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The Relationship of School Size and Socioeconomic Status to Middle Grades Growth Status on End of Grade Tests in North Carolina.

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by

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ABSTRACT

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The purpose of this quantitative study was to compare student achievement, as assessed by the ABC (Accountability, Basics, Local Control) end of grade tests, of students in different sized schools and of different socioeconomic backgrounds. The population consisted of 379 middle schools in North Carolina. Data were gathered from the 2006-2007 school year. Several *t*-tests for independent samples, analyses of variance, and chi square analyses were used to identify relationships between variables. The measures of growth used were the change ratio, which is used to determine high growth status and mean growth, which is used to determine expected growth or no recognition status. No recognition is the designation given to those schools that do not meet expected growth.

The study showed no significant relationship between school size and academic growth status. Similarly, there was no significant

difference in the observed proportions and the hypothesized proportions of different sized schools in terms of academic growth status. There was a significant relationship between socioeconomic status and academic growth status; high socioeconomic status schools had higher change ratios and higher mean growth than did low socioeconomic status schools. The study showed a significant difference in the observed and hypothesized proportions of the growth levels; high socioeconomic status schools had more schools designated high growth than no recognition and low socioeconomic status schools had more schools designated no recognition than high growth.

The results of this study indicated that as educators in North Carolina continue to focus on achievement levels of all students, particular attention should be paid to those schools with higher percentages of students receiving free or reduced price meals. To narrow the academic gap between students in high and low socioeconomic status schools, attention should be given to the particular needs and traits of children from high poverty backgrounds. Educational practices that recognize and remove the barriers associated with those needs should be implemented. Regardless of socioeconomic status, educational methods in all

schools should reflect current research of best practices for increasing all students' achievement.

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CHAPTER 1

INTRODUCTION TO THE STUDY

The idea of a free, public education is one that has been nurtured throughout the history of the United States. In the early years of the country's formation, education was handled at the state and local level because in the United States' Constitution, there is no implicit, enumerated right to an education. Fast forward to the early years of the 21st century, and the federal government's involvement in public education is widespread. Much of this involvement developed as a result of increasing pressures to provide a quality education for all students and to close the gaps in achievement between various groups of students. One such gap is the one that exists between students from a high socioeconomic background and those from a lower one. How we arrived at the current focus on the best ways of closing this gap is a story with roots in the first three decades of the 20th century. It is a story that took on new urgency in the 1950s with the launch of the Soviet Union's Sputnik and led to many characteristics of today's schools. The story is one of increasing standardization and consolidation- a "one size fits all" solution that has led to increasingly larger schools that are based on ideas nearly 100 years old.

In the early part of the 20th century, a large rural to urban migration spurred interest in providing an opportunity for those living in rural areas to receive the same education that was available in the perceived superior urban schools. Kennedy(1915) and Cubberly (1922) were the two chief proponents of the early standardization movement that emphasized the greater possibilities to be achieved in larger schools and led in great measure to a large decrease in the number of schools and an increase in the size of those existing ones.

The 1957 launch of Sputnik, the Soviet satellite, fueled an urgency based on fear of Soviet domination. Conant (1959), in his book, ***The American High School***, described his ideas for the comprehensive high school, typically one serving large numbers of students that would prepare the college-bound as well as those going directly from high school to work. These ideas formed the basis of education for the next 25 years and were not reexamined to any great degree until the 1984 report, ***A Nation at Risk***, focused attention on the United States' declining status as a world educational leader.

Until the 1980s, the focus on school size had been based on inputs rather than results (Berry, 2003), as many educational decisions about school size were based on economies of scale (Wahlberg, 1992). As standardized testing became more pervasive, attention focused on outcomes and the differences between

schools. One obvious place to look for differences was in the area of school size, and it is research in the 1980s that began to cast doubts on the advantages of large comprehensive high schools (Guthrie & Reed, 1986).

Although there are many studies that examined the relationship between school size and achievement, the conclusions reached vary. While Raywid (1999) states emphatically that small schools are more effective than large schools, others disagree, claiming that much of the research is advocacy based (Lee, Ready, & Welner, 2002). What does seem to emerge from these studies is that children from lower socioeconomic backgrounds do benefit from a smaller school environment, while those from more affluent backgrounds tend to benefit from a larger one (Lee & Smith, 1997).

Larger and smaller, however, are defined in many different ways. What is large in one state is small in another (Howley, 2003), and for policy makers, who often have to make decisions based on perceived causal relationships between variables (Slate & Jones, 2005), the guidelines are not easy to follow.

Another factor that hinders decision makers is that much of the literature on school size focuses on high schools. Middle schools are featured in several studies, but, by and large, this important transition from elementary school to high school is ignored.

In North Carolina, the ABCs of education, implemented in the mid 1990s, focuses on student growth, and each school is then labeled based on the overall academic growth of its students. In 2006, schools were identified as having high growth, expected growth, or no recognition.

With the emphasis on providing equal opportunities for all, studies indicating relationships between school size, achievement, and socioeconomic status have significance for middle schools as they prepare students for high school and beyond.

Statement of the Problem

North Carolina implemented the ABCs of education in the mid 1990s. Schools are judged on their ability to grow students academically. No consideration is given to a school's size or the socioeconomic status of its students. Some research has indicated that students from lower socioeconomic backgrounds benefit from smaller schools. The purpose of this study was to determine if school size and socioeconomic status are reflected in the growth report for North Carolina's middle schools.

Significance of the Study

Achievement gaps exist between students from lower and higher socioeconomic backgrounds. This study examined whether those gaps were reflected in North Carolina's middle schools based on the growth status of each school and its size and socioeconomic status of its students. Findings of this study should help policymakers and educators be more aware of variations in the achievement of students from different socioeconomic backgrounds and different sized schools. Implications of these results could warrant further study into the conditions in North Carolina's middle school that affect student achievement.

Limitations

This study is limited to North Carolina School report card data from the 2006-2007 school year. In this study, academic growth was analyzed in North Carolina middle schools based on school size and the percentage of students receiving free or reduced priced meals. Within each school, there are other characteristics that may have affected the growth rate of the school.

A common measure of student socioeconomic status is the percentage of students receiving free or reduced price meals.

However, there are limitations including the number of parents applying for this program and the application procedures implemented by each school that can affect the actual percentage reported.

Delimitations

The study was delimited to the state of North Carolina. The results of this study could be generalized to states with similar demographics of size and socioeconomic status.

Research Questions

Question 1

Is there a difference in the mean growth and change ratio (used to determine high growth status) among small, medium, and large middle schools in North Carolina as indicated by the ABC assessments?

Question 2

Is there a difference in growth status among small, medium, and large middle schools in North Carolina as indicated by the ABC assessments?

Question 3

Is there a difference in the mean growth and change ratio (used to determine high growth status) among schools with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals?

Question 4

Is there a difference in achievement growth status among schools with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals?

Research Hypotheses

$Ho1_1$: There is no difference in the change ratio on the ABC assessments among middle schools in North Carolina based on size.

$Ho1_2$: There is no difference in the mean growth on the ABC assessments among middle schools in North Carolina based on size.

Ho2: There is no difference in ABC growth status among middle schools in North Carolina based on size.

$Ho3_1$: There is no difference in the change ratio on the ABC assessments among middle schools in North Carolina with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals.

$Ho3_2$: There is no difference in mean growth on the ABC assessments among middle schools in North Carolina with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals.

Ho4: There is no difference in ABC growth status among middle schools in North Carolina with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals.

Definition of Terms

ABCs- North Carolina's testing program, implemented in 1996- the first letter, A, stands for accountability, the linchpin of the program. The second letter, B, stands for basics; the focus of accountability is on the basic subjects of reading and math (at the elementary level). The final letter, C, stands for local control, with the idea that finding ways to be accountable for mastering the basics is best determined at the local level.

Change ratio- The rates of those students who have academic growth of "0" or greater to those students whose academic growth is less than "0." This ratio is used to determine schools' high growth status.

EOG tests-End of grade tests that are administered in North Carolina's schools in grades 3-8 near the end of each school year- Tests are given in the subject areas of reading and math. (Science has recently been added in grades 5 and 8 in order to comply with federal standards.)

Expected Growth- Schools in North Carolina are determined to have expected growth if the mean growth of their students is "0" or greater.

High Growth- Schools in North Carolina are determined to have high growth if their change ratio is 1.50 or greater. In a school of 1000 students, if 600 students had academic growth of "0" or greater and 400 students had academic growth of less than "0", the change ratio would be 1.50 (600/400) and the school would be designated high growth.

Mean Growth–Based on the mean academic growth of all students in a school. Mean growth is used to determine schools' expected or no recognition status.

No Recognition-Schools in North Carolina are determined to have no recognition if the mean academic growth of their students is less than "0."

Overview of Study

This study was organized and presented in five chapters. Chapter 1 included an introduction to the problem and a brief overview of the literature related to school size, socioeconomic status, and achievement. Chapter 1 also included the purpose and significance of the study, the limitations and delimitations, and the research questions and hypotheses. Chapter 2 included a review of the literature related to school size, achievement, and socioeconomic status, including a review of the history of school consolidation. Chapter 3 contained the methodology and data collection procedures related to the research questions. Chapter 4 presented an analysis of the data and Chapter 5 included conclusions and recommendations for further study.

CHAPTER 2

REVIEW OF RELATED LITERATURE

Introduction

Chapter 2 contains a review of the current and historical literature related to school size, socioeconomic status, and student achievement. It is organized into six sections, the first of which examines the history of school consolidation through the first part of the 20th century. The second section focuses on school size research in the last half of the 20th century and the first few years of the 21st century; research that began to look at student outcomes rather than organizational inputs. Conflicting conclusions about the effect of school size on achievement are reviewed in the next section and the differing viewpoints as to what is an effective school size are discussed in the final section. This is followed by a discussion of the paucity of research related to middle school size and achievement. Finally a review of North Carolina's history of public education system and its current accountability model are included.

History of School Consolidation

The idea of a free public education for all citizens of the United States can be traced to Thomas Jefferson who viewed

citizenship in a democracy as an ongoing apprenticeship (Pugh, 1994), and although there is no mention of education in the United States Constitution, most states, some more quickly than others, established guidelines for the education of their young citizens. Public education moved in fits and starts throughout the 19th century, with schools located in urban areas generally perceived as superior to those, often one-room schoolhouses, in rural areas. Schools in the latter half of the 19th century began to adapt models taken from organizational techniques of the Industrial Revolution (Orr, 1992), and this model tended to favor large, more efficient schools; smaller schools were increasingly viewed as inefficient. In the first decade of the 20th century, another movement emerged that would focus increased attention on the superiority of consolidated schools. The Country Life movement had its roots in the early Progressive era and was composed of three main groups. The first group consisted of businessmen who realized that the United States' competitive position would not continue without the continued ready availability of food (Danbom, 1979). The second group was composed of social scientists interested in the ideas of efficiency and the application of social engineering to agricultural production issues (Hays, 1999).The final group included leaders of mainline Protestant denominations who were

concerned with dwindling numbers in their rural congregations, and who sought to be more involved in the social and economic matters of their congregations (Reynolds, 2001). In addition to promoting more modern, progressive agricultural techniques, the Country Life movement's attention to education focused on the benefits of the consolidated school, one that would better prepare rural children for the urban-industrial jobs to which it was assumed many would be headed.

