To the Graduate Council:

I am submitting herewith a dissertation written by Myrna Gail Sumner entitled “Climate and Student Performance in Tennessee Middle Schools.” I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Education, with a major in Educational Administration and Policy Studies.

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CLIMATE AND STUDENT PERFORMANCE IN TENNESSEE MIDDLE SCHOOLS

A Dissertation

Presented for the

Doctor of Education Degree

The University of Tennessee, Knoxville

Myrna Gail Sumner

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DEDICATION

This dissertation is dedicated to my parents, Glen Franklin Sumner and Mabel Banks Sumner. They provided a home where their daughters developed a love of learning and the power of education. They encouraged us to aim high and never to settle for second best. They have always been there with encouragement, love, and hugs.

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ABSTRACT

The purpose of this study was to extend previous research by investigating the relationship between school climate and student performance (value-added gains) in selected middle schools. In order to confirm previous research with the selected instrument, school climate and student achievement were also compared.

This study used a correlation analysis design. Forty middle schools from across Tennessee were used as a population sample. The data sources were the School Climate Inventory (SCI), and the State of Tennessee Report Card, 2005. Criterion referenced data and value-added gain data were collected from the Report Card. Aggregate achievement scores and aggregate performance (value-added) scores in language arts, math, science, and social studies were compared with school climate scores using the Pearson Product Moment Correlation Coefficient.

There is a relationship between overall school climate and at least one aspect of student performance, that of language arts. Language arts performance scores correlated significantly with 5 of the 7 climate subscales. Significant correlations of science performance scores with the climate subscale of expectation, as well as the social studies performance scores with the climate subscale of order were also found. This study also affirmed previous research that showed a relationship between the academic emphasis of climate and student achievement.

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CHAPTER I

INTRODUCTION

In July 1966, "The Equal Educational Opportunity Survey" by Coleman, Campbell, Hobson, McPardand, Mood, and Weinfield was published. This report, funded by the U.S. Office of Education, concluded that family background, not the school, was the major determinant of student achievement performance. Coleman was among a group of social scientists who, during the 1960s and 1970s, believed that family factors such as poverty or a parent's lack of education prevented children from learning regardless of the method of instruction (Lezotte, 1991).

By lending official credence to the notion that schools did not make a difference in predicting student achievement, the report stimulated a vigorous reaction, instigating many of the studies that would later come to define the research base for the Effective Schools Movement. In direct response to this report, researchers such as Edmonds, Brookover, and Lezotte surveyed achievement data from schools across the country. These schools included student populations that were composed of children from poverty backgrounds. Nationwide, researchers found schools where all children were learning.

Edmonds, Brookover, and Lezotte identified common traits in effective schools, regardless of location or size. These commonalities become known as the correlates of effective schools research. Effective schools are defined as schools that are achieving high and equitable levels of student learning. It is expected that all children will learn at least the essential knowledge, concepts, and skills needed so that they can be successful at the next level the following year (More Effective Schools, 1996a).

The Correlates of Effective Schools were formally identified by Edmonds in 1982. These correlates have been refined and expanded through research to include a list of seven dimensions (Lezotte, 1991). The list includes instructional leadership, a clear and focused mission, a safe and orderly environment, a climate of high expectations, the frequent monitoring of student progress, positive home-to-school relations, and the opportunity to learn and student time on task.

One approach to school improvement rests on the concept that links content with process to arrive at a notion of school culture (Brookover & Lezotte, 1979; Rutter, Maughan, Mortimer, Ouston, & Smith, 1979). Content refers to such things as the organizational structure, roles, norms, values, and instructional techniques of a school and the information taught in the curriculum. School process refers to the nature and style of political and social relationships and to the flow of information within the school. A school culture perspective rejects the view that schools are relatively static constructs of discrete variables. Instead, schools are thought to be dynamic social systems made up of interrelated factors (Brookover & Lezotte, 1979). This mix of interconnected characteristics is unique to each school and provides each with a definite personality or climate (Halpin & Croft, 1963).

The role of a positive school climate in improving student achievement has been researched over the last 35 years (Brookover & Lezotte, 1979; Rutter, 1981; Wynne, 1980). In this research, academic achievement has been defined by standardized test scores. These test scores are a 1-day snapshot of a student's possible achievement. These current-status scores may also be influenced by non-school factors such as

socioeconomic status (SES), family educational level, community, and prior influences on academic achievement (Drury & Doran, 2003).

As school systems explore new ways to assess schools and formulate continuing school improvement, value-added analysis of standardized test scores has emerged as an alternative method. By factoring out non-school related influences on student achievement, the value-added approach lets educators measure the impact of schools on student learning.

Statement of the Problem

Research-based school improvement reforms are focused on the importance of restructuring, school-based decision making, value-added outcomes and other proposed remedies for the problems of public education (Bulach & Malone, 1994). Academic achievement is the ultimate goal, but many schools throughout the United States may be implementing change and reform improvements before sufficiently considering the conditions in the school setting, specifically climate, that might affect the success of implementing the reform.

A positive school climate has been associated with fewer behavioral and emotional problems for students (Kuperminc, Leadbetter, Emmons, & Blatt, 1997). Specific research has also been done on school climate in high-risk urban environments, which indicates that a positive, supportive, and culturally conscious school climate can significantly shape the degree of academic success experienced by urban students (Haynes, Emmons, & Comer, 1993). Additional research found that positive school climate perceptions are a protective factor for boys and may supply high-risk students with a healthy learning environment that will result in healthy development as well as

preventing anti-social behaviors (Haynes, Emmons, & Ben-Avie, 1997; Kuperminc et al., 1997). School climate research suggests that positive interpersonal relationships and optimal learning opportunities for students in all demographic environments can increase achievement levels and reduce maladaptive behavior (McEvoy & Welker, 2000). Taylor and Tashakkori (1995) found that a positive school climate is associated with increased job satisfaction for teachers, administrators, and other school personnel.

Student perspectives are important during the transition from one school level to another. Attending a new school can be a frightening experience for students. This kind of negative experience can adversely affect students' perceptions of their school's climate and learning outcomes. Therefore, research has shown that providing a positive and supportive school climate for students is important for a smooth and easy transition to a new school level (Freiberg, 1998).

Moore and Esselman (1994) believe that schools with historically poor achievement tend to have teachers who, as a group, report a poorer image of school climate. This poor image of school climate, in turn, contributes to poor perceptions of teaching effectiveness. They also note a circular nature of the relationship, in that the weak sense of teacher efficacy is a function of the poor performance of students. The relationship is similar to the one noted between collegiality and climate by Bulach and Malone (1994) and the relationships between efficacy and school climate as noted by Hoy and Woolfolk (1993). Hoy and Tarter (1991) also theorize that a healthy organizational climate is crucial for an effective school.

Purpose of the Study

The purpose of this study was to extend previous research by investigating the relationship between school climate and student performance. Student performance in this study was operationally defined as student value-added gains as presented in the State of Tennessee Report Card, 2005. To confirm previous research with the selected instrument, school climate and student achievement were also compared.

Research Questions

The study was guided by the following research questions:

1. What is the relationship between school climate scores and student performance in selected middle schools in the state of Tennessee?
2. What is the relationship between school climate scores and student achievement in selected middle schools in the state of Tennessee?

Significance of the Study

Researchers have used various definitions of climate; Hoy and Miskel (2005, p.185) defined school climate as "the set of internal characteristics that distinguish one school from another and influence the behaviors of each school's members." Kottkamp (1984) suggested that climate consists of shared values, interpretations of social activities, and commonly held definitions of purpose. Hoy, Tarter, and Kottkamp (1991, p. 10) stated that "school climate is the relatively enduring quality of the school environment that is experienced by participants, affects their behavior and is based on their collective perception of behavior in schools."

A positive school climate can enhance staff performance, promote higher morale, and improve student achievement (Frieberg, 1998). Heck (2000) and Goddard, Hoy, & Hoy (2000) linked school climate and achievement. "School achievement may be one of

the most important ingredients of a successful instructional program. Without a climate that creates a harmonious and well functioning school, a high degree of academic achievement is difficult, if not downright impossible to obtain" (Hoyle, English, & Steffy, 1985, p. 15). Bulach, Malone, and Castleman (1995) found a significant relationship between student achievement and school climate; Bulach and Malone (1994) also concluded that school climate is a significant factor in successful school reform. Urban (1999) stated, "Unless students experience a positive and supportive climate, some may never achieve the most minimum standards or realize their full potential" (p. 69). Hoy, Tarter, and Bliss (1990) found that long-term improvement in academic achievement was related to school with strong academic emphasis within the context of healthy and open climates. Birdin (1992) and Zigarmi, Edeburn, and Blanchard (1991) found strong positive correlations between effectiveness scores and selected climate variables.

The cause for varying levels of achievement in schools has frequently been the subject of investigation and research. Research has pointed out that the best predictor of student achievement is socioeconomic status (Chubb & Moe, 1990; Coleman, 1966; Metz, 1988). No relevant studies conducted on school climate and student performance as indicated by value-added gains was found in the literature. It would be an asset in an educational setting if there were a strong predictor for performance (value-added gains), which controls for such background factors as SES.

Roney, Anfara, and Brown (2002) presented a research paper at the American Educational Research Association's Annual Meeting entitled "Revealing What's In the Black Box: The Middle School Movement and High Student Achievement." This paper

researched the link between the middle school concept and student academic achievement. The "black box" references a statement made by Erb (2000) in which he noted that "...school reform, such as the Turning Points recommendations, involve the presence of a 'black box' between the implementation of innovations on one side and student outcomes on the other" (p. 194). School improvement reform, Erb claims, is a three-part process beginning with a middle school reform implementation. The implementation is then followed by the second part of the process (the "black box") which consists of intermediate variables such as teacher efficacy, school climate and school resources. He believes these intermediate variables actually induce the third or final stage, student outcomes, one of which is student achievement. Erb directed researchers to "unravel what happens in the black box" (p. 194).

Roney et al. (2002) concluded that there was a large disparity between SES of the high achieving and low achieving schools. The fact that research shows that SES is the largest single factor in determining high achievement could not be factored out. Hoy and Hannum (1997) remind us that "Although the SES of the community is important in predicting student achievement, so too are aspects of the organizational health of middle schools." The researchers also stated that implementing school improvement reforms in middle schools are "necessary but not sufficient" for high student outcomes. The school improvement recommendations presented in much of the middle school literature are a means to an end, not an end in and of themselves as Backes, Ralston, and Ingwalson (1999) contend. However, Roney et al., (2002) recommend that other researchers attempt to unravel the black box and connect reform efforts to school climate, and then school climate to student outcome in achievement.

Conceptual Framework

The purpose of this study was to investigate the relationship of school climate variables to student performance. The literature review suggests that there is a relationship between student achievement and school climate (Agnew, 1981; Anderson, 1982; Brookover, Beady, Flood, Schweitzer, & Wisenbaker, 1977; Howe, 1985; Keefe, et al., 1985; Lezotte, Hathaway, & Miler, 1980; Montoya & Brown, 1990; Paredes, 1991; Stickard & Mayberry, 1986; Stronge and Jones, 1991). The literature also reveals a direct correlation between socioeconomic status and student achievement (Chubb & Moe, 1990; Coleman, 1966; Metz, 1988). The work of Mayer and Jencks (1989) suggests that once the pattern of low academic achievement is set, it may be difficult to reverse, even if school climate is good.

The review of effective schools literature suggests that there is a strong correlation between the degree of implementation of the effective schools correlates and student achievement (Bliss, Firestone, & Richards, 1991; Cruickshank, 1990; Lezotte, 1991; Matluck, 1987). These correlates are clear school mission, high expectations, instructional leadership, frequent monitoring of student progress (assessment), opportunity to learn and student time on task, safe and orderly environment, and home-school relations. The Association for Effective Schools (AES) states that the correlates are characteristics of a school's climate associated with improved better student learning (More Effective Schools, 1996).

Developmentally responsive (or effective) middle schools have exhibited common traits in the literature (Carnegie Corporation, 1989; National Association of Secondary School Principals [NASSP], 1995; National Middle School Association

[NMSA], 1985; Southern Regional Education Board [SREB], 2002). Many of these commonalities link directly to the effective schools research (see Appendix B).

The School Climate Inventory (SCI) has dimensions that measure the institutional attributes of school climate. It has seven subscales that measure order, leadership, environment, involvement, instruction, expectations, and collaboration. The SCI measures the same variables as the effective schools research with the exception of frequent monitoring and student time on task.

This study considered the common characteristics from the literature of effective schools and middle school concepts. Research has shown there is a correlation between these characteristics and student achievement. The SCI measures climate with dimensions that mirror all but two of these correlates. Figure 1, a graphic representation of this framework, shows the common domains of instruction, leadership, expectations, involvement, and order and environment. Through the use of this framework, the study may show there is a significant correlation between student performance (value-added gains) and school climate as measured by the SCI.

Assumptions

The researcher conducted this study operating under the following assumptions:

1. Tennessee Comprehensive Assessment Program (TCAP) Criterion Referenced Achievement Test, Form P, is a valid measure of student achievement.
2. Tennessee Value-Added Assessment System (TVAAS) calculations represent reliable measures of predicted student gains.
3. The School Climate Inventory (SCI) overall index is a valid measure of school climate.

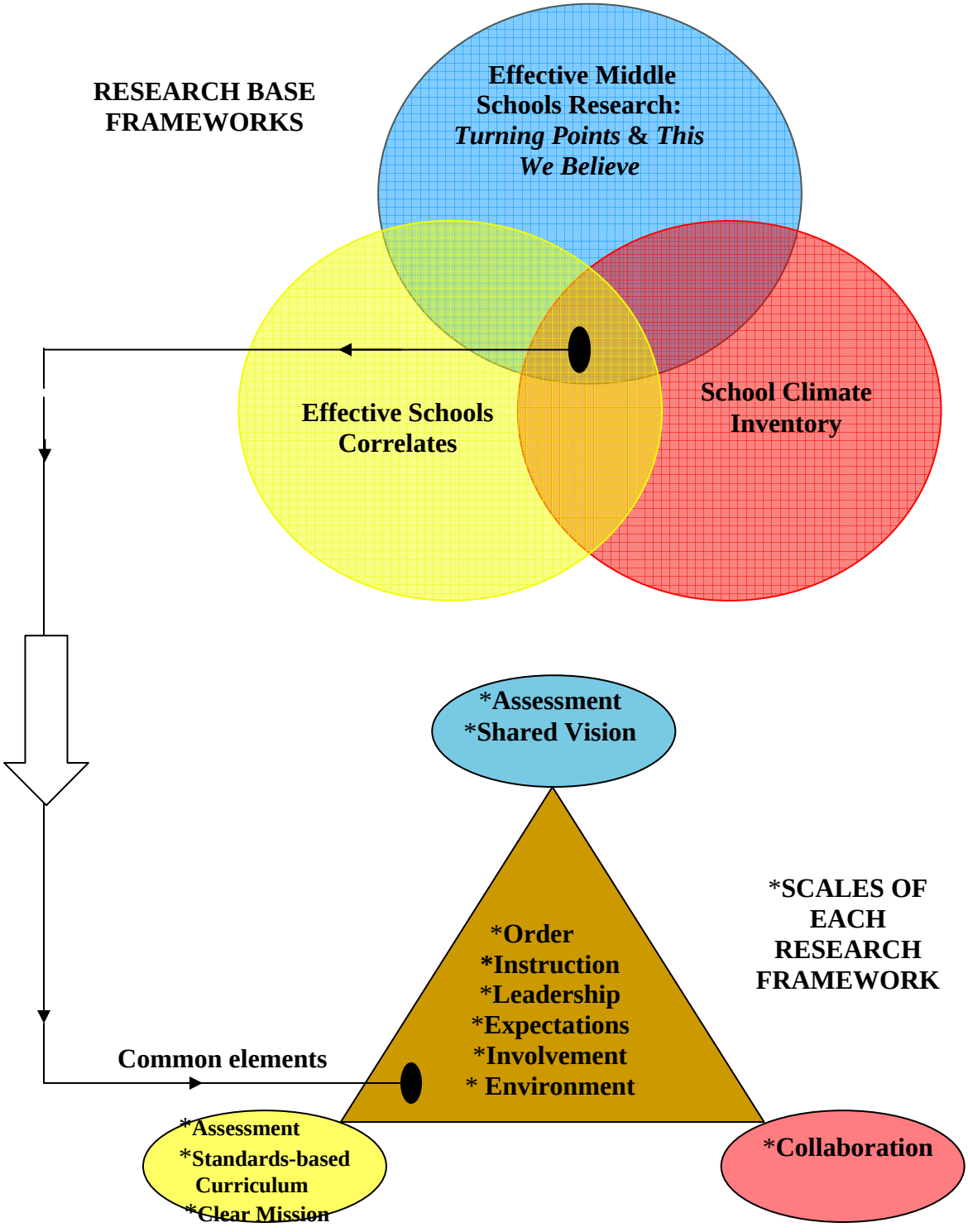


Figure 1. Theoretical framework.

