) inquiry-based use of data to inform decisions, (d) roles and responsibilities that reflect broad involvement, collaboration, and collective responsibility, (e) reflective practice/innovation as the norm, and (f) high or steadily improving student achievement. Next, the secondary conceptual theories of organizational learning and cultural change are explored in relationship to leadership capacity and social constructivism. Finally, psychometric theory is defined and discussed as it relates to this case study.

Chapter three presents the research design and methodology that were used to conduct this study. The purpose of the study is reviewed, as are the guiding research questions and null hypotheses. Instrumentation, reliability and validity, selection of participants, data collection and data analysis are also discussed.

Chapter four offers a presentation of findings. Analysis of data by research question includes results of reliability and construct validity analyses, descriptive statistics, summaries, and conclusions. Chapter five presents a discussion of findings and conclusions. Recommendations for school practitioners are made as well as recommendations for further study.
CHAPTER II

REVIEW OF RELATED LITERATURE

Chapter two begins with a brief history of school improvement literature that supported the need for a tool such as the LCSS (Lambert, 2003) to assess the phenomenon of leadership capacity. Social constructivism is introduced as the conceptual underpinning supporting Lambert’s (1998) leadership capacity theory. Next is a discussion of leadership and the relationship of constructivist leadership and transformational leadership to leadership as capacity-building.

The phenomenon of leadership capacity, as defined by Lambert (2003) is discussed and the six characteristics of “high” leadership capacity will be individually explored. They include: (a) broad-based, skillful participation in the work of leadership, (b) development of a shared vision that results in program coherence, (c) inquiry-based use of data to inform decisions, (d) roles and responsibilities that reflect broad involvement, collaboration, and collective responsibility, (e) reflective practice and innovation as the norm, and (f) high or steadily improving student achievement. Next, the secondary conceptual theories of organizational learning and cultural change are explored in relationship to leadership capacity and social constructivism. Finally, psychometric theory is defined and discussed as it relates to this case study.

Statement of the Problem

The Leadership Capacity School Survey, LCSS (2003) is used nationally and internationally as a self-assessment tool to measure the perceived presence of the phenomenon of leadership capacity in schools (Lambert, 2003). The reliability and
construct validity of the LCSS (Lambert) had not yet been established (Lambert, personal communication, 2006). This lack of knowledge posed a problem for educators who were striving to measure the presence of leadership capacity in their schools from a research perspective. There were no other instruments that measured the phenomenon of leadership capacity in schools. There was a need to determine the psychometric properties of the LCSS (Lambert), namely the reliability and validity, in order to measure the best practice of school leadership capacity in a scientific manner.

Purpose of the Study

The purpose of this study was to determine the psychometric properties, the reliability and construct validity, of Lambert’s LCSS (2003) and all reduced forms. This was accomplished by surveying the full-time faculty employees of twenty-five elementary, middle, and high schools in a select case study school district in Missouri.

Historical Review of Leadership Capacity

The importance of leadership capacity as it relates to school improvement in the 21st century is best understood by looking at this best practice within a historical context. A brief review of America’s school improvement initiatives over the past 50 years is presented to provide a historical context for the research that follows.

School Improvement Initiatives

Discontent with the achievement of America’s students resulted in a succession of school improvement initiatives over the past fifty years (DuFour & Eaker, 1998). Since the 1957 launch of Sputnik, schools struggled to find a formula for lasting school improvement that resulted in significant and sustained gains in student achievement (Short & Greer, 1997; DuFour & Eaker, 1998).
The excellence movement. Encouraged by the National Commission on Excellence in Education’s report, *A Nation at Risk* (1983), a surge of school improvement initiatives throughout the United States offered clear direction for school reform. This sudden rush to reform became known as the Excellence Movement and was characterized not by new ideas, but by asking schools to intensify existing practices (DuFour & Eaker, 1998). Characterized by a top-down approach mandating improvement and calling for “more of the same,” this movement came to a halt when, in the early 1990’s the United States Department of Education reported that the Excellence Movement failed to make a difference in student achievement (Alsalam & Ogle, 1990).

The restructuring movement. Following the “Excellence Movement,” our nation’s governors convened for a national summit on education. Six national goals, with two additional goals added at a later date, were the product of their work (United States Department of Education, 1994). Appropriately named “Goals 2000”, this reform movement aimed to establish national goals and standards through a site-based approach to restructure and redesign our nation’s schools. Known as the “Restructuring Movement”, site-based management during this time focused on such issues as discipline, parent involvement, and staff morale. While greater local autonomy provided hope for improvement, over time this site-based movement failed to transform schools in a way that made a significant difference in student achievement (Barth, 1991; Newmann & Wehlage, 1995).

The “Excellence Movement” of the 1980s and the “Restructuring Movement” of the 1990s were but a few of the widespread initiatives that failed to produce the desired result of improved student achievement (Fullan, 1997). While these reform efforts
focused on methods and processes, they failed to clearly define intended results (DuFour & Eaker, 1998). Research asserted that a focus on results provided greater promise of achieving sustained school improvement (Bernhardt, 1998; Blankstein, 2004; DuFour & Eaker, 1998; Sparks, 2005).

*No child left behind.* The “No Child Left Behind Act of 2001” (NCLB) was a more recent school improvement initiative in the United States. *NCLB* was a federal law whose goal was to have all students achieving at or above grade level by the year 2014. Now in its 6th year of existence, the Act is in the process of reauthorization. *NCLB* holds America’s schools accountable for reaching and sustaining high levels of student achievement.

Although school reform efforts have taken America down a variety of different pathways, Fullan (2005) asserted that it was leadership that would lead America’s schools to wide-spread lasting improvement and sustainable, large-scale reform. As discussed in Chapter 1, the development of leadership capacity in our nation’s schools offers great hope for schools striving to meet and exceed today’s high expectations for student achievement.

**Conceptual Underpinnings**

*Social Constructivism*

Social constructivism is a sociological theory of knowledge that became prominent in the United States (Berger & Luckmann, 1966). The theory of social constructivism describes the ways in which individuals and groups participated in the creation of their own realities. Berger and Luckmann (1966) asserted that the construction of reality was an ongoing, dynamic process based upon knowledge and interpretations derived from and maintained by social interactions.
Constructivism is an epistemological concept that was borne from the fields of psychology, philosophy, and science (Lambert, 2002). Constructivism is both a theory of “knowing” and a theory of “coming to know” (Fosnot, 1992). Biological in nature, organisms seek to assimilate new information and accommodate this information into existing structures, forming schemas, based on inherent beliefs, previous experiences, and values (Piaget & Inhelder, 1971). Schemas are constantly evolving as organisms reformulate to make sense of information. This continuous process places individuals in a state of “disequilibrium” (Piaget & Inhelder, 1971) as one battles to construct meaning based on prior experiences (Lambert, 2002).

Lambert (2002) asserted that there was a close parallel between learning theory and leadership theory. Lambert credited Dewey (1916) with drawing a connection between constructivist learning and leading. Dewey professed that learning was a social endeavor and that decision-making should be shared within the school community. Likewise, Piaget and Inhelder (1971) stressed that learning is a continual process of constructing and reorganizing knowledge, from the concrete to the abstract, often putting the learner in a state of “disequilibrium” as one makes sense of increasingly difficult information.

Lambert (2002) claimed that the process of knowledge construction often involves inquiry, participation, and reflection. Constructivist learning theory laid the groundwork for constructivist leadership theory (Lambert).

*Leadership*

The role of the principal in the improvement of student achievement was investigated in “School Leadership That Works”, a study published in 2005 by Mid-Continent Research for Education and Learning (MCREL). MCREL found that
there was a correlation between effective school leadership and student achievement. The
MCREL meta-analysis combined 25 years of research on school improvement and
identified twenty-one key areas of leadership responsibility that possibly had a positive or
negative effect on student achievement: 1. culture, 2. order, 3. discipline, 4. resources, 5.
curriculum and assessment, 6. knowledge of curriculum, 7. focus,
8. visibility, 9. contingency rewards, 10. communication, 11. outreach, 12. input,
13. affirmation, 14. relationship, 15. change agent role, 16. optimizer role, 17. ideals and
intellectual stimulation (Waters, Marzano, & McNulty, 2005). The MCREL study noted
that the focus of change efforts and the magnitude or order of change determined whether
or not leadership would have a positive or negative correlation on student achievement.
The study also claimed that school principals alone could not accomplish all of the
“essential” leadership responsibilities necessary to improve student achievement
(Marzano, 2003). Fullan (2005) agreed and claimed that developing others as leaders is
key to sustaining the effective leadership needed to positively impact student
achievement over time. The distribution of school leadership within a common culture is
essential in order to sustain any improvement or innovation (Elmore, 2000). Sustaining
leadership is also important as principals retire and leadership succession is addressed
(Fullan; Hargreaves, 2004; The Wallace Foundation, 2003).

*Constructivist leadership.* Lambert’s (2002) constructivist view of leadership,
borne of social constructivism, was defined as “the reciprocal processes that enabled
participants in an educational community to construct common meanings that led toward
a common purpose for schooling” (p. 1). Lambert asserted that the construction of
knowledge within the constructivist leadership theory was an evolutionary process that required participation in reciprocal relationships. Lambert also emphasized that it was only through conversations, dialogue, and inquiry that new meanings were constructed and organizations were transformed. Inquiry caused “disequilibrium in thinking” which brought about deep changes. Leadership then became an act of transformation (Snyder, Acker-Hocevar, & Snyder, 2000; Wheatley, 1992).

Transformational leadership. Lambert (2002) drew a parallel between constructivist leadership and transformational leadership. Transformational leadership, as defined by Yukl (1998), is a process of building commitment to organizational objectives and empowering others to achieve those objectives. Transformational leaders are visionary and often shape, strengthen, or change an organization’s culture as they motivate and influence members (Deal & Peterson, 1999). Leaders shape, or transform the culture of an organization through their thoughts, words, and actions (Sparks, 2005). Although diverse in many ways, transformational leaders build a strong culture of empowerment and are generally committed to individual and organizational learning (Yukl, 1998).

Transformational leaders are also key to building a trusting environment, a condition that is vital to shared governance (Short, Greer, & Melvin, 1997). Van Tassell-Baska (1997) asserted that in order to improve education, school leaders must be facilitators of change. Transformational change differs from simple reform or restructuring; transformation implies that a humane dimension, where personal transformation occurs, precedes an organization’s ability to be transformed (Giancola & Hutchison, 2005). The development of leadership capacity requires such transformational
leadership (Lambert, 1998, 2002, 2003). Transformational leadership is an integrative leadership approach that supported the culture of empowerment necessary for the development of leadership capacity within an organization (Schein, 1998).

Both constructivist leadership and transformational leadership assume that individuals grow and change within a collaborative culture (Lambert, 2002). Transformational leadership, however, assumes that a directional “leader” is responsible for the growth of knowledge in others (Burns, 1978), whereas constructivist leadership assumes that knowledge is constructed through dynamic reciprocal relationships within a learning community (Lambert, 2002).

Leadership as capacity building. It was Conzemius and O’Neill (2001) who drew a similarity between constructivist leadership and the concept of leadership as capacity-building (Lambert, 2002). Leadership was defined as “… the capacity of the school for broad-based, skillful participation in the creation and fulfillment of a vision focused on student learning” (Conzemius & O’Neill, p. 5). The concept of leadership as capacity-building became a central theme in school improvement literature (Fullan, 2002; Lambert, 1998, 2003; Senge, 1990; Sergiovanni, 1992).

The concept of leadership capacity was also the subject of many recent doctoral dissertations. Leadership capacity was investigated by Forbes (2004) as a method of sustaining and transforming on-line teaching and learning. Forbes found that e-learning provided opportunities for learners to share in inquiry, collaboration and continuous conversations regarding teaching and learning. Likewise, Philippon’s (2001) study found promise in building capacity for self-sustaining improvement in restructuring and re-culturing a select school community. In addition, a multi-case qualitative study by
di Benedetto (2006) explored how independent school leaders built the educational technology leadership capacities of their schools to sustain educational change. In all of these studies, sustainable school improvement was attributed to the building of leadership capacity.

Lambert (2003) defined leadership capacity as “...broad-based, skillful participation in the work of leadership” (p. 4). Lambert (1998) made the following five assumptions regarding leadership capacity to support her definition: (a) leadership was not trait theory; (b) leadership involved learning towards a shared purpose; (c) everyone had the right and potential to lead; (d) leadership was a shared endeavor; (e) leadership required that power and authority must be redistributed.

Popular terms such as shared leadership, collective leadership, leadership density, participatory leadership, and distributed leadership were all terms that implied that leadership was no longer an individual matter, but rather, leadership was spread throughout an organization. Lambert (2003) proposed that leadership capacity offered the promise of sustainable school improvement. When principals focused on the development of teachers’ skills and knowledge, thus developing “school capacity,” quality instruction and corresponding academic success were the results (Newmann, King, & Youngs, 2000).

Leadership capacity was also one of the six guiding principles that affected student achievement in high performing schools where “failure is not an option” (Blankstein, 2004). Blankstein drew from an array of research and practice to identify six characteristics or principles that guided student achievement in high performing schools. The six principles were: (1) common mission, vision, values, and goals, (2) ensuring
achievement for all students, (3) collaborative teaming, (4) using data to guide decision making and continuous improvement, (5) gaining active engagement from family and community, and, (6) building sustainable leadership capacity. The overarching principle that surfaced from Blankstein’s meta-analysis was that sustainable leadership capacity must be built into the school’s culture in order to maintain student achievement over time.

*The Six Components of “High Leadership Capacity”*

Lambert (2003) contended that a combination of breadth of participation and depth of skillfulness gave way to four possible leadership capacity scenarios: low skill/low participation, low skill/high participation, high skill/low participation, high skill/high participation. According to Lambert there were six critical features of a school that held the highest level of leadership capacity - schools that possessed high faculty skill and high faculty participation. The six critical features of a “high” leadership capacity school related to significant aspects of school improvement discovered through research and experience (Lambert). They were: (a) broad-based, skillful participation in the work of leadership, (b) shared vision resulting in program coherence, (c) inquiry-based use of information to inform shared decisions and practice, (d) roles and responsibilities that reflect broad involvement, collaboration, and collective responsibility, (e) reflective practice and innovation as the norm, and (f) high or steadily improving student achievement. These six critical features formed the constructs (subscales) measured by the LCSS (Lambert).
Figure 1. Lambert (2003) identified six critical features of leadership capacity.

Broad-based, skillful participation. The first critical feature of a school with high leadership capacity (Lambert, 2003), broad-based skillful participation in the work of leadership, refers to both the structures and the processes for participation. Collins (2001) postulated that level five leaders, those who build “enduring greatness,” developed the leadership capacity in others. A broad base of participation in the work of leadership allowed for continuity of direction within an organization. Leadership structures varied: governance groups, action research groups, grade level teams, interdisciplinary teams, and ad hoc groups were a few of the working groups whose work was participatory.

“Since constructivist learning was a social endeavor, community was essential for substantive and sustainable learning to occur” (Lambert, 2002). Wheatley (1999) supported the importance of participation and asserted that life itself depended on participation and that the participatory nature of reality forced people to focus on relational dynamics. According to Kouzes & Posner (2002, p. 383), “Leadership is everyone’s business.”
In the continuous pursuit of excellence, Deming (1986) designed the “Total Quality Management” approach (TQM), a system for continuously improving organizational quality through the participation of employees of all levels and functions. Deming asserted that true leaders should strive to empower all employees and promote leadership throughout the organization. Others, like Short and Greer (1994) agreed and professed that empowerment is “…a process whereby school participants develop the competence to take charge of their own growth and resolve their own problems” (p. 134).

In addition to broad-based participation, participants must be skillful. Lambert (1998) believed that providing opportunities for collaboration was not enough. Collaborative work must be guided by a shared sense of purpose and facilitated within a trusting and open environment (Glaser, 2005; Katzenback & Smith, 1993). Participants must also be skillful, empathetic listeners in order to learn from others (Covey, 1989). Leadership skills must be modeled and participants must be given opportunities to lead (Blasé & Blasé, 1997).

Shared vision resulting in program coherence. The second critical feature of high leadership capacity was the development of a shared vision that resulted in program coherence (Lambert, 2003). Leadership research was very clear about the importance of developing a shared vision (Blankstein, 2004; DuFour & Eaker, 1998; Hopfenberg & Levin, 1993; Kouzes & Posner, 2002; Lambert, 2003; Schein, 1992; Senge, 1990). Often described as a dream, a desired state, a purpose, an inspiration or a destiny, the intent was the same; visions provided organizations with a sense of meaning and purpose. Although faculty may have believed that “visioning” was the job of the school principal, the
development of a shared vision evoked ownership and commitment (Hopfenberg & Levin, 1993; Senge, 1990).

Vision must be communicated and embedded into the culture of the school (Bennis & Nanus, 1985). Bennis and Nanus also encouraged appropriate organizational structure and management changes consistent with the values and objectives of the vision. Senge (1990) noted that building a shared vision was necessary if leaders were to create learning organizations. Driven by intention, participants conceptualized their visions before they could strategize and design a plan for implementation (Nonaka & Takeuchi, 1995). Visions provided direction and feelings of psychological safety that allowed organizations to move forward (Schein, 1992). According to Drucker (1992), “Leadership is vision.”

*Inquiry-based use of data.* The third critical feature of schools with high leadership capacity was inquiry-based use of data to inform shared decisions and practices (Lambert, 2003). The power of inquiry in decision-making is well-documented (Bruffee, 1999; Glaser, 2005; Nonaka & Takeuchi, 1995; Preskill & Torres, 1999). Inquiry requires the use of dialogue, questioning, discussion, and knowledge construction. Dialogue, not monologue, is at the heart of leadership (Kouzes & Posner, 2002). Tacit knowledge is constructed through social interaction combined with the processes of questioning and reflection (Nonaka & Takeuchi). Through dialogue and conversation, learning occurs (Bruffee). Collins (2001) encouraged companies to “confront the brutal facts” of their reality by allowing people to engage in intense dialogue as they searched for understanding and learning.
Wheatley (1999) supported the use of inquiry and noted that in order to learn, an organization must be willing to look at itself and confirm or disconfirm existing beliefs. Likewise, Senge (1999) asserted that creative tension results when people articulate their visions and compare the visions to their current realities, thus building the capacity of a community to shape its own future and sustain change. In order to challenge the status quo, mental models held by members of the group must surface, thereby identifying assumptions that may have influenced future opportunities and courses of action for the organization (Senge, 1990).

Waterman (1988) attested that our culture was “data rich and information poor.” He advised that only through the analysis of data and the ability to relate that data to what we already know about schools can we understand and visualize improvement. Examination of data using a systematic process of inquiry allowed schools to make informed decisions regarding teaching and learning (Bernhardt, 1998). Bernhardt asserted that the element most often missing in the majority of failed school change efforts is an evaluation or monitoring component. Peters (1992) emphasized the importance of evaluation when he stated, “What gets measured gets done.” Through the inquiry-based use of data, school leadership capacity could be strengthened.

*Broad involvement, collaboration, and collective responsibility.* A fourth necessary component of a school with high leadership capacity, according to Lambert (2003), is that faculty roles and responsibilities reflect broad involvement, collaboration, and collective responsibility. Partners who choose to work together assume ownership and a sense of responsibility for group decisions (Block, 1993). In addition to responsibility, the ability to maintain purposeful collaborative partnerships also provides
partners with a competitive advantage (Kanter, 1994). Patton (1997) noted that working together with stakeholders presents a win/win situation. Collaboration is critical for achieving and sustaining high performance and vital to collaboration was a climate of respect and trust (Kouzes & Posner, 2002). Supporting that premise, between 1999 and 2004, four out of five school “turnaround” studies cited that the collaboration of teachers was a critical element in improving student achievement (Duke, 2006). Conversely, it was noted when researchers from the Southwest Educational Development Laboratory (SEDL) studied a variety of low performing schools, they observed very few opportunities for staff to collaborate or problem-solve together (Morrissey, 2000). This fact led the researcher to deduct that focused faculty collaboration and group problem-solving may be responsible for the positive difference in the level of student achievement in these schools.