In 1915, Joseph Kennedy, Dean of the School of Education at the University of North Dakota, wrote ***Rural Life and the Rural School*** and enumerated several reasons that consolidated schools were of higher quality than smaller schools, including cost, more available activities, grading, better teachers, better buildings, longer school terms, regularity in attendance, better supervision, and better roads (it was expected that consolidated schools would require better roads for the longer distances necessary to reach the school). Edward Cubberly, a professor at Stanford University, followed Kennedy's work with his 1922 ***Rural Life and Education: A Study of the Rural-School Problem as a Phase of the Rural-Life Problem.*** Cubberly stated that larger schools had several distinct advantages. First, the ratio of administrators to teachers would be smaller, which would in turn create a more efficient administration. Second, larger schools

could more properly sort and place students. Cubberly also wrote that consolidated schools would provide better facilities at a lower operating cost.

In 1930, the U.S. Office of Education published a pamphlet that detailed information from 105 consolidated schools. Several reasons for the desirability of school consolidation included: opportunities for students, efficiency, increasing demands on schools, and state encouragement (Shreve, 1989). In the 1930s, business also became involved in the consolidation push; International Harvester Company, a manufacturer of school buses, added its voice to those promoting the benefits of consolidation (White, 1981).

In 1957, the Soviet Union launched Sputnik, and fears of Soviet domination spurred a renewed urgency in education. The 1959 publication of ***The American High school Today,*** by James Conant, discussed and promoted the uniqueness of the American comprehensive high school. Conant's objectives for these schools were to:

> Provide a general education for all the future citizens;… to provide good elective programs for those who wish to use their acquired skills immediately on graduation;…to provide satisfactory programs for those whose vocations will depend on their subsequent education in a college or university (p.17).

His promotion of the larger high school at the expense of the smaller one was echoed in comments of earlier proponents of

consolidation: larger schools could provide more opportunities at smaller operating costs.

The cumulative effects of the move to consolidate schools were tremendous. In 1869, there were approximately 116,000 public schools in the United States. That number surged to a peak of around 217,000 in 1920, but by the late 1980s the number of public schools had plummeted to approximately 83,000. During the period of the most rapid consolidation, 1930-1970, the average daily attendance in schools increased from 87 to 440 (Berry, 2003).

It was not until 1984, when ***A Nation at Risk*** was published, that any great scrutiny was given to the effects of school size on student achievement. Although many proponents of school consolidation had mentioned the increased opportunities for students in larger schools, most proponents still cited as a prime reason for consolidation, efficiency of costs, or the idea of "economies of scale," the assumption of "falling per-unit costs with greater numbers of units produced or served" (Wahlberg, 1992, p.4). Walberg noted, however, that in fact, "diseconomies of scale" are evident in American schools, as during the past half century, per-student costs increased 6 times, district size increased 12 times, and school size increased 5 times.

Research Related to School Size and Achievement

Although the 1980s saw an increase in research related to student outcomes as opposed to system inputs, as early as 1966, the effects of school size, especially on children in poverty, began to be a focus. Coleman's 1966 study, ***Equality of Educational Opportunity,*** was one of the first to identify poverty as a predictor of achievement level in school. His assertion that the socioeconomic status of children was the greatest influence on education began to shift the emphasis from organizational inputs in education to examining outcomes and effects on outcomes. Stemnock (1974) summarized 120 studies conducted between 1924 and 1974 and found that the majority of those researchers had focused on inputs and most proposed increases in school size. Later studies that focused on outcomes often relied on student achievement measures, and although standardized testing had been in place before the 1960s, its use was not widespread. This led Berry (2003) to another approach when he went back in time to the period of increasing school consolidation. In the absence of achievement scores, he sampled 1980 census data from 1,000,000 white males who had been born between 1920 and 1949 and found that students from states with smaller schools did better in the job market than did students from states with larger schools. Although he cautions against

using this information in current decision making processes, it is revealing to note patterns that were replicated, at least in part, by those who in later years used student achievement data as the basis for their research. All of these studies serve as examples of two streams of thought regarding school size (Lee, 1999); the economic strand that analyzes school size based on costs and benefits was the predominant focus until at least the Coleman Report in 1966, which began to look at sociological effects, in this case poverty, and in later years the effects of size on other organizational factors. As could be predicted, the two streams of research are not consistent, with the sociological view favoring smaller schools and the economic strand favoring larger ones.

More than 20 years after Stemnock's research, Cotton summarized the research of the previous 15 years that was related to school size and found that with regards to achievement, academic achievement in smaller schools was equal and in many cases stronger than that in larger schools. She also found that students from lower socioeconomic status backgrounds had higher achievement in smaller schools than in larger ones (Cotton, 1996). It was during this time that several studies examined the relationship between school size and achievement in different states; several simply looked at the relationship

between size and achievement, while some examined the effects of other organizational and sociological factors. One of the first statewide studies to examine the relationship between size and achievement was in California. The study looked at the relationship between school size and achievement at four grade levels and noted that smaller school size benefited school performance in poorer communities while students in more affluent communities had higher achievement scores in larger schools (Friedkin & Necochea, 1988). A New Jersey study found that school size was inversely related to test scores in math and writing (Fowler & Wahlberg, 1991). Conversely, a Georgia report noted that students in larger high schools scored higher than students in smaller ones (less than 850) (Gentry, 2000).

One of the most comprehensive studies to examine the relationship between school size and achievement was named the Matthew Project and was supported, in part, by the Rural Challenge Policy Program. The Matthew Project, inspired by the work of Friedkin and Necochea, sought to replicate the California research in four other states: Georgia, Ohio, Texas, and Montana. All of these studies used regression equations to provide a view of possible excellence effects-which socioeconomic levels benefit or are harmed from increases in school size. In addition, equity effects simply examined the

correlation between socioeconomic status and achievement. The schools in each state were divided into two groups based on size, with the median school size in each state determining the dividing line between the two groups. The results of their research determined that school size had a negative impact on schools with a higher degree of poverty and a positive effect on schools with a more affluent population (Howley & Bickel, 1999).

Two studies that looked at national data found similar trends. In the first, data from NAEP was used to compare state scores. In looking at the relationships, states with the smallest school size, Nebraska, North Dakota, Montana, and Wyoming, had the highest average achievement, and states with the largest school size, Florida and Hawaii, had some of the lowest average achievement scores (Wahlberg, 1992). A 1997 longitudinal study, with a nationwide sample of over 9000 students, found the highest achievement in schools between 600 and 900 students, as opposed to those smaller or larger (Lee & Smith, 1997).

Since the mid 1990s, there have been several more statewide studies that have reported different findings. A Mississippi study that examined third and seventh grade results on the Mississippi Curriculum Test (MCT) found no significant difference between achievement results and school size after

controlling for socioeconomic status (Welch, Lander, & Thurston, 2004). In Kentucky, scores at the elementary level were higher or highest at the largest schools, and at the middle school level scores were progressively higher as school size increased. At the high school level, high schools with fewer than 300 students had scores higher than those with a population between 300 and 900, while schools with a population greater than 900 students had the highest achievement of all (Clark, Hager, & Nikolova, 2006). In North Dakota, smaller schools outperformed larger schools, and it was noted that the smaller schools had, on average, higher percentages of students receiving free or reduced lunch (Hyden, 2004). A 2004 longitudinal study in North Carolina found no significant relationship between school size and achievement, except at the high school level, where larger schools generally outperformed the smaller ones (McMillen, 2004).

The different conclusions reached by these studies would seem to serve as a caution to decision makers as they determine the optimal school size for their communities. Nevertheless, the results of much of the research led Raywid to proclaim that the superiority of small schools had been established with a level of confidence normally unseen in educational research (Raywid, 1999). Other researchers would disagree and caution against the

use of advocacy research which tends to generate bias in design and the interpretation of data (Johnston & Pennypacker, 1993). Others try to distinguish between schools that want to be small and schools that are small by default (Lee, Ready, & Welner, 2002). A more sensible approach argues that school size should be viewed as having an indirect effect, with those school factors that promote learning-teacher collegiality, personalized student-teacher relationships, and lack of ability grouping-able to flourish in a smaller school setting (Fisher, Emanuel, & Teitelbaum, 1999). It is also important to note that although the results found in the various studies are contrary, they are not contradictory-what is, is. Discussions about school size and outcomes are controversial because a simple yes or no answer is often sought to the question "Are small schools better than large ones?" (Slate & Jones, 2005). Howley revisited the issue of school size and achievement in 2004 and reached four conclusions: First, smaller school size benefits all students but the most affluent. Second, smaller school size can mediate the relationship between socioeconomic status and achievement. Third, the relationship between school size and achievement is linear, and fourth, the same effects are observed in both rural and urban schools (Howley, 2004).

Optimal School Size

In the previous section, it was noted that there was a wide range of findings with regards to smaller or larger schools, with the research generally favoring smaller schools for children from impoverished backgrounds and larger schools for those from affluent backgrounds. But just as the debate continues over the relative effectiveness of larger and smaller schools, so too do the discussions about what is meant when referring to a large school or a small one. In Stemnock's review of research from 1924 to 1974, he noted that six of the reports examined costs associated with schools and those researchers generally recommended high schools of approximately 1100 students. Of the six studies whose emphasis was on course offerings, the recommended high school size, 1200 students, was larger (Stemnock, 1974). These two arguments-larger schools were more cost effective and that enhanced course offerings were possible in larger high schools-served to justify and validate the large high school of the last 40 years of the 20th century. The idea that expanded course offerings were only possible in a larger high school had critics as early as 1970, when a study found that some schools with as few as 500 students had as many course offerings as those with much greater numbers (Turner & Thrasher, 1970). In the late 1980s, Monk (1987) reported that

once school size reached 400 or more students, courses did not vary significantly.

Definitions of small and large are relative, and it is helpful to have an idea of the distribution of school sizes across the United States. Nationwide, 25% of secondary schools have more than 1000 students. New York City has nine high schools with more than 4000 students and the largest, John F. Kennedy High School, has over 5000 students (Rotherham, 1999). Hawaii has the largest percentage (92%) of high schools larger than 1000 students, followed by Florida (84%), California (78%), and Maryland (76%). On the other side of the large school scale, New Jersey and Massachusetts have only 40% of their high schools with 1000 or more students. Washington, DC has the lowest percentage (22%) of high schools with more than 1000 students. In looking at smaller schools, those with 400 or fewer students, Montana leads the nation with 81% of its high schools enrolling 400 or fewer students (Lawton, 1999).

The numbers from the various states serve to reinforce the idea of the relativity of "large" and "small." Johnston and Pennypacker (1993) found that a single school could be identified as small or large depending on who was making the identification. They suggested either developing a standard

system of ordering schools or simply reporting findings in terms of the actual numerical size of the school.

If there was a standard system in place for ordering schools, what would it look like? Williams (1990) recommended that 800 students be the upper limit for high schools, but that is countered by Gregory (2000), who stated that 400 to 500 students was small enough, only if business as usual was good enough. Wasley and Lear (2001) would concur, agreeing that that optimal size for a small school is closer to 200 than 400 students, and Darling-Hammond (1998) found that a smaller school size (300-500 students) was one of the factors affecting achievement. Lawton (1999) concluded that fiscal studies showed the effective upper limit for K-8 schools to be 500 students, and the Cross City Campaign for Urban Schools set limits at 350 students for elementary schools and 500 students for high schools (Fine & Somerville, 1998). Lee and Smith (1997) stated that between 600 and 900 students were necessary before enough courses were offered. Howley (2003) wrote the upper limit for high schools should be 1000 students and the upper limit for K-8 or K-6 schools be placed at 500 students. A survey of principals by the National Association of Secondary School Principals reported that high schools should be no larger than 600 students and that a middle school's ideal range was between 400 and 799

students (Valentine, Clark, Irvin, Keefe, & Melton, 1993). A parent survey by Phi Delta Kappa discovered that 58% of parents surveyed preferred schools with fewer than 1000 students, 28% favored schools in the 1000-1500 student range, and 2% favored schools larger than 2000 students (Rose & Gallup, 1998). Few studies focused specifically on middle schools, but one did propose that middle schools with 750 or fewer students were more effective than larger ones (Mertens, Flowers, & Mulhall, 2001), and another argued that no middle school should be larger than 600 students. Cotton (1996) made note of the wide disparity in determining optimal school size. Based on her review of 69 studies related to school size and achievement, she determined the effective range for an elementary school to be between 300 to 400 students and between 400 to 800 students for secondary schools.