Limitations

The researcher conducted this study operating under the following assumptions:

1. This study was limited to climate as defined by the SCI-R.

2. This study was limited to the selected sample of 40 schools rather than the state population.

Delimitations

The researcher conducted this study operating under the following delimitations:

1. This study was delimited to the middle schools that administered the SCI-R during the 2004-05 school year.

2. This study was delimited to the TCAP and TVAAS scores available on the Tennessee State Web site.

3. This study was delimited to middle school grade levels.

Definition of Terms

The researcher conducted this study operating under the following operational definition of terms:

1. State of Tennessee Report Card, 2005: The Tennessee Education Improvement Act of 1992 established accountability standards for all public schools in the state and required the Department of Education to produce a Report Card for the public to assess each year.

2. Student Achievement: Student test scores as measured by the Tennessee Comprehensive Assessment Program Criterion Referenced Test, Form P.

3. Student Performance: Student gain scores as measured by the Tennessee Value-Added Assessment System (TVAAS), a statistical system developed to measure predicted gains by students over a period of time.

4. Organizational Health: A healthy working environment (climate) is the precondition for generating skills and knowledge, collaborative working relationships, change, resilience, and innovation.

5. Effective Schools Research: The unique characteristics and processes common to schools where all children are learning.

6. School Climate: A subset of organizational health. The norms, beliefs, and attitudes reflected in institutional patterns and practices that enhance or impede student achievement.

7. School Climate Inventory (SCI): A school climate inventory that contains 49 Likert-type items with seven items comprising each of seven dimensions which include collaboration, environment, expectations, instruction, involvement, leadership, and order.

8. Tennessee Comprehensive Assessment Program Criterion Referenced Test, Form P, 2005: The Tennessee test that measures a student's achievement according to specific state standards.

Organization of the Study

The study was organized in the following sequence. Chapter One includes the introduction, problem statement, purpose statement, research questions, significance of the study, conceptual framework, assumptions, delimitations, definitions, and the organization of the study.

Chapter Two includes a current review of literature focusing on issues related to school climate and student achievement. These issues include effective schools research, the historical roots of organizational climate, school climate, student achievement, and student performance. In Chapter Three, a description of the research methods and procedures that frame the study are included. Chapter Four contains a description of the data sources, the findings, and subsequent data analysis for the study. Chapter Five includes a summary of the finding, conclusions, and recommendations drawn from the analysis of the study.

CHAPTER II

REVIEW OF LITERATURE

Introduction

This chapter is a review of literature related to effective schools, school climate, student achievement, and student performance. The review of literature is divided into four sections. The first section reviews the effective schools research. Included in this section is a survey of effective middle school reforms.

A historical look at organizational health and the educational subset of school climate is reviewed in the second section. Student achievement and its relationship to school climate are discussed in the third section. The fourth section is related to student performance as defined by value-added assessment. A general discussion of student performance begins the section followed by a section that is specific to Tennessee. A summary of these findings concludes the review of literature.

Effective Schools Research

In 1966, a report was presented to the United States Congress that shaped the foundation of the American education system for decades. The landmark Equal Educational Opportunity Survey by Professor James Coleman examined the achievement of 600,000 students in 4,000 schools. His research concluded that the homes from which children come make a greater difference than do the schools they attend (Coleman et al., 1966).

One small case study triggered the early effective schools research. A team of researchers led by Edmonds had documented two schools that did not fit Coleman's

hypothesis (Raham, 2001). Instead, children from these two low-income schools outperformed their more affluent peers in nearby schools. Based on this study, Edmonds received one million dollars from the U.S. Office of Education to identify more exceptions. Subsequent research was able to find hundreds of schools in which poor children were learning beyond expectations. These schools were named "effective schools" (2001).

The period from 1966 to 1976 saw many descriptive studies of individual effective schools. Research began to duplicate these findings, even though the causes were not yet understood. To learn more about this anomaly, researchers began to compare high-achieving schools with schools in which similar students were not learning. They wanted to know what was causing the difference.

Throughout the 1980s effective schools research documented the characteristics of effective schools. Researchers and school-based practitioners probed deeper, observing what was happening at the school and classroom level. A list of common traits and processes present in the effective schools was identified. These common characteristics became known as the "effective schools correlates" because they correlated with high levels of school achievement. Table 1 describes these correlates.

In an effective school, there is a clearly articulated school mission through which the staff shares an understanding of and commitment to instructional goals, priorities, assessment procedures, and accountability. Staff members accept responsibility for students' learning of the school's essential curricular goals.

There is a climate of expectation in effective schools. The staff members believe and demonstrate that all students can attain mastery of the essential content and skills.

Table 1. Effective Schools Correlates

CORRELATE	DESCRIPTION
Safe and Orderly Environment	There is an orderly, purposeful, businesslike atmosphere which is free from the threat of physical harm. The school climate is not oppressive and is conducive to teaching and learning.
Climate of High Expectations for Success	There is a climate of expectation in which the staff believes and demonstrates that all students can attain mastery of the essential school skills, and the staff also believes that they have the capability to help all students achieve that mastery.
Instructional Leadership	The principal acts as an instructional leader and effectively and persistently communicates that mission to the staff, parents, and students. The principal understands and applies the characteristics of instructional effectiveness in the management of the instructional program.
Clear and Focused Mission	There is a clearly articulated school mission through which the staff shares an understanding of and commitment to the instructional goals, priorities, assessment procedures and accountability. Staff accepts responsibility for students' learning of the school's essential curricular goals.
Opportunity to Learn and Student Time on Task	School teachers allocate a significant amount of classroom time to instruction in the essential skills. For a high percentage of this time students are engaged in whole class or large group, teacher-directed, planned learning activities.
Frequent Monitoring of Student Progress	Student academic progress is measured frequently through a variety of assessment procedures. The results of these assessments are used to improve individual student performance and also to improve assessments are used to improve individual student performance and also to improve the instructional program.
Home-School Relations	Parents understand and support the school's basic mission and are given the opportunity to play an important role in helping the school to achieve this mission.

Lezotte, L.W. (1991). *Correlates of effective schools: The first and second generation.* Okemos, MI: Effective Schools Products, Ltd.

The faculty and staff also believe that they have the capability to help all students achieve that mastery.

In an effective school, the principal acts as an instructional leader. The principal effectively and persistently communicates the school mission to the staff members, parents, and students. The principal understands and applies the characteristics of instructional effectiveness in the management of the instructional program.

Student academic progress is measured frequently in an effective school. A variety of assessment procedures are used. The results of the assessments are used to improve individual student performance and to improve the instructional program.

An effective school has teachers who allocate a significant amount of classroom time to instruction in the essential content and skills. For a high percentage of this instructional time students are engaged in whole class or large group, teacher-directed, planned learning activities.

The climate in an effective school is an orderly, purposeful, businesslike atmosphere that is free from the threat of physical harm. The school climate is not oppressive and is conducive to teaching and learning.

In an effective school, parents understand and support the school's basic mission. Parents are given the opportunity to play an important role in helping the school to achieve that mission.

During the 1990s a body of case studies known as the "90/90 schools" became part of the effective schools literature. These schools had 90% economically disadvantaged and minority students with 90% or more of the students meeting or exceeding high academic standards. The strategies of these 90/90 schools were found to

be effective even in high mobility sites and to have multi-grade and multi-disciplinary impact (Raham, 2001).

The resulting body of evidence over the last four decades does claim that schools do make a difference. In today's world of increasing expectations for schools to produce higher levels of achievement regardless of student backgrounds, this research is increasingly relevant.

School climate is frequently mentioned in the effective schools research as one of the variables important for student achievement. Matluck (1987), Cruickshank (1990), and Bliss et al. (1991) identified a number of variables relevant to student achievement. Although variables differ from researcher to researcher, there is a common group of variables relevant to student achievement: climate, leadership, expectations, frequent monitoring of instruction, parent and community involvement, and instruction.

Critics of effective schools research stated that the data were collected from poor urban schools and students of low SES and that the research was flawed in methodology (Bliss et al., 1991; Firestone, 1991; Good & Brophy, 1986; Purkey & Smith, 1983). Another critic (Matluck, 1987) suggested that the definition of terms was a flaw in the research because similar studies used the same terms, but lacked agreement on the meaning of terms. Despite this criticism, there was overwhelming support for the premise that effective schools improve student achievement.

In 1996, the Association for Effective Schools included the following statement on their website (www.mes.org):

> What is unique about the effective schools correlates is that they are the only set of research based characteristics of a school's climate associated with improved, better student learning. They are the only set of research identified constructs with which to analyze that complex social organization called a school in order to cause the school as a whole to improve.

Effective Middle Schools

In 1989, The Carnegie Corporation of New York issued *Turning Points: Preparing American Youth for the 21st Century*, a landmark report that recognized the need to strengthen the academic core of middle schools. The report recommended the following to create effective middle schools: creating a community for learning, teaching a core of common knowledge, ensuring success for all students, empowering teachers and administrators, preparing teachers for middle grades, improving academic performance through better health and fitness, re-engaging families in the education of young adolescents, and connecting schools with communities (1989).

The first large-scale effort to study the academic impact of *Turning Points* showed a strong association between this approach and student achievement. Based on data collected over several years from nearly 100 Illinois middle grades schools, Felner and colleagues (1997) found that the more fully a school practiced the Turning Points model, the higher its students scored on language arts assessments. Felner's work has been updated and validated in Michigan, Arkansas, Louisiana and Mississippi by researchers at the University of Illinois (Mertens, Flowers, & Mulhall, 1998).

In 1998, the Carnegie Corporation turned to the Center for Collaborative Education (CCE) to develop a new reform design that would be based on the research and work of the preceding nine years. CCE launched the National Turning Points

Network in August 1999. In 2000, Carnegie Corporation issued an in-depth update of the 1989 report, *Turning Points 2000: Educating Adolescents in the 21st Century* (Jackson & Davis, 2000).

This We Believe (National Middle School Association [NMSA], 1995) outlined the essential features of a "developmentally responsive middle-level school." The effective middle school would have educators committed to young adolescents; a shared vision; high expectations for all; an adult advocate for every student, family, and community partnerships; and a positive school climate.

The Southern Regional Education Board (SREB) issued four reports examining student performance, curriculum and instruction, and teaching in the middle grades. SREB promoted an approach to middle grades reform that draws on best practices designed to improve student achievement. These reform models call for a rigorous academic curriculum for all students; schools that are small and flexible in structure; schools that make high demands on students and provide the support students need to achieve; classrooms that build higher-order thinking skills; and parents who are actively engaged in their children's education.

The National Association of Secondary School Principals' (NASSP) *An Agenda for Excellence at the Middle Level* (1985) stated that to help young adolescents reach their potential, middle schools must provide high quality intellectual climates that foster the development of adaptive skills that students can use throughout their lives. The report presents practical advice for using the 12 interrelated dimensions the NASSP believes merit the highest priority attention. These include core values, culture and climate, student development, curriculum, learning and instruction, school organization,

technology, teachers, transition, principals, community connections, and client centeredness.

Historical Roots of Organizational Climate

Climate and culture are two frameworks used for conceptualizing the nature of organizations (Hoy & Tarter, 1997). The origins of organizational culture can be traced back to the 1930s and 1940s when both Mayo (1945) and Barnard (1938) emphasized the importance of concepts such as norms, values, as well as both formal and informal interactions within an organization. Selznick (1957) later added to the work of Mayo and Barnard by focusing on organizations as institutions. The concept of culture "has become a vehicle to understand the characteristics of organizational life" (Hoy & Tarter, 1997, p. 3). Culture studies of educational institutions reveal teachers' assumptions about teaching and learning and how those assumptions translate into classroom practice (Ferriera, Smith & Bobsworth, 2001).

The second framework for describing the nature of an organization is organizational climate. Studies on organizational climate can be traced back to the origins of social science in the 1950s.

Both the culture and climate concept frameworks attempt to measure the characteristics of an organization. However, despite a tendency for the concepts to be used interchangeably, scholars agree that there are subtle differences in the concepts. "Culture is the individually and socially constructed values, norms, and beliefs about an organization and how it should behave that can be measured only by observation of the setting using qualitative methods" (Hall & Hord, 2001, p. 194). Climate is measured by shared perceptions of behavior. Therefore, "climate is the individuals' perceptions of a

work setting in terms of established concepts that can be measured empirically" (Hall & Hord, p. 194). Climate research typically focuses on the description of an actual behavior or outcome. Climate research is ideally used for implementing improvement plans (Hoy & Tarter, 1997).

Hoy and Miskel (2001) have defined school climate to be a "relatively enduring quality of the school's environment that is experienced by participants, affects their behavior, is based on their collective perceptions of behavior in schools" and is commonly referred to as the personality of the school (p. 190).

An open climate has distinct features that foster cooperation and respect among the faculty and principal (Hoy & Miskel, 2001). Recent research has indicated that an open climate will foster trust and loyalty between the faculty and principal as well as among the teachers. Open climates are less likely to alienate students (Fraser, 2001; Goddard, Hoy, & Hoy, 2000; Smith, 2002; Sweetland & Hoy, 2000; White, 1993). The use of climate measures is useful to the practitioner. Hoy and Miskel believe that "principals who want to improve instructional effectiveness are more likely to be successful if they first develop an open and trusting climate" (2001, p. 196). Overall, an open climate seems to generate a higher degree of organizational commitment and involvement in a school.

Halpin and Croft (1963) developed the Organizational Climate Description Questionnaire (OCDQ), which has become a frequently used measure of school climate. The OCDQ is a survey questionnaire that measures the user's perception of his or her climate research. This survey instrument uses the openness framework (Halpin & Croft, 1962; Hoy et al., 1991). The questionnaire uses a 4-point Likert scale response ranging

from *rarely occurs*, *sometimes occurs*, *often occurs*, and *very frequently occurs* (Halpin & Croft, 1962). The OCDQ was derived from a study of seventy-one elementary schools, which identified six school climate profiles by means of factor analysis (Hoy & Miskel, 2001; White, 1993). Individual responses of the OCDQ-RE are compiled and the aggregate is scored on a continuum ranging from open to closed (Halpin & Croft, 1962; Hoy et al., 1991). The OCDQ-RE identifies three dimensions of principal behavior and three dimensions of teacher behavior.

The three behaviors for principals are noted as supportive, directive, and restrictive. Supportive behavior is demonstrated by the principal valuing suggestions from teachers, providing constructive feedback, and respecting professional decisions made. Directive behaviors are demonstrated by the degree of rigid control the principal exerts over teachers and school functions. Restrictive principal behaviors are demonstrated by the degree of demands teachers are required to accomplish which hinder their primary job of teaching, such as paperwork or extra duties (Hoy & Tarter, 1997).

The three behaviors associated with teachers are noted as collegial, intimate, and disengaged (Hoy & Miskel, 2001). Collegial behaviors are reflected by open exchanges between teachers and respect for peers as professionals. Collegial behaviors as displayed through school pride and satisfying working relationships. Intimate behaviors are evident in strong social relationships, where teachers are comfortable with one another and often socialize together. Disengaged behaviors are often noticed by lack of common goals and unproductive professional development. Disengaged behaviors are often negative as colleagues are critical of peers and their school (Hoy & Tarter, 1997).