Fullan (2005) believed that positive collaborative cultures provide for cyclical energizing and thus support sustainability. “Who is in and who is out” within an organization has symbolic meaning according to Schein (1992), and he stressed that internal issues such as group identity must be addressed. Schein (1992) asserted that when group members perceived themselves as “insiders” they gain a sense of identity as members of the group. Lambert (1998) claimed that leadership capacity grows when teachers begin to perceive their roles differently and assume more responsibility. Growth in leadership capacity has an impact on teacher self-perception (Lambert, 1998). Teachers view their status in a new light as they became empowered through the assumption of more responsibility (Short & Greer, 1994).
Reflective practice and innovation. The fifth characteristic of a school with high leadership capacity was that reflective practice and innovation become the norm (Lambert, 2003). During a cycle of inquiry, reflective practice is essential (Preskill & Torres, 1999). A continuous process of questioning leads to fluctuation and creative chaos, a necessary component of organizational learning (Nonaka & Takeuchi, 1995). This deep learning can only be experienced through reflection (Schon, 1983). Reflection leads to challenging the status quo and ultimately to constructing new knowledge that can then be transformed into creative and innovative new ideas (Nonaka & Takeuchi). Double-loop learning (Argyris & Schon, 1978) occurs as organizations question and reconstruct existing premises. Senge (1999) strongly suggested that one should reflect upon learning efforts before drawing conclusions about improvement in performance.

High or steadily improving student achievement. The sixth and seemingly most important characteristic of a school with high leadership capacity was high or steadily improving student achievement (Lambert, 2003). The central focus of schooling is teaching and learning. A vision of high student achievement involves academic achievement, positive school involvement, the acquisition of resiliency behaviors, equitable gains between socioeconomic groups, and sustained improvement over time (Lambert, 1998). Collaboration should be focused on the needs of students, on increasing student learning, and on building a professional learning community (Murphy & Lick, 2005).

Shared vision, collective inquiry, collaborative teams, and action orientation should be assessed on the basis of results rather than good intentions (DuFour & Eaker, 1998; Senge, 1995; Sparks, 2005). Senge concluded: “The rationale for any strategy for
building a learning organization revolves around the premise that such organizations will produce dramatic results” (p. 44). Sustaining high levels of student achievement is a challenge for most schools (Chrisman, 2005; Lambert, 2005; Washor & Mojkowski, 2006), but high or steadily improving student achievement are the expected results of schools with high leadership capacity (Lambert, 2003).

Organizational Learning

Leaders set the pace for organizational learning, a necessary component of organizational growth. Tracing the roots of leadership capacity through organizational studies and school reform literature revealed that the concept of leadership capacity is closely linked to shared leadership, a critical component of a professional learning community. Professional learning communities are characterized by shared mission, vision, values, and goals; collaborative teams that are focused on learning; collective inquiry into best practices; action orientation/experimentation; commitment to continuous improvement; and results orientation (DuFour & Eaker, 1998). Both professional learning communities (DuFour & Eaker) and leadership capacity (Lambert, 1998, 2003) were built upon organizational learning theory.

Three guiding principles formed the foundation of organizational learning found in professional learning communities (DuFour & Eaker, 1998). The first principle asserts that the purpose of school is to insure high levels of learning for all students. Second, schools can achieve their purpose only if teachers and administrators work together in a collaborative culture characterized by high performing teams. Last, schools must assess their individual and collective effectiveness on the basis of results, as indicated by student achievement.
Educational studies that cite the influence of learning theory on leadership theory abound (Lambert, 1995; Senge, 1990; Sergiovanni, 1992). The connections between constructivist learning (Lambert, 1998), and knowledge creation (Nonaka & Takeuchi, 1995) are unmistakable. Social constructivism occurs when teachers interact to construct knowledge within a collaborative atmosphere (Barker, 2001). As the energies and capacities of teachers are mobilized, deep learning takes place (Fullan, 2002).

Leading, redefined as learning, made the relationship between professional learning communities and leadership capacity evident. The development of a collaborative school culture, where leadership capacity is fostered, allows schools to function as professional learning communities and offers the most promising blueprint for schools to achieve significant, ongoing improvement in student achievement (DuFour & Eaker, 1998; McLaughlin, 1995; Fullan, 1995; Eastwood & Lewis, 1992; Newmann, King, & Youngs, 2000).

Through the organizational learning process, schools build the capacity necessary for the successful use and dissemination of knowledge (Argyris & Schon, 1978). Organizational knowledge creation is the result of the continuous spiraling interaction between tacit and explicit knowledge (Nonaka & Takeuchi, 1995). The National Staff Development Council’s Standards for Staff Development (2001) claimed that leaders should promote a school culture that supports ongoing team learning and school improvement. Deal and Peterson (1999) identified school principals as cultural architects who build organizations that focus on team learning in service to students. The creation of organizational culture is the result of this complex learning process (Schein, 1992).
Cultural Change and Sustainability

Organizational learning theory offered recommendations to guide the reacculturation process (Scribner, 1999). It was recommended that there must be a transformation in the overall culture of schools in order to build learning communities (Fullan, 2002). When schools experienced such cultural shifts, fundamental changes to existing practices occurred that moved schools from simple reform and restructuring to re-culturing (Eaker, 2005; Sarason, 1996). This type of change in a school often requires organizational reacculturation as existing practices are questioned and new knowledge is contextualized (Bruffee, 1999). Washor and Mojkowski (2006) agreed and indicated that the establishment of an innovative culture requires the examination and questioning of existing practices and the organizational capacity to implement creative new ideas. “The culture of a school changes significantly when experienced teachers stop functioning in isolation and start solving problems related to student learning collectively” (Rosenholtz, 1991, p. 51).

In an investigation of the characteristics that distinguished good companies from great companies, Collins (2001) contended that sustainability, or “enduring greatness,” could only take place when leadership was willing to transform the organization through people and teams. Leaders who exhibited “moral purpose” developed other leaders in the school who were capable of sustaining reform through turnovers in leadership (Fullan, 2001). Blankstein (2004) asserted that sustainable leadership outlived individual leaders. Sharing or distributing leadership with others called for restructuring traditional roles and relationships at the school level (Elmore, 2000; Spillane, Halverson, & Diamond, 2001).
DuFour and Eaker (1998) agreed but noted that most educators have not been adequately trained to initiate, implement, and sustain ongoing change within the cultures of their schools. Researchers concurred that the distribution of leadership, characterized by organizational learning, leads to second-order change; change that requires new knowledge, practices, or approaches as the result of critical evaluation of one’s underlying values and assumptions (Marzano, 2003; Scribner, 1999).

It was argued that sustainability was closely linked to cultural change (Fullan, 2005). “Re-culturing is the name of the game” (Fullan, 2001). Fullan argued that changing a school’s culture through the redefinition of values and how people work together, leads to profound, enduring change. Based on years of study regarding school change, it was determined that sustainable leadership was needed in order to attain sustainable change; long-lasting improvement required an investment in long-term capacity-building (Blankstein, 2004). “If we want change to matter, to spread and to last, then the systems in which leaders do their work must make sustainability a priority” (Hargreaves & Fink, 2004, p. 13).

The cultural shift from an environment of teacher isolation to one of collegiality and collaboration is needed in order to improve student learning (Murphy & Lick, 2005). This type of change is complicated and challenging and requires systems thinking. Systems thinking focuses upon the interdependencies and interrelationships within an organization (Senge, Cabron-McCabe, Lucas, Smith, Dutton, & Kleiner, 2000; Wheatley, 1999). Teschke (1995) asserted that principals must be leaders of leaders, systems thinkers who consider the effects that their acts will have on the entire organization.
Change itself is constructivist in nature due to its unpredictability and evolving disposition (Lambert, 2002). Cultural change creates tension, thus placing an organization in a state of chaos (Nonaka & Takeuchi, 1998). Schein (1992) noted that it is the shared, basic assumptions acknowledged by members of an organization, manifested in observable artifacts, shared values, norms, and rules of behavior that defines culture. School improvement efforts are doomed to fail unless they are meaningfully linked to the school’s culture (Deal & Peterson, 1999; Sarason, 1996). In schools where “failure is not an option” transforming the culture is said to be key (Blankstein, 2004). Schein (1985) agreed and noted that one aspect of transformational leadership is an influence on culture. Change beyond first order restructuring is needed in order to transform traditional schools into schools where learning is continuous and focused on student achievement (Cuban, 1983). Fullan (2001) contended,

> It is a kind of re-culturing for which we strive; one that activates and deepens moral purpose through collaborative work cultures that respect differences and constantly build and test knowledge against measurable results-a culture within which one realizes that sometimes being off balance is a learning moment. (p. 45)

As a result of such research, many schools are involved in efforts to develop cultures that recognize and promote the collective talents and strengths of their staffs (Protheroe, 2004). Lambert (2003) asserted that school reform was a by-product of cultural reform in which a school’s faculty and community reconsider their traditional roles. During this transition or re-acculturation period, members of a school’s faculty
must learn to work together as they build trust in each other through the development of shared language, mores and values (Bruffee, 1999).

Change theorists frequently battle the problem of moving an organization beyond the implementation phase of change to the institutional phase (Blankstein, 2004). The challenge of sustaining change requires attention to the three Cs of communication, collaboration, and culture (DuFour & Eaker; 1998). Communicating and promoting the school’s vision, mission, and values, creating a collaborative environment, and embedding those values into the daily life and culture of the school are necessary in order to avoid the failures of previous improvement initiatives (DuFour & Eaker). Kotter (1988) contended that change should be built into the culture of an organization through thoughts, words, and actions. He believed that shared values should be demonstrated, promoted, and protected.

Senge (1999) contended that in order for learning organizations to sustain their momentum there must be inner shifts in people’s values and behaviors coupled with outer shifts in processes, strategies, and systems. Senge believed that leadership was the capacity of a living organization to shape its own future, as it constantly evolves and changes.

Psychometric Theory

Psychometric theory is the discipline that addresses the measurement and quantification of psychological phenomena (Ludlow, 2005). Generally, psychological phenomena are not objects, but rather they are people or their attributes (Nunnally & Bernstein, 1994). The term “psych” generally refers to personality or behavior whereas “metric” infers measurement or the use of numbers. Galton (1879) stated that,
“Psychometry, it is hardly necessary to say, means the imposing of measurement and number upon operations of the mind… that until the phenomena of any branch of knowledge have been subjected to measurement and number, it cannot assume the status and dignity of a science” (p. 149).

Early psychometric theories sought to understand the structure of intelligence. The first psychometric theory was published by British psychologist Spearman in 1904. Spearman developed a technique of statistical analysis, the two factor theory, whereby patterns of individual differences in test scores were examined resulting in a “general factor” of intelligence (Thorndike, 2005). American psychologist Thurstone (Thorndike), however, questioned Spearman’s theory and developed his own theory of intelligence. Using a new technique of his own devise, common factor analysis, Thurstone asserted that intelligence was multidimensional and that measures of mental abilities were actually composed of two factors (Thorndike, 2005). The theories of Spearman and Thurstone laid the groundwork for theories of intelligence and “…were derived from an examination of test relations and test content….called psychometric or structural theories” (Thorndike, p. 241).

Psychometric theory has evolved to include the measurement of attitudes, feelings, personality traits, personal preferences, perceptions, and dispositions through the use of self-reporting methods (Thorndike, 2005). One frequently used method of self-reporting is the survey technique. Surveys using summative attitude scales (Edwards, 1957), such as the semantic differential scale, require respondents to indicate their feelings or attitudes using numerical indications.
Numerous surveys have been developed that measure quality practices within business settings, but very few surveys have been created that measure quality practices in educational settings (Detert & Jenni, 2000). “The concept of leadership capacity has captured the imagination of educators around the world,” Lambert (2003, p. ix) contended. This case study employed psychometric theory as it was concerned with the design and analysis of a survey tool, the LCSS (Lambert, 2003) which purports to measure human characteristics, namely human perceptions. In this study the perceptions of faculty regarding the presence of leadership capacity in their schools were measured for the purpose of determining the reliability and construct validity of the LCSS (Lambert).

Summary

The purpose of this study was to determine the reliability and construct validity of Lambert’s LCSS (2003) and all reduced forms. This was accomplished by surveying the full-time faculties of twenty-five elementary, middle, and high schools within a select case study school district in Missouri.

Chapter two began with a brief historical review of school improvement initiatives that supported the need for a tool such as the LCSS (2003) to assess leadership capacity. The major conceptual underpinning of this study, social constructivism, was then examined, leading to a discussion of leadership and the relationship of constructivist leadership and transformational leadership to leadership as capacity-building.

The phenomenon of leadership capacity, as defined by Lambert (2003), was then discussed and the six characteristics of schools with high leadership capacity were individually explored. They included: (a) broad-based, skillful participation in the work
of leadership, (b) development of a shared vision that results in program coherence, (c) inquiry-based use of data to inform decisions, (d) roles and responsibilities that reflect broad involvement, collaboration, and collective responsibility, (e) reflective practice/innovation as the norm, and (f) high or steadily improving student achievement. Next, the secondary conceptual theories of organizational learning and cultural change were explored in relationship to leadership capacity and social constructivism. Finally, the underlying theory of psychometrics was presented as it related to the purpose of this study.

Chapter three presents the research design and methodology that were used to conduct this study. The purpose of the study is reviewed, as are the guiding research questions and null hypotheses. Instrumentation, reliability and validity, selection of participants, data collection and data analysis are also discussed.
CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

This chapter explains the research design and methodology that were used to conduct this case study, giving special emphasis to the analysis of data. The statement of the problem and purpose of the study are reviewed, as are the guiding research questions and corresponding null hypotheses. The selection of research participants is described, as well as the instrumentation, data collection methods, and data analysis procedures that were employed.

Statement of the Problem

The Leadership Capacity School Survey (LCSS, Lambert, 2003) has been used throughout the world as a self-assessment tool to measure the perceived presence of leadership capacity in schools (Lambert). The reliability and construct validity of the LCSS (Lambert), however, had not yet been established (Lambert, personal communication, 2006). Although the reliability and validity of numerous other surveys that measure quality practices in schools have been determined (Detert & Jenni, 2000; Short & Rinehart, 1992), none of these surveys specifically measures the phenomenon of leadership capacity. This lack of knowledge posed a problem for educators who depended upon the LCSS to provide a valid and reliable measure of the perceived presence of leadership capacity from a scientific perspective. If leadership capacity is to serve as a measurable indicator of school improvement, it was imperative that the psychometric properties of the LCSS (Lambert) be determined (Detert & Jenni, 2000).
Purpose of the Study

The purpose of this study was to determine the reliability and construct validity of Lambert’s LCSS (2003) and all reduced forms. This was accomplished by surveying the full-time faculties of twenty-five public elementary, middle, and high schools in a small, urban case study school district in Missouri.

Research Questions and Null Hypotheses

As discussed in chapter one, the researcher in this case study measured the perceived levels of leadership capacity in twenty-five elementary, middle and high schools. Five research questions provided the focus for inquiry. The first four questions sought to determine the reliability and construct validity of the LCSS (Lambert, 2003). The final research question determined summary statistics. Specifically, the research questions were:

**RQ1a.** Can constructs be identified for the LCSS (Lambert) overall with an eigen value =1.0 or greater (Green &Salkind, 2003; SPSS, 2006)?

**H01a:** Constructs cannot be identified for the LCSS (Lambert) overall with an eigen value of 1.0 or greater.

**RQ1b.** Can identified constructs be compared to Lambert’s suggested constructs with an eigen value of 1.0 or greater?

**RQ1c.** Can identified constructs be reduced to produce a valid short form?

**H01c.** The constructs cannot be reduced to produce a valid short form.

**RQ2.** What is the reliability of the LCSS (Lambert) overall and subscale in all
reduced forms with a correlation of 0.70 or above (Cronk, 2004; Green & Salkind, 2003)?

H₀: The LCSS (2003) and all reduced forms are not reliable by total and subscale using a correlation of 0.70 or above.

RQ₃. What are the summary statistics (N, mean, sd) for the perceptions of the phenomenon of leadership capacity final form and subscale as measured by the LCSS (Lambert, 2003)?

Research Design

Statistics was defined as the science of conducting studies to collect, organize, summarize, analyze and draw conclusions from data (Messner, personal communication, 2000). Statistical analyses may be either qualitative (Does something exist?) or quantitative (How much exists?). The research design for this study is best described as a quantitative (Glatthorn, 1998) cross-sectional (Fink & Kosekoff, 1998) case study (Yin, 1993; Patton, 1997). Non-experimental descriptive survey research methods (Fink & Koseckoff, 1998; Folz, 1996) were employed to investigate and respond to the research questions of this study.

Case studies gather information from one individual or group at a given point in time or over a period of time (Yin, 1993). For the purpose of this case study, participants were full-time faculty from a small, urban Missouri school district. Descriptive research describes the characteristics of an existing phenomenon at the present time or in the past (Folz, 1996). Leadership capacity, as defined by Lambert (2003) was the phenomenon under investigation in this case study. The researcher employed a survey research method to gather information regarding leadership capacity. This research method was selected as
it best served the needs of this particular study; surveys are data collection techniques, or tools, used to gain information from people (Fink & Kosekoff, 1998; Folz, 1996). The researcher used a cross-sectional design by which participants were surveyed at a single point in time (Fink & Kosekoff, 1998) to collect information regarding the participants’ current perceptions of the phenomenon of leadership capacity present in their schools.

Non-experimental descriptive statistical methods (Fink & Kosekoff, 1998; Folz, 1996) were employed to investigate and answer the research questions of this study. The LCSS (Lambert, 2003) yielded quantitative, interval research data (Hopkins, 1998). Results are presented in the form of summative scores (Fink & Kosekoff, 1998), namely sample size (n), mean (m), and standard deviation (sd). Survey results were also used to determine reliability, internal consistency, and construct validity (Green & Salkind, 2003).

Instrumentation

Lambert’s LCSS (2003) was the survey that was used to conduct this research study. Permission was granted by the Association for Supervision and Curriculum Development (ASCD) and by Lambert to reprint the survey and to use it for research purposes (Appendix C). The LCSS (Lambert) was developed to measure faculty perceptions of the phenomenon of leadership capacity present in their schools. The LCSS (Lambert) consisted of 30 questions clustered into six categories, or constructs, according to the characteristics of schools exhibiting high leadership capacity. The six constructs were: (a) broad-based, skillful participation in the work of leadership, (b) shared vision resulting in program coherence, (c) inquiry-based use of information to inform decisions and practice, (d) roles and responsibilities that reflect broad involvement, collaboration,
and collective responsibility, (e) reflective practice/innovation as the norm, and (f) high or steadily improving student achievement.

To a social scientist, the measurement of a phenomenon means the measurement of an abstract concept, something that cannot be seen or touched (Carmines & Zeller, 1979). Carmines and Zeller purported that this type of measurement requires the connecting of an abstract concept to an empirical indicant. In this study, the abstract concept or underlying, unobservable concept was the phenomenon of leadership capacity. The empirical indicant or observable response in this study was the rating that participants gave as they responded to the LCSS (Lambert, 2003).

Respondents were asked to select the answer that best described their perceptions of the phenomenon of leadership capacity within their schools from a choice of five responses on a continuous semantic differential scale (Heise, 1970). Semantic differential scales (SD) are response formats that measure the affective domain, people’s perceptions or reactions to stimuli, on a bipolar scale with contrasting adjectives at both ends (Heise, 1970). Heise also noted that semantic differential scales are easy and economical to use. Heiss added that SD ratings tend to be correlated and that dimensions of response, namely evaluation, potency, and activity, have been verified and replicated numerous times.