An alternative view proposes that simply analyzing school size based on the overall size is not effective, and that a better measure of actual size is the size of each grade level cohort within the school. Lawton (1999) compares a 9-12 school containing 800 students to a ninth grade academy housing the same number and says the two schools are not equal in size. Other research indicates that when a school reaches more than 100 students per grade level, the costs associated with getting

the same level of achievement increase greatly (Slate & Jones, 2005).

Advocates of smaller school state that those who favor smaller schools are more interested in the school as a community as opposed to those whose emphasis is on test scores (Raywid, 1999). Howley and Howley (2004) take a more measured approach and advise policymakers to find ways to maintain existing small schools, acknowledge upper limits for schools, avoid building mega-schools, and build smaller schools in impoverished communities. Their caution against building mega-schools comes through an acknowledgement that while there may be some disagreement over optimal school size, nothing in the research literature suggests that any school larger than 1000 students is advantageous.

Middle Schools

Much of the literature surrounding school size and achievement is focused on the high school level or takes a more general view by using the terms elementary or secondary. Where do middle schools fit? In some studies, elementary is defined as K-8, while in others K-6 is the prevailing descriptor. Part of the issue could be related to the fact that middle schools are relatively new phenomena; the first middle school was created in

1950 (Manning, 2000), and it wasn't until the 1980s that middle schools proliferated. This would account, in large measure, for researchers' differences in placing middle school data in either a K-8 elementary field or a 7-12 secondary one.

History of North Carolina Public Schools and Accountability Program

The first known school in North Carolina was formed in New Bern in 1707, but in the early years of North Carolina's history, formal education was the exception rather than the rule. Any early attempts at education were usually initiated by the various religious denominations, most notably the Presbyterians, Anglicans, Quakers, and Moravians (North Carolina Department of Public Instruction, n.d.).

The state constitution in 1776 provided that "A School or Schools shall be established by the legislature for the convenient Instruction of Youth," and although this did not result in the formation of public schools for younger children, it did lead to the founding of the first state supported school in the country, the University of North Carolina, in 1795 (Lefler & Newsome, 1973).

Education efforts lagged in the state through the first part of the 19th century; indeed North Carolina as a whole was known

as the "Rip Van Winkle State," for its lack of progress in many areas. There were, however, signs of some interest in education. As early as 1817, Archibald Murphey proposed a system of funding public schools, and although initially his ideas were not implemented, they did lead to the creation of the Literary Fund in 1825, whose purpose was to fund a system of public education (Lefler & Newsome). Still efforts languished until the appointment of Calvin Wiley as the first Superintendent of Common Schools in 1852. Under his leadership, public schools made considerable progress and by 1860, North Carolina had a reputation of having the best schools in the south (North Carolina Department of Public Instruction, n.d).

The reputation was short-lived, however, as the effects of the Civil War and its aftermath were felt in all areas of life. The new state constitution, adopted in 1868 included strong language in support of public education, but it was not until the election of Governor Charles B. Aycock in 1900, however, that educational reform was again at the forefront. Governor Aycock focused on education for all, a marked change from the emphasis, after Reconstruction, on educating only white students (North Carolina Department of Public Instruction, n.d.). A 1907 law that provided money for schools would only fund four high

schools per county, and in 1911, there were about 200 rural high schools in the state (Lefler & Newsome).

The Great Depression again slowed progress in education, but the School Machinery Act of 1933 firmly established the state's interest in providing public education for all. Highlights of the period between 1940 and 1980 included the expansion of the school term to 9 months, the increase of the compulsory school age from 14 to 16, and the establishment of state supported kindergarten programs (North Carolina Department of Public Instruction, n.d.). In North Carolina, the trend towards fewer schools was similar to the rest of the country. In 1933, there were 7,166 schools across the state. By 1972, that number had diminished to 2,034. In 1949, there were 917 one and two teacher schools, but by 1962, half of the state's 100 counties had none (Lefler & Newsome).

It is in the period from 1983 to the present that the development and use of standardized testing expanded. North Carolina's reaction to ***A Nation at Risk*** was similar to the rest of the country's in the sense of urgency that was felt. In 1985, the Basic Education Plan (BEP) was passed. The BEP focused attention on all academic areas as well as the arts and vocational skills. At a projected cost of $800 million dollars, allocations were made for drop-out prevention, summer schools,

additional teachers to lower class size, textbooks, and funds for additional support personnel such as counselors and school psychologists (North Carolina Department of Public Instruction,n.d.). The recession of the early 1990s created a funding hardship and the BEP was never fully implemented. The stage, however, had been set. The 1989 School Improvement and Accountability Act directed local schools to develop school improvement plans every 3 years. This was followed in 1995 by the passage of Senate Bill 16, the ABCs (Accountability, Basics, Local Control) of education, which recognized the state's interest in increasing student achievement and gave local units the flexibility of determining how achievement was to be improved (North Carolina State Board of Education,n.d.). End of Grade (EOG) tests were developed for grades 3-8, and End of Course (EOC) tests were devised for high school classes. Four achievement levels were established, with Level III set as a passing rate, and Level IV considered the highest achievement level. In addition, growth levels were also reported. The original growth formulas had constants set, using values that represented the statewide average growth. Scores on newer editions of tests were then converted to the original scale to allow for year-to-year comparisons with the original formula. The formulas also provided for a regression to the mean (North

Carolina Department of Public Instruction, 2006). Schools were then rated on three scales: expected growth, exemplary growth, or no recognition. Teachers in schools that made expected growth received a $750 bonus, while those in schools making exemplary status received a $1500 bonus.

In the early 2000s, a review noted that as editions of tests changed, changes in growth expectations did not necessarily follow. In addition, a saw-toothed pattern of gains and dips of schools making growth was occurring (North Carolina Department of Public Instruction, 2006). The highest percentage of schools making expected or high growth (exemplary was redefined as high in 2002) was 94% in 2002-2003, while the lowest percentage of schools making growth occurred in 2000-2001 at 59.7% (North Carolina Department of Public Instruction, 2006b). The study also noted that changes in curriculum did not appear to correlate with the percentage of schools making growth.

Beginning with the 2005-2006 school year, a new growth formula was implemented that based a student's current performance on the previous 2 years' performance. If a student only had scores from 1 previous year, the formula was modified to accommodate that as well. The new formula was based on a standardized scale model similar to *z*-scores. Once student scores were standardized, a student's performance was determined

as a point on the ***C***-scale (change scale) relative to standard performance for that grade level in a standard setting year. In the first year of implementation, half of all students in the state would be above "0" and half would be below. Students scoring "0" or above would be considered to show growth, while those below "0" would have no growth. Similarly, schools with a mean growth of "0" or above would be designated expected growth and those schools whose mean growth was below "0" would be designated no recognition. The new formula, like the old one, also accounted for the regression to the mean, and is as follows:

$$AC=CS_{c\text{-}scale} - (0.92 \times ATPA_{c\text{-}scale})$$

with AC equal to academic change, CS equal to change score, and ATPA equal to the average of two previous assessments. Similarly:

$$AC= CS_{c\text{-}scale} - (0.82 \times PA_{c\text{-}scale})$$

with AC equal to academic change, CS equal to the current score, and PA equal to the previous assessment score.

In order to calculate a school's growth rate, the mean academic change of all students is calculated. To determine high growth, a c-ratio is used: the rates of those who have "0" or greater to those whose academic change is less than "0." Beginning in 2006, in order to make high growth, a school's

change ratio must be 1.50 or greater. In a school with 1000 students, if 600 students had growth of "0" or above and 400 students had growth less than "0", the school's change ratio would be 1.50 (600/400) and the school would be designated high growth. (North Carolina Department of Public Instruction, 2006a).

CHAPTER 3

METHODS AND PROCEDURES

Introduction

This quantitative study was designed to compare the North Carolina End of Grade growth status of middle schools based on two characteristics: school size(small, medium, and large) and socioeconomic status (40% or more students receiving free or reduced-price meals and fewer than 40% receiving free or reduced-price meals).

Research Design

North Carolina has 381 regular middle schools with a 6-8 grade configuration. The size of those schools range from 80 to 1,683. A quantitative research design guided this study. This study was a comparative analysis of all middle schools in North Carolina with a 6-8 grade configuration. Quantitative procedures were used to compare the end-of-grade growth status among larger and smaller schools and among schools with a higher percentage of students receiving free or reduced-price meals and school with a lower percentage of students receiving free or reduced-price meals

Population

The population for this study consisted of 379 middle schools with a 6-8 grade configuration located in North

Carolina's public school systems. Two schools were not included in this study because of incomplete information. Schools in North Carolina have been classified using the 2006-2007 free and reduced-price meals data obtained from the North Carolina Department of Public Instruction.

Procedures

Prior to implementation of the study, approval was obtained from the Institutional Review Board (IRB) at East Tennessee State University. School growth information was obtained from the North Carolina Department of Public Instruction Report Cards. The percentage of students receiving free or reduced-price meals was obtained from the North Carolina Department of Instruction, Child Nutrition Services.

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) Version 11.0 software program. Findings of the data analysis are presented in Chapter 4. A summary of the findings, conclusions, and recommendations for future research are presented in Chapter 5.

Research Questions

Question 1

Is there a difference in the mean growth and change ratio (used to determine high growth status) among small, medium, and large middle schools in North Carolina as indicated by the ABC assessments?

Question 2

Is there a difference in growth status among small, medium, and large middle schools in North Carolina as indicated by the ABC assessments?

Question 3

Is there a difference in the mean growth and change ratio (used to determine high growth status) among schools with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals?

Question 4

Is there a difference in achievement growth status among schools with a high percentage of students receiving free or reduced

price meals and schools with a low percentage of students receiving free or reduced price meals?

The following research null hypotheses were derived from the research questions.

$Ho1_1$: There is no difference in the change ratio on the ABC assessments among middle schools in North Carolina based on size.

$Ho1_2$: There is no difference in the mean growth on the ABC assessments among middle schools in North Carolina based on size.

Ho2: There is no difference in ABC growth status among middle schools in North Carolina based on size.

$Ho3_1$: There is no difference in the change ratio on the ABC assessments among middle schools in North Carolina with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals.

$Ho3_2$: There is no difference in mean growth on the ABC assessments among middle schools in North Carolina with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals.

Ho4: There is no difference in ABC growth status among middle schools in North Carolina with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals.

Data Analysis

The Statistical Program for the Social Sciences (SPSS) was used to analyze the data. One way analyses of variance were conducted to determine if there are differences in the change ratio (used to determine high growth status) and mean growth on the North Carolina end-of-grade tests among larger (greater than 800 students), medium-sized (between 600 and 800 students), and smaller (less than 600 students) middle schools. Chi square analyses were conducted to determine if there are differences in the growth status among larger, medium-sized, and smaller middle schools. To determine if there were differences in the change ratio and mean growth among schools with a higher percentage of students receiving free or reduced-price meals (40% or greater) and schools with a lower percentage of students receiving free or reduced-price meals t-tests for independent samples were conducted. Chi square analyses were used to identify differences in growth status based on the percentage of students receiving free or reduced-price meals. The statistical tests were

conducted using an alpha level of .05 to determine if statistically significant differences occurred in growth status between large and small schools and between schools with a higher percentage of free or reduced-price meals and schools with a lower percentage of students receiving free or reduced price meals.