Another concept used in school climate research is that of organizational “health”.

Organizational health is measured on a continuum ranging from healthy to sick. Hoy and Miskel (2001) define a healthy organization to be one where the "technical, managerial, and institutional levels are in harmony" (p. 197). There are four premises that make up a healthy organization. The first premise is the ability for the school to obtain needed resources and the ability to adjust in order to meet the needs of the environment. The second premise of a healthy organization revolves around the ability of the school to identify problems within the organization and accordingly set attainable but challenging goals. The third premise is derived from the school's ability to maintain togetherness within the organization, and the fourth premise addresses the ability of the school to preserve the values of the organization (Hoy & Miskel, 2001; Hoy & Tarter, 1997; Hoy et al., 1991).

Healthy schools are characterized by specific desirable qualities. For instance, a healthy school maintains a balance between the focus on tasks and the focus on relations. The principal in a healthy school has the needed latitude in decision making and protects the school from unreasonable demands from the community and parents. Teachers within a healthy school maintain a high academic emphasis by holding their students to high standards and setting high but obtainable goals for their students. The students within a healthy school have a respect for learning and are motivated academically. There is camaraderie among the teachers. Healthy schools exhibit school pride and commitment within the learning community (Hoy & Miskel, 2001; Hoy & Tarter, 1997; Hoy et al., 1991).

Both the OCDQ-RE and the Organizational Health Inventory (OHI) measure components of organizational climate. The OCDQ-RE measures openness and the OHI

measures health. The development of the Organizational Health Inventory for Middle Schools (OHI-M) was created based upon a Parsonian theoretical framework in conjunction with Miles' (1969) health metaphor for climate. The OHI dimensions have been "strongly related to student achievement" (Hoy et al., 1991), even after controlling for SES. In fact, academic emphasis has been the one facet of organizational health which continues to "make a significant contribution to the explanation of student achievement that goes beyond the influence of SES" (p. 139).

The OHI-M is composed of 45 Likert scale items, ranging from *rarely occurs*, *sometimes occurs*, *often occurs*, and *frequently occurs*. This instrument has three dimensions of school health: institutional level, administrative level, and teacher level. The institutional level is measured by institutional integrity, which is the ability of the principal to shelter the school from unreasonable community or parental demands. The administrative level is defined by collegial leadership and resource influence. Collegial leadership is characterized by behaviors displayed by the principal such as friendly, supportive, and driven by values of equity. Collegial leadership is further displayed through clear and challenging expectations. Resource support denotes the ability of the principal to provide needed resources and also the degree of influence a principal has over his or her superiors. The third dimension, teacher level, is defined by both teacher affiliation and academic emphasis. Teacher affiliation attempts to measure teachers' commitment and attitudes toward their students and their colleagues; whereas, academic emphasis refers to the degree of emphasis placed on high scholastic achievement (Hoy et al., 1991).

The dimensions of the OHI attempt to measure participants' perceptions of their environment. The OHI is a tool that requires participant reflection. This instrument provides a snapshot of a school's health and so, provides a road map for continuous improvement (Hoy et al., 1991). The OHI does not cover all of the constructs that contribute to the health of an organization, but it does address five major contributing dimension of an organization's health.

There is no simple all-inclusive formula that will scientifically determine an organization as healthy or open, but rather there are patterns embedded and layered throughout these social structures, pieces of which can be illuminated by different approaches and instruments.

As noted previously, schools with an open climate tend to be healthy and conversely, healthy schools tend to have an open climate (Hoy & Miskel, 2001; Hoy & Sabo, 1998). Since particular facets of school climate have been linked to academic achievement, it appears an investigation into a school's climate would be a logical starting point for measuring a school's effectiveness, establishing a plan for professional development, and/or implementing an improvement plan (Goddard, Sweetland et al., 2000; Hoy et al., 1991; Smith, 2002; Sweetland & Hoy, 2000).

Many researchers have developed measures of school climate. Examining these measures and the dimensions assessed provides insight into the nature of school climate. These assessments consider multiple factors and individuals within the school system. Assessments may use direct measures, such as surveys and interviews; indirect measures, such as disciplinary and attendance records; or both, direct and indirect measures (Freiberg, 1998). The School Climate Survey (Haynes, Emmons, & Comer, 1993)

contains seven dimensions of school climate and specifically assesses students' perceptions in the following areas: achievement motivation, fairness, order and discipline, parent involvement, sharing of resources, student interpersonal relationships, and student-teacher relationships.

The Charles F. Kettering Ltd. (CFK) School Climate Profile is also used to measure school climate. This survey is comprised of four sections and is given to teachers, administrators, and students. Part A, the General Climate Factors, is comprised of the following eight subscales: respect, trust, high morale, opportunity for input, continuous academic and social growth, cohesiveness, school renewal, and caring (Johnson, Johnson & Zimmerman, 1996; Johnson & Johnson, 1993, 1997).

One of the more widely used school climate surveys is published by the National Study of School Evaluation (NSSE). One reason for the widespread popularity of these surveys is the fact that NSSE will also tabulate, analyze, and report on their results. These surveys are also available in a paper or on-line format, allowing the building level team to choose the technology appropriate for that faculty. Comparable forms exist for elementary school students, middle school students, high school students, teachers, English-speaking parents, Spanish-speaking parents, and community members. The surveys are predominantly Likert scale-based, but also allow for minor amounts of open-ended input.

Another major set of climate assessment instruments comes from the NASSP. Their Comprehensive Assessment of School Environments (CASE) School Climate Surveys collect data on 10 sub-scales. These subscales include teacher-student relationships, security and maintenance, administration, student academic orientation,

student behavior values, guidance, student-peer relationships, parent-community-school relationships, instructional management, and student activities. The information gathered through this instrument is supplemented by separate satisfaction surveys for parents, teachers, and students. Much of the information on these satisfaction surveys is comparable across groups. NASSP offers scoring and reporting services for these surveys, including allowing the school to ask "what if" questions related to the subscales.

Other scales have been created to assess issues such as security, maintenance, administration, guidance, student activities, and teacher-principal interactions (Hanna, 1998). Additional measures include the Comprehensive Assessment of School Environments (Keefe & Kelley, 1990), the Organizational Climate Index (Hoy, Smith & Sweetland, 2002), and the School Climate Inventory (Butler & Alberg, 1991).

The Tennessee School Climate Inventory (TSCI) was developed in 1989 by personnel of the College of Education, Memphis State University, under the sponsorship of the Center for Research in Educational Policy (CREP). The TSCI was revised in the fall of 1991 and is now known as the School Climate Inventory (SCI). The inventory is based on the definition of school climate as those "norms, beliefs, and attitudes reflected in institutional patterns and practices that enhance or impede student achievement" (Wallich, 1981). The notion of climate used in developing the inventory of items is similar to that of "culture", which includes belief systems, values, general cognitive structures, and meanings that govern patterned relationships of person and groups (Tagiuri, 1968). The school climate items were selected from a pool created to logically represent constructs influential in contributing to predictive school organizational climates and effective schools and directly impacting on teaching and learning (Anderson

& Walberg, 1974; Stickard & Mayberry, 1986; Wilson & McGrail, 1987; Walberg & Fowler, 1987).

The School Climate Inventory consists of seven dimensions or subscales. The inventory contains forty-nine items, with seven items comprising each subscale. Responses are scored through the use of Likert-type ratings (*strong disagreement* = 1; *strong agreement* = 5). Each dimension yields a mean score ranging from 1 to 5 with higher scores being more positive.

The norming of the TSCI occurred during the 1989-90 school year. The data were collected in pilot sites of the Positive Attitudes in Tennessee Schools (PATS) Project during the first year of implementation. Data were collected during the fall of 1989 and the spring of 1990. Fall data included 1,444 individuals holding faculty, administrator, or support staff positions in 37 schools: 20 elementary schools (N = 686), 6 junior high or middle schools (N = 200), and 11 high schools (N = 325). Spring data were obtained from 992 individuals in 32 schools: 19 elementary schools (N = 536), 5 junior high or middle schools (N = 131), and 8 high schools (N = 325). Reliability data on the SCI-R using the Cronbach alpha or measure of rationale equivalence was an average of +.80 for the 7 subscales (Butler & Alberg, 1991).

The SCI has been used in recent years to evaluate the effectiveness of schools. It has proven especially useful in comparing two groups of schools that have or have not initiated school improvement initiatives. Bulach and Malone (1994) conducted a study on *The Relationship of School Climate to the Implementation of School Reform*. They used the SCI and found a significant relationship between climate and the scores of the schools using the reforms. Bulach, Malone, and Castleman (1995) published a study on

An Investigation of Variables Related to Student Achievement. The researchers used the SCI and the California Test of Basic Skills. They found a correlation between the climate and the achievement scores that was stronger than the correlation of SES and achievement. The strongest subscale correlation was that of involvement.

In 1999, AEL (the Regional Educational Laboratory for Kentucky, Tennessee, Virginia, and West Virginia) and CREP at the University of Memphis initiated a three-year research project to examine specific school-level implementations of comprehensive school reform (CSR). Researchers compared the CSR schools and the control schools to learn about the effects of comprehensive school reform on school improvement and the differences comprehensive school reform models create in schools over time. The SCI was used to measure differences in climate in the schools over the three year period. The study showed that school climate was more positive in schools in which reforms had been implemented and scores had risen.

The Center for Research on Educational Policy (CREP) coordinated a study in 2002 on Memphis City Schools using the Co-nect school reform design. The study confirmed that schools that had implemented the school reform model and had seen positive test score results also saw a positive correlation with the dimensions of the SCI (Ross & Lowther, 2002).

The SCI was used in 2002 to measure differences in climate over an implementation period of the Small Schools Initiative at the Manual High School Complex in Denver, Colorado. The achievement results, the positive staff attitude, and the positive school climate results were suggestive of the school program benefits (Goldfeder & Ross, 2003).

In 2005, CREP was involved in a study on Achievement and School Climate Outcomes for the Knowledge is Power Program (KIPP). This reform model was specifically designed to raise academic achievement of at-risk urban middle school students by interventions such as extended school day and year, rigorous curriculum, after-school access to teachers, and increased family-school connections. A correlation between the implementing schools and positive climate was found. Non-implementation schools did not have as high climate scores (Thompson, McDonald & Sterbinsky, 2005).

The measurement of climate offers an alternative route to qualitatively measuring the shared assumptions within a culture. Climate studies measure participants' shared perceptions of their work environment, which are more readily accessible to a researcher. Such data are more readily accessible due to the fact that participants can be questioned in regards to their perceptions in a small amount of time compared to the time needed to use qualitative methodologies. The ability to study larger portions of populations in this manner presents a researcher with an opportunity to generalize findings across the population studied. Climate studies are also well suited for studies covering a larger geographical territory.

For the purposes of this research the climate framework will be utilized for its ability to be measured and quantified based upon participants perceptions of school effectiveness. The dimensions of the SCI closely mirror the effective schools correlates.

School Climate and Student Achievement

The school climate research contains much information citing the importance of climate for student achievement (Agnew, 1981; Anderson, 1982; Brookover et al., 1977; Howe, 1985; Keefe et al., 1985; Lezotte, Hathaway, Miler, Passalacqua & Brookover,

1980; Montoya & Brown, 1990; Paredes, 1991; Stickard & Mayberry, 1986; Stronge & Jones, 1991). The works of Brookover et al. (1979), Rutter (1981), Rutter et al. (1979), and Wynne (1980) support the statement that a school's climate heavily influences a student's chance for success. Discussing Brookover's 1979 work, Ralph and Fennessey (1983) state that school climate variable may be the effect or the cause of changes in other variables, such as achievement. Hoyle, English, and Steffy (1985) state "school climate may be one of the most important ingredients of a successful instructional program. Without a climate that creates a harmonious and well functioning school, a high degree of academic achievement is difficult, if not downright impossible, to obtain" (p. 15). Sweeney (1988) writes, "a winning school climate provides the very foundation for a sound educational program. When the climate is right, people are inspired to do their best. Teachers and students…do what needs to be done to stimulate learning. Achievement generally rises" (p.1).

Parsons (1967) developed the theory that organizations have three ways to control the needs that drive them. Translating those methods to the educational arena, Hoy and Feldman (1987) named them the technical, managerial, and institutional controls. The technical level in schools concerns the teaching and learning processes that occur. Teachers are responsible for providing effective educational practices to their students. The managerial level is comprised of the administrative functions within the school. The principal should develop a shared sense of commitment with and for the staff. The principal should also be able to influence higher ranking administrators for the betterment of the school. The institutional level consists of the connection between the school and

its environment. Schools must balance on the line between community involvement and community interference.

Together these three levels of controls make up the health or climate of a school. Hoy and Feldman (1987) found that a healthy school is one in which all three levels are in harmony and the school is meeting its needs in spite of external forces while directing its energies toward its mission of education.

Several researchers (Browne, Hoy and Hannum, Hoy, Tarter et al., Smith, Sweetland and Hoy, and Valente) found strong correlations between four aspects of organizational health and student achievement. They found that teacher affiliation, resource support, and academic emphasis positively correlate to student achievement. These findings remain consistent even when the researchers controlled for SES.

Across many of the studies (Brown et al., 2003; Hoy & Hannum, 1997; Sweetland & Hoy, 2000), the strongest correlation exists for the academic emphasis in the schools. It appears that schools that hold high expectations for their students and maintain an orderly environment see higher student achievement scores on standardized tests (Goddard et al., 2000). This finding was so consistent that Goddard et al. focused one study on that result and found strong positive correlations between academic emphasis in a school and the achievement of its students.

Several small studies did not show a significant positive relationship between climate and achievement. Culpepper (1993) gathered data from 698 teachers in 41 elementary schools. She used the school as the unit of analysis and found no significant relationships between climate and reading and math achievement. Montoya and Brown (1990) examined the relationship of middle school climate to academic achievement.

Participants were in 8 different sixth grade classes. Correlation analyses were done on the mathematics, reading, and overall scores from the California Test of Basic Skills and the school climate perception scores as measured by the SCI. Only three dimensions of the climate correlated positively with the academic scores. It was concluded that there were no linear relationships between students' perceptions of school climate and academic achievement.

Student Performance

Several methods of assessing student and school performance based on standardized test scores have been proposed over the last several decades. The earliest of these methods used only student scores from the current year to estimate school effects on student performance (Coleman, Campbell, & Kilgore, 1982). Status-based methods rely on regression models, which include school effects that are assumed fixed. These methods may or may not include student or school variables that influence test scores. The main characteristic of status-based methods is the absence of adjustment for students' incoming knowledge level. The previous year's score is not controlled when estimating school effects. The most obvious deficiency of such methods would seem to be that differences among schools in average knowledge of incoming students would confound the assessment of instructional quality at each school. This aspect of the status-score methods is especially undesirable when assessing the quality of instruction by grade level, because although the school might be responsible for students' incoming math scores in the third grade, for example, the third grade math teachers are not (Tekwe et al., 2004).

Alternative methods of assessment that adjust for incoming differences in knowledge level or ability are generally preferred. Aitkin and Longford (1986) stated that "the minimal requirement for valid institutional comparison is an analysis based on individual level data which adjusts for intake differences." Sanders suggested that a statistical method for measuring the influence of districts, schools, and teachers on student learning that focuses on student improvement rather than absolute scores is the "only fair, reasonable thing to do if you are going to have an accountability system" (Olson, 1998). Methods that adjust for student incoming knowledge levels produce value-added assessments of school performance.

One approach to value-added assessment has relied on Hierarchical Linear Models (HLM) analysis (Aitkin & Longford, 1986; Goldstein, 1997; Phillips & Adcock, 1996; Raudenbush & Bryk, 1986). The hierarchical linear models that have been studied in the literature (Hierarchical Linear Mixed Models, HLMM) are special cases of the general mixed effects models (Littell, Milliken, Stroup & Wolfinger, 1996) and are distinguished from the corresponding fixed effects models (FEM) by the fact that school effects are assumed to be random. That is, in HLMM, schools are assumed to be a random sample from a larger population of schools (perhaps conceptual), whereas in fixed effects models they are taken to be the fixed population of schools to be graded. A value-added assessment of school performance can be derived from either HLMM or FEM analysis of change scores (current year score minus previous year score) or of status scores with intake score (usually last year's test score) included as a covariate (Tekwe et al., 2004).