The five response choices on the LCSS (Lambert, 2003) were: (1) We do not do this in our school, (2) We are starting to move in this direction, (3) We are making good progress here, (4) We have this condition well-established, and (5) We are refining our practice in this area. Overall and subscale summative scores were used to perform further statistical analyses. Participants did not see the subscale or cumulative totals of
their surveys. This decision was made by the researcher to avoid the natural evaluation apprehension that many participants have regarding the quality of their responses (Campbell & Stanley, 1963).

The LCSS (2003) was Lambert’s most recent version of the survey. According to Lambert (personal communication on June 19, 2006; Appendix B), the original LCSS (Lambert, 1998) was developed “over time with the help of graduate students, principals, and teacher leaders in various locales” and “refined in conjunction with hundreds of people from the 1998 to the 2003 books.” Lambert also noted that formal reliability and validity studies had not been conducted on either form of the LCSS (Lambert) prior to this case study. This gap of knowledge posed a problem for researchers because issues of reliability and validity are of importance any time a collection of quantitative data for the purpose of research occurs (Huitt, 1999). Reliability is concerned with the consistency of information collected whereas validity focuses on the accuracy of information. For a survey to be valid, it must consistently measure what it intends to measure (Huitt, 1999). This case study, therefore, sought to determine the reliability and construct validity of the LCSS instrument (Lambert) overall and in all reduced forms.

Participants

A non-probability convenience sampling strategy was used to select participants (Fink & Kosekoff, 1998; Heppner & Heppner, 2004). Nonprobability samples may be selected systematically or as a matter of convenience (Fink & Kosekoff). Convenience sampling was also used for selection of participants in this research and the sample included people who were currently available and who met the selection criteria at the time of the survey. Participants were also willing to take a voluntary survey.
For the purpose of this study, sample selection was limited to certified teachers, counselors and building level administrators who had knowledge of the leadership capacity present in their schools. A total of 649 full-time faculty members from twenty-five elementary, middle, and high schools in a select school district in Missouri in April, 2007 were invited to participate. Figure 3 illustrates the number of faculty invited to participate in this case study by faculty and school status. Although this represented a very large sample, researchers contend that larger samples tend to reduce errors in sampling (Fink and Kosekoff, 1998). The actual study group consisted of those persons who were willing to participate in the survey.

A sample size calculator was used to determine the sample size needed for this study (Creative Research Systems, 2003). Sample size was determined to be between 86 (for a 10% confidence level) and 280 (for a 5% confidence level).

<table>
<thead>
<tr>
<th></th>
<th>Elementary Schools (n=18)</th>
<th>Middle Schools (n=4)</th>
<th>High Schools (n=3)</th>
<th>Total Schools (N=25)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrators</td>
<td>18</td>
<td>8</td>
<td>11</td>
<td>37</td>
</tr>
<tr>
<td>Teachers</td>
<td>265</td>
<td>112</td>
<td>205</td>
<td>582</td>
</tr>
<tr>
<td>Counselors</td>
<td>18</td>
<td>4</td>
<td>8</td>
<td>30</td>
</tr>
<tr>
<td>Total Faculty</td>
<td>301</td>
<td>124</td>
<td>224</td>
<td>649</td>
</tr>
</tbody>
</table>

*Figure 3.* This chart shows the number of faculty invited to participate in the study by faculty status and school status.

Data Collection

The LCSS (2003) was administered following approval by the Institutional Review Board (IRB) Research Office at the University of Missouri – Columbia in May of 2007. Data was collected, analyzed, and reported as a group; there was no disaggregation of data by school. The name of the case study school district, identities of individual
faculty members, and names of schools were blinded and were not identified in any way. An invitation to participate in this study was sent to the sample population via electronic mail by a third party (Appendix D).

Following the suggestions of Monette, Sullivan and DeJong (2005) and Fink and Kosekoff (1998) the letter of invitation introduced the researcher to recipients, explained the purpose of the study, described how participants were selected, listed possible risks and benefits of participation, discussed the amount of time required for completion of the survey, addressed anonymity and confidentiality, provided instructions for completing the survey including deadline for return, and appealed for the person’s participation. Contact information was provided including the names, e-mail addresses and telephone numbers of the principal investigator and dissertation advisor. The letter of invitation contained all “informed consent” information that was required for University of Missouri – Columbia IRB approval.

Within the letter of invitation, recipients were advised that by logging in to the website, completing the survey, and submitting the survey they were issuing their informed consent. Participants were provided with an embedded link to the survey at crownprojects.com/pierce_lambert_survey.asp. Crownprojects.com was an independent service that existed to provide hosting and development of web surveys and web research. Participants were asked to log in to the web site and complete their on-line surveys within five days. A reminder was sent on the third day (Appendix E).

Upon entering the survey website, respondents viewed a portal introduction (Appendix F) that thanked them in advance for participating in the survey and reminded them that their submission of the survey served as their informed consent. Participants
were then asked to proceed to the survey. Functionality of the survey was reviewed and checked prior to general release.

Data Analysis

As surveys were returned, raw data was entered into Microsoft Office Excel (Microsoft, 2003) spreadsheets. The Statistical Package for Social Sciences (SPSS, 2007) graduate software package, Base 15.0 for Windows, statistical program was used to perform data analyses. Both descriptive and summative data analyses were conducted. Results of the survey were calculated as overall summary scores and as subscale scores of Lambert's (2003) six critical features of leadership capacity. The following figure describes the treatment of imported data.

![Data Analysis Flowchart]

*Figure 4.* This data analysis flowchart shows the progression of data from collection through analysis.
Once surveys were submitted data went directly into a Microsoft Office Excel (Microsoft, 2003) spreadsheet. Data was then imported into the Statistical Program for Social Sciences (SPSS, 2006) data file. Research questions were framed to reflect the purpose of the underlying statistical applications (Green & Salkind, 2003). The data analysis techniques employed by this study, therefore, reflected the five underlying research questions.

Validity

Measurements, such as tests and surveys, can be reliable without being valid, but they cannot be valid unless they are reliable (Campbell & Stanley, 1966). Although reliability is a necessary condition for validity, reliability is not sufficient to determine validity alone. There are three types of validity as discussed below: face validity, content validity, and construct validity (Stewart & Ware, 1992).

Face validity. Face validity refers to validity at face value and requires intuitive judgment and subjective opinion (Cronbach, 1971; Walsh & Betz, 2001). The face validity of the LCSS (Lambert, 2003) was accepted since the survey had been used numerous times by Lambert and others to conduct school self-assessments (Lambert). The survey was refined numerous times since 1998 with input from thousands of educators (Lambert, personal communication, 2006). At face value, the LCSS (Lambert) appeared to measure the six critical components of leadership capacity as defined by Lambert; therefore, this study accepted the face validity of the LCSS (Lambert). Cronbach (1971) warned, however, that the internal structure of such a measure may not actually coincide with its appearance, and that validity in research should go beyond face
and appearance. The internal structure, or content validity, therefore, was then investigated.

*Content validity.* Content validity referred to the relationship between test items and the content knowledge being assessed or measured (Cronbach, 1971). In other words, the knowledge and skills covered by survey items should be representative of a larger body of knowledge and skills. Stewart and Ware (1992) noted that there were three main requirements for the content validity of an instrument: (a) main topic headings should be appropriate to the overall subject and aim of the measurement, (b) items chosen for inclusion should relate to the definition of their domain, and (c) items chosen should be representative of all of those that may have been chosen for inclusion.

Based on a meta-analysis of research regarding leadership capacity and its theoretical and conceptual underpinnings, the LCSS (Lambert, 2003) appeared to possess content validity. Furthermore, the LCSS was developed by Lambert, an expert in the field of leadership capacity. Lambert claimed that the LCSS was revised numerous times while in use through the input of users (Lambert, personal communication, 2006). For example, the 1998 version of the LCSS (Lambert) contained only five critical features of leadership capacity, whereas, following revision, the 2003 version contained six major components. “Shared vision resulting in program coherence” was an addition to the 2003 revision. This study, therefore, accepted the content validity of the LCSS (Lambert) and did not attempt to conduct further content validity analyses.

*Construct validity.* The construct validity of the LCSS (Lambert, 2003) had not yet been established, therefore, this study determined the construct validity of the LCSS (Lambert). Construct validity may be interpreted in two different ways (Streiner &
Norman, 1989). Streiner and Norman warned that, although construct validity refers to the degree to which scores measure the construct one is trying to measure, it is important to note what the tests for construct validity are trying to achieve. A researcher may attempt to validate an instrument in its entirety or validate the instrument’s underlying constructs. This study attempted to validate the construct validity of both the overall LCSS (Lambert) and its six individual constructs or subscales, namely: (a) broad-based, skillful participation in the work of leadership, (b) shared vision resulting in program coherence, (c) inquiry-based use of information to inform shared decisions and practice, (d) roles and responsibilities that reflect broad involvement, collaboration, and collective responsibility, (e) reflective practice and innovation as the norm, and (f) high or steadily improving student achievement.

Construct validity is a quantitative distinction (Hunter & Schmidt, 1990). One way to determine the construct validity of a scale is through the statistical method known as confirmatory factor analysis (Spearman, 1904; Thurstone; 1959). “Factor analysis is a technique used to identify factors that statistically explain the variation and co-variation among measures” (Green & Salkind, 2003, p. 296). Green and Salkind noted that factor analysis is conducted in two stages: principal components analysis and factor extraction and factor rotation. SPSS achieved both functions in one command. The program found the factors, extracted factors using principal components analysis, and then rotated the factors through varimax rotation.

Principal components analysis. The first stage of factor analysis involved the application of principal components analysis. Principal components analysis was a type of factor analysis that involved extracting factors from a correlation matrix in order to
make decisions about the number of factors underlying a set of measures (Green & Salkind, 2003). Factor analysis is often used as a data reduction technique by which a large number of variables can be reduced to a smaller group of factors (Green & Salkind).  

*Factor extraction.* To determine which factors to extract one must obtain the eigen values of all factors based on the principal components to assess their relative magnitudes or their total amount of variance. (Green & Salkind, 2003). Green and Salkind contended that the factor to be extracted first should be the one that represented the largest amount of variability. The statistical criteria for factor extraction was generally believed to be an eigen value greater than 1 (Cronk, 2001; Green & Salkind; SPSS, 2006). During factor analysis, items that measured the same constructs grouped together or loaded on the same factors. The factors were then determined to be constructs.  

*Factor rotation.* The second stage of factor analysis involved the rotation of factors to make them more meaningful. The goal of factor rotation was to statistically manipulate the results to make the factors more easily interpretable and to determine the final number of underlying factors (Green & Salkind, 2003). In this case, the factors were expressed in terms of multiple items of the LCSS (Lambert, 2003) instrument being employed. A varimax rotation was conducted to refine the constructs (Green & Salkind (2003).
<table>
<thead>
<tr>
<th>Research Question</th>
<th>Variable</th>
<th>Data Type</th>
<th>Description</th>
<th>Analysis</th>
<th>Yields</th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ 1</td>
<td>LCSS (2003) instrument</td>
<td>Scores</td>
<td>Component Identification</td>
<td>Confirmatory Factor Analysis: (a) Principal Component Factor Analysis (b) Varimax Rotation eg= 1.0 or above</td>
<td>eigen values constructs</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reduces # of items</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RQ 2</td>
<td>LCSS (2003) instrument</td>
<td>Scores</td>
<td>Internal Consistency</td>
<td>Item Total Analysis overall and by subscale Cronbach’s Alpha</td>
<td>Correlation r value alpha coefficient</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reliability</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 5.** Data analyses that were used to answer RQ1 and RQ2.

“An eigen value is the amount of variance of the variables accounted for by a factor (p. 301). Eigen values are important as they help a researcher decide how many factors one should use in an analysis. Although researchers vary on their opinions regarding how many factors to extract based on the magnitude of the eigen value, SPSS defaulted to retain all factors with an eigen value greater than 1.

*Reliability and Internal Consistency*

Reliability pertains to the consistency between measurements at different time intervals. Walsh and Betz (2001) discussed four types of reliability: test-retest reliability, alternate forms reliability, split-half reliability, and internal consistency reliability. The American Educational Research Association (1985) professed that there were three primary ways of reporting reliability: coefficient alpha for internal consistency estimates, test-retest correlations for temporal stability estimates, and alternate form correlations to determine form equivalence. For the purpose of this study internal consistency estimates
were determined using item-total analysis to inter-correlate total scores overall and the scores for each of the six constructs or subscales of the LCSS (Lambert).

Internal consistency refers to the homogeneity of test or survey items (Yu, 2005) or the consistency of results among items within a test. Internal consistency measures how well items that were designed to measure the same construct hold together in a scale (Messner, personal communication, 2006). The alpha coefficient is the most commonly used measure of internal consistency (Cronk, 2004) and was therefore determined by this case study.

Cronbach’s alpha (Cronbach, 1951) was the measure of reliability and internal consistency that was used to answer the research questions of this study. Cronbach’s alpha consists of a scale, comprised of a number of items, all of which were designed to measure a single construct. This psychometric application was used to determine the degree to which all items of the LCSS (Lambert) measured the same construct, namely leadership capacity. Additionally, Cronbach’s alpha was used to determine the degree to which all items within each of the six subscales measured that same construct.

An alpha coefficient at a minimum of .7 was considered adequate (Cronk, 2004); an alpha coefficient closer to .8 was considered strong (Cronk, personal communication, September, 2006). Cronbach (1951) recommended that researchers take into consideration the standard error of measurement when employing this approach. This study determined the internal consistency, or reliability, of the LCSS (Lambert). The coefficient of scores was obtained overall and by subscale of the six critical features of leadership capacity as measured by the LCSS (Lambert).
Descriptive Statistics

Procedures that are used to summarize and describe data are called descriptive statistics (Cronk, 2004). The descriptive interval data received from LCSS (Lambert, 2003) survey responses were collected as scaled scores. Of the three primary measures of central tendency determined by descriptive statistics (mean, median, and mode) the mean is the most powerful measure of central tendency. The standard deviation, a mathematical transformation of the variance, is the most powerful measure of dispersion (Cronk, 2004). Cronk claimed that when reporting measures of central tendency, it is also important to report the corresponding measure of dispersion; therefore, when reporting mean scores ($M$), it is also important to report the standard deviations ($sd$). In this case study the mean (M) and standard deviation (sd) were both determined overall summary and for the six subscales of the LCSS (Lambert). The size of the sample, overall (N) and subscale (n), were also reported. These statistics were reported as scale scores and assisted in describing and summarizing the data for further analysis.

<table>
<thead>
<tr>
<th>Descriptive Analysis</th>
<th>Interval Data Type</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCSS overall summary</td>
<td>Scale scores</td>
<td>n, M, and SD</td>
</tr>
<tr>
<td>LCSS subscales (n=6)</td>
<td>Scale scores</td>
<td>n, M, and SD</td>
</tr>
</tbody>
</table>

*Figure 6: Statistics that were used to answer Research Question 3.*

*Presentation of findings.* Research findings were described in two ways: written narrative and figural illustrations or tables. The confidentiality of participants was protected at all times. Blinded data were reported as summary statistics. School and faculty names were not reported. A final summary report is available for Linda Lambert,
authority and researcher, the case study school district superintendent, and for participants and other researchers at their request.

**Institutional Review Board (IRB) and School District Approval**

Approval was granted by the Institutional Review Board (IRB) Research Office at the University of Missouri – Columbia to conduct this study. Permission was also granted from the Superintendent of Schools of the selected case study district (Appendix F). The Association of Supervision and Curriculum Development (ASCD) granted the researcher permission to reprint and use the LCSS (Lambert, 2003) for dissertation purposes (Appendix C). Linda Lambert provided encouragement (Appendix B).

**Summary**

Chapter three presented the research design and methodology for this case study. The purpose of the study was reviewed, as were the five guiding research questions and corresponding null hypotheses. Selection of participants, data collection methods, instrumentation, and data analysis procedures were also described. The chapter ended with assurances of University of Missouri – Columbia IRB approval, case study school district superintendent approval, and ASCD approval to use the LCSS (Lambert, 2003)
CHAPTER FOUR
PRESENTATION OF FINDINGS

Lambert developed a survey, The Leadership Capacity School Survey (LCSS, 2003, Appendix A), designed to measure the perceived presence of leadership capacity in schools. School leaders worldwide already use the LCSS (Lambert) as a self-assessment tool to measure the perceived presence of leadership capacity in their schools (Lambert, 2005). The reliability and construct validity of the LCSS (Lambert) from a research perspective, however, had not yet been established (Lambert, personal communication, 2006). Although the reliability and validity of a number of other surveys that measure quality practices in schools have been determined (Detert & Jenni, 2000; Short & Rinehart, 1992), none of those surveys specifically measures the phenomenon of leadership capacity. This lack of knowledge posed a problem for educators who depended upon the LCSS (Lambert, 2003) to provide a valid and reliable measure of the presence of leadership capacity in their schools from a research perspective. If leadership capacity was to serve as one measurable indicator of school improvement potential, it was imperative that the psychometric properties of the LCSS (Lambert) be determined (Detert & Jenni, 2000).

The purpose of this quantitative case study was to determine the reliability and construct validity of Lambert’s Leadership Capacity School Survey (LCSS, 2003) and all reduced forms. The study addressed the following research questions:

RQ1a. Can constructs be identified for the LCSS (Lambert, 2003) overall with an eigen value =1.0 or greater (Green &Salkind, 2003; SPSS, 2006)?
$H_{1a}$: Constructs cannot be identified for the LCSS (Lambert, 2003) overall with an eigen value of 1.0 or greater.

$RQ1b$. Can identified constructs be compared to Lambert’s (2003) suggested constructs with an eigen value of 1.0 or greater?

$RQ1c$. Can identified constructs be reduced to produce a valid short form?

$H_{1c}$. The constructs cannot be reduced to produce a valid short form.

$RQ2$. What is the reliability of the LCSS (Lambert, 2003) overall and subscale and all reduced forms with a correlation of 0.70 or above (Cronk, 2004; Green & Salkind, 2003)?

$H_{2}$. The LCSS (Lambert) and all reduced forms are not reliable by total and subscale using a correlation of 0.70 or above.

$RQ3$. What are the summary statistics (N, mean, sd) for the perceptions of the phenomenon of leadership capacity final form and subscale as measured by the LCSS (Lambert, 2003)?

In response to these research questions this chapter reported the survey results of the LCSS (Lambert, 2003) that was administered to teachers, counselors, and building-level administrators in a select case study school district in Missouri in May, 2007. The data were organized to address each of the five research questions.

The sections included in this chapter discussion are as follows: introduction, description of study participants, analysis of data by research question, summary of findings, and conclusions.

Description of Study Participants
The LCSS (Lambert, 2003) was distributed to 649 administrators, counselors, and teachers in an urban case study school district in Missouri. A non-probability convenience sampling strategy was used to select participants (Fink & Kosekoff, 1998). The sample included only certified and currently employed administrators, counselors and teachers within twenty-five elementary, middle, and high schools that comprised the case study school district. All members of the sample population had school district-provided e-mail addresses and therefore, it was presumed that they had access to a computer in order to complete the LCSS (Lambert) survey.