Summary

Included in Chapter 3 were the research design, population, and statistical procedures used for data analysis. Quantitative procedures were used to compare the end-of-grade growth status among small, medium, and large schools and among schools with a higher percentage of students receiving free or reduced-price meals and school with a lower percentage of students receiving free or reduced-price meals. Four research questions and six null hypotheses guided the study. Three hundred seventy-nine middle schools in North Carolina were used for the study. Only middle schools that have the grades 6-8 configuration were included. Chapter 4 provides an analysis of the data and chapter 5 discusses conclusions, implications, and recommendations for further study.

CHAPTER 4

ANALYSIS OF DATA

In the mid-1990s, North Carolina implemented its ABC (Accountability, Basics, Local Control) model of education that included end of grade tests in reading and math for third through eighth graders. In the original model, schools were judged on their ability to grow students academically and were recognized as schools with exemplary growth, expected growth, or no growth. In 2006, a major revision of the model focused on school means of student growth over a 2-year period and the percentage of students making growth in each school. Schools were then identified by three categories: high growth, expected growth, and no recognition. The intent of the model was to eliminate the saw-toothed pattern of growth that existed with the old model. The purpose of this study was to examine the relationship between growth status and two variables: school size and poverty level (as indicated by the number of students receiving free or reduced price meals). Four research questions and six null hypotheses were tested.

The middle schools in this study were divided into three categories based on size: small (less than 600 students), medium (600 to 800 students), and large (greater than 800 students). Schools were also divided into two categories based on the

percentage of students receiving free or reduced priced meals. The Title 1 threshold of 40% was used to divide schools into high or low socioeconomic categories.

No alternative middle schools were included in this study and two middle schools were not included because of incomplete or missing data. Middle schools with a 6-8 grade configuration were chosen. There were 138 small schools, 114 medium schools, and 127 large schools. One hundred twenty-two schools were classified high socioeconomic status and 257 schools were classified low socioeconomic status.

Research Question 1

Is there a difference in the mean growth (used to determine expected growth or no recognition status) and change ratio (used to determine high growth status) among small, medium, and large middle schools in North Carolina, as indicated by the ABC assessments?

From Research Question 1, the following hypotheses were developed and tested:

$Ho1_1$: There is no difference in the change ratio on the ABC assessments among middle schools in North Carolina based on size.

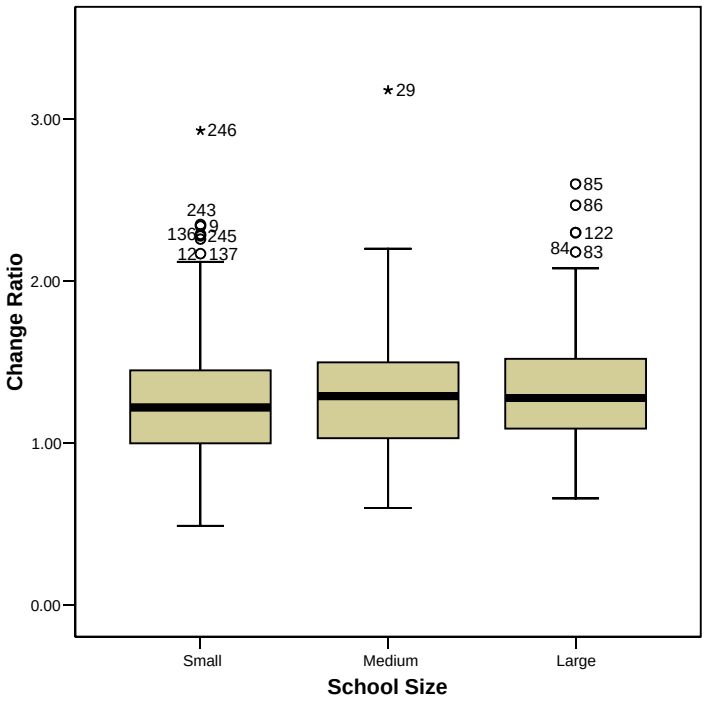
$Ho1_2$: There is no difference in the mean growth on the ABC assessments among middle schools in North Carolina based on size.

A one-way analysis of variance was conducted to evaluate the relationship between middle school size and the change ratio on North Carolina's end of grade tests. The independent variable, school size, included three levels: small (<600), medium (600-800), and large (>800). The dependent variable was the change ratio. The ANOVA was not significant, F (2, 376) = 1.11, p= .33. The strength of the relationship between school size and change ratio as assessed by η^2 was small (.01). The results indicate that the change ratio was not significantly related to school size. The means and standard deviations for the three school size groups are reported in Table 1. Figure 1 shows the change ratio means for the three school size groups.

Table 1

Change Ratio: Mean Change Ratio and Standard Deviations of 3 School Sizes

School size	N	M	SD
Small	138	1.27	.39
Medium	114	1.30	.36
Large	127	1.34	.36



° Outliers (numbers indicate individual cases within the data set) that are 1.5 to 3 times the distance from the interquartile range (indicated by the shaded area)

* Extreme cases (numbers indicate individual cases within the data set) that are more than 3 times the distance from the interquartile range (indicated by the shaded area)

Figure 1. Change Ratios for the Three Different Sized Schools

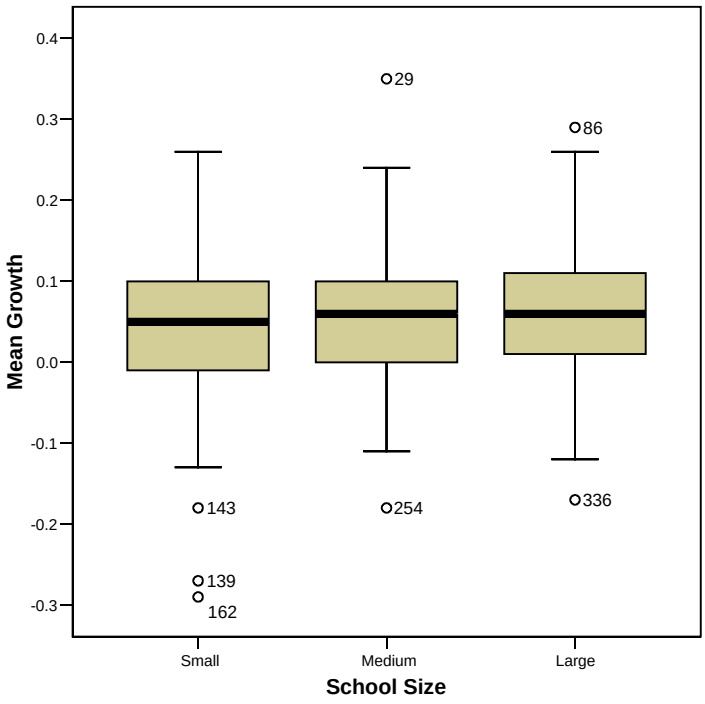
A one-way analysis of variance was conducted to evaluate the relationship between middle school size and mean growth on North Carolina's end of grade tests. The independent variable, school size, included three levels: small (<600), medium (600-800), and large (>800). The dependent variable was the mean growth. The ANOVA was not significant, $F(2, 376) = .29$, $p = .74$. The strength of the relationship between school size and mean growth as assessed by η^2 was small (.00). The results indicate

that mean growth was not significantly affected by school size. The means and standard deviations for the three school size groups are reported in Table 2. Figure 2 shows the mean growth for the three different sized schools.

Table 2

Mean Growth: Mean Growth and Standard Deviations of 3 School Sizes

School size	N	M	SD
Small	138	.06	.19
Medium	114	.05	.08
Large	127	.07	.08



°Outliers (numbers indicate individual cases within the data set) that are 1.5 to 3 times the distance from the interquartile range (indicated by the shaded area)

Figure 2. Mean Growth for the Three Different Sized Schools

Research Question 2

Is there a difference in growth status among small, medium, and large middle schools in North Carolina as indicated by the ABC assessments?

From Research Question 2, the following hypothesis was developed and tested:

Ho2: There is no difference in ABC growth status among middle schools in North Carolina based on size.

A one-sample chi-square test was conducted to assess the distribution of small schools (less than 600 students) designated as no recognition, expected growth, or high growth. Hypothesized proportions were determined by the overall percentage of schools in each growth category. The results of the test were not significant, χ^2 (2, N=138)=2.18, p= .34, and the sample proportions are similar to hypothesized proportions. The observed and hypothesized proportions are reported in Table 3. Figure 3 shows the growth status for small middle schools.

Table 3

Observed and Hypothesized Proportions: Small Schools

	Observed	Hypothesized	Difference(Hypothesized −Observed)
No Recognition	38	32	-6
Expected Growth	72	72	0
High Growth	28	34	6

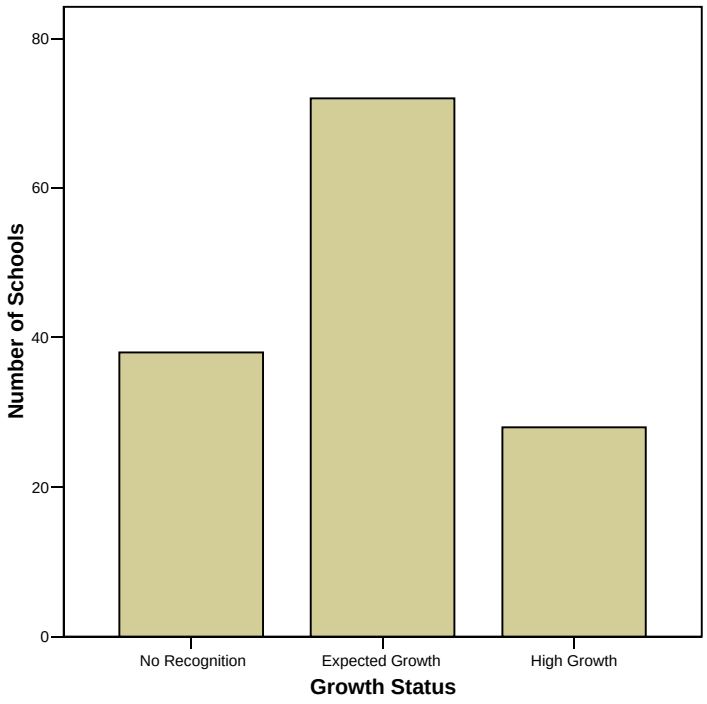


Figure 3. Observed Growth Status of Small Middle Schools

A one-sample chi-square test was conducted to assess the distribution of medium-sized schools (600-800 students) designated as no recognition, expected growth, or high growth. Hypothesized proportions were determined by the overall percentage of schools in each growth category. The results of the test were not significant, χ^2 (2, N=114)=.07, p= .96, and the sample proportions are similar to hypothesized proportions. The observed and hypothesized proportions are reported in Table 4. Figure 4 shows the growth status of medium sized middle schools.