An alternative mixed model, called the Layered Mixed Effects Model (LMEM), was suggested by Sanders and Horn (1994), to estimate school effects on student learning gains, and is the foundation of the Tennessee Value-Added Assessment System (TVAAS). The LMEM includes neither a direct measure of gain nor measure of incoming knowledge or ability as a covariate. It, nevertheless, does produce value-added measures of school effects by utilizing the information in non-zero covariance between test scores at different times (Sanders & Horn, 1994). Carter et al. (2001) and McCaffrey et al. (2004) independently demonstrated that the LMEM can be viewed as a model for change scores with random school effects. An LMEM can be specified to either analyze multiple subject area test scores simultaneously (multivariate LMEM) or separately (univariate LMEM); (Tekwe et al., 2004).

Even though value-added assessment is used in other areas of the country, Tennessee has the most comprehensive value-added system and is the only state so far to put in place a statewide process of gathering information needed to determine the effects of teaching on students' growth (Carey, 2004). The Annenberg Foundation is supporting value-added analysis in Florida and in the Washington area where school officials are measuring each school against its past performance (Matthews, 2000). Other states with school districts using value-added analysis of schools, teachers, or both include Colorado, Minnesota, North Carolina, and Wisconsin (Carey).

Value-added assessment represents a variety of technologies from many different academic areas that build upon the statistical advantages of mixed model theory and methodology (Sanders & Horn, 1998). It was developed by William Sanders, who at the time was a professor at the University of Tennessee. While doing statistical analysis for

agricultural research scientists, Sanders states, “those people were constantly trying for better ways to take performance data and to better partition genetic influences from environmental influences, such that they could improve breeding efficiencies of plants and animals" (Archer, 1999, p. 27). Sanders focused not on one set of test results but on how the scores change over time, and he contended that by looking at a student’s test score gain or loss from the previous year, the role played by the classroom teacher can be determined (Matthews, 2000).

In the mid-1980s the level of concern for the state of education in the United States rose across the nation after the publication of *A Nation at Risk*. In Tennessee, a major attempt to improve educational opportunities for students was enacted in 1984 under Governor Lamar Alexander. The Comprehensive Education Reform Act (CERA) included a major increase in educational spending.

In 1989, a law suit filed by a group of smaller school districts in the state contended that the state must provide equal funding across districts to ensure and equal educational opportunity for all students. This lawsuit was the impetus for the Education Improvement Act (EIA) signed into law by Governor Ned McWherter in 1992. This piece of legislation included another major increase in funding for education. It also required a second increase in the state’s sales tax in less than 10 years. Legislators in both parties, under pressure from business, demanded a strong accountability provision be included in the act. “At every level the need for accountability and assessment was recognized as an essential component of educational improvement” (Sanders & Horn, 1994). This accountability model required concrete evidence for satisfactory year-to-year

improvements down to the classroom level. The TVAAS, along with other measures would provide information to form the base for the new accountability system.

The TVAAS, referred to in the EIA as the *Sanders model*, was the methodology designated to determine the effectiveness of school systems, schools, and teachers in producing academic growth in Tennessee students. The TVAAS required the convergence of a statewide testing program, which tests each student each year in four academic subjects, and an application of a statistical approach that enables a massive multivariate longitudinal analysis of student records. These data include student scores on the Tennessee Comprehensive Assessment Program Criterion Referenced Test, Form P, in four core subject areas: reading/language arts, math, science, and social studies. The statistical models used in TVAAS were not restrictive as to the indicator variables that can be employed in the process. Rather, any variables linear in their metrics, highly correlated with curricular objectives, and possessing appropriate measurement sensitivities could be used.

Each student's test data are collected over time and are linear to that student's teachers, schools, and systems. TVAAS uses the scale scores students make over the years to model their learning patterns. By utilizing the longitudinal data, it is possible to track the academic growth and when it deviates from the norm. By following this growth over time, the student acts as his or her own control. This enables the separation of system, school, and teacher effects free of the exogenous factors that influence academic achievement.

The guiding principle of TVAAS is that "society has a right to expect that schools will provide students with the opportunity for academic gain regardless of the level at

which the students enter the educational venue. In other words, all students can and should learn commensurate with their abilities" (Baker, Xu, & Detch, 1995, p. 1).

The main purpose of TVAAS in the EIA is to provide summative evaluation on how effective a school, system, or teacher has been in leading students to achieve normal academic gain over a three-year period. TVAAS reports, issued each year, include information on student gains for each subject and grade for the three most recent years as well as the three-year average gains. The cumulative average gain is the main indicator by which performance success is measured. According to the EIA, the standards to which systems and schools are held accountable are in terms of academic gains rather than absolute scores.

Performance goals were set for teachers, schools, and districts. The goals for schools and school districts included academic achievement or value-added to student learning. The goals have changed in recent years to include achievement and value-added to student learning. Achievement gain was measured in the beginning as a norm reference to a national sampling in five academic areas. It has evolved into a criterion referenced score on the four core subject areas. The current academic areas include reading/language arts, math, science, and social studies.

A conceptual view of TVAAS can by visualized by imagining an "academic growth chart" for each individual student, charting the student's rate of growth over multiple years. Like a physical growth chart, this chart shows times of more rapid growth and times of slower growth. When the charts of all the students in a classroom, school or system are correlated, educators can spot areas where learning is taking place more slowly or more rapidly.

The statistical model required to correlate this growth is much more complicated because real life testing is much more complicated. Students can miss tests, move between schools, or have a bad day on testing day. These and other complications require sophisticated statistical analysis to insure reliable measures of the influences of systems, schools, and teachers on the rate of academic growth of students.

The most significant differences between TVAAS, which uses mixed-model statistics and less sophisticated methodologies, are treatment of missing data, the approach to non-teacher variable, and the accommodation of different real-world teaching scenarios.

Value-added scores are a measure of academic growth from year to year in each of these academic areas. The value-added measure is the centerpiece of the evaluation of system, school, and teacher effectiveness. Student normal curve equivalent (NCE) scores are compared from year to year. Value-added scores that are positive are considered to be more than one year's growth whereas negative gains are considered to be less than one year's growth. School gain scores are calculated by averaging the gain scores of individual students in the school (Sanders et al., 1996).

Schools, systems, and teachers receive reports detailing their effectiveness with students of different achievement levels so that they may more effectively plan their curricula, methods of implementation, and special programs. This information has been found to be invaluable by teachers and administrators in planning curriculum, program evaluation, and strategies to meet the needs of student with different academic abilities. The reports assist systems in pinpointing grade and subject problems and successes and to direct efforts and resources accordingly.

The TVAAS gathers raw data from the Tennessee Comprehensive Assessment Program (TCAP), an umbrella testing program that encompasses four mandated achievement testing programs. One of these programs, the criterion-referenced TCAP Test, Form P, is designed to evaluate the level of students' proficiency on the Tennessee curriculum frameworks. This assessment provides diagnostic information for specific state content objectives by identifying academic skills the student has accomplished. This assessment also complies with the federal No Child Left Behind Act of 2001.

The use of TVAAS shows the effect schools have on student gains in learning while controlling for biasing factors of SES, ethnicity, and transience. Through the use of the mixed-model method, incomplete records resulting from student mobility or absence from the administration of the test can still be used in calculating the school or teacher value-added score (Sanders et al., 1997).

Value-added assessment is not a new or different type of test. Rather, it is a model used to statistically analyze test data to determine the influence of teachers, schools, and school districts on student learning. Instead of comparing students to each other or to an established level of proficiency, value-added assessment compares students to themselves, to determine if they are advancing academically, and, if so, at what pace. The value-added assessment statistical model uses test scores accumulated year to year from each student to track change in achievement. This allows creation of academic "growth charts" for each student's progress, measuring the "value added" to the knowledge the student already had. Like a physical growth chart, the curve is rarely even—the record will show flat spots or spurts of accelerated learning. By calculating statistically significant variances in a group of students' test scores, determination can be

made as to how well a particular teacher, school, or district is educating a particular student.

The calculation of TVAAS scores is not a simple process. It combines very complex formulas to quantify the effects a school has on student learning. However, TVAAS is one of the more prominent methods for computing this score. For the purpose of this study, only school value-added scores will be used. The aggregate school value-added score for each school will be utilized to look for a possible relationship with the aggregate school climate score. Although the value-added score does not show all of the effect a school can have on a student's learning, the TVAAS score does provide a reliable measure of the typical gain made by students in the school.

Summary

The literature provides a solid base for both the conceptual framework and instrument used in this study. The effective schools research developed by Edmonds, Brookover, and Lezotte identified common traits in effective schools. Research has continued through the years to expand and replicate the original research into a solid base of practice (Raham, 2001).This research shows a definite link between the effective schools correlates and student achievement (Lezotte, 1991).

Middle schools research has shown a correlation between the implementation of the correlates in *Turning Points* (Carnegie Corporation, 1989) and *This We Believe* (NMSA, 1995) and more effective middle schools. The National Middle School Association has published several reports that support the implementation and practice of these recommendations.

The SCI has been used in recent years to evaluate the effectiveness of schools. This instrument will be used to measure and quantify participant perceptions of school climate.

This study will look at the perceived school climate and school effectiveness as measured by student performance and student achievement. The following chapter will outline the methodology used during this study.

CHAPTER III

METHODOLOGY

This study examined the relationship of school climate and student performance as evidenced by achievement scores and value-added gain scores in selected middle schools from the state of Tennessee.

Study Design

The unit of analysis for this study was the school. Variables of organizations can affect climate studies. Therefore, an index score of the school's climate was appropriate for this research (Hoy & Hannum, 1997). Aggregate achievement scores and aggregate value-added gains for the schools were compiled for this study. These data were compared with school climate scores using the Pearson Product Moment Correlation Coefficient (Pearson's ***r***). The Pearson's ***r*** was also used to compare the school's climate subscale scores in order, leadership, environment, involvement, instruction, expectation, and collaboration with student performance and student achievement in reading/language arts, mathematics, science and social studies.

The following questions were examined using the Pearson Product Moment Correlation Coefficient.

Research Question

The research was guided by the following questions:

1. What is the relationship between school climate scores and student performance in selected middle schools in the state of Tennessee?
2. What is the relationship between school climate scores and student achievement in selected middle schools in the state of Tennessee?

A correlation analysis was applied to determine the strength and direction of the relationship between school climate and value-added gain scores and school climate and achievement scores. To determine significance, the correlation (r) was compared to the critical value table for the correct degrees of freedom at the $p < .05$ level.

Instrumentation

The SCI was chosen as the instrument for this study due to the factors of school effectiveness (institutional attributes) that it measured. The SCI contains 49 statements comprising seven subscales of seven items each which yield quantitative estimates of school climate dimensions. Responses are scored through use of Likert-type ratings (*strong disagreement* to *strong agreement*, 1-5). Each scale yields summative scores ranging from 7 to 35 with higher scores being more positive. The seven scales, definitions of the constructs, and the items forming each scale are presented in Table 2 (Butler & Alberg, 1991).

The inventory can be administered individually or in a group setting. The administration time is approximately 30 minutes. The inventory may be used for administration to professional school personnel, as well as support personnel, parents, and community members.

The SCI has been produced in several formats to be administered in different contexts. Although the Inventory is designed to be used with an optical scanner, the responses can be hand scored. All of the formats include solicited personal information. The standard school climate instrument includes total years of experience as a school employee, total years of experience at this school, educational attainment, ethnic background, age group, and gender. Project specific inventories have incorporated tracer

Table 2. School Climate Inventory Subscales

SUBSCALES	DEFINITIONS	SCALE ITEMS
Order	The extent to which the environment is ordered and appropriate student behavior are present. (α=.8394)	q13, q23, q25, q30, q39, q44, q46
Leadership	Extent to which the administration provides instructional leadership. (α=.8345)	q8, q20, q34, q36, q42, q45, q47
Environment	Extent to which positive learning environment exists. (α=.8094)	q7, q9, q10, q14, q29, q38, q49
Involvement	Extent to which parents and the community are involved in the school. (α=.7582)	q5, q11, q12, q18, q19, q32, q37
Instruction	Extent to which the instructional program is developed and implemented. (α=.7453)	q4, q15, q24, q33, q35, q41, q48
Expectations	Extent to which student are expected to learn and be responsible. (α=.7275)	q2, q3, q17, q21, q22, q27, q43
Collaboration	Extent to which the administration, faculty, and students cooperate and participate in problem solving. (α=.7417)	q1, q6, q16, q26, q28, q31, q40

Butler, E.D. & Alberg, M.J. (1991). *Tennessee school climate inventory: A resource manual.* Memphis, TN: The University of Memphis Center for Research in Educational Policy.

variables such as school size, community type, and region of the state. School-related variables, such as grade level assignment, position within the school, and others have been included upon request. Additional scales for evaluation of staff development activities, rating of instructional strategies, and perception of school improvements during a specified time period have also been included in the past (Butler & Alberg, 1991).

The SCI is used by the State of Tennessee in 3-year principal leadership academies. These Beginning Principal Academies are for new administrators in the state. Each principal's school can administer the SCI as part of the Academy program. This allows new administrators to see areas of climate that need to be improved as well as provide an instrument to be used in the school improvement process.

Content and construct validity of the SCI subscales have been assured through developmental and review procedures. Individuals outside the development team reviewed the items and subscales and have supported their use in assessing perceptions of school climate dimensions. School faculties in more than 100 school sites responded to the items and used the results in designing and implementing school improvement plans. Responses from school personnel participating in workshops conducted with school leadership teams indicated support for the constructs assessed y the instrument and have affirmed the value of the information yielded both by individual items and the subscales. Use of the variety of school faculties in rural, small town, and urban settings has further substantiated validity of the items (Butler & Alberg, 1991).

The items and subscales have demonstrated discriminatory power by yielding empirical indicators that differentiate school faculties on the variables assessed. Alpha coefficients document desirable internal total inventory and subscale consistency at

various school levels. Scale interrelations are statistically significant at the $p < .01$ level (See Appendix D).

Control of the social desirability factor (response bias due to the desire to please, fear of exposure to criticism, and evaluator apprehensiveness relative to scoring the items) was accomplished through controlled data collection and reporting of results. Guidelines for administration of the inventory were developed to ensure individual anonymity and objectivity.

Data Sources

Data for this study were collected from two major sources: (1) the School Climate Inventory (SCI) and (2) the State of Tennessee Report Card, 2005.

School Climate Inventory (SCI)

School Climate Inventory (SCI) results collected at the Center for Research in Educational Policy (CREP) were used as participant responses. The information was amassed from 40 Tennessee middle school faculties during the 2004-05 school year. The participation of these schools was outside this researcher's control. The data already existed at CREP and were believed to be representative of the state population.

There were five classifications of schools that used the SCI during the 2004-2005 school year. The first group was composed of schools that were participating in the Appalachian Educational Laboratory (AEL) and CREP Formative Evaluation Process for School Improvement (FEPSI). There were 10 schools in this classification. There were 4 schools who took the SCI in their facilities due to participation in the TEAM TN Project. There were 6 schools that contracted with CREP individually to administer the SCI in their facilities. There were six schools who administered the SCI during their inclusion

of a graduate student project. The final classification of schools is composed of 14 schools whose principals were enrolled in the Beginning Principals Academy sponsored through the State of Tennessee Department of Education.

The demographic data are represented in Table 3. The study sample included 13 schools from west Tennessee, 16 schools from middle Tennessee, and 13 schools from east Tennessee. The schools range in size from 1,381 students to 224 students. The data included a total of 1,484 faculty respondents (N). The number of faculty respondents per school ranged from N = 78 to N = 16.