A total of 337 out of a possible 649 participants responded to the voluntary survey. This represented a 52% overall return rate. SPSS used the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy (SPSS, 2006). Using the KMO, values are measured between 0 and 1 with values closest to 1 considered the best. Values should be greater than 0.5 for a satisfactory factor analysis to proceed (SPSS). The KMO determined that this return represented a .963 level of sampling adequacy. Using a sample calculator (Creative Research Systems, 2003), with a population of 649, a sample size of 312 was required to obtain a 95% confidence level with a confidence interval of 4. The return of 337 represented a 95% confidence level with a 3.7% confidence interval. Of the surveyed population 62% (n = 23) of administrators, 60% (N = 18) of counselors, and 50% (N = 289) of teachers chose to respond to the voluntary survey. Sample survey groups and return rates by faculty and school status are seen in Figure 7.
<table>
<thead>
<tr>
<th>Faculty Status</th>
<th>Surveys sent by school status</th>
<th>Surveys returned by school status</th>
<th>% return by faculty status</th>
<th>Total % of overall return by status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrators</td>
<td>37</td>
<td>23</td>
<td>62% of surveyed administrators responded</td>
<td>7%</td>
</tr>
<tr>
<td></td>
<td>18 elementary</td>
<td>10 elementary</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 high school</td>
<td>3 high school</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 middle school</td>
<td>6 middle school</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 did not designate</td>
<td>4 did not designate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counselors</td>
<td>30</td>
<td>18</td>
<td>60% of surveyed school counselors responded</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td>18 elementary</td>
<td>6 elementary</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8 high school</td>
<td>5 high school</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 middle school</td>
<td>2 middle school</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5 did not designate</td>
<td>5 did not designate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers</td>
<td>582</td>
<td>289</td>
<td>50% of surveyed teachers responded</td>
<td>86%</td>
</tr>
<tr>
<td></td>
<td>265 elementary</td>
<td>160 elementary</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>205 high school</td>
<td>70 high school</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>112 middle school</td>
<td>42 middle school</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>17 did not designate</td>
<td>17 did not designate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did not designate faculty status</td>
<td>7</td>
<td>0 elementary</td>
<td>2% of surveyed respondents did not designate status</td>
<td>2%</td>
</tr>
<tr>
<td></td>
<td>2 high school</td>
<td>1 middle school</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4 unknown</td>
<td>4 unknown</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>649</td>
<td>337</td>
<td>52% of those surveyed responded</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Figure 7.* Return rates of the LCSS (Lambert, 2003) by faculty and school status are depicted in Figure 7.

Thirty respondents failed to designate their school status (elementary, middle, or high school). Seven respondents failed to designate their faculty status (administrator, counselor, or teacher). Four respondents failed to identify both their school status and their faculty status. SPSS (2006) automatically discounted any responses that were
unidentifiable for any research questions in which faculty or school status were necessary for analysis.

Analysis of Data by Research Question

Data acquired from participation in the voluntary LCSS (Lambert, 2003) were analyzed and summarized according to the statistical methods outlined in Chapter 3. The following results were reported by the research questions that guided this quantitative case study.

Research Question RQ1a Results

Research question RQ1a sought to determine the construct validity of the LCSS (Lambert, 2003) through the statistical method known as confirmatory factor analysis (Spearman, 1904; Thurstone, 1959). The guiding research question was:

RQ1a. Can constructs be identified for the LCSS (Lambert) overall with an eigen value =1.0 or greater (Green & Salkind, 2003; SPSS, 2006)?

H0,1a: Constructs cannot be identified for the LCSS (Lambert) overall with an eigen value of 1.0 or greater.

Confirmatory factor analysis results. In order to respond to research question RQ1a, a confirmatory factor analysis was conducted using survey data. Employing the Statistical Package for Social Sciences (SPSS, 2006) a principal component analysis, the first stage of confirmatory factor analysis, was conducted. The eigen values of all principal components were determined to assess their relative magnitudes or total amounts of variance (Green & Salkind, 2003). An output chart listing the initial eigen values and percentage of variance from the principal components analysis is presented in
Appendix H. A scree plot is presented in Figure 8 that depicts initial eigen values for components 1-30.

![Scree Plot]

Figure 8. A scree plot depicts components 1-30 of LCSS (Lambert, 2003).

Identification of components. Of the 30 possible components, SPSS (2006) defaulted to retain four factors with eigen values greater than 1; those components with the largest percentage of variability. The cut off point for retained components and remaining Cattell Rubble factors are seen in Figure 8. The four retained factors accounted for 68.45% of the total variance and were summarized in Table 1.

Component 1, was the strongest retained factor and accounted for 54.99% of the variance. Component 2 accounted for 5.35% of the variance. Component 3 represented 4.50% of the variance and Component 4 represented 3.60% of the variance for a cumulative variance of 68.45%. This result was consistent with the advice of Mertler and
Vannatta (2005) that retained items should account for approximately 70% of the cumulative variance.

Table 1

<table>
<thead>
<tr>
<th>Components</th>
<th>Initial Eigen-value</th>
<th>% of Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16.500</td>
<td>54.999</td>
</tr>
<tr>
<td>2</td>
<td>1.605</td>
<td>5.350</td>
</tr>
<tr>
<td>3</td>
<td>1.350</td>
<td>4.502</td>
</tr>
<tr>
<td>4</td>
<td>1.080</td>
<td>3.601</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Total 68.452</td>
</tr>
</tbody>
</table>

Summary. As shown in Table 1 and Figure 8, in response to RQ1a, the researcher rejected the null hypothesis. Four constructs were identified overall with eigen values of 1.0 or greater. One construct was overwhelmingly stronger than the other three; construct 1 represented 54.99% of the total variance. As a result of factor analysis, Lambert’s six original constructs were reduced to four components as discussed below.

Research Question RQ1b Results

Research question RQ1b sought to determine the construct validity of the original LCSS (Lambert, 2003) instrument’s six underlying constructs or subscales, namely: (a) broad-based, skillful participation in the work of leadership, (b) shared vision resulting in program coherence, (c) inquiry-based use of information to inform shared decisions and practice, (d) roles and responsibilities that reflect broad involvement, collaboration, and collective responsibility, (e) reflective practice and innovation as the norm, and (f) high or steadily improving student achievement. The research question was:

RQ1b. Can identified constructs be compared to Lambert’s suggested constructs with an eigen value of 1.0 or greater?
Data reduction results. Using the results of the initial principal components analysis, SPSS (2006) was again employed. A varimax rotation with Kaiser normalization was used as a data reduction technique to determine whether the principal components, or underlying constructs, could be reduced to a smaller group of factors (Green & Salkind, 2003). The rotation converged in ten iterations. Four unnamed components emerged as compared to the six original constructs suggested by Lambert (2003).

Rotated component matrix output (SPSS, 2006) identified factor loadings with an initial cutoff point of 0.4 or above. Twenty-nine of the 30 original items of the LCSS (Lambert, 2003) remained at the 0.4 cutoff. In analysis, rotated component factor weights below 0.4 were considered low; weights above 0.6 were considered high (Cronk, 2007).

Recognizing that 29 of the 30 original constructs weighed 0.4 or above, the researcher then selected a cutoff point of 0.55 to reduce the scale. Reduced Form #1 (Appendix I) consisted of those questions whose factor loadings remained with a cutoff point of 0.55, excluding co-correlates. Questions remaining at the 0.55 cutoff point were designated in Table 2 by an asterisk* and were also listed in Figure 9.

In order to further reduce the instrument, an additional cutoff point of 0.6 was selected. Again, paired co-correlates were dropped, resulting in Reduced Form #2 (Appendix J). Component questions that remained at the 0.6 level and above were designated in Table 2 by double asterisks** and were also listed in Figure 9.
Table 2

*Rotated Component Matrix Eigen Values of 0.4 or Above for LCSS (Lambert, 2003)*

<table>
<thead>
<tr>
<th>Question</th>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>A1</td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>.566*</td>
</tr>
<tr>
<td>A3</td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td></td>
</tr>
<tr>
<td>A5</td>
<td></td>
</tr>
<tr>
<td>A6</td>
<td>.563*</td>
</tr>
<tr>
<td>A7</td>
<td></td>
</tr>
<tr>
<td>B1</td>
<td>.709**</td>
</tr>
<tr>
<td>B2</td>
<td>.685**</td>
</tr>
<tr>
<td>B3</td>
<td>.740**</td>
</tr>
<tr>
<td>B4</td>
<td>.680**</td>
</tr>
<tr>
<td>C1</td>
<td></td>
</tr>
<tr>
<td>C2</td>
<td></td>
</tr>
<tr>
<td>C3</td>
<td>.602**</td>
</tr>
<tr>
<td>C4</td>
<td>.632**</td>
</tr>
<tr>
<td>C5</td>
<td>.551*</td>
</tr>
<tr>
<td>D1</td>
<td></td>
</tr>
<tr>
<td>D2</td>
<td></td>
</tr>
<tr>
<td>D3</td>
<td></td>
</tr>
<tr>
<td>D4</td>
<td></td>
</tr>
<tr>
<td>E1</td>
<td>.756**</td>
</tr>
<tr>
<td>E2</td>
<td>.747**</td>
</tr>
<tr>
<td>E3</td>
<td>.708**</td>
</tr>
<tr>
<td>E4</td>
<td>.598**</td>
</tr>
<tr>
<td>E5</td>
<td>.630**</td>
</tr>
<tr>
<td>F1</td>
<td></td>
</tr>
<tr>
<td>F2</td>
<td></td>
</tr>
<tr>
<td>F3</td>
<td>.825**</td>
</tr>
<tr>
<td>F4</td>
<td>.831**</td>
</tr>
<tr>
<td>F5</td>
<td></td>
</tr>
</tbody>
</table>

Key:  * Designates those factors that remained at a 0.55 cutoff point (23 items)
** Designates those factors that remained at a 0.6 cutoff point (17 items)

According to Lambert’s LCSS (2003), the seven questions in subscale A originally measured broad-based, skillful participation. The four questions in subscale B measured shared vision. The five questions in subscale C measured inquiry-based use of...
information. Subscale D consisted of four questions that measured collaboration.

Reflection was measured by the five questions in subscale E. Subscale F’s five questions measured student achievement.

Table 2 depicts reduced forms of the LCSS (2003) that were identified by the researcher. Comparisons between Lambert’s original LCSS (2003) subscales and the constructs identified with 0.55 and 0.6 cutoff points are found in Figure 9.

<table>
<thead>
<tr>
<th>LCSS (Lambert, 2003) 30 Questions Cutoff 0.4</th>
<th>Reduced LCSS (Lambert) Form #1 Cutoff 0.55 23 Questions</th>
<th>Reduced LCSS (Lambert) Form #2 Cutoff 0.6 17 Questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construct 1: (Participation) A1, A2, A3, A4, A5, A6, A7</td>
<td>Construct 1: (Professional Learning Community) A2, A6, B1, B2, B3, B4, C3, C4, C5</td>
<td>Construct 1: (Intense Focus on Vision) B1, B2, B3, B4, C3, C4</td>
</tr>
<tr>
<td>Construct 2: (Vision) B1, B2, B3, B4</td>
<td>Construct 3: (Inquiry) C1, C2, C3, C4, C5</td>
<td>Construct 3: (Collaboration) D1, D2, D3, D4</td>
</tr>
<tr>
<td>Construct 3: (Inquiry) C1, C2, C3, C4, C5</td>
<td>Construct 4: (Collaboration) D1, D2, D3, D4</td>
<td>Construct 3: (Shared Leadership) A1, A3, A7, D2, D3</td>
</tr>
<tr>
<td>Construct 4: (Collaboration) D1, D2, D3, D4</td>
<td>Construct 5: (Reflection) E1, E2, E3, E4, E5</td>
<td>Construct 2: (Reflection) E1, E2, E3, E4, E5</td>
</tr>
<tr>
<td>Construct 5: (Reflection) E1, E2, E3, E4, E5</td>
<td>Construct 6: (Student Achievement) F1, F2, F3, F4, F5</td>
<td>Construct 4: (Student Achievement) F2, F3, F4, F5</td>
</tr>
<tr>
<td>Construct 6: (Student Achievement) F1, F2, F3, F4, F5</td>
<td>Construct 4: (Student Achievement) F2, F3, F4, F5</td>
<td>Construct 4: (Student Achievement) F2, F3, F4</td>
</tr>
</tbody>
</table>

*Figure 9. Components of the original LCSS (Lambert, 2003) are compared to reduced forms #1 and #2.*
Figure 9 clearly shows that two of Lambert’s original LCSS (2003) constructs or subscales remained strong in both the 0.55 and the 0.6 reduced forms of the survey. These two constructs measured “reflection” and “student achievement” and were represented by questions E and F respectively. Lambert (2003) subscale A “participation” and D “collaboration” descriptors merged to form newly identified constructs in reduced forms #1 and #2. Lambert (2003) construct C “Inquiry” no longer stood on its own, however, some descriptors of Lambert’s subscale C blended with Construct 1 of reduced forms #1 and #2.

Reduced Form #1 consisted of four identified constructs. Construct 2 clearly coincided with Lambert’s (2003) subscale of “Reflection” and Construct 4 was closely aligned to the Lambert subscale “Student Achievement.” The researcher then determined that the two remaining constructs, 1 and 3, although reflecting items from Lambert’s original subscales, required new definition due to their new configurations. A review of LCSS (2003) questions that were retained under reduced survey form #1, led the researcher to define new Construct 1 of LCSS (Lambert, 2003) reduced form #1 as “Professional Learning Community” and Construct 3 was identified as “Shared Leadership.”

Similarly, reduced survey form # 2 also emerged with four constructs. Construct 2 mirrored “Reflection” and Construct 4 again represented “Student Achievement.” Upon examination, Construct 1 was redefined as “Intense Focus on Vision” and Construct 3 was identified as “Shared Governance.”

Component 2 in both reduced forms #1 and #2 mirrored Lambert’s LCSS (2003) subscale “Reflection,” and the researcher noted that many of Component 2’s retained
descriptors referred not only to reflection, but also to the innovative use of resources. Similarly, new Component 4 closely aligned with Lambert’s subscale F - “Student Achievement” but was renamed “Monitors and Responds to Student Achievement.” Although the LCSS (Lambert, 2003) subscale titles were fitting to the original instrument, based on a meta-analysis of literature, new component headings more accurately described the constructs presented in reduced forms #1 and #2.

Summary. Following principal components analysis with varimax rotation, four components emerged as compared to the six original constructs suggested by Lambert (2003). Four identified components were compared to Lambert’s six suggested constructs with eigen values of 1.0 or greater. The construct originally labeled “Reflection” by Lambert (2003) maintained its identity throughout the reduction process. The Lambert (2003) construct “Student Achievement” remained strong, but not identical to the original Lambert subscale. The four remaining Lambert (2003) subscales converged following principal component analysis with varimax rotation into two new constructs that were renamed due to their new configurations. In reduced survey form #1 the new constructs were defined as “Professional Learning Community” and “Shared Leadership.” In reduced survey form #2, new constructs were labeled “Intense Focus on Vision” and “Shared Governance.”

In response to RQ1b: Can identified constructs be compared to Lambert’s suggested constructs with an eigen value of 1.0 or greater? Although similar in many ways, the 30 original items of the LCSS (Lambert, 2003) did not fully align within Lambert’s six proposed constructs, therefore construct validity of the LCSS (Lambert) was not confirmed. Two reduced forms of the LCSS (Lambert) instrument were
developed through the data reduction technique known as Principal Component Analysis with varimax rotation (Green & Salkind, 2003).

**Research Question RQ1c Results**

Research question *RQ1c* questioned the validity of the newly identified reduced forms of the LCSS (Lambert, 2003). The question was:

*RQ1c*. Can identified constructs be reduced to produce a valid short form?

*H0,1c*. The constructs cannot be reduced to produce a valid short form.

The researcher found that the LCSS (Lambert, 2003) was a psychometric tool composed of 30 items. Principal component analysis with varimax rotation found that 29 of the 30 items possessed identified factor loadings at 0.4 or above. Since component weights of 0.4 were considered low, constructs were reduced to produce two valid short forms of the survey; forms with factor loadings of 0.55 and above and 0.6 and above, respectively. The four identified components that comprised each of the two reduced forms of the LCSS (Lambert, 2003) were comparable, although not identical, to Lambert’s six suggested constructs with eigen values of 1.0 or greater, as depicted in Figure 9. In response to *RQ1c*, the researcher rejected the null hypothesis. Constructs were reduced to produce two valid short forms of the LCSS (Lambert, 2003). These reduced survey forms are found in Appendixes I and J.

**Research Question RQ2 Results**

The purpose of research question RQ2 was to determine the reliability and internal consistency of the LCSS (Lambert, 2003) and all reduced forms. The question was: *RQ2*. What is the reliability of the LCSS (Lambert, 2003) overall and subscale and
all reduced forms with a correlation of 0.70 or above (Cronk, 2004; Green & Salkind, 2003)?

$H_2$. The LCSS (2003) and all reduced forms are not reliable by total and subscale using a correlation of 0.70 or above.

*Reliability and Internal Consistency*

Item-total analysis and Cronbach’s alpha were the measures of reliability and internal consistency employed to respond to $RQ2$ (Cronbach, 1951; Cronk, 2004; Green & Salkind, 2003). These psychometric applications were first employed to determine the degree to which all items of the LCSS (Lambert, 2003) measured the overall construct of leadership capacity. In addition, the alpha co-efficient was also used to determine the degree to which all items within each of the six original subscales measured those same underlying dimensions. SPSS (2006) was employed to perform item-total analysis and calculate Cronbach’s alpha. Results were scored on a semantic differential scale of 1 – 5 with 1 being the lowest score and 5 being the highest. It was therefore not necessary to transform or reverse score any survey items since results were originally reported as standard scores (Green & Salkind, 2003).

*Cronbach’s alpha on LCSS (Lambert, 2003)*. Findings from the calculation of Cronbach’s alpha indicated that the LCSS (Lambert) overall had a reliability factor of .97 which represented a very high level of internal consistency. According to Cronk (personal communication, 2007), 1.0 is the highest alpha possible and anything above 0.7 is considered adequate. The original LCSS (Lambert, 2003), therefore, was found to be a very reliable and internally consistent measure of the overall construct of “leadership capacity.”
The reliability factors for all six original subscales of the LCSS (Lambert, 2003) were also found to be very high, ranging from .867 to .919, as represented in Table 3.

Table 3

**Summary of the Reliability of the Leadership Capacity School Survey (Lambert, 2003) Overall and Subscale of the Six Critical Features**

<table>
<thead>
<tr>
<th>Items</th>
<th>Cronbach’s Alpha</th>
<th>N of Cases</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCSS (overall)</td>
<td>.970</td>
<td>296</td>
<td>30</td>
</tr>
<tr>
<td>Participation</td>
<td>.900</td>
<td>324</td>
<td>7</td>
</tr>
<tr>
<td>Vision</td>
<td>.919</td>
<td>331</td>
<td>4</td>
</tr>
<tr>
<td>Inquiry</td>
<td>.902</td>
<td>329</td>
<td>5</td>
</tr>
<tr>
<td>Collaboration</td>
<td>.919</td>
<td>328</td>
<td>4</td>
</tr>
<tr>
<td>Reflection</td>
<td>.909</td>
<td>324</td>
<td>5</td>
</tr>
<tr>
<td>Student Achievement</td>
<td>.867</td>
<td>326</td>
<td>5</td>
</tr>
</tbody>
</table>

*Cronbach’s alpha on reduced forms #1 and #2.* Next, employing Cronbach’s Alpha, the reliabilities of two reduced forms of the LCSS (Lambert, 2003) were also determined. As seen in Tables 4 and 5, the reliabilities of reduced forms #1 and #2, overall and subscale, were also found to be very high. All alpha coefficients were 0.7 or greater, with all but one alpha measuring 0.86 or above. LCSS (Lambert, 2003) Reduced Form #1 component reliability factors ranged from 0.8641 to 0.9312. The range for Reduced Form #2 of the LCSS (Lambert, 2003) was 0.783 to 0.918. Reduced form reliability summaries are found in Tables 4 and 5.