Table 4

Observed and Hypothesized Proportions: Medium Sized Schools

	Observed	Hypothesized	Difference (Hypothesized −Observed)
No Recognition	26	27	1
Expected Growth	59	59	0
High Growth	29	28	-1

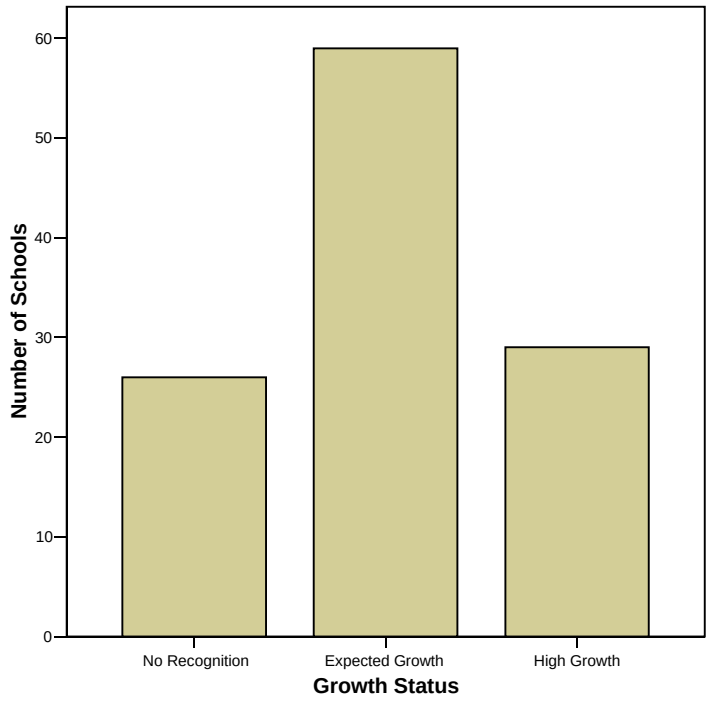


Figure 4. Observed Growth Status of Medium Sized Middle Schools

A one-sample chi-square test was conducted to assess the distribution of large schools (greater than 800 students) designated as no recognition, expected growth, or high growth. Hypothesized proportions were determined by the overall percentage of schools in each growth category. The results of the test were not significant, χ^2 (2, N=127)=1.64, p= .44, and the sample proportions are similar to hypothesized proportions. The observed and hypothesized proportions are reported in Table 5. Figure 5 shows the growth status of large middle schools.

Table 5

Observed and Hypothesized Proportions: Large Schools

	Observed	Hypothesized	Difference(Hypothesized −Observed)
No Recognition	25	30	5
Expected Growth	66	66	0
High Growth	36	31	-5

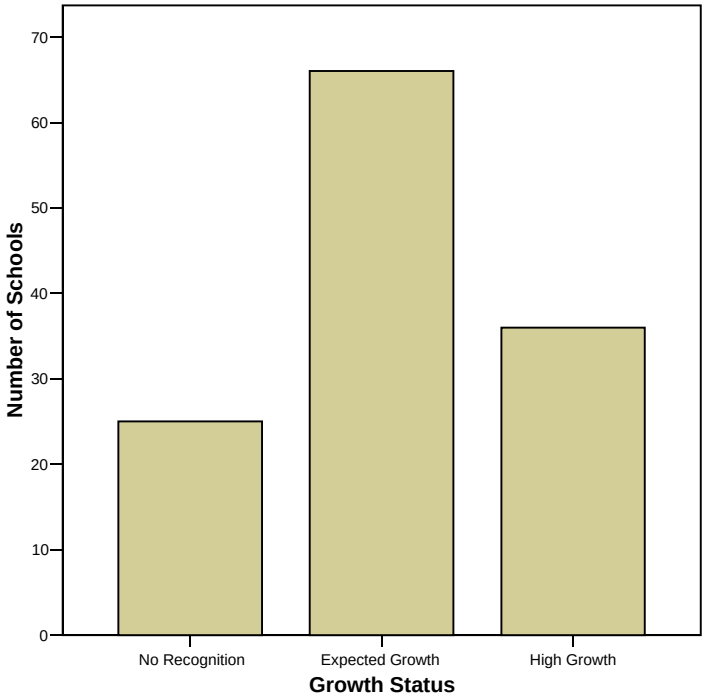


Figure 5. Observed Growth Status of Large Middle Schools

Research Question 3

Is there a difference in the mean growth and change ratio (used to determine high growth status) among schools with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals?

From Research Question 3, the following hypotheses were developed and tested:

$Ho3_1$: There is no difference in the change ratio on the ABC assessments among middle schools in North Carolina with a

high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals.

$Ho3_2$: There is no difference in mean growth on the ABC assessments among middle schools in North Carolina with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals.

An independent samples *t*-test was conducted to evaluate whether the change ratio (an indication of high growth status) differs among high socioeconomic status (less than 40% students receiving free or reduced priced meals) and low socioeconomic status (40% or more students receiving free or reduced price meals) middle schools in North Carolina. The change ratio was the test variable and the grouping variable was high socioeconomic status or low socioeconomic status. The test was significant, t (377) = 6.2, p= .00. High socioeconomic status schools (M= 1.46, SD=.38) had higher change ratios than low socioeconomic status schools (M= 1.23, SD= .34). The 95% confidence interval for the difference in means was .16 to .32. The η^2 index was .09 which indicated a medium effect size. Table

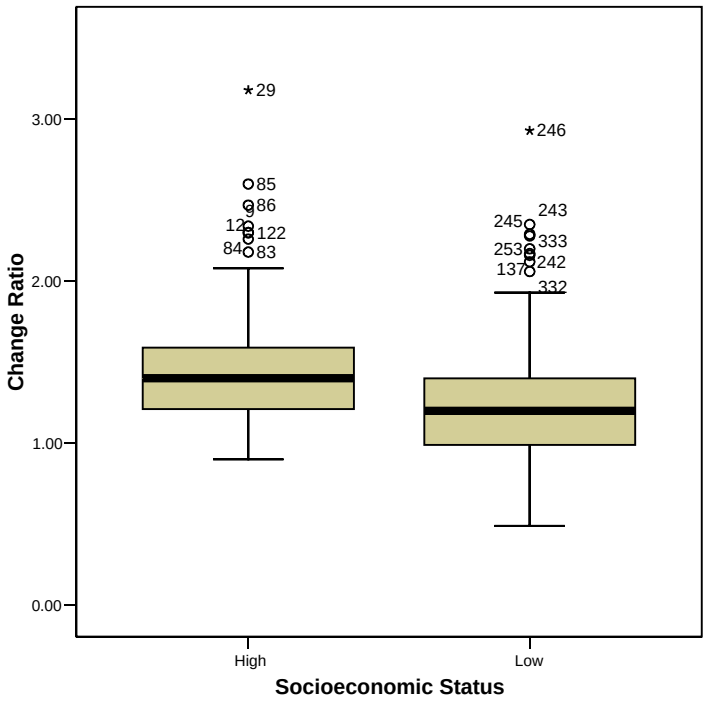
6 shows a comparison of change ratios by socioeconomic level.

Figure 6 shows the distribution for the two groups.

Table 6

Comparison of Change Ratios by Socioeconomic Status

Socioeconomic Status	N	M	SD	*t*	*p*
High	122	1.47	.38	6.2	<.001
Low	257	1.23	.33		



° Outliers (numbers indicate individual cases within the data set) that are 1.5 to 3 times the distance from the interquartile range (indicated by the shaded area)

* Extreme cases (numbers indicate individual cases within the data set) that are more than 3 times the distance from the interquartile range (indicated by the shaded area)

Figure 6. Change ratios by Socioeconomic Status

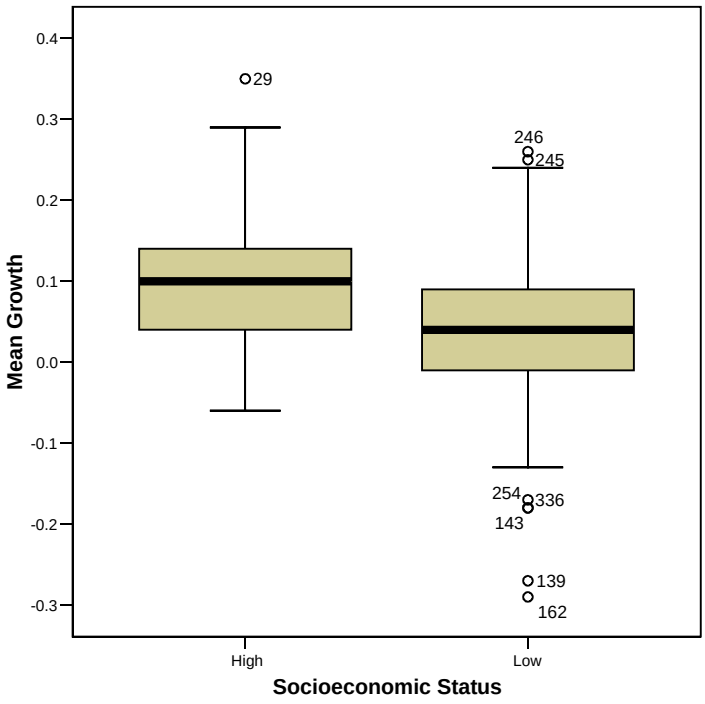
An independent samples *t*-test was conducted to evaluate whether the mean growth (an indication of expected growth or no recognition status) differs between high socioeconomic and low socioeconomic status middle schools in North Carolina. The mean growth was the test variable and the grouping variable was high socioeconomic status or low socioeconomic status. The test was significant, t (377) = 5.71, p= .00. High socioeconomic schools (M= .11, SD=.18) had higher change ratios than low socioeconomic

status schools (*M*= .03, *SD*= .08). The 95% confidence interval for the difference in means was .05 to .11. The η^2 index was .08 which indicated a medium effect size. Table 7 shows a comparison of mean growth by socioeconomic status. Figure 7 shows the distribution for the two groups.

Table 7

Comparison of Mean Growth by Socioeconomic Status

Socioeconomic Status	N	M	SD	*t*	*p*
High	122	.11	.18	5.71	<.001
Low	257	.03	.08		



°Outliers (numbers indicate individual cases within the data set) that are 1.5 to 3 times the distance from the interquartile range (indicated by the shaded area)

Figure 7. Mean Growth by Socioeconomic Status

Research Question 4

Is there a difference in achievement growth status among schools with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals?

From Research Question 4, the following hypothesis was developed and tested:

Ho4: There is no difference in ABC growth status among middle schools in North Carolina with a low percentage of

students receiving free or reduced price meals and schools with a high percentage of students receiving free or reduced price meals.

A one-sample chi-square test was conducted to assess the distribution of high socioeconomic status (less than 40% of students receiving free or reduced price meals) schools designated as no recognition, expected growth, or high growth. Hypothesized proportions were determined by the overall percentage of schools in each growth category. The results of the test were significant, χ^2 (2, N=122)=16.53, $p < .01$.The test was significant because the observed frequency of no recognition of 15 was much lower than the hypothesized frequency of 29, while the observed frequency of high growth of 47 was much greater than the hypothesized frequency of 30.The observed frequency of expected growth of 63 was similar to the hypothesized frequency of 60. The observed and hypothesized proportions are reported in Table 8. Figure 8 shows the observed growth status of high socioeconomic status middle schools.