The varied settings for these schools included rural, metropolitan, urban, suburban, small city, and small town. All of the schools were public middle schools with varied grade configurations. The majority of these schools include Grades 6 through 8.

The socio-economic status (SES) of each school was figured by percentage of students participating in the free and reduced lunch program. The percentage of participating students ranged from 2.3% to 100%.

State of Tennessee Report Card, 2005

The Tennessee Education Improvement Act of 1992 established accountability standards for all public schools in the state and required the Department of Education to produce a Report Card for the public to assess each year.

Tennessee state law (Tennessee Code Annotated 49-1-601) has since been amended to match regulations in No Child Left Behind (NCLB). Additionally, the State Board of Education has revised its performance standards and requirements to meet performance criteria in the new federal law. Schools, systems, and the state must meet proficiency benchmarks in nine subgroups including five race/ethnicity groups; students

Table 3. School Descriptive Demographics

School	Student Population	Percent of Free and Reduced Lunch Students	Number of Faculty Respondents	Grade Configuration	Region of the State
1	419	44.7	30	5-8	East
2	1202	49.6	64	6-8	East
3	410	58.1	29	5-8	East
4	1053	2.5	44	6-8	Middle
5	307	36.2	24	6-8	West
6	550	29.7	38	6-8	East
7	397	98.5	25	6-8	East
8	1202	53.2	74	6-8	East
9	778	62.1	27	6-8	West
10	436	92.1	23	6-8	East
11	627	42.1	29	5-8	West
12	492	45.6	28	6-8	Middle
13	317	58.0	27	7-9	West
14	554	23.1	40	6-8	Middle
15	1297	76.2	78	6-8	East
16	577	85.7	27	5-8	Middle
17	1004	1.2	56	6-8	Middle
18	722	10.0	37	6-8	Middle
19	495	46.5	29	6-8	Middle
20	1020	67.4	32	6-8	West
21	494	52.0	29	4-8	West
22	726	62.7	27	6-8	West
23	486	54.1	23	6-8	Middle
24	224	59.6	22	5-8	Middle
25	434	66.3	19	5-8	Middle
26	462	72.5	21	6-8	East
27	494	59.1	33	5-8	East
28	1018	69.4	61	6-8	East
29	307	60.6	16	6-8	East
30	1381	68.4	48	6-8	West
31	1139	33.3	56	6-8	Middle
32	924	46.6	42	5-8	East
33	1236	30.4	60	6-8	West
34	599	63.9	35	6-8	Middle
35	833	15.8	44	6-8	Middle

Table 3 (continued).

School	Student Population	Percent of Free and Reduced Lunch Students	Number of Faculty Respondents	Grade Configuration	Region of the State
36	624	100.0	27	6-8	West
37	622	96.6	31	5-8	Middle
38	836	61.6	41	6-8	Middle
39	493	53.5	30	6-8	West
40	1050	2.4	58	6-8	Middle
	<450 = 9	1-40 = 10	<25 = 7	4-8 = 1	East = 13
	450-750 = 16	41-80 = 25	25-45 = 24	5-8 = 9	Middle = 16
	>750 = 15	81-100 = 5	>46 = 9	6-8 = 29	West = 11
				7-9 = 1	

with disabilities; limited English proficient students; economically disadvantaged students; and the school as a whole.

The Report Card is organized in four parts: State/System/School Profile, Student Academic Achievement, TVAAS (Value Added), and Adequate Yearly Progress (AYP). Grades are assigned to appropriate criteria with a grade scale available for explanation of specific scaling. Each section of the Report Card will be discussed in relation to the data it provides for this study.

Part I: School Profile

There are two categories in this section: general information and demographics. The general information category includes name of school, grades served, safe school status, school status, and highly qualified status. The demographics category includes a description of the student body based on net enrollment by race/ethnicity as well as other federally required subgroup information. For the purposes of this study, grades served, the net enrollment and the percentage of economically disadvantaged (percent of free and reduced lunch participants) were used.

Part II: Student Academic Achievement (TCAP)

Four categories are included in Part II: criterion referenced academic achievement, subgroup disaggregation for math, subgroup disaggregation for language arts plus writing, and writing. The criterion referenced academic achievement category measures individual student performance against a predetermined set of standards that are established based on the curriculum. Grades are assigned to appropriate criteria with a grade scale available for explanation of specific scaling. Scores for four academic areas (reading/language arts, math, science, and social studies) are reported. Scores for 2 years

as well as the current year state scores are included in this category. There is also a trend indicator that tracks the positive, negative, or flat growth across 3 years.

The subgroup disaggregation for language arts and math divide the student population into NCLB subgroups. Each subgroup is then further separated by Below Proficient, Proficient, and Advanced percentages. State aggregate scores are reported for comparison purposes. Scores are reported for 2 years and include a 3-year average.

The writing category consists of the results of the TCAP writing assessment over a 3-year period. The scores include the raw score, the grade assigned, and the trend over a 3-year period. The current state score is included for comparison.

This study used achievement test scores from the 2004-05 school year. The three year average criterion referenced test (CRT) scores for the school in reading/language arts, math, science, and social studies were used. These results were found on the State of Tennessee Report Card, 2005, state web site (**www.state.tn.us/education**). On this web site, CRT normal curve equivalent (NCE) scores were combined across grade levels for a 3-year average school score in each subject area. The grade ranges for the CRT scores on the Report Card are shown in Table 4.

Part III: TVAAS (Value Added)

There is only one category in Part III. However, it is divided into two parts. The first part shows the growth standard over a 2-year period. There are aggregate school scores for the four academic areas of language arts, math, science, and social studies. These aggregate school scores include an assigned letter grade (status), the mean gain, and the current state growth standard.

Table 4. Grade Ranges for TCAP Achievement Scores

State Report Card Grade 2005	Status	Language Arts CRT Mean NCE Score Range	Math CRT Mean NCE Score Range	Social Studies CRT Mean NCE Score Range	Science CRT Mean NCE Score Range
A	Exemplary	57-99	56-99	60-99	59-99
B	Above Average	52-56	51-55	54059	54-58
C	Average	46-51	46-50	48-53	49-53
D	Below Average	41-45	39-45	41-47	42-48
F	Deficient	0-45	0-38	0-40	0-41

State of Tennessee Report Card: 2005 [Data files]. Nashville, TN: State Department of Education.

The second part consists of grade level (4-8) scores in each of the four academic areas over a 3-year period. Also included are the 3-year averages for each grade in each subject, the current state growth standard, and the state 3-year average for comparison.

The measure of a school's value-added gains is the state's aggregate gain. In comparison, if a school makes gains equal to the state's aggregate gain, it is considered to have average gains. On the Tennessee State Report Card, schools are given a letter grade of A, B, C, D, or F based on how their student gains compare with the expected gains of students across the state. Table 4 shows the value-added mean gain range for the 2005 Report Card. The state growth standard is 0.0, which shows one year's growth. The state growth standard was derived from calculations using baseline data from the 1998 administration of TCAP

This study used TVAAS scores from the 2004-05 school year. These scores can be found on the State of Tennessee Report Card, 2005, state web site. The 3-year mean gains for each grade level are combined for a mean gain for the school in each subject area. The average mean gain ranges used to assign letter grades on the Report Card are shown in Table 5.

Part IV: Adequate Yearly Progress (AYP)

There are two categories in this section of the report card: Elementary/Middle and High School. The Adequate Yearly Progress (AYP) is a component required by NCLB as a measure of all schools, systems, and the state in meeting the required federal benchmarks. Each benchmark has individually determined standards or targets that must

be met. Each category reports the percentage of students tested and percent of students scoring proficient and advanced in both math and reading/language arts. In the

Table 5. State Report Card Value-Added Mean Gain Range

TVAAS Grade	Status	Value-added Mean Gain Range by Subject Area			
		Language Arts	**Math**	**Social Studies**	**Science**
A	Exceptional	>1.2	>1.5	>0.4	>0.6
B	Exceeds State Growth Standard	0.7-1.2	0.5 to 1.5	-0.1 to 0.4	-0.2 to 0.6
C	Maintains State Growth Standard	-0.1 to 0.6	-0.5 to 0.4	-0.8 to -0.2	-1.1 to -0.3
D	Below State Growth Standard	-0.6 to -0.2	-1.9 to -0.6	-1.6 to -0.9	-1.9 to -1.2
F	Deficient	<-0.6	<-1.9	<-1.6	<-1.9

State of Tennessee Report Card: 2005 [Data files]. Nashville, TN: State Department of Education.

Elementary/Middle category attendance rate is monitored. In the High School category, the event dropout rate is monitored. Both categories indicate whether AYP was met. No scores from this section of the Report Card are used in this study.

Data Collection

The sample that was used in this study consisted of 40 schools which took the SCI on their own for various reasons and of schools who contracted to take the SCI as part of a program evaluation process.

Administration of the SCI is a standardized procedure. The SCI instruments were handed out during school faculty meetings. Each participant completed an inventory. The inventories were then blindly placed in a large white mailing envelope. When all participants had completed and deposited their inventories, a designated person (other than the principal) sealed the envelope and placed it in the mail to CREP at the University of Memphis. The inventory was scored and tabulated at the CREP facility. A compiled report was then sent to each participating school.

The Center for Research in Educational Policy agreed for the responses of all middle schools to be used in this study. The raw data files were sent in non-delimited text format. There were 43 separate text files. Individual school personnel responses and demographic information were included in each separate text file.

When the text files were received, each set of school responses had to be manually delimited and then imported into Microsoft Excel. A workbook was set up with forty-three worksheets. Each school was imported to a separate worksheet. The fields included the school's state ID number, individual responses to the 49 items, and eight fields of demographic information. The demographics included building level,

position in the building, total years at the facility, total educational experience, educational level, age range, gender, and ethnic origin.

Inside each Excel worksheet, a formula was embedded to find the seven subscale scores for each respondent. Table 4 shows the link between the subscales and individual items. The mean index for the seven subscale scores was found for each respondent. The mean for all of the respondent indexes was then found for the school mean or overall school climate index.

The scores for student performance collected from the State of Tennessee Statewide Report Card 2005 website (**www.state.tn.us/education**). Each school has a report card on the site. The report cards were printed and collated in a notebook. The scores for student performance were collected from Part III – TVAAS (Value Added). These scores were entered into the Excel workbook sheet for each school. Three schools were exempted from this study. No TVAAS scores were available for these three schools.

The scores for student achievement were collected from the State of Tennessee Statewide Report Card 2005 website (**www.state.tn.us/education**). The scores for student performance were collected from Part II – Student Academic Achievement. These scores were entered into the Excel workbook sheet for each school.

Data Analysis

Quantitative data was analyzed using the Pearson Product Moment Correlation. Correlations were computed for the overall school SCI index scores and the school 3-year mean CRT NCE scores for the reading/language arts, math, science, and social studies subject areas. Correlations were also computed for the overall school SCI index scores

and the school 3-year mean value-added gains for reading/language arts, math, science, and social studies subject areas.

The SCI was scored to obtain both an overall climate index score for the schools as well as subscale scores in each of the seven areas related to school climate. These seven areas are collaboration, environment, expectations, instruction, involvement, leadership, and order. The data from the SCI were explored to find any possible correlations with student performance and with student achievement. The Pearson Product Moment Correlation Coefficient was compared with the overall SCI score for each school and the student performance for each school using the Data Analysis Tools included in Microsoft Excel software. The process was repeated using the Pearson Correlation for the SCI school scores and the student achievement scores. The Pearson ***r*** was then calculated for each of the subscales of the SCI and student performance and with student achievement. All of these tests were performed with an alpha level of less than or equal to 0.05 ($p \leq 0.05$), a standard probability level for the field of education. SCI scores were used to rank order the schools by their overall climate index scores.

Summary

This study used a correlation analysis design. Utilizing the effective schools research, the middle school concept and reform research, and climate research as conceptualized by the SCI as a conceptual framework, this study explored the nature of the relationship of school climate and student performance at the middle school level. The data came from the SCI assessment of school climate and the State of Tennessee Report Card, 2005. TCAP, Form P, CRT data and TVAAS gain data were collected from the Report Card. These data were utilized in a correlation analysis using the Pearson

Product Moment Correlation Coefficient. The analysis of these data is presented in Chapter IV.

CHAPTER IV

DATA ANALYSIS

Introduction

In this chapter, the data regarding the correlation of overall school climate and student performance and the correlation of overall school climate and student achievement are presented, analyzed, and discussed. The purpose of this study was to investigate the relationship between school climate and student performance. This study also compared school climate and student achievement in order to confirm previous research.

Description of the Data

The climate data were amassed from 40 Tennessee middle schools during the 2004-05 school year. These schools were selected outside my control. The data already existed at the Center for Research on Educational Policy (CREP) and were representative of the state population. The SCI response data from the faculties of these 40 middle schools across the state of Tennessee were used in a correlation analysis.

As an additional means for looking at the sample distribution, schools were separated into quadrants based on performance/achievement ranking in two academic areas, language arts and math. High achieving schools were defined as schools that scored above the mean normal curve equivalent (NCE) of 50. Low achieving schools scored at or below the mean NCE of 50. High performing schools were defined as schools that scored above the mean value-added gain index of 1.0. Low performing schools scored at or below the mean value-added gain index of 1.0. The distribution is shown in Table 6.

Table 6. School Achievement/Performance Distribution for Language Arts & Math

	Language Arts	
Quadrant	I	II
Descriptor	High Achieving/High Performance	High Achieving/Low Performance
Number of Schools	15	13
Quadrant	III	IV
Descriptor	Low Achieving/High Performance	Low Achieving/Low Performance
Number of Schools	2	10
	Math	
Quadrant	I	II
Descriptor	High Achieving/High Performance	High Achieving/Low Performance
Number of Schools	17	10
Quadrant	III	IV
Descriptor	Low Achieving/High Performance	Low Achieving/Low Performance
Number of Schools	3	10

The first quadrant (QI) consisted of high achievement/high performance schools. The second quadrant (QII) consisted of high achievement/low performance schools. The third quadrant (QIII) consisted of low achievement/high performance schools. The fourth quadrant (QIV) consisted of low achieving/low performance schools.

In language arts there were 15 schools in QI, 13 schools in QII, 2 schools in QIII, and 10 schools in IV4. In math there were 17 schools in QI, 10 schools in QII, 3 schools in QIII, and 10 schools in QIV.

This study used the Tennessee Comprehensive Assessment Program (TCAP), Form P, criterion referenced test (CRT) scores from the 2004-05 school year. The 3-year average CRT scores for the school in language arts, math, science, and social studies were used. These results were found on the State of Tennessee Report Card, 2005, state web site (**www.state.tn.us/education**). On this web site, criterion referenced test (CRT) normal curve equivalent (NCE) scores were combined across grade levels for a three year average school score in each subject area.

This study used Tennessee Value Added Assessment Scores (TVAAS) from the 2004-05 school year. These scores were found on the State of Tennessee Report Card, 2005, state web site **(www.state.tn.us/education).** The 3-year mean gains for each grade level were combined for a mean gain for the school in each subject area.

Analysis of Data

Quantitative data were analyzed using the Pearson Product Moment Correlation. Correlations were computed for the school SCI index scores and the school 3-year mean CRT NCE achievement score for the reading/language arts, math, science and social studies subject areas. Correlations were also computed for the school SCI index scores

and the school 3-year mean TVAAS performance scores for Reading/Language Arts, Math, Science, and Social Studies subject areas.

The SCI is scored to obtain both an overall climate index score for the schools as well as subscale scores in each of the seven areas related to school climate. These seven areas are collaboration, environment, expectations, instruction, involvement, leadership, and order. The data from the SCI were explored to find any possible correlations with student performance and with student achievement. The Pearson Product Moment Correlation Coefficient ***(r)*** was compared with the overall SCI score for each school and the student performance for each school using the Data Analysis Tools included in Microsoft Excel software.

The process was repeated using the Pearson Correlation for the SCI school scores and the student achievement scores. The Pearson ***r*** was then calculated for each of the subscales of the SCI and student performance and with student achievement. All of these tests were performed with an alpha level of less than or equal to $p \leq 0.05$, a standard probability level for the field of education. SCI scores were also used to rank order the schools by their overall climate index scores.