Table 4

**Summary of the Reliability of Reduced Survey Form #1 of the LCSS (Lambert, 2003) Overall and Reduced Components**

<table>
<thead>
<tr>
<th>Items</th>
<th>Cronbach’s Alpha</th>
<th>N of Cases</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1</td>
<td>.931</td>
<td>324</td>
<td>9</td>
</tr>
<tr>
<td>Component 2</td>
<td>.909</td>
<td>324</td>
<td>5</td>
</tr>
<tr>
<td>Component 3</td>
<td>.871</td>
<td>322</td>
<td>5</td>
</tr>
<tr>
<td>Component 4</td>
<td>.864</td>
<td>329</td>
<td>4</td>
</tr>
<tr>
<td>Overall:</td>
<td>.961</td>
<td>300</td>
<td>23</td>
</tr>
</tbody>
</table>
Table 5

Summary of the Reliability of Reduced Form #2 of the LCSS (Lambert, 2003)
Overall and Reduced Components

<table>
<thead>
<tr>
<th>Items</th>
<th>Cronbach’s Alpha</th>
<th>N of Cases</th>
<th>N of Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1</td>
<td>.918</td>
<td>327</td>
<td>6</td>
</tr>
<tr>
<td>Component 2</td>
<td>.909</td>
<td>324</td>
<td>5</td>
</tr>
<tr>
<td>Component 3</td>
<td>.783</td>
<td>326</td>
<td>3</td>
</tr>
<tr>
<td>Component 4</td>
<td>.863</td>
<td>320</td>
<td>3</td>
</tr>
<tr>
<td>Overall:</td>
<td>.945</td>
<td>307</td>
<td>17</td>
</tr>
</tbody>
</table>

Item-Total Analysis

An item-total analysis was conducted on the LCSS (Lambert, 2003) overall to
determine if the LCSS (Lambert) was internally consistent: that is, whether or not the six
underlying subscales, A-F, measured the overall construct of leadership capacity. Item-
total analysis revealed an overall correlation of .887 with subscale correlations ranging
from .824 to .911.

All six original subscales of the LCSS (Lambert, 2003) measured the
phenomenon of leadership capacity. The LCSS (Lambert) was internally consistent
overall with a correlation of .887. The six subscale correlations ranged from .824 to .911.

Reduced Form #1 was also internally consistent. Item-total analysis revealed an
overall correlation of .960 with correlations of the four components ranging from .850 to
.931. In addition, Reduced Form #2 was also internally consistent with a correlation of
.945 and components ranging from .783 to .918. Item correlations of the LCSS (Lambert,
2003) and reduced forms #1 and #2, overall and subscale, were depicted in Table 6.
Table 6

*Summary of Item-Total Analysis of LCSS (Lambert, 2003) and Reduced Forms #1 and #2, Overall and Subscale*

<table>
<thead>
<tr>
<th>LCSS Subscale</th>
<th>Correlation</th>
<th>Reduced Form #1</th>
<th>Correlation</th>
<th>Reduced Form #2</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (Participation)</td>
<td>.911</td>
<td>C1</td>
<td>.931</td>
<td>C1</td>
<td>.918</td>
</tr>
<tr>
<td>B (Vision)</td>
<td>.850</td>
<td>C2</td>
<td>.850</td>
<td>C2</td>
<td>.850</td>
</tr>
<tr>
<td>C (Inquiry)</td>
<td>.890</td>
<td>C3</td>
<td>.871</td>
<td>C3</td>
<td>.783</td>
</tr>
<tr>
<td>D (Collaboration)</td>
<td>.870</td>
<td>C4</td>
<td>.864</td>
<td>C4</td>
<td>.863</td>
</tr>
<tr>
<td>E (Reflection)</td>
<td>.887</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F (Student Achievement)</td>
<td>.824</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall:</td>
<td>.887</td>
<td>Overall:</td>
<td>.9601</td>
<td>Overall:</td>
<td>.945</td>
</tr>
</tbody>
</table>

*Item-total correlations by original subscales.* Internal item-total correlations were determined for each of Lambert’s (2003) subscales, A-F, to determine if all questions that composed the individual subscales measured that same construct. The internal consistency of each set of subscale questions is depicted in Tables 7-12.

The seven questions which constituted Subscale A (Participation) were internally consistent with item correlations ranging from .706 to .838. Correlation was significant at the 0.01 level (2-tailed). Correlations were depicted in Table 7.

Table 7

*Item-Total Correlations for LCSS (Lambert, 2003) Subscale A (Participation)*

<table>
<thead>
<tr>
<th>Item</th>
<th>Item-total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>.706</td>
</tr>
<tr>
<td>A2</td>
<td>.730</td>
</tr>
<tr>
<td>A3</td>
<td>.838</td>
</tr>
<tr>
<td>A4</td>
<td>.815</td>
</tr>
<tr>
<td>A5</td>
<td>.831</td>
</tr>
<tr>
<td>A6</td>
<td>.815</td>
</tr>
<tr>
<td>A7</td>
<td>.856</td>
</tr>
</tbody>
</table>
The four questions that composed Subscale B (Vision) were internally consistent with item correlations ranging from .855 to .919. Correlation was significant at the 0.01 level (2-tailed). Correlations are depicted in Table 8.

Table 8

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>.855</td>
</tr>
<tr>
<td>B2</td>
<td>.913</td>
</tr>
<tr>
<td>B3</td>
<td>.919</td>
</tr>
<tr>
<td>B4</td>
<td>.900</td>
</tr>
</tbody>
</table>

The five items that constituted Subscale C (Inquiry) were internally consistent with item correlations ranging from .840 to .868. Correlation was significant at the 0.01 level (2-tailed). Table 9 depicts these correlations.

Table 9

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1</td>
<td>.843</td>
</tr>
<tr>
<td>C2</td>
<td>.849</td>
</tr>
<tr>
<td>C3</td>
<td>.845</td>
</tr>
<tr>
<td>C4</td>
<td>.868</td>
</tr>
<tr>
<td>C5</td>
<td>.840</td>
</tr>
</tbody>
</table>

The four items that constituted Subscale D (Collaboration) were internally consistent with correlations ranging from .884 to .908. Correlation was significant at the 0.01 level (2-tailed). Correlations are depicted in Table 10.

Table 10

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-total Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1</td>
<td>.884</td>
</tr>
<tr>
<td>D2</td>
<td>.889</td>
</tr>
<tr>
<td>D3</td>
<td>.908</td>
</tr>
<tr>
<td>D4</td>
<td>.907</td>
</tr>
</tbody>
</table>
The five items that constituted Subscale E (Reflection) were internally consistent with item correlations ranging from .814 to .896. Correlation was significant at the 0.01 level (2-tailed). Table 11 depicts these correlations.

**Table 11**

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-total Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>.861</td>
</tr>
<tr>
<td>E2</td>
<td>.896</td>
</tr>
<tr>
<td>E3</td>
<td>.814</td>
</tr>
<tr>
<td>E4</td>
<td>.866</td>
</tr>
<tr>
<td>E5</td>
<td>.847</td>
</tr>
</tbody>
</table>

The five questions that constituted Subscale F (Student Achievement) were internally consistent with item correlations ranging from .750 to .863. Correlation was significant at the 0.01 level (2-tailed). Correlations are found in Table 12.

**Table 12**

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>.750</td>
</tr>
<tr>
<td>F2</td>
<td>.842</td>
</tr>
<tr>
<td>F3</td>
<td>.780</td>
</tr>
<tr>
<td>F4</td>
<td>.863</td>
</tr>
<tr>
<td>F5</td>
<td>.817</td>
</tr>
</tbody>
</table>

**Summary.** The data in Tables 7-12 revealed that the LCSS (Lambert, 2003) possessed internal consistency overall with a correlation of .887. In addition, each of the original subscales that represented the six critical features of leadership capacity (Lambert, 2003) was also found to be internally consistent. Subscale reliability factors were as follows: Participation .900, Vision .919, Inquiry .902, Collaboration .919, Reflection .909, Student Achievement .867. Based upon these findings, the researcher
rejected the null hypothesis $H_0$. The LCSS (Lambert, 2003) was reliable overall and by subscale using a correlation of 0.70 and above.

*Reduced Survey Form Analyses*

Reliability analyses (SPSS, 2006) were also conducted on the two reduced forms of the LCSS (Lambert, 2003) as identified by the earlier principal component factor analysis with varimax rotation. New constructs were compared to Lambert’s (2003) six original subscales in Table 6. Tables 13-18 depict the item-total correlations for the reduced components that composed Reduced LCSS (Lambert, 2003) Forms #1 and #2.

*Reduced Form #1.* Reduced Form #1 consisted of four components: Professional Learning Community, Reflection, Shared Leadership, and Monitors and Responds to Student Achievement. The nine items that constituted Component 1, Reduced Form #1 (Professional Learning Community) were internally consistent, ranging from .694 (.7) to .868. Correlation was significant at the 0.01 level (2-tailed). These correlations are depicted in Table 13.

Table 13

*Item-Total Correlations for Reduced Form #1, Component 1 (Professional Learning Community)*

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-Total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2</td>
<td>.694</td>
</tr>
<tr>
<td>A6</td>
<td>.786</td>
</tr>
<tr>
<td>B1</td>
<td>.799</td>
</tr>
<tr>
<td>B2</td>
<td>.848</td>
</tr>
<tr>
<td>B3</td>
<td>.868</td>
</tr>
<tr>
<td>B4</td>
<td>.848</td>
</tr>
<tr>
<td>C3</td>
<td>.800</td>
</tr>
<tr>
<td>C4</td>
<td>.786</td>
</tr>
<tr>
<td>C5</td>
<td>.796</td>
</tr>
</tbody>
</table>
The five items that constituted Component 2 of Reduced Form #1 (Reflection) were internally consistent with item correlations ranging from .814 to .896. Correlation was significant at the 0.01 level (2-tailed). Table 14 depicts these correlations.

Table 14
Item-Total Correlations for Reduced Form #1, Component 2 (Reflection)

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-Total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>.861</td>
</tr>
<tr>
<td>E2</td>
<td>.896</td>
</tr>
<tr>
<td>E3</td>
<td>.814</td>
</tr>
<tr>
<td>E4</td>
<td>.866</td>
</tr>
<tr>
<td>E5</td>
<td>.847</td>
</tr>
</tbody>
</table>

The five items that composed Component #3, Reduced Form #1 (Shared Leadership), were internally consistent, ranging from .751 to .837. Correlations were significant at the 0.01 level (2-tailed). Correlations are depicted in Table 15.

Table 15
Item-Total Correlations for Reduced Form #1 Component 3 (Shared Leadership)

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-Total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>.751</td>
</tr>
<tr>
<td>A3</td>
<td>.833</td>
</tr>
<tr>
<td>A7</td>
<td>.828</td>
</tr>
<tr>
<td>D2</td>
<td>.828</td>
</tr>
<tr>
<td>D3</td>
<td>.837</td>
</tr>
</tbody>
</table>

The four items that comprised Component 4 of Reduced Form #1 (Student Achievement) were internally consistent with a range of .813 to .903. Correlations were significant at the 0.01 level (2-tailed). Table 16 depicts these correlations.
Table 16

*Item-Total Correlations for Reduced Form #1, Component 4 (Monitors and Responds to Student Achievement)*

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-Total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2</td>
<td>.837</td>
</tr>
<tr>
<td>F3</td>
<td>.833</td>
</tr>
<tr>
<td>F4</td>
<td>.903</td>
</tr>
<tr>
<td>F5</td>
<td>.813</td>
</tr>
</tbody>
</table>

*Summary.* The data in Tables 13-16 revealed that all four components that comprised Reduced Form #1 of the LCSS (Lambert, 2003) were internally consistent. Subscale reliability coefficients were: Component 1 - .931, Component 2 - .887, Component 3 - .871, and Component 4 - .864. No items were deleted.

*Reduced Form #2.* Reduced Form #2 also consisted of four components. These components were labeled Intense Focus on Vision, Reflection, Shared Governance, and Monitors and Responds to Student Achievement. Component 1 of Reduced Form #2 consisted of 6 items as seen in Table 17. All items were internally consistent and ranged from .784 to .890. Correlation was significant at the 0.01 level (2-tailed).

Table 17

*Item-Total Correlations for Reduced Form #2, Component 1 (Intense Focus on Vision)*

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-Total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1</td>
<td>.827</td>
</tr>
<tr>
<td>B2</td>
<td>.866</td>
</tr>
<tr>
<td>B3</td>
<td>.890</td>
</tr>
<tr>
<td>B4</td>
<td>.872</td>
</tr>
<tr>
<td>C3</td>
<td>.805</td>
</tr>
<tr>
<td>C4</td>
<td>.784</td>
</tr>
</tbody>
</table>

Item-Total Correlations for Reduced Form #2, Component 2 (Reflection) were the same as Alternate Form #1, Component 2. These correlations were depicted in Table 14.
The five items were internally consistent with item correlations ranging from .814 to .896. Correlation was significant at the 0.01 level (2-tailed).

Table 18 depicts the internal consistency that was found between the three items that formed Component 3 of Reduced Form #2. Correlations ranged from .793 to .869 and were significant at the 0.01 level (2-tailed).

Table 18

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-Total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>.793</td>
</tr>
<tr>
<td>D2</td>
<td>.855</td>
</tr>
<tr>
<td>D3</td>
<td>.869</td>
</tr>
</tbody>
</table>

Component 4 of Reduced Form #2 was internally consistent with correlations ranging from .863 to .919. Seen in Table 19, correlations were significant at the 0.01 level (2-tailed).

Table 19

<table>
<thead>
<tr>
<th>Question</th>
<th>Item-Total Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>F2</td>
<td>.863</td>
</tr>
<tr>
<td>F3</td>
<td>.880</td>
</tr>
<tr>
<td>F4</td>
<td>.919</td>
</tr>
</tbody>
</table>

Summary. The data in Tables 17-19 revealed that all four components of Reduced Form #2 of the LCSS (Lambert, 2003) were internally consistent. Subscale reliability coefficients were as follows: Component 1 - .918, Component 2 - .887 Component 3 - .783, and Component 4 - .863. No items were dropped.
Research Question RQ3 Results

The purpose of RQ3 was to describe how the sample population responded as a group to all of the central variables of this case study. Descriptive data were determined in response to the following research question:

RQ3. What are the summary statistics (N, mean, sd) for the perceptions of the phenomenon of leadership capacity final form and subscale as measured by the LCSS (Lambert, 2003)?

Descriptive Statistics

Summary statistics, final form and subscale, as measured by the LCSS (Lambert, 2003) were calculated using the SPSS (2006) to measure the presence of the phenomenon of leadership capacity within the selected case study school district. Table 20 depicts the number of valid and missing responses, the mean, and the standard deviation for the 30 questions that composed the LCSS (Lambert, 2003).
Table 20

*Summary Statistics for the LCSS (Lambert, 2003) by Item*

<table>
<thead>
<tr>
<th>Item</th>
<th>N Valid</th>
<th>N Missing</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>332</td>
<td>5</td>
<td>3.27</td>
<td>1.211</td>
</tr>
<tr>
<td>A2</td>
<td>337</td>
<td>0</td>
<td>3.78</td>
<td>.908</td>
</tr>
<tr>
<td>A3</td>
<td>335</td>
<td>2</td>
<td>3.41</td>
<td>1.014</td>
</tr>
<tr>
<td>A4</td>
<td>337</td>
<td>0</td>
<td>3.23</td>
<td>1.018</td>
</tr>
<tr>
<td>A5</td>
<td>334</td>
<td>3</td>
<td>3.26</td>
<td>1.093</td>
</tr>
<tr>
<td>A6</td>
<td>335</td>
<td>2</td>
<td>3.35</td>
<td>1.086</td>
</tr>
<tr>
<td>A7</td>
<td>333</td>
<td>4</td>
<td>3.05</td>
<td>1.079</td>
</tr>
<tr>
<td>B1</td>
<td>335</td>
<td>2</td>
<td>3.64</td>
<td>1.005</td>
</tr>
<tr>
<td>B2</td>
<td>335</td>
<td>2</td>
<td>3.33</td>
<td>1.052</td>
</tr>
<tr>
<td>B3</td>
<td>333</td>
<td>4</td>
<td>3.51</td>
<td>1.031</td>
</tr>
<tr>
<td>B4</td>
<td>333</td>
<td>4</td>
<td>3.32</td>
<td>1.091</td>
</tr>
<tr>
<td>C1</td>
<td>335</td>
<td>2</td>
<td>3.09</td>
<td>1.033</td>
</tr>
<tr>
<td>C2</td>
<td>335</td>
<td>2</td>
<td>3.33</td>
<td>1.085</td>
</tr>
<tr>
<td>C3</td>
<td>335</td>
<td>2</td>
<td>3.77</td>
<td>.986</td>
</tr>
<tr>
<td>C4</td>
<td>331</td>
<td>6</td>
<td>3.72</td>
<td>.973</td>
</tr>
<tr>
<td>C5</td>
<td>333</td>
<td>4</td>
<td>2.98</td>
<td>1.127</td>
</tr>
<tr>
<td>D1</td>
<td>329</td>
<td>8</td>
<td>3.25</td>
<td>1.042</td>
</tr>
<tr>
<td>D2</td>
<td>330</td>
<td>7</td>
<td>3.04</td>
<td>1.050</td>
</tr>
<tr>
<td>D3</td>
<td>333</td>
<td>4</td>
<td>3.22</td>
<td>1.051</td>
</tr>
<tr>
<td>D4</td>
<td>333</td>
<td>4</td>
<td>3.16</td>
<td>1.100</td>
</tr>
<tr>
<td>E1</td>
<td>333</td>
<td>4</td>
<td>3.28</td>
<td>1.109</td>
</tr>
<tr>
<td>E2</td>
<td>331</td>
<td>6</td>
<td>3.16</td>
<td>1.101</td>
</tr>
<tr>
<td>E3</td>
<td>331</td>
<td>6</td>
<td>2.65</td>
<td>1.130</td>
</tr>
<tr>
<td>E4</td>
<td>331</td>
<td>6</td>
<td>3.32</td>
<td>1.013</td>
</tr>
<tr>
<td>E5</td>
<td>329</td>
<td>8</td>
<td>3.13</td>
<td>1.078</td>
</tr>
<tr>
<td>F1</td>
<td>330</td>
<td>7</td>
<td>3.19</td>
<td>1.017</td>
</tr>
<tr>
<td>F2</td>
<td>333</td>
<td>4</td>
<td>3.61</td>
<td>.953</td>
</tr>
<tr>
<td>F3</td>
<td>333</td>
<td>4</td>
<td>3.80</td>
<td>.849</td>
</tr>
<tr>
<td>F4</td>
<td>329</td>
<td>8</td>
<td>3.67</td>
<td>.908</td>
</tr>
<tr>
<td>F5</td>
<td>333</td>
<td>4</td>
<td>3.31</td>
<td>1.058</td>
</tr>
</tbody>
</table>

An analysis of descriptive data indicated that the number of valid responses on each question of the LCSS (Lambert, 2003) varied from a low of 329 responses to a high of 337 responses (100% response). Respondents were allowed to skip items if they desired. Of the 30 questions posed by the LCSS (Lambert), 337 faculty members (100%) responded to items A2 and A4, and 335 responded to items A3, A6, B1, B2, C1, C2, and
C3. Three hundred and thirty-four faculty responded to item A5, 333 responded to items A7, B3, B4, C5, D3, D4, E1, F2, F3, F5. Item A1 received 332 responses. Three hundred thirty-three respondents answered items C4, E2, E3, and E4. Items F1 and D2 were answered by 330 faculty, however only 329 faculty responded to D1, E5 and F4.

Means for the 30 survey items on a five-point scale ranged from 2.65 (Item E3 - *Have joined with networks of other schools and programs, both inside and outside the district, to secure feedback on our work*) to 3.80 (Item F3 - *Provide feedback to children and families about student progress*). Standard deviations among responses ranged from a low standard deviation of .849 (Item F3, above) to 1.211 (Item A1 – *Have established representative governance groups*).

Descriptive statistics for the LCSS (Lambert, 2003) overall, by total and subscale, are summarized in Figure 10. Figure 10 also depicts the range of possible scores for each subscale, the median or midpoint of each range, the overall percentage of points scored based upon the number of points possible for each subscale (mean/overall possible points), and the average rating per item overall and subscale.