Table 8

Observed and Hypothesized Proportions: High Socioeconomic Status Schools

	Observed	Hypothesized	Difference (Hypothesized −Observed)
No Recognition	15	29	14
Expected Growth	60	63	3
High Growth	47	30	-17

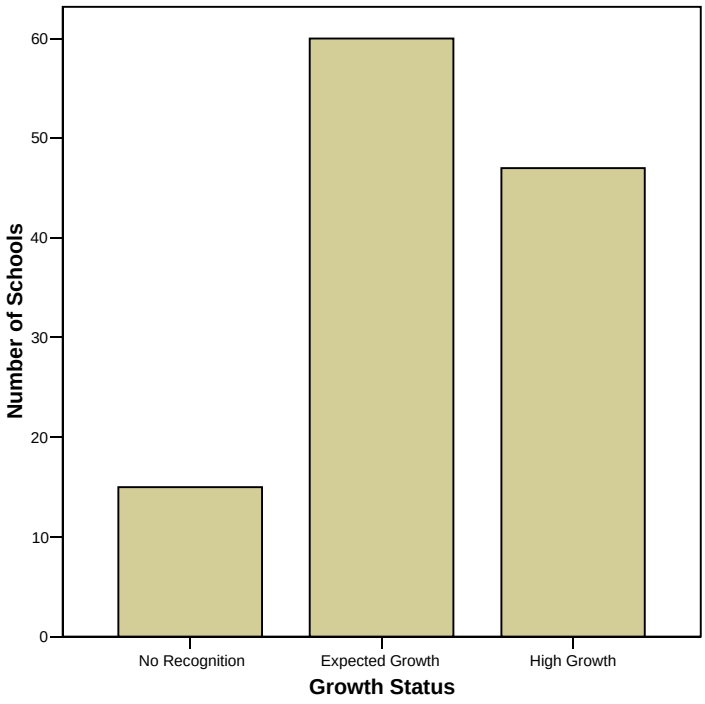


Figure 8. Observed Growth Status of High Socioeconomic Status Schools

A one-sample chi-square test was conducted to assess the distribution of low socioeconomic status (40% or more students receiving free or reduced price meals) schools designated as no recognition, expected growth, or high growth. Hypothesized proportions were determined by the overall percentage of schools in each growth category. The results of the test were significant, χ^2 (2, N=257)=7.92, $p < .05$.The test was significant because the observed frequency of no recognition of 74 was much higher than the hypothesized frequency of 60, while the observed frequency of high growth of 46 was much lower than the

hypothesized frequency of 63.The observed frequency of expected growth of 137 was similar to the hypothesized frequency of 134. The observed and hypothesized proportions are reported in Table 9. Figure 9 shows the observed growth status of low socioeconomic status middle schools.

Table 9

Observed and Hypothesized Proportions: Low Socioeconomic Status Schools

	Observed	Hypothesized	Difference(Hypothesized −Observed)
No Recognition	74	60	-14
Expected Growth	137	134	-3
High Growth	46	63	17

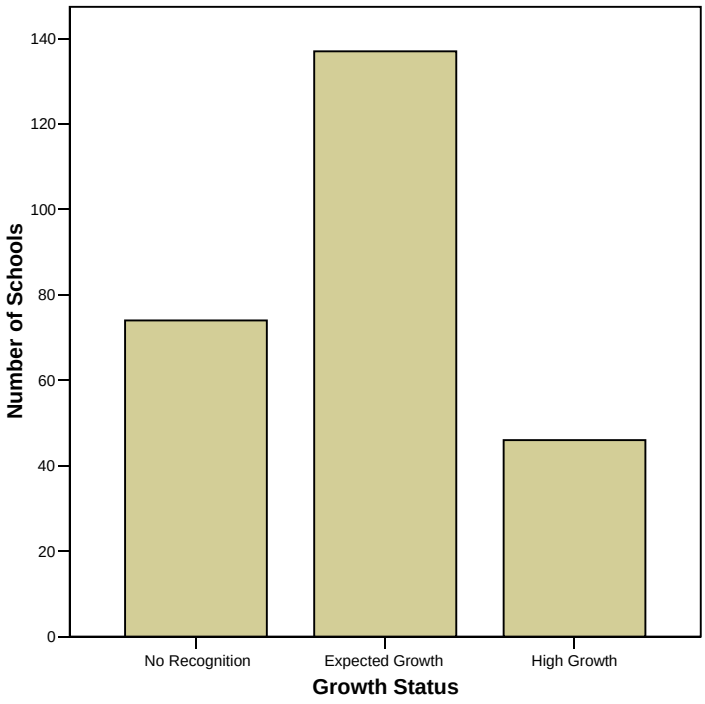


Figure 9. Observed Growth Status of Low Socioeconomic Status Schools

CHAPTER 5

FINDINGS, LIMITATIONS, CONCLUSIONS, AND RECOMMENDATIONS

The purpose of this study was to determine the relationships between school size, socioeconomic status (as indicated by the percentage of students receiving free or reduced price meals), and measures of growth in North Carolina middle schools on the ABC (Accountability, Basics, Local Control) end of grade assessments. Reports from the 2006-2007 school year were used to compare growth measures: change ratio (indication of percentage of students achieving growth and used to determine a school's high growth status), mean growth (mean growth of all students in a school), and growth status (high, expected, no recognition). Using statistical procedures, comparisons were made between school size, socioeconomic status, and the growth measures. A summary of conclusions and recommendations for further research and practice follows.

Summary of the Study

The study compared the growth measures- change ratio, mean growth, and growth status- of middle schools with a 6-8 grade level configuration in North Carolina. The variables examined were the growth measures, school size, and socioeconomic

status(as indicated by the percentage of students receiving free or reduced price meals).

The population consisted of 379 middle schools in North Carolina. Analyses of variance and *t*-tests for independent samples were used to identify the relationship between the independent variables, school size and socioeconomic status, and the dependent variables, change ratio and mean growth. Chi square analyses were used to determine the relationship between observed proportions of the three growth categories and the hypothesized proportions. The study showed no significant relationship between school size and both measures of growth. Similarly, there was no significant difference in the observed proportions and the hypothesized proportions of different sized schools in terms of growth status. There was a significant relationship between socioeconomic status and both measures of growth; high socioeconomic status schools had higher change ratios and higher mean growth than did low socioeconomic schools. The study showed a significant difference in the observed and hypothesized proportions of the growth levels; high socioeconomic status schools had more schools designated high growth than no recognition and low socioeconomic schools had more schools designated no recognition than high growth.

The review of literature documented that studies related to school size, socioeconomic status, and achievement had varying results. Most of the studies focused on achievement levels rather than student or school academic growth. In North Carolina's middle schools, size did not have a significant effect on a school's growth status but socioeconomic status did.

Summary of the Findings

The analysis was based on four research questions and six null hypotheses. The independent variables were school size and socioeconomic status as indicated by the percentage of students receiving free or reduced price meals. The dependent variables included the change ratio (used to determine high growth status), mean growth (used to determine expected growth or no recognition status), and growth status (high, expected, or no recognition). The change ratio, mean growth, and growth status were obtained from the North Carolina Department of Public Instruction website, and the percentage of students receiving free or reduced price meals was obtained from the North Carolina Department of Public Instruction, Child Nutrition Services. The following reviews each research question and provides a brief summary of related findings.

Research Question 1

Is there a difference in the mean growth (used to determine expected growth or no recognition status) and change ratio (used to determine high growth status) among small, medium, and large middle schools in North Carolina as indicated by the ABC assessments?

The results indicated there were no significant differences in the 2006-2007 change ratios between different sized schools. The change ratio for small school (M=1.27), medium sized schools (M=1.30), and large schools (M= 1.34) were not significantly different.

The results indicated there were no significant differences in the 2006-2007 mean growth between different sized schools. The mean growth for small schools (M=.05), medium sized schools (M= .06), and large schools (M=.07) were not significantly different.

Research Question 2

Is there a difference in growth status among small, medium, and large middle schools in North Carolina as indicated by the ABC assessments?

The results indicated that there was no significant difference in 2006-2007 growth status between different sized

schools. In small schools, the hypothesized proportions of high growth N=34, expected growth N=72, and no recognition N= 32 were not significantly different from the observed proportions of high growth N=28, expected growth N=72, and no recognition N=38. In medium-sized schools, the hypothesized proportions of high growth N=28, expected growth N=59, and no recognition N=27 were not significantly different from the observed proportions of high growth N=29, expected growth N=59, and no recognition N=26. In large schools, the hypothesized proportions of high growth N=31, expected growth N=66, and no recognition N=31 were not significantly different from the observed proportions of high growth N=25, expected growth N=66, and no recognition N=36.

Research Question 3

Is there a difference in the mean growth and change ratio (used to determine high growth status) among schools with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals?

Using the Title I percentage of free and reduced price meals (40%), change ratios and mean growth were analyzed based on a school's percentage of students receiving free or reduced price meals above or below 40%. The results indicated that high

socioeconomic status schools had significantly higher change ratios (M=1.47) than low socioeconomic status schools (M=1.23). Similarly, the results indicated that high socioeconomic status schools had significantly higher mean growth (M=.11) than low socioeconomic status schools (M=.03).

Research Question 4

Is there a difference in achievement growth status among schools with a high percentage of students receiving free or reduced price meals and schools with a low percentage of students receiving free or reduced price meals?

Using the Title I percentage of free and reduced price meals (40%), growth status was analyzed based on socioeconomic status as indicated by a school's percentage of students receiving free or reduced price meals above or below 40%.The results indicated that there were significant differences in 2006-2007 growth status among schools with low socioeconomic status levels and high socioeconomic status. In high socioeconomic status schools, the hypothesized proportions of high growth N=30, expected growth N=63, and no recognition N= 29 were significantly different from the observed proportions of high growth N=47, expected growth N=60, and no recognition N=15. In low socioeconomic status schools, the hypothesized proportions

of high growth N=63, expected growth N=134, and no recognition N= 60 were significantly different from the observed proportions of high growth N=46, expected growth N=137, and no recognition N=74. In both high socioeconomic status and low socioeconomic status schools, the hypothesized number of schools with expected growth was similar to the observed number of schools with expected growth. The results would seem to indicate that low socioeconomic status schools are more likely to have the designation of no recognition than the designation of high growth and high socioeconomic status schools are more likely to have the designation of high growth than the designation of no recognition.

Discussion

This study focused on North Carolina middle schools' growth on the 2006-2007 ABC end of grade assessments in reading and math. Change ratios, mean growth, and growth status were compared using school size and socioeconomic status.

Three hundred seventy-nine middle schools in North Carolina were studied to determine if a relationship existed between school size and academic growth. For all three measures, change ratio, mean growth, and growth status, the study showed no significant difference based on size.

The study showed significant difference in change ratios, mean growth, and growth status based on socioeconomic status. High socioeconomic status schools had higher change ratios, mean growth, and a greater percentage of schools designated high growth than low socioeconomic status schools.

This study would seem to indicate that in North Carolina middle schools, socioeconomic status is a strong indicator of a school's overall growth and growth status. This could be reflective of students from lower socioeconomic backgrounds coming to school with more distracting, unmet needs (food, clothing, shelter) than those from higher socioeconomic backgrounds. It could also reflect a difference of emphasis that is placed on education in families from higher or lower socioeconomic backgrounds. The difference may also be related to differing expectations for students from different socioeconomic backgrounds.

Although this study did not find that school size was not a significant indicator of academic growth, it should be noted that the academic growth of larger schools was slightly greater than in smaller schools. In reviewing the data, large schools accounted for 58% of the total of high socioeconomic status schools and 24% of the total of low socioeconomic status schools; small schools accounted for 15% of the total of high

socioeconomic status schools and 44% of the total of low socioeconomic status schools.

In North Carolina, each school's growth status determines a part of the financial compensation for the staff members in the school. Certified personnel (teachers, counselors, administrators) receive a $1500 bonus if their school is designated as having high growth, a $750 bonus if their school is designated as making expected growth, and no bonus if their school is designated as no recognition. The results from this study would seem to indicate that it is more likely that a teacher in a high socioeconomic status school will receive a $1500 bonus than a teacher in a low socioeconomic status school. This amount of money could be a significant factor if a teacher has a choice of working in a high socioeconomic status school or a low one, and this could result in low socioeconomic status schools having a smaller pool of qualified teachers from which to select than high socioeconomic status schools.

Limitations

This study is limited to North Carolina School report card data from the 2006-2007 school year. In this study, academic growth was analyzed in North Carolina middle schools based on school size and the percentage of students receiving free or

reduced priced meals. Within each school, there are other characteristics that may have affected the growth rate of the school.

A common measure of student socioeconomic status is the percentage of students receiving free or reduced price meals. However, there are limitations including the number of parents applying for this program and the application procedures implemented by each school that can affect the actual percentage reported.