Research Question 1

> What is the relationship between school climate scores and student performance in selected middle schools in the state of Tennessee?

Language Arts Performance Scores

Language arts performance scores from the TVAAS value-added gains scores were correlated with the SCI subscales and overall climate index. The results are shown in Table 7.

Table 7. Summary of Performance Scores and Climate Correlations

Performance Scores	Overall Climate Index	Collaboration Subscale	Environment Subscale	Expectation Subscale	Instruction Subscale	Involvement Subscale	Leadership Subscale	Order Subscale
Language Arts	0.40*****	0.38*****	0.40*****	0.33*****	0.20	0.20	0.43*****	0.44*****
Math	0.13	0.09	0.14	0.06	0.03	0.13	0.12	0.19
Science	0.27	0.27	0.22	0.33*****	0.16	0.11	0.20	0.31
Social Studies	0.31	0.30	0.30	0.27	0.12	0.17	0.30	0.37*****

Note*:* ***** $p < .05$

State of Tennessee Report Card: 2005 [Data files]. Nashville, TN: State Department of Education.

The correlation between the overall climate index and language arts performance scores was statistically significant at the $p < .05$ level. The correlations of the language arts scores and the climate subscale scores of collaboration, environment, leadership, and order were also statistically significant at the $p < .05$ level. The language arts performance scores correlated more significantly with the climate subscales and index than any other performance score category.

The climate subscales and the overall index correlated positively with the language arts performance scores. The most significant correlation was between the performance scores and the climate subscale of order at $\boldsymbol{r}(35) = .44$, $p < .05$. The second highest correlation was the performance scores and the leadership subscale with $\boldsymbol{r}(35) = .43$, $p < .05$. Following are the correlations between the environment subscale and the overall climate index at $\boldsymbol{r}(35) = .40$, $p < .05$.

No other language arts correlations were statistically significant at the $p < .05$. The lowest correlation with the language arts performance scores were the climate subscales of involvement and instruction at $\boldsymbol{r} = .20$.

Math Performance Scores

Math performance scores from the TVAAS value-added gains scores were correlated with the School Climate Inventory subscales and overall climate index. The results are shown in Table 7.

There were no statistically significant correlations of math performance scores with climate scores at the $p < .05$ level or greater. The math performance scores correlated more weakly with the climate subscales and index than any other performance score category.

The climate subscales and overall index were positively correlated with the math performance scores. The highest correlation was between the math performance scores and the climate subscale of order at ***r*** = .19. The second highest correlation was the math performance scores and the environment subscale with ***r*** = .14. Following closely are the correlations between the involvement subscale and the overall climate index at ***r*** = .13. The lowest correlation with the math performance scores was the instruction subscale at ***r*** = .03).

Science Performance Scores

Science performance scores from the TVAAS value-added gains scores were correlated with the SCI subscales and overall climate index. The results are shown in Table 7.

The correlation between Science performance scores and the climate subscale of expectation was statistically significant at the $p < .05$ level. None of the other correlations were significant at the ***p*** < .05 level.

The climate subscales and overall index correlated positively with the Science performance scores. The only significant correlation was between the performance scores and the climate subscale of expectation at ***r*** (35) = .33, $p < .05$. The second highest correlation was the correlation of performance scores and the climate subscale of order with ***r*** = .31. Following closely are the correlations between the collaboration subscale and the overall climate index at $r = .27$. The lowest correlation with the Science performance scores was the climate subscale of involvement at ***r*** = .11.

Social Studies Performance Scores

Social studies performance scores from the TVAAS value-added gains scores were correlated with the SCI subscales and overall climate index. The results are shown in Table 7.

The climate subscales and overall index correlated positively with the social studies performance scores. The only significant correlation was between the social studies performance scores and the climate subscale of order at $\boldsymbol{r}$ (35) = .37, $p < .05$.

None of the other correlations were significant at the $p < .05$ level. The second highest correlation was the correlation between the performance scores and the overall climate index at $\boldsymbol{r} = .31$. Following closely are the correlations between the performance scores and the climate subscales of environment and leadership at $\boldsymbol{r} = .30$. The lowest correlations were with the social studies performance scores and the climate subscales of involvement at $\boldsymbol{r} = .17$ and instruction at $\boldsymbol{r} = .12$.

Summary of Performance Scores

While the performance scores of the four academic areas were all positively correlated with both the overall climate index and the climate subscales, only a few were statistically significant at the $p < .05$ level. The summary performance score correlations are presented in Table 7.

The correlation of the language arts performance scores and overall climate index was significant at the $\boldsymbol{r}$ (35) = .40, $p < .05$. Within the language arts performance scores, the climate subscales of collaboration ($\boldsymbol{r}$ (35) = .38, $p < .02$), environment ($\boldsymbol{r}$ (35) = .40, $p < .05$), expectation ($\boldsymbol{r}$ (35) = .33, $p < .05$), leadership ($\boldsymbol{r}$ (35) = .43, $p < .05$) and order ($\boldsymbol{r}$ (35) = .44, $p < .05$) were statistically significant. The correlation of language arts

performance scores and the climate subscales of instruction and involvement were not statistically significant.

There were no statistically significant correlations in the math performance category.

The correlation between the science performance scores and the climate subscale of expectation was statistically significant at r (35) = .33, p < .5 level. None of the other correlations in the Science category were statistically significant at the p < .05 level.

The correlation of the social studies performance scores and overall climate index were statistically significant at $\boldsymbol{r}$ (35) = .31, p < .05. Within the Social Studies performance scores, the climate subscale of order was higher than the overall index at $\boldsymbol{r}$ (35) = .37, p < .05. The subscales of collaboration, environment, expectation, involvement, leadership, and instruction were not statistically significant.

The performance score correlations with the climate subscale of instruction and involvement were consistently low across all four of the subject areas. The performance score correlation with the climate subscale of order was consistently high across all of the subject areas. Language arts and social studies were statistically significant in this subscale. The performance score correlation with the subscale of environment appears to be the next most consistently high across all four subject areas. However, only the score in language arts was statistically significant.

Research Question 2

> What is the relationship between school climate scores and student achievement in selected middle schools in the state of Tennessee?

Language Arts Achievement Scores

Language arts achievement scores from the TCAP, Form P, 2005 scores were correlated with the SCI subscales and overall climate index. The results are shown in Table 8.

The correlations of the language arts achievement scores and the climate subscales of environment and order were statistically significant at the $p < .05$ level. The climate subscales and the overall index correlated positively with the Language Arts achievement scores. The most significant correlation was between the Language Arts achievement scores and the climate subscales of order and environment ($\boldsymbol{r}$ (35) = .36, $p < .05$).

The correlation between Language Arts achievement scores and the overall climate index was not significant at $\boldsymbol{r}$ = .28. The correlations of Language Arts achievement scores and the climate subscales of involvement ($\boldsymbol{r}$ = .27), collaboration ($\boldsymbol{r}$ =.22), leadership ($\boldsymbol{r}$ =.18), instruction ($\boldsymbol{r}$ = .17), and expectation ($\boldsymbol{r}$ = .07) were not statistically significant.

Math Achievement Scores

Math Achievement scores from the TCAP, Form P, 2005 scores were correlated with the School Climate Inventory subscales and overall climate index. The results are shown in Table 8.

The climate subscales and the overall index correlated positively with the Math achievement scores. The correlation of the Math achievement scores and the climate subscale of environment was statistically significant at the $p < .05$ level. The most significant correlation was between the Math achievement scores and the climate

Table 8. Summary of Achievement Scores and Climate Correlations

Achievement Scores	Overall Climate Index	Collaboration Subscale	Environment Subscale	Expectation Subscale	Instruction Subscale	Involvement Subscale	Leadership Subscale	Order Subscale
Language Arts	0.28	0.22	0.36*	0.07	0.17	0.27	0.18	0.36*
Math	0.28	0.22	0.35*	0.08	0.16	0.28	0.17	0.36*
Science	0.35*	0.30	0.42*	0.16	0.23	0.28	0.24	0.44*
Social Studies	0.30	0.25	0.37*	0.10	0.20	0.27	0.19	0.38*

Note: * $p < .05$

State of Tennessee Report Card: 2005 [Data files]. Nashville, TN: State Department of Education.

subscale of order (***r*** (35) = .36, $p < .05$). The correlation between the Math achievement scores and the subscale of environment was also significant at ***r*** (35) = .35, $p < .05$. The correlations of Math achievement scores with the climate subscales of involvement (***r*** = .28), collaboration (***r*** = .22), leadership (***r*** = .17), instruction (***r*** = .16), and expectation (***r*** = 08) were not statistically significant at the $p < .05$ level. The correlation of the math achievement scores and the overall climate index (***r*** = .28) was not significant at the $p<$ .05 level.

Science Achievement Scores

Science achievement scores from the TCAP, Form P, 2005 scores were correlated with the SCI subscales and overall climate index. The results are shown in Table 8.

The correlation of the science achievement scores and the overall climate index was statistically significant at the $p < .05$ level. The correlations of the science achievement scores and the climate subscales of environment and order were statistically significant at the $p < .05$ level

The climate subscales and the overall index correlated positively with the science achievement scores. The most significant correlation was between the Science achievement scores and the climate subscale of order (***r*** (35) = .44, $p < .01$). The correlation between the science achievement scores and the subscale of environment was also significant at ***r*** (35) = .42, $p < .05$. The correlation between the science achievement scores and the overall climate index was significant at ***r*** (35) = .35, $p < .05$.

The correlations between the science achievement scores and the climate subscales of collaboration (***r*** = .30), involvement (***r*** = .28), leadership (***r*** = .24), instruction (***r*** = .23), and expectation (***r*** = .16) were not significant at the $p < .05$ level.

Social Studies Achievement Scores

Social studies achievement scores from the TCAP, Form P, 2005 scores were correlated with the SCI subscales and overall climate index. The results are shown in Table 8.

The climate subscales and the overall index correlated positively with the Social Studies achievement scores. The correlations of the social studies achievement scores and the climate subscales of environment and order were statistically significant at the $p < .05$ level. The most significant correlation was between the social studies achievement scores and the climate subscale of order ($\boldsymbol{r}$ (35) = .38, $p < .05$). The correlation between the Science achievement scores and the subscale of environment ($\boldsymbol{r}$ (35) = .37, $p < .05$) was also significant.

The correlations of the social studies achievement scores and the climate subscales of involvement ($\boldsymbol{r}$ = .27), collaboration ($\boldsymbol{r}$ = .25), instruction ($\boldsymbol{r}$ = .20), leadership ($\boldsymbol{r}$ = .19), and expectation ($\boldsymbol{r}$ = 10) were not statistically significant at the $p < .05$ level. The correlation of the social studies achievement scores with the overall climate index ($\boldsymbol{r}$ = .30) was not significant at the $p < .05$ level.

Summary of Achievement Scores

The achievement scores of the four academic areas were all positively correlated with both the overall climate index and the climate subscales. The summary of the achievement scores and climate correlations are presented in Table 8.

The correlation of the language arts achievement scores and the subscales of environment and order were both significant at the $p < .05$ level. The correlation of the language arts achievement scores and the overall climate index was not significant. The

correlations of the language arts achievement scores and the climate subscales of collaboration, expectation, instruction, involvement, and leadership were not significant.

The correlations of the math achievement scores and the climate subscales of order and environment were significant at the $p < .05$ level. The correlation of the math achievement scores and the overall climate index was not significant. The correlations of the math achievement scores and the climate subscales of collaboration, expectation, instruction, involvement, and leadership were not statistically significant at the $p < .05$ level.

The correlation of the science achievement scores and the overall climate index was the most significant correlation with $\boldsymbol{r}$ (35) = .35, $p < .05$. The correlation of the science achievement scores and the climate subscales of order and environment were statistically significant at the $p < .05$ level. The correlations of science achievement scores and the climate subscales of collaboration, instruction, involvement, and leadership, and expectation were not significant at the $p < .05$ level.

The correlation of the social studies achievement scores and the climate subscale of order was the most significant correlation with $\boldsymbol{r}$ (35) = .38, $p < .05$. The correlation between the social studies achievement scores and the climate subscale of environment was significant at $\boldsymbol{r}$ (35) = .37, $p < .05$. The correlations of the social studies achievement scores and the climate subscales of collaboration, environment, expectation, instruction, involvement, and leadership were not statistically significant at the $p < .05$ level.

The correlations of the four academic areas achievement scores and the climate subscale of environment were all statistically significant. The correlations of the four academic area achievement scores and the climate subscale of order were all statistically

significant. In the achievement scores category, across the four subject areas, the overall climate and subscale correlations were consistent in rank order: science, social studies, language arts, and math (see Table 8).

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

The purpose of this study was to extend previous research by investigating the relationship between school climate and student performance. Student performance in this study was operationally defined as student value-added gains in four academic areas (language arts, math, science, social studies) as presented in the State of Tennessee Report Card, 2005. In order to confirm previous research with the selected instrument, school climate and student achievement were also compared in four academic areas (language arts, math, science, social studies).

Utilizing the effective schools research, the middle school concept and reform research, and climate as measured by the School Climate Inventory (SCI), a conceptual framework was designed. This framework provided the basis for exploring the nature of the relationship of school climate and student performance at the middle school level. The study attempted to provide answers to the following questions:

1. What is the relationship between school climate scores and student performance in selected middle schools in the state of Tennessee?
2. What is the relationship between school climate scores and student achievement in selected middle schools in the state of Tennessee?

The first phase in this research required a four-step investigation into the current knowledge of effective schools, organizational health, student achievement, and student performance. Organizational health literature was reviewed with an emphasis upon the subset of school climate. The last section of the investigation included the area of student performance as defined by the Tennessee Value-Added Assessment System (TVAAS).

The second phase of the research involved choosing an instrument for the study. The School Climate Inventory (SCI) developed in 1989 by personnel of the College of Education, Memphis State University, under the sponsorship of the Center for Research in Educational Policy (CREP) was chosen for its inclusion of effective schools correlate measurements in the climate subscales.

Permission to use the SCI scores from the 40 Tennessee middle schools previously collected during the 2004-05 school year was received from the University of Memphis. Achievement test scores, TVAAS scores and school demographic information for the selected schools were collected from the Tennessee Department of Education public domain web site.

The population sample for this study consisted of forty middle schools that had participated in the administration of the SCI during the 2004-2005 school year. These schools were not individually chosen to participate, but rather chose to conduct the School Climate Inventory-Revised (SCI-R) in their facility. The selected schools were a sample of convenience. The data already existed but were believed to be representative of the state population. The sample included 13 schools from west Tennessee, 16 schools from middle Tennessee, and 13 schools from east Tennessee. The schools ranged in size from 1,381 students to 224 students. The data included a total of 1,484 faculty respondents (N). The number of faculty respondents per school ranged from N = 78 to N = 16.

The varied settings for these schools included rural, metropolitan, urban, suburban, small city, and small town. All of the schools were public middle schools with varied grade configurations. The majority of these schools included Grades 6 through 8.

The socio-economic status (SES) of each school was figured by the percentage of students participating in the free and reduced lunch program. The percentage of participating students in each school ranged from 2.3% to 100%.

This study used a correlation analysis design. The data sources were the SCI assessment of school climate and the State of Tennessee Report Card, 2005. Tennessee Comprehensive Assessment Program (TCAP), criterion referenced test (CRT), Form P, data and Tennessee Value Added Assessment System (TVAAS) gain data were collected from the Report Card. These data were utilized in a correlation analysis using the Pearson Product Moment Correlation Coefficient. All of these tests were performed with an alpha level of less than or equal to 0.05 ($p \leq 0.05$), a standard probability level for the field of education

Findings

The findings from the analysis of data in Chapter IV are reviewed below. The findings are listed by research question categories.

Findings for Research Question 1

1. While the performance scores, based on value-added gains of the four academic areas, were all positively correlated with the overall school climate index, only language arts was found to have a significant correlation at the $p < .05$ level.