<table>
<thead>
<tr>
<th>Subscale</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
<th>N of Questions</th>
<th>Range of Possible Points</th>
<th>Median of Range</th>
<th>% of Possible Points Scored</th>
<th>Average Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation</td>
<td>324</td>
<td>23.34</td>
<td>5.88</td>
<td>7</td>
<td>7-35</td>
<td>21</td>
<td>66%</td>
<td>3.3</td>
</tr>
<tr>
<td>Vision</td>
<td>331</td>
<td>13.80</td>
<td>3.74</td>
<td>4</td>
<td>4-20</td>
<td>12</td>
<td>69%</td>
<td>3.45</td>
</tr>
<tr>
<td>Inquiry</td>
<td>329</td>
<td>16.88</td>
<td>4.42</td>
<td>5</td>
<td>5-25</td>
<td>15</td>
<td>68%</td>
<td>3.4</td>
</tr>
<tr>
<td>Collaboration</td>
<td>328</td>
<td>12.64</td>
<td>3.81</td>
<td>4</td>
<td>4-20</td>
<td>12</td>
<td>63%</td>
<td>3.15</td>
</tr>
<tr>
<td>Reflection</td>
<td>324</td>
<td>15.55</td>
<td>4.66</td>
<td>5</td>
<td>5-25</td>
<td>15</td>
<td>62%</td>
<td>3.1</td>
</tr>
<tr>
<td>Student Achievement</td>
<td>326</td>
<td>17.59</td>
<td>3.87</td>
<td>5</td>
<td>5-25</td>
<td>15</td>
<td>70%</td>
<td>3.5</td>
</tr>
<tr>
<td>Overall</td>
<td>296</td>
<td>99.44</td>
<td>23.11</td>
<td>30</td>
<td>30-150</td>
<td>90</td>
<td>66%</td>
<td>3.3</td>
</tr>
<tr>
<td>Valid N</td>
<td>296</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Figure 10.* Overall and subscale summaries of the LCSS (Lambert, 2003) are depicted.
Items on the LCSS (Lambert, 2003) were rated on a scale of 1-5. Respondents who rated each item within a subscale a “1” (*We do not do this in our school*) would have scored 20% of the points possible for the entire subscale. A subscale average of “2” (*We are starting to move in this direction*) equated to 40% of the subscale’s possible points. An average rating of “3” (*We are making good progress here*) earned 60% of subscale points possible. Eighty-percent (80%) of possible points earned required an average score of “4” (*We have this condition well-established*). An average score of “5” (*We are refining our practice in this area*) on each subscale would have earned 100% of the points possible for that subscale. Based upon this line of reasoning, Figure 11 reflects the percent of possible points earned overall by subscale on the LCSS (Lambert).

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>We do not do this at our school.</strong></td>
<td><strong>We are starting to move in this direction.</strong></td>
<td><strong>We are making good progress here.</strong></td>
<td><strong>We have these conditions well-established.</strong></td>
<td><strong>We are refining our practice in this area.</strong></td>
</tr>
<tr>
<td><strong>20%</strong> of possible score</td>
<td><strong>40%</strong> of possible score</td>
<td><strong>60%</strong> of possible score</td>
<td><strong>80%</strong> of possible score</td>
<td><strong>100%</strong> of possible score</td>
</tr>
</tbody>
</table>

*Figure 11.* The rating scale of the LCSS (Lambert, 2003) and percentage of possible points are seen above.

All subscales earned 60% or more of the points possible for that subscale with subscale average scores ranging from 3.1 to 3.5. As seen in Figure 10, the subscale with the highest overall rating was “Student Achievement” which earned 70% of the points possible with an average rating of 3.5. “Reflection” was the subscale with the lowest overall percentage of points earned (62%) with an average rating of 3.1. Other subscale average ratings were “Collaboration” 3.15 (63%), “Participation” 3.3 (66%), “Inquiry” 3.4 (68%), and “Vision” 3.45 (69%). Overall, the average rating per survey item was 3.3 or 66% of the points possible.
One-way Analysis of Variance (ANOVA)

Described as a useful and adaptable statistical tool (Cronk, 2004), the analysis of variance (ANOVA) is a statistical procedure that examines the mean differences of two or more levels of an independent variable on a dependent variable (Heppner & Heppner, 2004). The one-way ANOVA is a statistical procedure that analyzes the mean differences between or across two or more groups or subjects that vary based upon a single independent variable (Cronk, 2004; Green & Salkind, 2003).

A one-way ANOVA was conducted on the LCSS (Lambert, 2003) overall by faculty status to determine if administrator, counselor, and teacher responses differed significantly on any of the subscales or on the total of the original LCSS (Lambert). Based on observed means, a significance level of 0.05 or below would have indicated a significant difference between faculty by status. As found in Appendix K, no significant differences were found between groups: among all three groups of participants there were no significance levels less than 0.05 in any of the sub-scores nor in the overall total. The sub-score which came closest to identifying a difference between groups was subscale E (Reflection) which had a significance level of 0.072. Since no significant differences were found between faculty groups based on observed means on the original LCSS (Lambert), the researcher decided to look at reduced form #2 by school status.

One-way ANOVA on Reduced Form #2 by Construct

Next, a one-way ANOVA was conducted on Reduced Form #2 by school status to determine whether significant differences in the perceptions of the presence of leadership capacity by construct existed between elementary, middle, and high schools. A
one-way ANOVA, conducted on the four constructs and the overall total of Reduced Form #2, produced the following results.

Significant differences in the perceptions of faculty occurred based upon school status (elementary, middle, and high schools) on all four of the constructs that comprised Reduced Form #2 of the LCSS (Lambert, 2003). These differences are depicted in Table 21. Elementary schools rated their perceptions of the presence of leadership capacity the highest on all four revised LCSS (Lambert, 2003) constructs as compared to other types of schools. High school ratings ranked second by school status on all constructs, with middle school perceptions of the presence of leadership capacity rating the lowest of the three types of schools on all four revised constructs.

Construct 4 (Monitors and Responds to Student Achievement) received the highest mean overall by school status, followed by Construct 1 (Intense Focus on Vision), Construct 3 (Shared Governance), and Construct 2 (Reflection). In all instances the means of the elementary schools were the highest, with high school means ranking second and middle schools reporting the lowest means of the three school types. This information encouraged the researcher to further investigate the differences.

Table 21

*One-Way Analysis of Variance by Construct of Reduced Form #2 of the LCSS (Lambert, 2003) by School Status*

<table>
<thead>
<tr>
<th>Construct</th>
<th>Elementary School</th>
<th>Middle School</th>
<th>High School</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>1</td>
<td>22.5</td>
<td>5.1</td>
<td>167</td>
<td>18.5</td>
</tr>
<tr>
<td>2</td>
<td>16.1</td>
<td>4.6</td>
<td>168</td>
<td>13.2</td>
</tr>
<tr>
<td>3</td>
<td>9.9</td>
<td>2.9</td>
<td>171</td>
<td>8.7</td>
</tr>
<tr>
<td>4</td>
<td>11.7</td>
<td>2.2</td>
<td>170</td>
<td>10.4</td>
</tr>
</tbody>
</table>

* Based on observed means, the mean difference was significant at the .05 level. A .000 level of significance represents an amount less than .001 (Cronk, 2004).
Construct 1. Construct 1 of Reduced Form #2 consisted of 6 items. Possible scores for these 6 items ranged from 6 - 30 with a median of 18, equating to a rating of 3 on a five point Likert-like scale. As seen in Table 21, significant mean differences were seen by school status. The mean scores for Construct 1 in rank order were: elementary schools 22.54 (3.76 rating), high schools 20.63 (3.44 rating), and middle schools 18.53 (3.09 rating). All means were above the midpoint score of 18 which represented a “3” rating as described earlier in Figure 11.

Construct 2. Construct 2 of Reduced Form #2 consisted of 5 items. Total overall scores for construct 2 ranged from 5 – 25 with a midpoint of 15. A mean score of 15 represented an overall rating of 3 (Figure 14). As seen in Table 21, mean differences were again significant with mean scores as follows: elementary schools 16.12 (3.22 rating), high schools 15.32 (3.06 rating), and middle schools 13.23 (2.64 rating). Elementary schools and high schools both rated the items in Construct 2 at or above the midpoint of 15 (3 rating). Middle schools, however rated this construct below the midpoint of 15.

Construct 3. Construct 3 of Reduced Form #2 consisted of 3 items with a range of 3 – 15 possible points and a midpoint of 9. Mean differences were significant with mean scores as follows: elementary schools 9.92 (rating of 3.3), high schools 9.02 (rating of 3.0), and middle schools 8.70 (rating of 2.9). Mean scores by school status ranged from 8.70 to 9.92 based on a midpoint score of 9 as viewed in Table 21.

Construct 4. Construct 4 of Reduced Form #2 consisted of three items. Possible points for this subscale ranged from 3 – 15 with a midpoint of 9. The mean scores in rank order for Construct 4 were: elementary schools 11.71 (rating of 3.9), high schools 10.46
(rating of 3.49) and middle schools 10.40 (rating of 3.47). All means fell above the midpoint of 9 as seen in Table 21.

*One-way ANOVA on Reduced Form #2 by Construct, by Item*

It was determined that a one-way analysis of variance by individual item would assist in the specific identification of significant differences within each construct. Reduced Form #2 of the LCSS (Lambert, 2003) consisted of 17 items overall, therefore a one-way ANOVA was conducted using those 17 items. Differences were again calculated based on the observed means, rather than on a modified population mean. A significance level of 0.05 was used to identify significant differences. The results of this calculation are summarized in Tables 22-25. A description of all items discussed below can be found in Appendix J, LCSS (Lambert, 2003) Reduced Form #2.

*Construct 1.* Significant differences in the perceptions of faculty at the 0.05 level occurred on all six items of Construct 1 (B1, B2, B3, B4, C3, C4). The means of all items in Construct 1 were rated highest by elementary schools, followed by high schools. Middle school means were the lowest on all six items by school status. Elementary school ratings on Construct 1 items ranged from a mean of 4.06 on item C3 to 3.48 on item B4. Items B1 and C3 calculated the highest means (3.54) at the high school level with the lowest mean attributed to item B2 (3.28). Middle school means ranged from a high of 3.26 on items B1 and C4 to a low of 2.72 on item B4. Table 22 depicts the results of a one-way ANOVA by item for construct 1.
Table 22

Construct 1: One-Way Analysis of Variance by Item of Reduced Form #2 of the LCSS (Lambert, 2003) by School Status

<table>
<thead>
<tr>
<th>Item</th>
<th>Elementary School</th>
<th>Middle School</th>
<th>High School</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>B1</td>
<td>3.83</td>
<td>0.974</td>
<td>174</td>
<td>3.26</td>
</tr>
<tr>
<td>B2</td>
<td>3.52</td>
<td>1.100</td>
<td>174</td>
<td>2.80</td>
</tr>
<tr>
<td>B3</td>
<td>3.68</td>
<td>1.082</td>
<td>173</td>
<td>3.08</td>
</tr>
<tr>
<td>B4</td>
<td>3.48</td>
<td>1.082</td>
<td>172</td>
<td>2.72</td>
</tr>
<tr>
<td>C3</td>
<td>4.06</td>
<td>.885</td>
<td>174</td>
<td>3.24</td>
</tr>
<tr>
<td>C4</td>
<td>3.96</td>
<td>.903</td>
<td>170</td>
<td>3.26</td>
</tr>
</tbody>
</table>

*Based on observed means, the mean difference was significant at the .05 level. A .000 level of significance represents an amount less than .001 (Cronk, 2004).

Construct 2 consisted of five items (E1, E2, E3, E4, E5). Significant mean differences were found between school types (elementary, middle, and high) on four of the five items. No significant difference was found on item E3. Elementary school means were the highest on items E1, E2, E4, and E5. The high school mean was the highest by school status on item E3. Elementary mean scores ranged from a high of 3.46 on item E4 to a low of 2.63 on item E3. High school means ranged from 3.30 (item E4 for a high) to a low of 2.66 on item E3. Middle school means were lowest on all items ranging from 2.82 (item E5) to 2.41 (item E3). Results for construct 2 are depicted in Table 23.

Table 23

Construct 2: One-Way Analysis of Variance by Item of Reduced Form #2 of the LCSS (Lambert, 2003) by School Status

<table>
<thead>
<tr>
<th>Item</th>
<th>Elementary School</th>
<th>Middle School</th>
<th>High School</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>E1</td>
<td>3.45</td>
<td>1.069</td>
<td>173</td>
<td>2.65</td>
</tr>
<tr>
<td>E2</td>
<td>3.32</td>
<td>1.096</td>
<td>172</td>
<td>2.63</td>
</tr>
<tr>
<td>E3</td>
<td>2.63</td>
<td>1.097</td>
<td>172</td>
<td>2.41</td>
</tr>
<tr>
<td>E4</td>
<td>3.46</td>
<td>1.028</td>
<td>172</td>
<td>2.81</td>
</tr>
<tr>
<td>E5</td>
<td>3.26</td>
<td>1.106</td>
<td>170</td>
<td>2.82</td>
</tr>
</tbody>
</table>

*Based on observed means, the mean difference was significant at the .05 level. A .000 level of significance represents an amount less than .001.
Construct 3. Construct 3 was composed of three items. Significant mean differences by school status were found for two of the three items, namely A1 and D2. No significant difference by school status was found for item D3. Elementary schools again measured the highest means of the three school types (elementary, middle, and high) on all Construct 3 items, scoring 3.16 on item D2, 3.32 on item D3 and 3.43 on item A1. Middle school ratings were lowest by school status on two out of three items (D2 and D3), however the middle school mean (3.00) was slightly higher than the high school mean (2.99) on item A1. Mean differences for construct 3 are presented in Table 24.

Table 24

<table>
<thead>
<tr>
<th>Item</th>
<th>Elementary School</th>
<th>Middle School</th>
<th>High School</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>A1</td>
<td>3.43</td>
<td>1.217</td>
<td>176</td>
<td>3.00</td>
</tr>
<tr>
<td>D2</td>
<td>3.16</td>
<td>1.103</td>
<td>171</td>
<td>2.76</td>
</tr>
<tr>
<td>D3</td>
<td>3.32</td>
<td>1.083</td>
<td>173</td>
<td>2.96</td>
</tr>
</tbody>
</table>

*Based on observed means, the mean difference was significant at the .05 level.

Construct 4. All three items that composed Construct 4 (F2, F3, F4) yielded significant mean differences by school status. Item F3 yielded a significance level of .049, which was very close to the .05 cut-off. Elementary schools yielded the highest overall means on all three items (3.86, 3.91, 3.92) with middle school means ranking second on item F3 (3.76) and item F4 (3.44). The high school mean ranked second on item F2 with a rating of 3.37. Results are depicted in Table 25.
Table 25

Construct 4: One-Way Analysis of Variance by Item of Reduced Form #2 of the LCSS (Lambert, 2003) by School Status

<table>
<thead>
<tr>
<th>Item</th>
<th>Elementary School</th>
<th>Middle School</th>
<th>High School</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>SD</td>
<td>N</td>
</tr>
<tr>
<td>F2</td>
<td>3.86</td>
<td>.907</td>
<td>173</td>
</tr>
<tr>
<td>F3</td>
<td>3.92</td>
<td>.807</td>
<td>173</td>
</tr>
<tr>
<td>F4</td>
<td>3.91</td>
<td>.823</td>
<td>170</td>
</tr>
</tbody>
</table>

*Based on observed means, the mean difference was significant at the .05 level. A .000 level of significance represents an amount less than .001.

Summary of one-way analysis of variance by item. As depicted in Tables 22-25, there were significant differences in the perceptions of faculty at the 0.05 level or below by school status (elementary, middle, high) on 15 of the 17 items (B1, B2, B3, B4, C3, C4, E1, E2, E4, E5, A1, D2, F2, F3, F4) as measured on Reduced Form #2 of the LCSS (Lambert, 2003). No significant differences in perceptions by school status occurred on items E3, D3. In all cases but one (item E3), the elementary school means ranked highest by school status. In all but three cases middle school means were lowest by school status. Middle schools ranked second by school status on three items: A1, F3, and F4.

Tukey HSD multiple comparison post-hoc analysis. Tukey’s HSD (Honestly Significantly Different) is a test commonly used to conduct post-hoc comparisons. The Tukey test deals with pair-wise comparisons and is often used when three or more levels of the independent variable exist and significant differences from ANOVAs have been found (Heppner & Heppner, 2003).

Knowing that significant differences in the perceptions of faculty by school status (elementary, middle, high) existed on 15 of the 17 items that composed Reduced Survey #2, the next step was to determine where those differences occurred. In order to determine where differences occurred between schools, the researcher used descriptive
statistics that had been previously identified by the one-way ANOVA to perform a Tukey HSD multiple comparison post-hoc analysis.

*Results of the Tukey analysis.* Results of the Tukey HSD post-hoc analysis reported that significant differences in perceptions occurred between elementary schools and middle schools on twelve items: B1, B2, B3, B4, C3, C4, E1, E2, E4, E5, F2, and F4. No significant differences were found between elementary and middle schools on five items: E3, A1, D2, D3, and F3.

Significant differences were found between elementary school perceptions and high school perceptions on 6 items: C3, C4, A1, F2, F3, and F4. No significant differences in perceptions were found between elementary and high school responses on 11 items: B1, B2, B3, B4, E1, E2, E3, E4, E5, D2, and D3.

A comparison of middle school and high school responses identified 4 items where significant differences were noted: B2, B4, E1, and E4. No significant differences between middle school and high school responses were found in 13 of the 17 items, namely: B1, B3, C3, C4, E2, E3, E5, A1, D2, D3, F2, F3, F4. Results of the Tukey HSD analysis are summarized in Figure 12.

*Summary.* Significant differences between elementary, middle and high schools were documented 22 times as a result of the Tukey HSD post-hoc comparison. The greatest differences were noted between elementary school perceptions and middle school perceptions (12 items). The least number of significant differences occurred between the middle school and the high school levels (4 items). Six significant differences occurred between elementary school and high school levels.
<table>
<thead>
<tr>
<th>Item</th>
<th>E = high value</th>
<th>E = high value</th>
<th>HS = high value</th>
<th>Number of Significant Value Differences by Item</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1 – Develop vision jointly</td>
<td>X</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>B2 – Ask questions re: vision to keep on track</td>
<td>X</td>
<td>X</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>B3 – Align programs, assessments, instruction with vision</td>
<td></td>
<td>X</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>B4 – Review vision regularly</td>
<td>X</td>
<td>X</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>C3 – Focus on student learning</td>
<td>X</td>
<td>X</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>C4 – Use data to inform teaching</td>
<td>X</td>
<td>X</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>E1 – Make time for ongoing reflection</td>
<td>X</td>
<td>X</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>E2 – Encourage individual and group initiative</td>
<td>X</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>E3 – Network with other schools to secure feedback</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>E4 – Practice and support new ways of doing things</td>
<td>X</td>
<td>X</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>E5 – Develop our own criteria for accountability</td>
<td>X</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>A1 – Have established representative governance groups</td>
<td></td>
<td>X</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>D2 – Perform outside of traditional roles</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>D3 – Develop new ways to work together</td>
<td></td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>F2 – Teach and assess so that all children can learn</td>
<td>X</td>
<td>X</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>F3 – Provide feedback to students/families</td>
<td>X</td>
<td>X</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>F4 – Talk with families about student performance</td>
<td></td>
<td>X</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>6</strong></td>
<td><strong>4</strong></td>
<td><strong>22</strong></td>
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</tbody>
</table>

*Figure 12.* The multiple comparison analysis identifies where significant differences in mean perceptions occurred by school status levels (E = elementary schools, M = middle schools, HS = high schools).
Overall Summary

Chapter four began with an introduction to the presentation of findings and a review of the five research questions that guided this quantitative case study. A description and analysis of study participants followed. Major findings were then reported in a comprehensive analysis of data by research question. In order to determine construct validity, the results of confirmatory factor analysis were reported in which major components were identified. Additionally, the results of a varimax rotation with Kaiser normalization were reported by which components were reduced and construct validity was determined.