This study was limited to middle schools in North Carolina and conclusions from this study may not be applicable to North Carolina's elementary and high schools.

Conclusions

Based on this study, the following conclusions can be drawn:

1. Academic growth is affected by socioeconomic status. Middle schools with a higher percentage of students receiving free or reduced price meals have lower academic growth than schools with a lower percentage of students receiving free or reduced price meals.
2. Academic growth is not affected by school size. There were no significant differences in academic growth based on three levels of school size: small (less than 600

students), medium sized (600-800 students), and large(more than 800 students).

Recommendations for Practice

As educators in North Carolina continue to focus on achievement levels of all students, particular attention should be paid to those schools with higher percentages of students receiving free or reduced price meals. The characteristics and practices of those low socioeconomic status schools whose academic growth is higher than the mean should be examined for applicability to those low socioeconomic status schools whose academic growth is below the mean.

Although this study did not find significant evidence to favor smaller schools over larger ones, some research cited in the literature review does tend to support smaller schools, especially for students from lower socioeconomic backgrounds. Therefore, the characteristics and practices of successful smaller schools should be examined to determine those characteristics and practices that can be adapted to other schools to produce similar successful results.

To narrow the academic gap between students in high and low socioeconomic status schools, attention should be given to the particular needs and traits of children from high poverty

backgrounds. Educational practices that recognize and remove the barriers associated with those needs should be implemented.

Finally, regardless of socioeconomic status, educational methods in all schools should reflect current research of best practices for increasing all students' achievement.

Recommendations for Further Research

Research should be continued regarding school size, socioeconomic status, and academic growth in North Carolina's public schools. Studies that include North Carolina's elementary and high schools would give a broader picture of the state's testing program as it relates to the variables of school size, socioeconomic status, and academic growth.

Given that North Carolina rewards teachers and administrators in those schools achieving high or expected growth, research that examines teacher quality, as defined by educational attainment and relevant certification(actual as opposed to the federal "highly qualified designation") in low and high poverty schools could determine if there is a relationship between teacher quality, school socioeconomic status, and academic growth.

A 2005 study in Virginia examined the variables of school size (two categories), school location (three categories),

socioeconomic status (two categories), and achievement on 8th grade tests and found results similar to this study in the relationship between socioeconomic status and achievement. The study found that larger suburban schools had higher mean scores than smaller suburban schools and larger rural and urban schools (Lester, 2005). Although this study did not focus on school location because of the perceived blurred lines between rural, suburban, and urban in North Carolina, further research that adds the variable of school location could determine if similar relationships exist in North Carolina. It might also be possible that the relationship of school size and achievement is masked by school location: schools in rural areas tend to be smaller than those in urban or suburban areas. One other variable that might mask a relationship between school size and achievement is class size. Research that focuses on class sizes within different sized schools might provide additional information about the relationships between these variables and achievement.

Reflections

Throughout our country's history, the idea of a free, public education for all has been nurtured, and although barriers to educational equality have been removed, some remain. From the late 1800s through most of the 20th century, the idea that

larger schools equaled a better education was predominant. In the last decades of the 1900s, there was more interest in the outcomes of education; studies examined the effects of various school characteristics on outcomes, usually defined as scores on standardized tests. This study examined the relationship between school size, socioeconomic status, and academic growth in North Carolina's middle schools. A gap in academic achievement exists among schools with students from low poverty and high poverty backgrounds, regardless of school size. It is hoped that efforts to eliminate those gaps will be a major focus of educational practices so that the progression of ever increasing equality of opportunity for all people will continue to be a defining characteristic of the United States.

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APPENDICES

Appendix A: Institutional Review Board Certificate

CITI Collaborative Institutional Training Initiative

Human Research Curriculum Completion Report

Learner: Andrew Peoples (username: zjap29)
Institution: East Tennessee State University
Contact Information: Phone: 828-658-3059
Email: ap62@charter.net
Group3.: Social and Behavioral Research Investigators and Key Personnel who are **NOT** affiliated with or working at the VA. If you are an Member of the ETSU IRB you should join this Learner Group. IRB Members must also complete the IRB member module.

Stage 1. Basic Course Passed on 06/01/06 (Ref # 812852)

Required Modules	**Date completed**
Introduction	05/30/06
History and Ethical Principles - SBR	05/30/06
Defining Research with Human Subjects - SBR	05/30/06
The Regulations and The Social and Behavioral Sciences - SBR	05/30/06
Assessing Risk in Social and Behavioral Sciences - SBR	05/30/06
Informed Consent - SBR	05/30/06
Privacy and Confidentiality - SBR	05/31/06
Research with Prisoners - SBR	05/31/06
Internet Research - SBR	05/31/06
Group Harms: Research With Culturally or Medically Vulnerable Groups	05/31/06
HIPAA and Human Subjects Research	06/01/06
Conflicts of Interest in Research Involving Human Subjects	06/01/06
East Tennessee State University	06/01/06

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI participating institution. Falsified information and unauthorized use of the CITI course site is unethical, and may be considered scientific misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Course Coordinator

Appendix B: Raw Data Matrix

School Name	CHANGE RATIO	MEAN GROWTH	GROWTH STATUS	SCHOOL SIZE	PERCENTAGE FREE MEALS
A C Reynolds Middle	1.52	0.1	High	600	49.33%
A G Cox Middle	2.3	0.25	High	955	47.43%
A L Stanback Middle	1.3	0.07	Expected	628	29.14%
Acme Delco Middle	1.19	0	Expected	188	52.13%
Albemarle Road Middle	1.02	0	Expected	766	80.29%
Alexander Graham Middle	1.41	0.1	Expected	995	25.83%
Allen Middle	0.95	-0.02	NR	778	81.75%
Andrews Middle	1.45	0.06	Expected	240	56.67%
Anne Chesnutt Middle	1.22	0.03	Expected	683	56.95%
Apex Middle	1.97	0.2	High	1,157	16.34%
Apple Valley Middle	1.15	0.05	Expected	800	50.38%
Asheville Middle	1.3	0.06	Expected	632	47.31%
Aurora Middle	2.93	0.26	High	80	95.00%
Avery Middle	0.95	-0.04	NR	291	60.48%
Aycock Middle	2.06	0.22	High	677	71.34%
Bailey Middle School	1.1	0.02	Expected	1114	14.45%
Beaufort Middle	1.44	0.09	Expected	231	46.32%
Belmont Middle	1.27	0.06	Expected	663	33.94%
Bessemer City Middle	0.89	-0.07	NR	564	66.13%
Bethel Middle	0.9	-0.05	NR	316	39.87%
Brawley Middle	0.49	-0.27	NR	253	88.14%
Brawley Middle	2.6	0.26	High	1,045	6.99%
Brevard Middle	1.3	0.07	Expected	544	39.89%
Broad Creek Middle	1.48	0.11	Expected	545	27.34%
Broadview Middle	0.99	-0.01	NR	719	80.53%
Brogden Middle	1.47	0.11	Expected	834	51.68%
Brown Summit Center	1.6	0.17	High	211	40.28%
Bunn Middle	1.69	0.14	High	663	46.61%
Burgaw Middle	1.22	0.05	Expected	278	58.99%
Burns Middle	1.55	0.14	High	963	54.00%
Butner-Stem Middle	0.97	-0.04	NR	459	47.06%
C C Griffin Middle	1.52	0.11	High	1,376	25.65%
C G White Middle	2.35	0.21	High	209	86.12%
C M Eppes Middle	1.38	0.1	Expected	585	58.29%
Camden Middle	1.15	0.05	Expected	442	28.28%
Cane Creek Middle	1.73	0.17	High	822	8.88%
Cane River Middle	1.82	0.18	High	273	57.88%
Canton Middle	1.33	0.06	Expected	582	46.56%
Cape Fear Middle	1.21	0.02	Expected	435	59.77%
Carmel Middle	1.56	0.13	High	1029	28.47%
Carnage Middle	1.16	0.03	Expected	1,136	47.36%
Carroll Middle	1.09	0.04	Expected	637	51.33%
Carver Middle	1.43	0.1	Expected	476	75.42%
Cedar Creek Middle	1.24	0.07	Expected	715	50.77%
Centennial Campus Middle	1.52	0.11	High	586	36.18%

Central Davidson Middle	1.43	0.1	Expected	797	40.03%
Central Middle	1.1	0.02	Expected	479	46.76%
Central Middle	1.57	0.1	High	672	53.87%
Central Middle	1.49	0.12	Expected	526	62.36%
Central Wilkes Middle	1.52	0.12	High	767	54.11%
Chaloner Middle	0.68	-0.13	NR	594	56.23%
Charity Middle	1.4	0.09	Expected	490	78.57%
Charles C Erwin Middle	1.63	0.13	High	945	36.40%
Charles D Owen Middle	1.51	0.12	High	676	48.08%
Charles H Darden Middle	1.08	0	Expected	353	99.43%
Charles P Murray Middle	1.46	0.09	Expected	914	37.53%
Charles W Stanford Middle	0.93	-0.01	NR	681	33.04%
Chase Middle	1.29	0.05	Expected	720	55.28%
Chestnut Grove Middle	1.12	0.02	Expected	837	34.17%
Chewning Middle	0.84	-0.08	NR	742	62.40%
China Grove Middle	1.09	0.01	Expected	609	39.57%
Chowan Middle	1.46	0.11	Expected	589	53.31%
Clarkton Sch of Discovery	0.97	0	Expected	290	59.66%
Clayton Middle	2.07	0.2	High	741	28.34%
Clemmons Middle	0.94	-0.04	NR	1,161	43.24%
Cleveland Middle	1.49	0.1	Expected	763	19.92%
Clyde A Erwin Middle	1.09	0	Expected	1091	61.03%
Coats-Erwin Middle	1.67	0.13	High	664	60.39%
Cochrane Middle	0.95	-0.03	NR	611	79.71%
Columbia Middle	0.99	-0.01	NR	126	68.25%
Concord Middle	1.41	0.08	Expected	949	51.00%
Conway Middle	1.57	0.11	High	395	83.54%
Corriher Lipe Middle	1.19	0.03	Expected	590	46.61%
Coulwood Middle	1.09	0.01	Expected	1195	57.49%
Cramerton Middle	1	-0.01	NR	855	25.26%
Cranberry Middle	0.92	-0.04	NR	152	61.84%
Crest Mid Sch of Technology	1.4	0.08	Expected	1,045	44.69%
Crestdale Middle	1.31	0.08	Expected	1016	19.49%
Currituck County Middle	1.43	0.08	Expected	447	27.52%
D C Virgo Middle	0.77	-0.11	NR	372	69.62%
Daniels Middle	1.4	0.1	Expected	1015	34.68%
Davidson Intnl Bacc Middle	1.4	0.09	High	239	6.69%
Davis Drive Middle	1.58	0.14	High	1091	15.95%
Dillard Drive Middle	1.48	0.11	Expected	1002	45.21%
Dixon Middle	1.07	0.01	Expected	474	42.19%
Douglas Byrd Middle	0.83	-0.08	NR	718	82.45%
Dunn Middle	1.3	0.03	Expected	473	66.38%
Durant Road Middle	1.63	0.16	High	1119	34.14%
E B Aycock Middle	1.32	0.07	Expected	646	52.48%
E B Frink Middle	1.4	0.09	Expected	635	51.18%
E E Smith Middle	1.21	0.04	Expected	329	82.37%
E Lawson Brown Middle	1.22	0.03	Expected	759	36.36%
East Alexander Middle	1.19	0.04	Expected	699	51.50%
East Burke Middle	1.87	0.17	High	823	52.98%
East Forsyth Middle	0.83	-0.07	NR	792	46.59%