2. There was no significant correlation between the math performance scores and the overall school climate index at the $p < .05$ level.

3. There was no significant correlation between the science performance scores and the overall school climate index at the $p < .05$ level.

4. There was no significant correlation between the social studies performance scores and the overall school climate index at the $p < .05$ level.

5. At the climate subscale level, language arts scores correlate with five subscales, science scores correlate with one subscale, and social studies scores correlate with one subscale at a significance of p< .05 level.

Findings for Research Question 2

1. While the achievement scores of the four academic areas were all positively correlated with the overall school climate index scores, only science was found to have a significant correlation at the p < .05 level.

2. There was no significant correlation between language arts achievement scores and the overall school climate index at the p < .05 level.

3. There was no significant correlation between math achievement scores and the overall school climate index at the p < .05 level.

4. There was no significant correlation between social studies achievement scores and the overall school climate index at the p < 05 level.

5. At the subscale level, language arts scores correlate with two subscales, math scores correlate with two subscales, science scores correlate with two subscales, and social studies scores correlate with two subscales at a significance of p < .05 level.

6. The correlations of the four academic areas achievement scores and the climate subscales of environment and order were all statistically significant at the p < .05 level.

Conclusions

Student Performance

There is a relationship between overall school climate and at least one aspect of student performance, language arts.

Discussion

The conceptual framework used for this study identified six climate subscales and domains that were consistent across the climate, effective schools, and middle school concept research. Of those six subscale, language arts scores were significantly linked to four: leadership, expectations, order, and environment. Collaboration was the fifth

subscale statistically linked to language arts performance scores. While collaboration is considered to be a crucial aspect of middle school concept research, it was not considered in the effective schools research. The findings do, however, reflect back to and support the initial framework.

Previous research reflected in the framework also shows there is a link between socioeconomic status (SES) and student achievement; a link between student achievement and school climate; a link between effective schools and school climate; and, a link between school climate and middle school concepts. In this research, another link has been added; the link between student performance and overall school climate.

The relationship between school climate and performance was not consistent across all of the academic performance areas (language arts, math, science, and social studies). Only in the area of language arts performance was there a significant relationship found. Here language arts scores were significantly linked to 5 climate subscales (leadership, expectations, order, environment, and collaboration) out of 7. The items in 4 of the significant SCI subscales are closely linked to the definition and item statements of academic emphasis in research conducted using the Organizational Health Inventory (OHI).

Academic emphasis involves the extent to which a school presses for academic excellence. High but achievable academic goals are set for students, the learning environment is orderly and safe, and teachers believe in the students' abilities to achieve. Students work hard to achieve and respect those who do well.

Even though this study does show a significant link between language arts performance and overall school climate, there is no clear explanation why it was the only

academic performance area to show a significant correlation. However, it is a significant finding. It is important that climate research be continued using student performance (value-added) scores.

Student Achievement

This study did affirm previous research that shows a relationship between the academic emphasis of climate and student achievement.

Discussion

The SCI subscales, order and environment, that correlated significantly with all areas of achievement (language arts, math, science, and social studies) include items that are associated with academic emphasis (high expectations for students and an orderly, safe environment). Several studies (Brown et al., 2003; Hoy & Hannum, 1997; Sweetland & Hoy, 2000), found that a strong correlation exists between academic emphasis in the schools and student achievement. Schools that hold high expectations for their students and maintain an orderly environment see higher student achievement scores on standardized tests (Goddard et al., 2000).

Recommendations

The following are recommended by the researcher:

1. Recognizing that there is a link between school climate and student performance, schools might want to regularly monitor the climate profile of their building. Faculty and staff should be able to identify weaknesses and strengths of the climate to aid them in producing higher performance scores.

2. Recognizing that there are various climate instruments that measure different aspects of school climate, several instruments recommended for use by schools in the monitoring process. The instruments might be used in alternating years to gain a more inclusive perspective of the school's climate.

3. Schools might want to take action on the results of the school climate profiles by making efforts to increase climate scores through the school improvement

planning process. Particular importance should be given to areas relating to academic emphasis.

4. A study similar to this one may be conducted with an instrument other than the SCI to further investigate the relationship of school climate and student performance. Previous research using the OHI has shown a significant relationship between achievement and climate, especially in the area of academic emphasis. Therefore, a study using the same design but using the OHI might be conducted.

5. It is recommended that a study be conducted using a comparability analysis between the SCI and the OHI. This would allow a direct comparison and correlation of the results of both instruments from the same sample. It might also affirm the strength of the correlation between academic emphasis and student performance as well as reflecting the similarity of items/subscales being measured by both instruments. This could be done through an item analysis or by administration of both instruments to a common set of schools.

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APPENDICES

APPENDIX A: School Climate Inventory – Revised

School Climate Inventory - Revised (SCI-R)

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School Name: _____ **State:** _____

Indicate the extent to which you agree with each of the following items as they are currently reflected in your school. If you have no basis on which to respond, leave the item blank.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1. The faculty and staff share a sense of commitment to the school goals.	SA	A	N	D	SD
2. Low achieving students are given opportunity for success in this school.	SA	A	N	D	SD
3. School rules and expectations are clearly communicated.	SA	A	N	D	SD
4. Teachers use a variety of teaching strategies.	SA	A	N	D	SD
5. Community businesses are active in this school.	SA	A	N	D	SD
6. Students are encouraged to help others with problems.	SA	A	N	D	SD
7. Faculty and staff feel that they make important contributions to this school.	SA	A	N	D	SD
8. The administration communicates the belief that all students can learn.	SA	A	N	D	SD
9. Varied learning environments are provided to accommodate diverse teaching and learning styles.	SA	A	N	D	SD
10. The school building is neat, bright, clean, and comfortable.	SA	A	N	D	SD
11. Parents actively support school activities.	SA	A	N	D	SD
12. Parents are treated courteously when they call or visit the school.	SA	A	N	D	SD
13. Rules for student behavior are consistently enforced.	SA	A	N	D	SD
14. School employees and students show respect for each other's individual differences.	SA	A	N	D	SD
15. Teachers at each grade (course) level design learning activities to support both curriculum and student needs.	SA	A	N	D	SD
16. Teachers are encouraged to communicate concerns, questions, and constructive ideas.	SA	A	N	D	SD
17. Students share the responsibility for keeping the school environment attractive and clean.	SA	A	N	D	SD
18. Parents are invited to serve on school advisory committees.	SA	A	N	D	SD
19. Parent volunteers are used wherever possible.	SA	A	N	D	SD
20. The administration encourages teachers to be creative and to try new methods.	SA	A	N	D	SD
21. Students are held responsible for their actions.	SA	A	N	D	SD
22. All students in this school are expected to master basic skills at each grade level.	SA	A	N	D	SD
23. Student discipline is administered fairly and appropriately.	SA	A	N	D	SD
24. Teachers often provide opportunities for students to develop higher-order skills.	SA	A	N	D	SD
25. Student misbehavior in this school does not interfere with the teaching process.	SA	A	N	D	SD
26. Students participate in solving school-related problems.	SA	A	N	D	SD
27. Students participate in classroom activities regardless of their sex, ethnicity, religion, socioeconomic status, or academic ability.	SA	A	N	D	SD
28. Faculty and staff cooperate a great deal in trying to achieve school goals.	SA	A	N	D	SD
29. An atmosphere of trust exists among the administration, faculty, staff, students, and parents.	SA	A	N	D	SD
30. Student tardiness or absence from school is not a major problem.	SA	A	N	D	SD
31. Teachers are active participants in the decision making at this school.	SA	A	N	D	SD
32. Information about school activities is communicated to parents on a consistent basis.	SA	A	N	D	SD
33. Teachers use curriculum guides to ensure that similar subject content is covered within each grade.	SA	A	N	D	SD
34. The principal (or administration) provides useful feedback on staff performance.	SA	A	N	D	SD
35. Teachers use appropriate evaluation methods to determine student achievement.	SA	A	N	D	SD
36. The administration does a good job of protecting instructional time.	SA	A	N	D	SD
37. Parents are often invited to visit classrooms.	SA	A	N	D	SD
38. Teachers are proud of this school and its students.	SA	A	N	D	SD
39. This school is a safe place in which to work.	SA	A	N	D	SD
40. Most problems facing this school can be solved by the principal and faculty.	SA	A	N	D	SD

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School Climate Inventory - Revised
Continued

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
41. Pull-out programs do not interfere with basic skills instruction.	SA	A	N	D	SD
42. The principal is an effective instructional leader.	SA	A	N	D	SD
43. Teachers have high expectations for all students.	SA	A	N	D	SD
44. Teachers, administrators, and parents assume joint responsibility for student discipline.	SA	A	N	D	SD
45. The goals of this school are reviewed and updated regularly.	SA	A	N	D	SD
46. Student behavior is generally positive in this school.	SA	A	N	D	SD
47. The principal is highly visible throughout the school.	SA	A	N	D	SD
48. Teachers use a wide range of teaching materials and media.	SA	A	N	D	SD
49. People in this school really care about each other.	SA	A	N	D	SD

Indicate the level of your school.

☐ Elementary ☐ Middle School ☐ Junior High School ☐ Senior High School
☐ K-8 ☐ K-12 ☐ 7-12 ☐ Other

Indicate your position at your school.

☐ Administrator ☐ Teacher ☐ Counselor ☐ Librarian
☐ Student or Intern Teacher ☐ Teacher's Assistant ☐ Other

How many years of experience do you have as a school employee (teacher, administrator, support staff, etc.)?

☐ 5 years or less ☐ 6-10 years ☐ 11-15 years ☐ 16-20 years ☐ More than 20 years

How many years of experience do you have as an employee at this school?

☐ Less than one year ☐ 1-5 years ☐ 6-10 years ☐ 11-15 years ☐ More than 15 years

What is the highest level of education you have completed?

☐ High School diploma or less ☐ Associate's Degree or some college credit ☐ Bachelor's Degree ☐ Master's Degree ☐ Degree beyond Master's

Which best describes you?

☐ American Indian or Alaskan Native ☐ Asian or Pacific Islander ☐ Black/African American ☐ Hispanic/Latino ☐ Multi-Racial ☐ White

What is your age group?

☐ 29 years or less ☐ 30-39 years ☐ 40-49 years ☐ 50-59 years ☐ 60 years or older

What is your gender?

☐ Male ☐ Female

Please provide any additional comments you may have pertaining to your school's climate:

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APPENDIX B: Comparison of Common Characteristics of the Frameworks and SCI

Comparison of Common Characteristics of Frameworks and SCI

School Climate Inventory - R (Subscales)	**Effective Schools Correlates**	**Effective Middle School Reforms**	
		Turning Points	*This We Believe*
	Clear School Mission		A Shared Vision
Expectations	High Expectations	Organize relationships for learning	High expectations for all
Leadership	Instructional Leadership		
	Frequent Monitoring of Student Progress (Assessment)		Assessment & evaluation that promote learning
Instruction	Opportunity to Learn & Student Time on Task	Teach a curriculum grounded in standards	Varied teaching & learning practices that promote learning
		Use instructional methods that prepare all students	
Order	Safe & Orderly Environment	Provide a safe and healthy school	A Positive School Climate
Environment			Programs & policies that foster health, wellness, & safety
Involvement	Home-School Relations	Involve parents & communities in supporting learning	Family & Community Partnerships
Collaboration		Govern democratically by all staff members	Educators committed to young adolescents
		Prepare teachers for teaching middle grades	
			An adult advocate for every student

APPENDIX C: Permission to use SCI Data

From: Samuel Hurst
Date: 02/28/06 16:21:48
To: mgsumner@comcast.net
Subject: the SCI-R txt files of the TN Middle Schools of 2004-2005

Myrna:

I apologize for the delay, but we've been swamped and haven't had as much time to spend with students as we would normally like. Attached is the zipped folder of the 2004-2005 SCI files we discussed. My GA made a note of some problems he had (below) let me know if you need any further explanation that what he provided.

Thanks,

Sam

APPENDIX D: Reliabilities Coefficients for the Tennessee School Climate Inventory Scales

Reliabilities Coefficients for the Tennessee School Climate Inventory Subscales

Subscale	Alpha Coefficients ($p < .01$) Elementary (N = 386)	Junior High (N = 118)	Senior High (N = 358)
Order	.82	.79	.74
Leadership	.85	.89	.76
Environment	.86	.90	.79
Involvement	.75	.82	.70
Instruction	.77	.78	.70
Expectations	.76	.72	.64
Collaboration	.80	.83	.70
Total Index	.93	.94	.90

Note: Data obtained through Fall 1989 administration of TSCI in Positive Attitudes in Tennessee Schools (PATS) project sites.

Butler, E. D., & Alberg, M. J. (1991). *Tennessee School Climate Inventory: A resource manual*. Memphis: The University of Memphis.

APPENDIX E: Tennessee School Climate Inventory Subscale Intercorrelations

Tennessee School Climate Inventory Subscale Intercorrelations

Subscale	Order	Leadership	Environment	Involvement	Instruction	Expectations	Collaboration
Order	1						
Leadership	.7437	1					
Environment	.7620	.7016	1				
Involvement	.5767	.5163	.6246	1			
Instruction	.4818	.5110	.5440	.5384	1		
Expectations	.7896	.7017	.6819	.5377	.5347	1	
Collaboration	.7622	.7232	.8160	.5753	.4983	.6888	1

Note: $p < .01$

Butler, E. D., & Alberg, M. J. (1991). *Tennessee School Climate Inventory: A resource manual*. Memphis: The University of Memphis.

APPENDIX F: State of Tennessee Report Card

www.state.tn.us/education

State of Tennessee

Statewide Report Card 2005

Governor: Phil Bredesen
Commissioner: Lana Seivers

Part I: State Profile

General: Information is for 2004-2005 school year

Schools:	1693	Elementary Schools SACS Accredited:	72.2%
Grades Served:	K-12	Secondary Schools SACS Accredited:	91.3%
Students (ADM):	920,562	Teachers: (link to degree count)	59,274
Teacher Permits:	492	Administrators:	3,340
Teacher Waivers:	874	Safe School Status:	Safe

% of Core Classes Taught by Highly Qualified Teachers:	80.9%
# of Core Classes Taught by Highly Qualified Teachers:	131,281
% of Core Classes Not Taught by Highly Qualified Teachers:	19.1%
# of Core Classes Not Taught by Highly Qualified Teachers:	30,929
Total # of Core Classes Taught State Wide:	162,210
Percent Poverty per 2002 Census :	16.1%

Demographics: Information is for 2004-2005 school year

Student Body (Based on Net Enrollment)

	Students	
	#	%
White	683,744	69.9
African American	242,660	24.8
Hispanic	35,472	3.6
Asian	13,242	1.4
Native American	1,856	0.2
Pacific Islander	570	0.1
Limited English Proficient	20,243	2.2
Students with Disabilities	147,404	15.9
Economically Disadvantaged	453,492	52.12
Title 1	315,479	34.6

Suspensions & Expulsions

	Suspensions	Expulsions
	#	#
White	35,461	972
African American	46,409	930
Hispanic	2,245	49
Asian	455	13
Native American	108	2

Pacific Islander	46	2
Male	57,214	1,485
Female	27,510	483

Grades K-8: Non-Academic Indicators

	2004	2005	Goal
Attendance	94.8%	94.2%	93%
Promotion	97.1%	97.5%	97%

Grades 9-12: Non-Academic Indicators

	2004	2005	Goal
Attendance	92.2%	92.2%	93%
Cohort Dropout	10.7%	10.4%	10%
Event Dropout		2.6 %	
Graduation Percent	75.7%	77.9%	90%

Finance: Information is for 2004-2005 school year

	State	National
Per Pupil Expenditures per Funded ADM	$6,970	$8,554
Per Pupil Expenditures per ADA	$7,366	$9,102
Funding:		
Local %		42.1%
Federal %		12.1%
State %		45.7%

State of Tennessee

Statewide Report Card 2005

Governor: Phil Bredesen
Commissioner: Lana Seivers

Part II: Student Academic Achievement

Grades K-8: Criterion Referenced Academic Achievement					What's this?
(3 year average)	2004		2005		
CRT	Score	Grade	Score	Grade	
Math	51	B	53	B	
Reading/Language	50	C	52	B	
Social Studies	50	C	51	C	
Science	50	C	51	C	

(Note: 3-yr average of state CRT NCE's, basis 1998.) What's this?