Further data analysis led to the reporting of the results of item-total analysis and Cronbach’s alpha, which included item total correlations and internal consistency results. All results were reported overall and subscale of the original LCSS (Lambert, 2003), and also for reduced forms #1 and #2. Finally, an analysis of descriptive data reported the n, mean, and standard deviation for the LCSS (Lambert, 2003) overall and subscale. Results of a one-way analysis of variance (ANOVA) examined the mean differences overall and subscale of the LCSS (Lambert) by faculty status. The results of additional one-way ANOVAs by construct, performed on the LCSS (Lambert) Reduced Form #2, reported the mean differences by school status (elementary, middle, and high schools), and mean differences between school type by item. The analysis of data ended with the results of a Tukey HSD post-hoc multiple comparison analysis. Chapter five presents a summary and discussion of major findings, establishes conclusions, discusses limitations of the study, and suggests recommendations for further study.
CHAPTER FIVE

DISCUSSION OF FINDINGS AND CONCLUSIONS

The philosophy and principles of leadership capacity were extensively documented over the past several years (Blankstein, 2004; Collins, 2001; Deming, 1986; Lambert, 1995, 1998, 2003). Lambert (1998, 2003) contended that the development of leadership capacity led to school improvement and improved student achievement. If one accepts Lambert’s contention as true, it behooves school leaders to assess the presence of leadership capacity in their own schools as an indicator of school improvement potential.

Lambert developed a survey, The Leadership Capacity School Survey (LCSS, 2003, Appendix A) that was designed to measure the perceived presence of leadership capacity in schools. School leaders worldwide have already used the LCSS (Lambert) as a self-assessment tool to measure the presence of leadership capacity in their schools (Lambert, 2005), however the reliability and construct validity of the LCSS (Lambert) had not yet been determined (Lambert, personal communication, 2006). Although the reliability and validity of numerous other surveys have been established which measure quality practices in schools (Detert & Jenni, 2000; Short & Rinehart, 1992) none of these surveys specifically measures the phenomenon of leadership capacity. If leadership capacity is to serve as one measurable indicator of school improvement potential, it was necessary to determine the psychometric properties of the LCSS (Lambert) to ensure that this best practice could be measured in a reliable and valid manner (Detert & Jenni, 2000).

The purpose of this quantitative case study was to determine the reliability and construct validity of Lambert’s Leadership Capacity School Survey (LCSS, 2003) and all
reduced forms. This chapter presents a discussion of major findings by research question, presents conclusions, identifies limitations to the study, and suggests recommendations for further study.

Discussion of Findings by Research Question

The following discussion of findings is reported by the research questions that drove this quantitative case study. The study addressed the following research questions:

RQ1a. Can constructs be identified for the LCSS (Lambert, 2003) overall with an eigen value =1.0 or greater (Green & Salkind, 2003; SPSS, 2006)?

H01a: Constructs cannot be identified for the LCSS (Lambert, 2003) overall with an eigen value of 1.0 or greater.

RQ1b. Can identified constructs be compared to Lambert’s (2003) suggested constructs with an eigen value of 1.0 or greater?

RQ1c. Can identified constructs be reduced to produce a valid short form?

H01c. The constructs cannot be reduced to produce a valid short form.

RQ2. What is the reliability of the LCSS (Lambert, 2003) overall and subscale and all reduced forms with a correlation of 0.70 or above (Cronk, 2004; Green & Salkind, 2003)?

H02: The LCSS (Lambert) and all reduced forms are not reliable by total and subscale using a correlation of 0.70 or above.

RQ3. What are the summary statistics (N, mean, sd) for the perceptions of the phenomenon of leadership capacity final form and subscale as measured by the LCSS (Lambert, 2003)?
The results of data analysis were presented in Chapter 4. These data are reviewed in Chapter 5 and form the basis for the following discussion of findings.

*Research Question 1a*

*RQ1a.* Can constructs be identified for the LCSA (Lambert, 2003) overall with an eigen value =1.0 or greater (Green & Salkind, 2003; SPSS, 2006)?

*H₀₁a:* Constructs cannot be identified for the LCSA (Lambert, 2003) overall with an eigen value of 1.0 or greater.

*Results of principal components analysis.* In response to *RQ1a*, the researcher rejected the null hypothesis. As the result of principal components analysis, the first stage of confirmatory factor analysis, the 30 possible components were reduced to four components overall with eigen-values of 1.0 or greater. One component was overwhelmingly stronger than the other three; construct 1 represented 54.99% of the total variance, component 2 accounted for 5.35% of the variance, component 3 represented 4.50% of the variance and component 4 represented 3.60% of the variance for a cumulative variance of 68.45% (Mertler & Vannatta, 2005). Lambert’s six original constructs were reduced to four components.

*Research Question 1b*

*RQ₁b.* Can identified constructs be compared to Lambert’s (2003) suggested constructs with an eigen value of 1.0 or greater?

*Principal components analysis with varimax rotation.* Following principal components analysis a varimax rotation with Kaiser normalization was used as a data reduction technique. Four components emerged as compared to Lambert’s (2003) six original constructs with eigen values of 1.0 or greater. The construct originally labeled
“Reflection” by Lambert (2003) maintained its identity throughout the reduction process. Lambert’s (2003) construct “Student Achievement” remained strong, but not identical to the original Lambert subscale. This construct was therefore redefined by the researcher to more accurately describe its new identity in Reduced Forms #1 and #2 as “Monitors and Responds to Student Achievement.” The four remaining Lambert (2003) subscales converged following principal component analysis with varimax rotation into two new constructs that were renamed due to their revised configurations. In reduced survey form #1 the new constructs were defined as “Professional Learning Community” and “Shared Leadership.” In reduced survey form #2, new constructs were labeled “Intense Focus on Vision” and “Shared Governance.”

_Determination of construct validity._ In summary, the original LCSS (Lambert, 2003) items did not align within Lambert’s proposed constructs. Two reduced forms of the LCSS (Lambert) instrument were developed through the data reduction technique known as principal component analysis with varimax rotation (Green & Salkind, 2003). Although similar in many ways, constructs were not fully aligned. Construct validity of the LCSS (Lambert) was not confirmed.

_Research Question 1c_

_RQ1c. Can identified constructs be reduced to produce a valid short form?_

_H01c. The constructs cannot be reduced to produce a valid short form._

Constructs were reduced to produce two valid short forms of the survey; forms with factor loadings of 0.55 and above and 0.6 and above, respectively. The four identified components that comprised each of the two refined forms of the LCSS (Lambert, 2003) were comparable, although not identical, to Lambert’s six suggested
constructs with eigen values of 1.0 or greater. In response to RQ1c, the researcher rejected the null hypothesis. Constructs were reduced to produce two valid short forms of the LCSS (Lambert, 2003). These reduced survey forms are found in Appendixes I and J.

Research Question 2

RQ2. What is the reliability of the LCSS (Lambert, 2003) overall and subscale and all reduced forms with a correlation of 0.70 or above (Cronk, 2004; Green & Salkind, 2003)?

H_{2}: The LCSS (Lambert) and all reduced forms are not reliable by total and subscale using a correlation of 0.70 or above.

Item-total analysis and Cronbach’s alpha were the measures of reliability and internal consistency utilized to respond to RQ2. The results of these statistical procedures were as follows:

Summary of Cronbach’s alpha. Findings from the calculation of Cronbach’s alpha indicated that the LCSS (Lambert, 2003) overall had a reliability factor of .97 which represented a very high level of internal consistency (Cronk, personal communication). The original LCSS (Lambert) therefore, was found to be a very reliable and internally consistent measure of leadership capacity. The reliability factors for all six original subscales of the LCSS (Lambert) were also found to be very high, ranging from .867 to .919. The reliabilities of Reduced Forms #1 and #2 of the LCSS (Lambert, 2003), overall and sub-scale, were also very high with correlations of 0.70 or above.

Summary of item-total analysis. An item-total analysis was conducted on the LCSS (Lambert, 2003) overall and revealed an overall correlation of .887 with subscale
correlations ranging from .824 to .911. Reduced forms #1 and #2 were also found to be internally consistent with overall correlations of .960 (Form #1) and .945 (Form #2).

The four components that comprised Reduced Form #1 of the LCSS (Lambert, 2003) were internally consistent. Subscale reliability coefficients were: Component 1-.931, Component 2 -.887, Component 3 -.871, and Component 4 -.864. No items were deleted.

The four components of Reduced Form #2 of the LCSS (Lambert, 2003) were also found to be internally consistent. Subscale reliability coefficients were as follows: Component 1 -.918, Component 2 -.887 Component 3 -.783, and Component 4 -.863. No items were dropped.

*Research Question 3*

*RQ3.* What are the summary statistics (N, mean, sd) for the perceptions of the phenomenon of leadership capacity final form and subscale as measured by the LCSS (Lambert, 2003)?

*Summary of one-way analysis of variance by construct on LCSS (Lambert, 2003).* A one-way ANOVA was conducted on the LCSS (Lambert, 2003) overall by faculty status to determine if administrator, counselor, and teacher responses differed significantly on the total or on any of the subscales of the original LCSS (Lambert). A significance level of 0.05 or below would have indicated a significant difference between faculty by status. As found in Appendix K, no significant differences were found between faculty groups by construct on the LCSS (Lambert).

*Summary of one-way analysis of variance by construct on reduced form #2.* Significant differences in the perceptions of faculty did occur based upon school status
(elementary, middle, and high schools) on all four of the constructs that comprised Reduced Form #2 of the LCSS (Lambert, 2003). Elementary schools rated their perceptions of the presence of leadership capacity the highest on all four revised LCSS (Lambert, 2003) constructs as compared to other types of schools. High school ratings ranked second by school status on all constructs, with middle school perceptions of the presence of leadership capacity rating the lowest of the three types of schools on all four revised constructs.

Construct 4 (Monitors and Responds to Student Achievement) received the highest mean overall by school status, followed by Construct 1 (Intense Focus on Vision), Construct 3 (Shared Governance), and Construct 2 (Reflection). In all instances the means of the elementary schools were the highest, high school means ranked second and middle schools reported the lowest means of the three school types.

*Summary of one-way analysis of variance by item on reduced form #2.* There were significant differences in the perceptions of faculty at the 0.05 level or below by school status (elementary, middle, high) on 15 of the 17 items (B1, B2, B3, B4, C3, C4, E1, E2, E4, E5, A1, D2, F2, F3, F4) as measured on Reduced Form #2 of the LCSS (Lambert, 2003). No significant differences in perceptions by school status occurred on items E3 and D3. On all items but one (item E3), the elementary school means garnered the highest mean ranking by school status. In all but three cases middle school means were lowest by school status. Middle school means ranked second by school status on items A1, F3, and F4.

*Summary of the Tukey HSD post-hoc analysis.* Results of the Tukey HSD post-hoc analysis reported that significant differences in perceptions occurred between
elementary schools and middle schools on twelve items: B1, B2, B3, B4, C3, C4, E1, E2, E4, E5, F2, and F4. No significant differences were found between elementary and middle schools on five items: E3, A1, D2, D3, and F3.

Significant differences were found between elementary school perceptions and high school perceptions on 6 items: C3, C4, A1, F2, F3, and F4. No significant differences in perceptions were revealed between elementary and high school responses on 11 items: B1, B2, B3, B4, E1, E2, E3, E4, E5, D2, and D3.

A comparison of middle school and high school responses identified 4 items where significant differences were noted: B2, B4, E1, and E4. No significant differences between middle school and high school responses were found in 13 of the 17 items, namely: B1, B3, C3, C4, E2, E3, E5, A1, D2, D3, F2, F3, F4.

Summary of Findings

Leadership capacity was a socially constructed phenomenon within the case study school organization as defined by Lambert (2003), and therefore faculty perceptions of the presence of leadership capacity in schools were measurable. The phenomenon of leadership capacity was present in all case study schools to some degree. The LCSS (Lambert) in its original form was a highly reliable instrument and twenty-nine of the thirty items of the LCSS (Lambert, 2003) were valid at the 0.4 level.

Through the application of the statistical method known as factor analysis, the LCSS (Lambert, 2003) was reduced to form two reliable and valid shorter forms. A reduced LCSS (Lambert) instrument that consisted of 23 items was identified with factor loadings of 0.55 and above. A reduced LCSS (Lambert) instrument that consisted of 17 items was also identified with factor loadings of 0.6 and above.
The six critical features of leadership capacity as defined by Lambert (2003) were reduced to four major constructs. Combinations of Lambert’s original constructs, with the delimitation of co-correlates, formed newly defined, real concepts.

Significant differences in perceptions of leadership capacity were found by school status on 15 of 17 survey items as measured by LCSS (Lambert, 2003) Reduced Form #2 within the case study school district.

Limitations of the Study

This case study was conducted in only one small urban school district in the state of Missouri. Participants in this case study were limited to full-time faculty of twenty-five elementary, middle, and high schools that comprised the selected case study school district in April of 2007. Participation in the study was voluntary and contingent upon the willingness of participants to complete and return an on-line survey. All participants had district-issued and controlled email addresses and therefore it was assumed that all participants had access to the survey.

It was assumed that participants would respond honestly to survey questions and that those self-reported perceptions would be true representations of the leadership capacity present in their schools.

This case study was bounded by time. Respondents were given one week to respond to the survey. The survey was conducted in May of 2007, a very busy time in the case study district’s school year. Although the response rate overall was 52%, which represented a 95% confidence level with a 3.7 confidence interval, time may have hindered additional prospective participants from responding to the survey.
Only two middle school counselors responded to the survey. This fact made it difficult to conduct a valid two-way ANOVA by faculty status and school status involving school counselors.

The perceptions summarized as results in this case study were confined to the case study school district sample population and should not be generalized to other subject populations. The likelihood of external validity or generalization to other populations is low due to the use of a non-random convenience sampling technique.

Conclusions

The researcher has drawn several conclusions from this quantitative case study. Regarding the LCSS (Lambert, 2003) instrument, the following conclusions were made.

- The LCSS (Lambert) is a highly reliable instrument if used for the purposes designed by Lambert (2003), specifically that it is a tool to be used for self-assessment and collaborative reflection. LCSS (Lambert) results can serve to open conversations and dialogue about whole-school improvement and identify the professional development needs of the school as a whole. Within the limits of this case study sample, however, the LCSS instrument (Lambert) had flaws from a researcher’s point of view. The instrument did not possess construct validity. That flaw, however, was ameliorated through the identification of two reliable and valid reduced forms of the LCSS (Lambert) survey instruments.

- Face validity and content validity do not predict construct validity. The internal structure of the LCSS (Lambert, 2003) did not concur with its appearance.

- Survey score interpretation leads to value implications. Although statistics are objective, values are subjective and related to choice. In relationship to this study,
high reported levels of leadership capacity could be interpreted by some
researchers as an organizational strength. Others may perceive leadership capacity
as unnecessary in the achievement of student success and school improvement.

• Although Lambert (2003) purported that leadership capacity was composed of six
  major constructs, from a researcher’s point of view only four constructs were
  necessary in order to define and measure leadership capacity in this case study.

• “Reflection” and “Student Achievement” are present in all schools that possess a
  high level of leadership capacity. Both constructs were present in the original
  LCSS (Lambert, 2003) and were retained throughout the item reduction process.

• Collaboration and participation have similar connotations. These concepts are
  often perceived as being the same by school faculty.

Regarding the summative statistics as they relate to the case study school district
additional conclusions were made. These conclusions provide insight into the
development of leadership capacity within the case study school district overall and
between school levels.

• The concept of leadership capacity is more fully developed and mature at the
  elementary school level than at the high school or middle school levels within the
  case study district. The elementary schools in this particular school district have,
  in fact, spent many years on the building of teacher leadership and school
  governance structures through use of the Accelerated School Process (Levin,
  1993).

• The case study school district has placed a high priority on student achievement
  from the viewpoint of leadership capacity. It also values the importance of
visioning. Historically, the case study district develops a five-year plan which includes district-wide visioning and a mission which ensures success for all students.

- The case study school district has placed less emphasis on providing time for reflection and establishing shared governance structures than it has on student achievement and visioning. The case study district is in the beginning stages of providing job-embedded professional development time into the teachers’ daily schedules. This type of schedule allows teachers daily time for reflection and collaboration. The case study district is very parochial in nature, relying heavily on the expertise of those professionals that work within the district, rather than going outside the district for reflection and collaboration. It would benefit this district to provide more time for networking with other professionals outside of their own district.

- Elementary, middle, and high school faculties within the case study school district may value leadership capacity differently or they may have differing perceptions of what the building of leadership capacity really means. This may be due to their previous training, the philosophies of their building administrators, or the nature of their jobs. It would behoove the leaders of the case study district to explore the reasons why teachers at various school levels perceive the presence of leadership capacity differently.

Recommendations

- Although the LCSS (Lambert, 2003) proved to be a reliable tool which possessed internal consistency, and the researcher took precautions to guard against sources
of bias (Hawthorne effect, selection bias, evaluation apprehension), the researcher recommends that an additional study be pursued to test the LCSS (Lambert, 2003) survey for temporal stability. This could be completed in a different setting using a test/retest method.

- It is recommended that the LCSS (Lambert, 2003) be used to confirm or disconfirm faculty perceptions regarding the presence of leadership capacity in schools to see if espoused theories are actually theories in practice. The results of the LCSS (Lambert) can be used to illuminate those issues related to leadership capacity in need of refinement and growth as a staff.

- Now that two reliable and valid tools exist that measure the perceptions of leadership capacity in schools, it is recommended that this study be used as a springboard for a study that would investigate whether or not there truly is a relationship between leadership capacity and improved or sustained high levels of student achievement. The answer to this question could provide a valuable pathway leading to the improvement of America’s schools.

- It is recommended that the case study school district investigate what is being done at the elementary school level to support leadership capacity as compared to what is done at the high school and middle school levels. Elementary school faculties overwhelmingly perceived leadership capacity at a higher level in their schools than did either middle or high school faculties. The case study school district should target the middle school level as a site that could benefit from enhanced building of leadership capacity. The middle school faculties rated the
presence of leadership capacity lower than either the elementary or high school faculties on almost all items.

- Because the researcher has concluded that survey score interpretation leads to value implications, it is inferred by the low LCSS (Lambert, 2003) in regard to “Reflection” that the case study school district has not placed the same value on reflection as it has on the other major components of leadership capacity. It is recommended, therefore, that the case study school district provide more time for reflection and networking, both inside and outside the district.

- It is recommended that school leaders study what goes on in high achieving schools, particularly in regard to the building of leadership capacity, in order to define effective practices and learn from one another.

- It is recommended that aspiring principals and teacher leaders be trained at the university level in the development and measurement of leadership capacity within their schools.

- In this time of high stakes accountability, it is recommended that school leaders use this measurement of leadership capacity when reporting to local boards of education and state departments regarding the school improvement practices that are present in their schools.

Overall Summary

This case study determined the psychometric properties, namely the reliability and construct validity, of the LCSS (Lambert, 2003). The study also identified two refined forms of the LCSS (Lambert) that possessed reliability, internal consistency, and
construct validity overall and subscales. Leadership capacity was redefined through the reconfiguration of Lambert’s six original subscales into four major constructs.

This case study contributed to the ever-growing body of research in the fields of leadership capacity and psychometric theory. The use of the LCSS (Lambert, 2003) score as a reliable measure of faculty perceptions of the presence of leadership capacity is now justified by the results of this study. Additionally, the development of reliable and valid reduced LCSS (Lambert) forms supports the use of these psychometric tools by other researchers and practitioners for school improvement purposes. The study has given even more credibility to the work of Lambert and to the role that the LCSS (Lambert) can play as schools build “leadership capacity for lasting school improvement” (Lambert, 2003).
REFERENCES


SPSS, (2006). *Statistical package for social sciences graduate software package (Base 15.0) for Windows.* Chicago, IL: SPSS, Inc.


APPENDIX A

Leadership Capacity School Survey

This school survey is designed to assess the leadership capacity of your school. The items are clustered according to the characteristics of Quadrant 4 schools. Once each staff member has completed the survey, the results can be presented in a chart depicting schoolwide needs. The numbers on the 1-5 scale represent the following:

1 = We do not do this at our school.
2 = We are starting to move in this direction.
3 = We are making good progress here.
4 = We have this condition well established.
5 = We are refining our practice in this area.

Circle the rating for each item and tally the score for each column first, then add the results for each column together and transfer the results to the scoring box on the last page.

A. Broad-based, skillful participation in the work of leadership.
In our school we:
1. Have established representative governance groups
   1 2 3 4 5
2. Perform collaborative work in large and small teams
   1 2 3 4 5
3. Model leadership skills
   1 2 3 4 5
4. Organize for maximum interaction among adults and children
   1 2 3 4 5
5. Share authority and resources
   1 2 3 4 5
6. Express our leadership by attending to the learning of the entire school community
   1 2 3 4 5
7. Engage each other in opportunities to lead
   1 2 3 4 5

Total (add circled numbers down and then across columns) ___ = ___ ___ ___ ___ ___ ___

B. Shared vision results in program coherence.
In our school, we:
1. Develop our school vision jointly
   1 2 3 4 5
2. Ask each other questions that keep us on track with our vision
   1 2 3 4 5
3. Think together about how to align our standards, instruction, assessment, and programs with our vision
   1 2 3 4 5
4. Keep our vision alive by reviewing it regularly
   1 2 3 4 5

Total (add circled numbers down and then across columns) ___ = ___ ___ ___ ___ ___ ___

C. Inquiry-based use of information to inform decisions and practice.
In our school, we:
1. Use a learning cycle that involves reflection, dialogue, inquiry, and action
   1 2 3 4 5
2. Make time available for this learning to occur (e.g., faculty meetings, ad hoc groups, teams)
   1 2 3 4 5
3. Focus on student learning  
   1 2 3 4 5
4. Use data/evidence to inform our decisions and teaching practices  
   1 2 3 4 5
5. Have designed a comprehensive information system that keeps everyone informed and involved  
   1 2 3 4 5

Total (add circled numbers down and then across columns) \[= \_ \_ \_ \_ \_ \_ \]

D. Roles and actions reflect broad involvement, collaboration, and collective responsibility.
In our school, we:
1. Have designed our roles to include attention to our classrooms, school, community, and profession  
   1 2 3 4 5
2. Seek to perform outside of traditional roles  
   1 2 3 4 5
3. Have developed new ways to work together  
   1 2 3 4 5
4. Have developed a plan for sharing responsibilities in the implementation of our decisions and agreements  
   1 2 3 4 5

Total (add circled numbers down and then across columns) \[= \_ \_ \_ \_ \_ \_ \]

E. Reflective practice consistently leads to innovation.
In our school, we:
1. Make time for ongoing reflection (e.g., journaling, peer coaching, collaborative planning)  
   1 2 3 4 5
2. Encourage individual and group initiative by providing access to resources, personnel, and time  
   1 2 3 4 5
3. Have joined with networks of other schools and programs, both inside and outside the district, to secure feedback on our work  
   1 2 3 4 5
4. Practice and support new ways of doing things  
   1 2 3 4 5
5. Develop our own criteria for accountability regarding individual and shared work  
   1 2 3 4 5

Total (add circled numbers down and then across columns) \[= \_ \_ \_ \_ \_ \_ \]

F. High or steadily improving student achievement and development
In our school, we:
1. Work with members of the school community to establish and implement expectations and standards  
   1 2 3 4 5
2. Teach and assess so that all children learn  
   1 2 3 4 5
3. Provide feedback to children and families about student progress  
   1 2 3 4 5
4. Talk with families about student performance and school programs  
   1 2 3 4 5
5. Have redesigned roles and structures to develop resiliency in children (e.g., teacher as coach/advisor/mentor, schoolwide guidance programs, community service)  
   1 2 3 4 5

Total (add circled numbers, down and then across columns) \[= \_ \_ \_ \_ \_ \_ \_ \]

126
**Scoring:** Add totals for each section. Possible scores can be found by multiplying the possible number of scores for each category by the number of staff completing the survey; the results for your particular school can be found by adding the actual scores of the staff completing the survey in each category (see the following table). Sections with the lowest scores are those in greatest need of attention. A score of 1 or 2 in the survey represents areas of greatest need, 3 and 4 represent strengths, and 5 represents exemplary work that reflects high leadership capacity. When you have completed the survey, discuss each section and identify possible areas for growth.

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<td>Broad-based, skillful participation in the work of leadership</td>
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</tr>
<tr>
<td>Shared vision results in program coherence</td>
<td>20 x __ = ___</td>
<td></td>
</tr>
<tr>
<td>Inquiry-based use of information to inform decisions and</td>
<td>25 x __ = ___</td>
<td></td>
</tr>
<tr>
<td>Roles and actions reflect broad involvement, collaboration, and</td>
<td>20 x __ = ___</td>
<td></td>
</tr>
<tr>
<td>Reflective practice consistently leads to innovation</td>
<td>25 x __ = ___</td>
<td></td>
</tr>
<tr>
<td>High or steadily improving student achievement and development</td>
<td>25 x __ = ___</td>
<td></td>
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</tbody>
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Appendix B

Email from Molly Pierce to Linda Lambert
Sent June, 2006

Ms. Lambert,
I previously spoke to you by email regarding the use of your survey in my research study. I appreciate your positive response. I forgot to ask you if you have information regarding the development of the survey, reliability/validity information, etc. Is there any research that you can share with me regarding the development of the survey instrument, how questions were selected, how it was tested, etc. I've been doing Internet searches for this information, but haven't found what I need.

Thank you for your time.
Sincerely,
Molly Pierce

Email response from Linda Lambert
Sent June 15, 2006

Subject: Re: Leadership Capacity School Survey

Molly,
I've just had surgery so am not in a great place to think clearly. But...I developed the surveys over time with grad. students/principals/teacher leaders in various locales. I refined them in conjunction with hundreds of people from the 1998 to the 03 books. However, I did not do a classic validity/reliability study with them. I used them for self-assessment and conversations. Many people have done dissertations/theses on leadership capacity and have used the surveys...hopefully you can find some of those studies. Good luck to you, Linda
Appendix C

DATE: April 18, 2007

ELECTRONIC ACCESS PERMISSION

TO: Molly Pierce ("You")  Email: molly.pierce@sjsd.k12.mo.us
Address: c/o Coleman Elementary School  Fax Number: 816-671-4101
3312 Beck Road  Telephone: 816-671-4100
St. Joseph, MO 84506

RIGHTS REQUESTED

Date of Request: April 18, 2007  Online Publication: crownprojects.com
Publisher: University of Missouri-Columbia  Publication URL: n/a
Date Online: April, 2007  Term of License: One year from initial posting
Language: English  Territory: U.S.
Intended Use: Digital format as a survey to be administered to the principals and teachers in twenty-four
Missouri elementary schools. The results will be tabulated and used as part of a doctoral
dissertation.

Additional Terms: n/a

ASCD PUBLICATION

Title: Leadership Capacity for Lasting School Improvement
Author(s): Linda Lambert
Selection: Appendix E, pages 110 - 113

RIGHTS GRANTED

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footnote on the web page of the Publication on which the Selection appears:

   From Appendix E (pages 110-113), in Leadership Capacity for Lasting School Improvement, by Linda Lambert,
   Development is a worldwide community of educators advocating sound policies and sharing best practices to
   achieve the success of each learner. To learn more, visit ASCD at www.ascd.org.

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ASSOCIATION FOR SUPERVISION AND CURRICULUM DEVELOPMENT:

[Signature] 4/18/07
Appendix D

April 23, 2007

Dear Colleague,

I am a doctoral candidate at the University of Missouri - Columbia in the Department of Educational Leadership and Policy Analysis. I am asking you to participate in a research study. The purpose of this study is to determine the reliability and construct validity of a research tool, the Leadership Capacity School Survey (LCSS, Lambert, 2003).

I am inviting you to take 5-10 minutes of your time to complete the LCSS. This brief web-based survey consists of 30 questions that will measure your perception of the leadership capacity present in your school on a scale of 1 - We do not do this at our school to 5 – We are refining our practice in this area.

Your participation is voluntary and by individual choice. You may choose not to participate, skip items, or withdraw from the study at any time without penalty. In order to participate in this research you must be a full-time certified teacher, counselor, or administrator during the 2006-2007 school year.

All information obtained through this survey will be anonymous and confidential. Responses will be reported as a group, not as an individual. Your personal identification will be protected at all times. There are no anticipated risks associated with your participation beyond the risks of daily life. Results of this study will inform the greater research community regarding the reliability and construct validity of a useful survey that is currently being used worldwide to measure leadership capacity.

If you choose to participate in this research, please complete the survey by following the directions below. Your participation will serve as your informed consent.

If you have questions or concerns regarding your rights as a participant, or if you would like to know the results of this research, please contact Molly Pierce at 816-671-4100 or molly.pierce@sjsd.k12.mo.us . You may also contact my advisor, Dr. Phillip Messner at 660-562-1478 or PEMDAY@nwmissouri.edu . I sincerely appreciate your time and your participation.

Sincerely,

Molly Pierce

If you agree to participate in this research measuring your perception of the leadership capacity present in your school, please log into the survey today at:

http://www.crownprojects.com/pierce_lambert_survey.asp

Your participation serves as your informed consent.
Appendix E

April 26, 2007

Dear Colleague:

I am writing to you regarding the recent letter that you received from me asking you to participate in a research study that seeks to determine the reliability and construct validity of the *Leadership Capacity School Survey* (Lambert, 2003). The results of this study may provide useful information to schools worldwide who wish to measure the leadership capacity present in their schools.

If you have already completed the brief web-based *Leadership Capacity School Survey*, thank you so much. If you have not yet participated in this project, please take 5-10 minutes of your time to do so.

You must be a full-time teacher, counselor, or building level administrator during the 2006-2007 school year to participate in this study. Be reassured that your responses will remain anonymous and confidential. No individual participant names or names of schools will be reported. The findings will be reported by groups only, not by individual participant or school. There are no anticipated risks for participation. You may withdraw from the study at any time. You may request to obtain the results of the study.

If you deleted your initial invitation, the link is listed below. Please contact me if you have questions or concerns. Thank you in advance for your participation.

Molly Pierce, Coleman Principal  
Doctoral Candidate  
University of Missouri – Columbia  
(816)-671-4100  
molly.pierce@sjsd.k12.mo.us

Dr. Phillip Messner  
Department of Educational Leadership  
Northwest Missouri State University  
(660) 562-1478  
mailto:PEMDAY@nwmissouri.edu

If you agree to participate in this research measuring your perception of the leadership capacity present in your school, please log into the survey at:

http://www.crownprojects.com/pierce_lambert_survey.asp

Your participation serves as your informed consent.

Please respond today, or no later than ____________________.
Appendix F

Portal Introduction

Thank you in advance for taking the time to complete the *Leadership Capacity School Survey* (Lambert, 2003). I sincerely believe that the value gained from your participation merits the time and effort required of participants.

Completion of this survey indicates that you have read and are giving your informed consent to participate in this research study as described in the letter of invitation.

Please proceed to survey.
Appendix G

April 1, 2007

To: Dissertation Advisory Committee

Institutional Review Board at University of Missouri – Columbia

Re: Molly Kelley Pierce

Permission is granted for Molly Pierce to administer questionnaires to kindergarten through grade twelve teachers, counselors and principals in this school district in order to collect data for her dissertation entitled *A Determination of the Reliability and Construct Validity of the Leadership Capacity School Survey.*

The following are conditions for the study to be conducted in this school district:
Participation in this study is voluntary and respondents may withdraw from the study at any time. All answers will be used only for this study and will be kept confidential. Results of the study will be reported in groups, and no respondents or district will be identified individually.

Feel free to contact me if I may assist you further.

Sincerely,

Melody A. Smith

Superintendent of Schools

Cc: Mrs. Cheri Patterson, Associate Superintendent

Mr. Brian Shindorf, Asst. Director K-6 Curriculum & Instruction

Mrs. Jaime Dial, Asst. Director 7-12 Curriculum & Instruction
### Appendix H

**Table 1**

*Initial Eigen Values from Factor Extraction Procedure*

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Appendix I

Leadership Capacity School Survey
Reduced Form #1

This school survey is designed to assess the leadership capacity of your school. The items are clustered according to the characteristics of Quadrant 4 schools. Once each staff member has completed the survey, the results can be presented in a chart depicting school-wide needs. The numbers on the 1-5 scale represent the following:

1 = We do not do this at our school.
2 = We are starting to move in this direction.
3 = We are making good progress here.
4 = We have this condition well established.
5 = We are refining our practice in this area.

Circle the rating for each item and tally the score for each column first, then add the results for each column together and transfer the results to the scoring box on the last page.

Construct 1: Functions as a Professional Learning Community

In our school, we:
1. Perform collaborative work in large and small teams
2. Express our leadership by attending to the learning of the entire school community
3. Develop our school vision jointly
4. Ask each other questions that keep us on track with our vision
5. Think together about how to align our standards, instruction, assessment, and programs with our vision
6. Keep our vision alive by reviewing it regularly
7. Focus on student learning
8. Use data/evidence to inform our decisions and teaching practices
9. Have designed a comprehensive information system that keeps everyone informed and involved

Total (add circled numbers down and then across columns) __= __ __ __ __ __

Construct 2: Reflection and Innovation

In our school, we:
1. Make time for ongoing reflection (e.g., journaling, peer coaching, collaborative planning)
2. Encourage individual and group initiative by providing access to resources, personnel, and time
3. Have joined with networks of other schools and programs, both inside and outside the district, to secure feedback on our work
4. Practice and support new ways of doing things
5. Develop our own criteria for accountability regarding individual and shared work

Total (add circled numbers down and then across columns) __= __ __ __ __ __
**Construct 3: Shared Leadership**

In our school, we:
1. Have established representative governance groups  
   1 2 3 4 5
2. Model leadership skills  
   1 2 3 4 5
3. Engage each other in opportunities to lead  
   1 2 3 4 5
4. Seek to perform outside of traditional roles  
   1 2 3 4 5
5. Have developed new ways to work together  
   1 2 3 4 5

**Construct 4: Monitors and Responds to Student Achievement**

In our school, we:
1. Teach and assess so that all children learn  
   1 2 3 4 5
2. Provide feedback to children and families about student progress  
   1 2 3 4 5
3. Talk with families about student performance and school programs  
   1 2 3 4 5
4. Have redesigned roles and structures to develop resiliency in children (e.g., teacher as coach/advisor/mentor, school-wide guidance programs, community service)  
   1 2 3 4 5

_Total (add circled numbers, down and then across columns) _x_  

**Scoring:** Add totals for each section. Possible scores can be found by multiplying the possible number of scores for each category by the number of staff completing the survey; the results for your particular school can be found by adding the actual scores of the staff completing the survey in each category (see the following table). Sections with the lowest scores are those in greatest need of attention. A score of 1 or 2 in the survey represents areas of greatest need, 3 and 4 represent strengths, and 5 represents exemplary work that reflects high leadership capacity. When you have completed the survey, discuss each section and identify possible areas for growth.

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<th>Functions as a Professional Learning Community</th>
<th>Possible Scores</th>
<th>School Scores</th>
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<tr>
<td>Shared Leadership</td>
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<td>Monitors and Responds to Student Achievement</td>
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</table>
Appendix J

Leadership Capacity School Survey
Reduced Form #2

This school survey is designed to assess the leadership capacity of your school. The items are clustered according to the characteristics of Quadrant 4 schools. Once each staff member has completed the survey, the results can be presented in a chart depicting school-wide needs. The numbers on the 1-5 scale represent the following:

1 = We do not do this at our school.
2 = We are starting to move in this direction.
3 = We are making good progress here.
4 = We have this condition well established.
5 = We are refining our practice in this area.

Circle the rating for each item and tally the score for each column first, then add the results for each column together and transfer the results to the scoring box on the last page.

Construct 1: Intense Focus on Vision
In our school, we:
1. Develop our school vision jointly 1 2 3 4 5
2. Ask each other questions that keep us on track with our vision 1 2 3 4 5
3. Think together about how to align our standards, instruction, assessment, and programs with our vision 1 2 3 4 5
4. Keep our vision alive by reviewing it regularly 1 2 3 4 5
Total (add circled numbers down and then across columns) __ = __ __ __ __ __

Construct 2: Reflection and Innovation
In our school, we:
1. Make time for ongoing reflection (e.g., journaling, peer coaching, collaborative planning) 1 2 3 4 5
2. Encourage individual and group initiative by providing access to resources, personnel, and time 1 2 3 4 5
3. Have joined with networks of other schools and programs, both inside and outside the district, to secure feedback on our work 1 2 3 4 5
4. Practice and support new ways of doing things 1 2 3 4 5
5. Develop our own criteria for accountability regarding individual and shared work 1 2 3 4
Total (add circled numbers down and then across columns) __ = __ __ __ __ __

Construct 3: Shared Governance
In our school, we:
1. Have established representative governance groups 1 2 3 4 5
2. Seek to perform outside of traditional roles 1 2 3 4 5
3. Have developed new ways to work together 1 2 3 4 5
Total (add circled numbers down and then across columns) __ = __ __ __ __ __
Construct 4: Monitors and Responds to Student Achievement

In our school, we:

2. Teach and assess so that all children learn
3. Provide feedback to children and families about student progress
4. Talk with families about student performance and school programs

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<td>Shared Governance</td>
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<tr>
<td>Monitors and Responds to Student Achievement</td>
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Total (add circled numbers down and then across columns) ___ ___ ___ ___ ___

Scoring: Add totals for each section. Possible scores can be found by multiplying the possible number of scores for each category by the number of staff completing the survey; the results for your particular school can be found by adding the actual scores of the staff completing the survey in each category (see the following table). Sections with the lowest scores are those in greatest need of attention. A score of 1 or 2 in the survey represents areas of greatest need, 3 and 4 represent strengths, and 5 represents exemplary work that reflects high leadership capacity. When you have completed the survey, discuss each section and identify possible areas for growth.

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Appendix K

One-way Analysis of Variance (ANOVA) Depicting Significance Levels Between and Within Groups for the LCSS (Lambert, 2003) Overall and Subscale

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* denotes the subscale (Reflection) that was closest to showing a significant difference in responses between groups (teachers, administrators, counselors)
VITA

Molly Kelley Pierce, Ed. D.

Molly was born on December 25, 1953 in St. Joseph, MO. She graduated from Bishop LeBlond High School in 1972. In 1977, Molly graduated Cum Laude from Missouri Western State University with a Bachelor of Science Degree in Elementary Education. She earned a Master of Science Degree in Educational Administration in 1984 and an Education Specialist Degree in 1986 from Northwest Missouri State University. In 2007, Molly achieved a Doctorate in Educational Leadership and Policy from the University of Missouri – Columbia.

Molly believes that we should teach our children to be citizens of the world. Molly’s adventurous spirit and leadership ability have taken her to five continents and more than 30 countries. Molly studied in Australia and New Zealand as a Phi Delta Kappa International Scholar in 1990. In 1997 she was an educational delegate to Japan as the guest of Mukagawa Women’s University and in 2004 she was the recipient of a Fulbright Scholarship to Argentina. Molly has been honored as a Missouri Distinguished Principal, St. Joseph PTA Council Principal of the Year, and Missouri Western State University Distinguished Alumni. Molly currently serves as the principal of Coleman Accelerated School, a Missouri Gold Star School, in St. Joseph, Mo.