Grades K-8: Subgroup Disaggregation What's this?

Math

CRT	2004			2005					
	% Below Proficient	% Proficient & Advanced	% Proficient & Advanced 2 Yr Avg	% Tested	% Below Prof	% Prof	%Adv	% Prof & Adv 2 Yr Avg	% Prof & Adv 3 Yr Avg
				Target 100%		Target Prof & Adv 79%			
All Students	17.0	83.0	81.0		12.0	48.0	40.0	86.0	83.0
White	11.0	89.0	88.0		8.0	45.0	47.0	91.0	89.0
Hispanic	23.0	77.0	74.0		19.0	53.0	28.0	79.0	76.0
African American	31.0	69.0	66.0		23.0	57.0	20.0	73.0	70.0
Native American	15.0	85.0	82.0		12.0	50.0	38.0	87.0	84.0
Asian/Pacific Islander	7.0	93.0	92.0		4.0	32.0	64.0	95.0	93.0
Economically Disadvantaged	25.0	75.0	72.0		19.0	56.0	25.0	78.0	75.0
Students with Disabilities	55.0	45.0	42.0		45.0	42.0	13.0	50.0	46.0
Limited English Proficient	34.0	66.0	64.0		26.0	53.0	21.0	70.0	67.0
Female					11.0	50.0	39.0		
Male					13.0	47.0	40.0		
Migrant					30.0	54.0	16.0		
NonMigrant					12.0	48.0	40.0		

Grades K-8: Subgroup Disaggregation

What's this?

Reading/Language Plus Writing

CRT	2004			2005					
	% Below Proficient	% Proficient & Advanced	% Proficient & Advanced 2 Yr Avg	% Tested	% Below Prof	% Prof	%Adv	% Prof & Adv 2 Yr Avg	% Prof & Adv 3 Yr Avg
				Target 95%		Target Prof & Adv 83%			
All Students	14.0	86.0	85.0		9.0	53.0	38.0	89.0	87.0
White	10.0	90.0	89.0		6.0	50.0	44.0	92.0	90.0
Hispanic	24.0	76.0	73.0		21.0	54.0	25.0	78.0	75.0
African American	23.0	77.0	75.0		14.0	65.0	21.0	82.0	79.0
Native American	12.0	88.0	85.0		9.0	58.0	33.0	90.0	87.0
Asian/Pacific Islander	8.0	92.0	91.0		6.0	39.0	55.0	93.0	92.0
Economically Disadvantaged	22.0	78.0	76.0		14.0	63.0	23.0	82.0	79.0
Students with Disabilities	46.0	54.0	48.0		31.0	59.0	10.0	62.0	55.0
Limited English Proficient	21.0	59.0	57.0		34.0	51.0	15.0	63.0	60.0
Female					6.0	51.0	43.0		
Male					12.0	56.0	32.0		
Migrant					28.0	57.0	15.0		
NonMigrant					9.0	53.0	38.0		

Grades K-8: Writing

What's this?

(3 year average)	2003		2004			2005		
Writing	Score	Grade	Score	Grade	Trend	Score	Grade	Trend
Writing 4th/5th	3.9	B	3.9	B	NC	4.1	A	+
Writing 7th/8th	4.0	A	4.0	A	NC	4.2	A	NC

(Note: Based on 3-year averages.)

Grades 9-12: (Includes First Time Test Takers Only) What's this?

Math

Gateway	2004			2005					
	% Below Proficient	% Proficient & Advanced	% Proficient & Advanced 2 Yr Avg	% Tested	% Below Prof	% Prof	%Adv	% Prof & Adv 2 Yr Avg	% Prof & Adv 3 Yr Avg
				Target 95%		Target Prof & Adv 75%			
All Students	19.0	81.0	79.0		17.0	33.0	50.0	82.0	80.0
White	13.0	87.0	86.0		11.0	31.0	58.0	88.0	87.0
Hispanic	25.0	75.0	74.0		19.0	35.0	46.0	78.0	76.0
African American	38.0	62.0	59.0		32.0	40.0	28.0	65.0	62.0
Native American	19.0	81.0	78.0		22.0	33.0	45.0	80.0	78.0
Asian/Pacific Islander	9.0	91.0	88.0		8.0	23.0	69.0	92.0	89.0
Economically Disadvantaged	33.0	67.0	66.0		26.0	38.0	36.0	71.0	69.0
Students with Disabilities	61.0	39.0	40.0		51.0	30.0	19.0	44.0	43.0
Limited English Proficient	38.0	62.0	62.0		28.0	37.0	35.0	67.0	65.0
Female					15.0	34.0	51.0		
Male					18.0	32.0	50.0		
Migrant					30.0	20.0	50.0		
NonMigrant					17.0	33.0	50.0		

Grades 9-12: (Includes First Time Test Takers Only) What's this?

Reading/Language Plus Writing

Gateway	2004			2005					
	% Below Proficient	% Proficient & Advanced	% Proficient & Advanced 2 Yr Avg	% Tested	% Below Prof	% Prof	%Adv	% Prof & Adv 2 Yr Avg	% Prof & Adv 3 Yr Avg
				Target 95%		Target Prof & Adv 90%			
All Students	10.0	90.0	90.0		7.0	39.0	54.0	92.0	91.0
White	7.0	93.0	93.0		6.0	35.0	59.0	94.0	93.0
Hispanic	16.0	84.0	85.0		11.0	45.0	44.0	87.0	86.0
African American	17.0	83.0	82.0		11.0	49.0	40.0	86.0	84.0
Native American	15.0	85.0	84.0		14.0	40.0	46.0	86.0	85.0
Asian/Pacific Islander	8.0	92.0	92.0		5.0	33.0	62.0	94.0	93.0
Economically Disadvantaged	17.0	83.0	82.0		13.0	47.0	40.0	85.0	83.0
Students with Disabilities	44.0	56.0	53.0		33.0	50.0	17.0	62.0	57.0
Limited English Proficient	36.0	64.0	62.0		22.0	55.0	23.0	71.0	67.0
Female					5.0	34.0	51.0		
Male					9.0	32.0	50.0		
Migrant					37.0	20.0	50.0		
NonMigrant					7.0	33.0	50.0		

*The degree of certainty in test scores is related to the size of the tested population.
*Grades are based on varying scales and cannot be averaged.

State of Tennessee

Statewide Report Card 2005

Governor: Phil Bredesen
Commissioner: Lana Seivers

Part III: TVAAS (Value Added)

Elementary: Grades K-8

Growth Standard

(3 year average)*	2005	
CRT	Status	Mean Gain
Reading/Language	B	1.1
Math	B	1.0
Science	A	0.9
Social Studies	A	0.6

*Reported in state CRT NCE's basis 1998

Gain by grade and content

	Reading/Language Arts		Math		Science		Social Studies	
	State 3yr Avg	State Growth Standard	State 3yr Avg	State Growth Standard	State 3yr Avg	State Growth Standard	State 3yr Avg	State Growth Standard
4th	0.1	0.0	-0.1	0.0	1.7	0.0	0.8	0.0
5th	1.1	0.0	1.6	0.0	0.3	0.0	1.4	0.0
6th	3.4	0.0	0.6	0.0	0.0	0.0	0.1	0.0
7th	0.3	0.0	2.0	0.0	2.4	0.0	1.6	0.0
8th	0.4	0.0	1.0	0.0	0.1	0.0	-1.1	0.0

*The degree of certainty in test scores is related to the size of the tested population.
*Grades are based on varying scales and cannot be averaged.

State of Tennessee

Statewide Report Card 2005

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Part IV: Adequate Yearly Progress (AYP)

+ Met Federal Benchmark
X Did not meet Federal Benchmark
<45 Fewer than 45 members, does not have to report

Elementary / Middle	All	White	Hispanic	African American	Native American	Asian	Econ Disadv	Students w/ Disabilities	Limited English Proficient
Math									
% Tested	+	+	+	+	+	+	+	+	+
% Proficient/Adv	+	+	+	X	+	+	+	X	X
Reading, Language Arts, Reading									
% Tested	+	+	+	+	+	+	+	+	+
% Proficient/Adv	+	+	X	+	+	+	+	X	X
Attendance Rate	+								
Met AYP?	X								

High School	All	White	Hispanic	African American	Native American	Asian	Econ Disadv	Students w/ Disabilities	Limited English Proficient
Math									
% Tested	+	+	+	+	+	+	+	+	+
% Proficient/Adv	+	+	+	+	+	+	X	X	X
Reading, Language Arts, Reading									
% Tested	+	+	+	+	+	+	+	+	+
% Proficient/Adv	+	+	+	+	+	+	X	X	X
Event Dropout Rate	+								
Met AYP?	X								

APPENDIX G: How to Interpret the Report Card

State of Tennessee
Report Card 2005

How to Interpret the Report Card

The Tennessee Education Improvement Act of 1992 established accountability standards for all public schools in the state and required the Department of Education to produce a Report Card for the public to assess each year.

Tennessee state law (Tennessee Code Annotated 49-1-601) has since been amended to match regulations in No Child Left Behind (NCLB) for meeting required federal benchmarks for all schools, school systems, and the state. Additionally, the State Board of Education has revised its performance standards and requirements to meet performance criteria in the new federal law.

The goal of NCLB is to ensure that all students in all schools are academically proficient in math, reading and language arts by 2014. Until that time, schools, school systems and the state will be measured on their ability to move toward that goal. In other words, schools, school systems, and the state must show that a greater percentage of its students are meeting required proficiency standards.

Schools, school systems and the state must meet proficiency benchmarks in nine subgroups, including five race/ethnicity groups; students with disabilities; limited English proficient students; economically disadvantaged students; and the school as a whole.

The Report Card is organized in four parts or sections: System/School Profile, Student Achievement, Value Added (TVAAS data), and Adequate Yearly Progress (AYP). Data required by No Child Left Behind are defined in drop-down boxes containing explanations for each criterion. Grades are assigned to appropriate criteria, and a grade scale is available for explanation of specific scaling.

Schools and school systems that do not meet required federal benchmarks for one year are assigned the status of “Target.” Schools and school systems that do not meet the federal benchmark for two or more consecutive years in the same category are assigned the status of “High Priority.”

Report Card 2005 Home

APPENDIX H: Report Card Terminology

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State of Tennessee

Report Card 2005

Report Card Terminology

Above (status): Students in this school made significantly more progress in this subject than students in the average school in the state.

Adequate Yearly Progress (AYP): Adequate Yearly Progress is a measure of a school's or school system's ability to meet required federal benchmarks with specific performance standards from year to year.

Administrators: These are directors of schools, principals, supervisors, assistant principals, etc.

Attendance: This refers to the attendance rate, the average number of days students attend school as compared to the average number of days the students are enrolled.

Below (status): Students in this school made significantly less progress in this subject than students in the average school in the state.

Criterion Referenced Tests (CRT): Criterion referenced tests measure an individual student's performance against a predetermined set of standards which are established based on the curriculum.

Dropout Rate: The percentage of those students entering the 9th grade that has dropped out by the end of 12th grade.

English Language Learner: Non-English speaking students.

Expulsion: A student expelled from school is one who is not allowed to attend school for a period of time greater than ten days, and they are removed from school rolls during the period of expulsion.

Free/Reduced Price Meals: These children are from families who meet certain income criteria making them eligible to receive free or reduced meals at school.

Gateway Exams: Students who entered the 9th grade in 2001-2002 must attain a score indicating “Proficient” or “Advanced” on each of the Gateway examinations in three subject areas - mathematics, science and language arts - in order to earn a high school diploma.

Graduation Rate: A federally required benchmark which calculates the percent of on-time graduates with a regular high school diploma. GED and Special Education diplomas are not allowed to count as a regular high school diploma under regulations from the U.S. Department of Education.

High Priority School/School System: A high priority school/school system is one that has missed the same federal benchmark for more than one consecutive year. The different levels of high priority schools/systems are School Improvement 1, School Improvement 2, Corrective Action, Restructuring 1, Restructuring 2 and SEA/LEA Reconstitution Plan.

Highly Qualified Teacher: Any public elementary or secondary school teacher who holds at least a Bachelor's Degree, is fully-licensed in Tennessee and submits the required documents to demonstrate competency in the content area(s) being taught.

NDD (status): The progress of students in this school was "not detectably different" (NDD) from the progress of students in the average school in the state.

No Child Left Behind (NCLB): NCLB was implemented during the 2002-2003 school year. It requires schools to have 100 percent proficiency among students in math, reading and language arts by 2014. They must also meet graduation and attendance standards.

Normal Curve Equivalent (NCE): Normal Curve Equivalent is the mapping of percentile data into corresponding points in a normal distribution. The purpose is to enable data to be analyzed consistent with the Value-Added Report and the Achievement Report on the Report Card.

Norm Referenced Tests (NRT): Gives a comparison of student performance in five content areas against a national norm group of students taking a similar test. The expectation is that the average score for a school or school system will be at the national average.

Number of Students: Average daily count of students enrolled, which is generally referred to as the Average Daily Membership or ADM. The ADM is used to determine the amount of state funding each system receives.

Observed Score: A student’s observed score is the score reported for the student when he or she was tested.

Per Pupil Expenditure (Local, State and Federal): Total current operating expenditures on a per pupil basis. Some examples are instructional materials, maintenance, and transportation.

Predicted Score: A student's predicted score is an expected score, based on his or her performance on previous tests, assuming the student is in the average school in the state.

Promotion: Those students who are promoted to the next grade each year.

SACS Accredited: Southern Association of Colleges and Schools accredits elementary, middle and high schools based on rigorous standards for school improvement that focus on student performance.

Suspension: A student who is not allowed to attend school for a period of time not greater than ten days and remains on the school rolls.

Target School/School System: A target school/school system is one that missed a federal benchmark in at least one area for the first year. There are no sanctions/penalties for target schools/systems. The Department of Education offers technical assistance to help keep target schools/systems from becoming high priority schools/systems.

Teacher Permits: A permit is permission granted to a local school system to employ temporarily a degreed individual who does not hold a valid license when the school system is unable to obtain the services of a qualified teacher for the grade or subject area in which a vacancy exists.

Teacher Waivers: The teacher is licensed but teaching out of his or her field because no other certified teacher is available to teach that subject.

Title I: Federally funded programs in high poverty schools that target children with low achievement.

Value-Added: Value-added measures student progress within a grade and subject, which demonstrates the influence the school has on the students' performance. This reporting provides diagnostic information for improving educational opportunities for students at all achievement levels.

VITA

Myrna Gail Sumner was born in Spruce Pine, North Carolina on February 23, 1952. She attended public schools in Ohio, New York, Oklahoma, Indiana, and Ontario, Canada. Myrna graduated from Rockville High School in Rockville, Indiana in 1970.

In May 1974, she received a Bachelor of Arts degree from Oral Roberts University in Tulsa, Oklahoma. She became a VISTA volunteer in the summer of 1974. She began her teaching career in the fall of 1975 in Morgan County, Tennessee. In 1985, Myrna assumed part time assistant principal's duties in addition to teaching. Myrna became an educational consultant for the State Testing and Evaluation Center at the University of Tennessee in the summer of 1988. In 1991, she moved to west Tennessee to become a principal in Fayette County, Tennessee. In 1994, she returned to the classroom in Tipton County, Tennessee. Myrna moved home to Morgan County in July 1997 to become Supervisor of Secondary/Vocational Education. She returned to the classroom in 2001. Myrna now teaches at Wartburg Central Middle School in the Morgan County, Tennessee, school system.

Myrna received her Master of Arts degree with a major in Elementary Education and a concentration in Administration/Supervision from Tennessee Technological University in Cookeville, Tennessee in May of 1979. She finished her Administration/Supervision certification in 1984. She began working on her doctoral degree at the University of Tennessee in August of 1999.