East Garner Middle	1.21	0.05	Expected	1040	58.75%
East Hoke Middle	1.23	0.05	Expected	777	79.28%
East Lee Middle	0.9	-0.04	NR	993	63.75%
East Lincoln Middle	1.48	0.1	Expected	642	32.71%
East Middle	0.91	-0.05	NR	460	81.96%
East Middle	2.16	0.24	High	675	55.11%
East Millbrook Middle	0.91	-0.05	NR	1057	49.48%
East Rutherford Middle	0.99	-0.01	NR	699	58.08%
East Union Middle	1.01	-0.02	NR	793	59.14%
East Wake Middle	1.26	0.06	Expected	949	60.80%
East Wilkes Middle	2.17	0.24	High	441	49.89%
East Yancey Middle	2.29	0.21	High	349	54.73%
Eastern Middle	1.12	0.01	Expected	892	61.77%
Eastern Wayne Middle	1.29	0.07	Expected	620	49.19%
Eastman Middle	0.72	-0.18	NR	256	72.27%
Eastway Middle	1.33	0.06	Expected	879	87.14%
Eaton-Johnson Middle	1.2	0.05	Expected	891	79.80%
Elise Middle	1.24	0.07	Expected	238	76.89%
Elizabeth City Middle	0.98	-0.03	NR	656	59.91%
Elm City Middle	1.93	0.17	High	488	50.61%
Emma B Trask Middle	1.4	0.09	Expected	828	44.57%
Enfield Middle	0.5	-0.29	NR	234	83.76%
Enka Middle	1.08	-0.01	NR	993	45.92%
Farmville Middle	1.29	0.04	Expected	636	60.22%
Ferndale Middle	1.15	0.02	Expected	592	85.47%
First Flight Middle	1.47	0.11	Expected	352	32.10%
Flat Rock Middle	1.34	0.07	Expected	758	48.55%
Forest Hills Middle	1	0	Expected	605	54.88%
Four Oaks Middle	1.51	0.1	High	511	47.75%
Francis Bradley Middle	1.12	0.03	Expected	1037	23.34%
Fuquay-Varina Middle	1.32	0.08	Expected	997	32.70%
G C Hawley Middle	0.93	-0.06	NR	621	36.71%
G R Edwards Middle	1.27	0.06	Expected	872	63.88%
Gamewell Middle	1.14	0	Expected	544	66.18%
Gaston Middle	1.22	0.04	Expected	231	92.64%
George L Carrington Middle	1	-0.02	NR	1,156	39.27%
Graham Middle	1.5	0.11	High	671	84.95%
Grandview Middle	1.36	0.08	Expected	450	70.22%
Granite Falls Middle	1.19	0.03	Expected	697	37.16%
Gravelly Hill Middle	1.31	0.07	Expected	263	46.39%
Gray's Creek Middle	1.32	0.07	Expected	602	40.70%
Greene County Middle	0.83	-0.06	NR	724	68.78%
Grey Culbreth Middle	1.4	0.1	Expected	628	21.34%
Grover C Fields Middle	1.72	0.14	High	609	52.22%
Guy Phillips Middle	1.59	0.14	High	645	18.45%
H J MacDonald Middle	1.49	0.11	Expected	764	54.32%
Hanes Middle	1.88	0.22	High	564	51.06%
Harnett Central Middle	1.34	0.09	Expected	1,084	45.11%
Harris Middle	0.95	-0.05	NR	324	52.78%
Harris Road Middle	1.66	0.15	High	1,199	17.51%

Havelock Middle	1.54	0.13	High	463	60.69%
Hawfields Middle	1.36	0.08	Expected	629	36.09%
Henderson Middle	0.9	-0.05	NR	862	82.25%
Hendersonville Middle	1.12	0.02	Expected	485	47.01%
Heritage Middle	2.02	0.19	High	1,252	26.12%
Heritage Middle	2.2	0.23	High	658	50.15%
Hill Middle	0.86	-0.09	NR	368	98.37%
Hobbton Middle	1.31	0.07	Expected	396	69.70%
Holbrook Middle	1	0.01	Expected	773	53.56%
Holly Ridge Middle	1.13	0.02	Expected	1,299	24.63%
Hope Middle	2.34	0.25	High	541	26.43%
Hope Mills Middle	1.57	0.08	High	766	42.82%
Hudson Middle	1.52	0.1	High	828	42.39%
Hunters Creek Middle	1.49	0.11	Expected	836	39.83%
Ireland Drive Middle	1.07	0.03	Expected	350	79.43%
J E Holmes Middle	0.92	-0.04	NR	910	55.05%
J N Fries Middle	1.52	0.11	High	914	42.01%
J Sam Gentry Middle	1.12	0.01	Expected	434	50.00%
J W Parker Middle	1.1	0.01	Expected	549	70.67%
Jackson Middle	0.71	-0.11	NR	530	90.00%
Jacksonville Commons Middle	1.32	0.07	Expected	720	45.83%
James E Shepard Middle	1.03	-0.01	NR	413	54.00%
James Martin Middle	0.8	-0.08	NR	1280	63.20%
Jamestown Middle	1.57	0.15	High	1,177	47.83%
Jay M Robinson Middle	2.18	0.24	High	1145	12.84%
Jefferson Middle	1.98	0.2	High	1,145	18.86%
John Chavis Middle	1.13	0.04	Expected	524	50.19%
John M Alexander Middle	0.91	-0.05	NR	1683	35.35%
John R Griffin Middle	1.24	0.04	Expected	1,284	34.11%
John T Williams Middle	1	-0.01	NR	596	91.28%
Kernersville Middle	1.1	0.04	Expected	713	39.27%
Kernodle Middle	1.78	0.21	High	962	12.79%
Kiser Middle	1.14	0.02	Expected	889	56.69%
Knox Middle	0.83	-0.08	NR	598	71.57%
Lakeshore Middle	3.18	0.35	High	688	16.72%
Laurin Welborn Middle	1.28	0.05	Expected	563	65.01%
Ledford Middle	1.28	0.05	Expected	879	23.55%
Leesville Road Middle	1.1	0.03	Expected	1,267	28.89%
Leland Middle	1.61	0.12	High	602	70.93%
Lewis Chapel Middle	0.89	-0.06	NR	874	66.36%
Lexington Middle	1.37	0.06	Expected	711	87.62%
Liberty Middle	1.33	0.09	Expected	575	48.52%
Ligon Middle	1.54	0.14	High	1,075	29.58%
Lincolnton Middle	1.52	0.12	High	714	57.70%
Lowe's Grove Middle	1.2	0.02	Expected	659	69.95%
Lufkin Road Middle	1.81	0.21	High	1058	16.92%
Luther "Nick" Jeralds Middle	1.54	0.11	High	591	87.48%
M C S Noble Middle	1.71	0.16	High	844	28.79%
Mac Williams Middle	1.07	0	Expected	1,155	51.60%

Macon Middle	0.93	-0.04	NR	911	63.45%
Madison Middle	0.86	-0.07	NR	578	50.87%
Manteo Middle	1.38	0.08	Expected	664	16.87%
Martin Luther King, Jr Middle	1.18	0.02	Expected	965	81.35%
Martin Middle	1.57	0.14	High	1017	24.19%
Mattamuskeet Middle	1.22	0	Expected	115	80.87%
McClintock Middle	1.31	0.08	Expected	830	68.80%
McDougle Middle	1.54	0.11	High	642	20.25%
McGee's Crossroads Middle	1.58	0.13	High	684	26.61%
Meadowlark Middle	1.04	-0.01	NR	1,151	19.98%
Meadowview Middle	1.46	0.1	Expected	413	57.63%
Mendenhall Middle	1.52	0.1	High	958	41.23%
Midway Middle	1.57	0.09	High	589	50.76%
Mineral Springs Middle	0.92	-0.01	NR	522	90.42%
Mint Hill Middle School	1.79	0.16	High	1291	31.53%
Monroe Middle	1.28	0.05	Expected	760	79.87%
Moore Square Museum Magnet Mid	1.27	0.06	Expected	518	47.68%
Morehead City Middle	1.78	0.14	High	483	31.06%
Mount Airy Middle	1.56	0.15	High	395	60.76%
Mount Holly Middle	0.96	-0.04	NR	720	37.36%
Mount Olive Middle	1.56	0.12	High	306	66.67%
Mount Pleasant Middle	1.36	0.07	Expected	686	28.43%
Murphy Middle	0.9	-0.04	NR	347	49.57%
Myrtle Grove Middle	1.4	0.11	Expected	872	32.00%
N L Dillard Middle	1.25	0.06	Expected	766	55.35%
Nash Central Middle	0.75	-0.11	NR	686	65.45%
Neal Middle	0.6	-0.18	NR	763	66.45%
New Bridge Middle	1.62	0.12	High	520	59.42%
New Century Middle	1.25	0.03	Expected	919	41.78%
Newport Middle	1.25	0.07	Expected	466	44.21%
Newton-Conover Middle	1.49	0.11	Expected	654	53.98%
North Asheboro Middle	1.48	0.11	Expected	461	84.60%
North Davidson Middle	1.47	0.11	Expected	1,212	22.94%
North Davie Middle	1.56	0.13	High	817	22.15%
North Garner Middle	1.06	0	Expected	862	65.89%
North Iredell Middle	1.22	0.05	Expected	660	45.61%
North Johnston Middle	1.55	0.12	High	603	52.40%
North Lincoln Middle	1.21	0.05	Expected	711	21.52%
North Rowan Middle	1.27	0.06	Expected	561	66.67%
North Wilkes Middle	1.35	0.06	Expected	594	58.08%
Northeast Guilford Middle	0.98	-0.02	NR	969	49.85%
Northeast Middle	1.17	0.03	Expected	1076	48.05%
Northeastern Randolph Middle	0.9	-0.02	NR	530	46.98%
Northern Guilford Middle	2.26	0.2	High	223	13.90%
Northern Middle	1.01	-0.02	NR	625	50.56%
Northridge Middle	1.03	-0.02	NR	770	68.57%
Northview Middle	1.41	0.09	Expected	502	45.22%
Northwest Cabarrus Middle	1.09	0.01	Expected	878	36.33%

Northwest Guilford Middle	2.04	0.23	High	1,098	9.74%
Northwest Middle	1.13	0.03	Expected	941	51.01%
Northwoods Park Middle	1.66	0.15	High	652	41.10%
Norwayne Middle	1.34	0.08	Expected	963	42.47%
Overhills Middle	1.39	0.09	Expected	905	53.37%
P S Jones Middle	1.51	0.12	High	656	70.88%
Pamlico County Middle	1.42	0.1	Expected	301	52.49%
Parkwood Middle	1.37	0.07	Expected	1,012	33.40%
Pembroke Middle	1.1	0.03	Expected	654	78.59%
Perquimans County Middle	1.26	0.05	Expected	427	59.95%
Philo Middle	0.99	-0.03	NR	453	88.08%
Piedmont Middle	1.4	0.1	Expected	758	18.34%
Piedmont Open Middle	1.02	-0.01	NR	1010	43.56%
Pilot Mountain Middle	1.17	0.04	Expected	478	43.72%
Pine Forest Middle	1.38	0.08	Expected	751	41.41%
Piney Grove Middle	1.54	0.11	High	359	42.06%
Polk County Middle	1.01	0.02	Expected	570	45.26%
Porter Ridge Middle School	1.41	0.09	Expected	1,303	29.85%
Quail Hollow Middle	1.02	-0.01	NR	1109	60.41%
R Max Abbott Middle	1.26	0.07	Expected	969	45.72%
Randleman Middle	0.66	-0.17	NR	921	50.49%
Randolph Middle	1	0.01	Expected	879	52.67%
Ranson Middle	0.7	-0.12	NR	1148	68.73%
RD & Euzelle Smith Middle	1.87	0.19	High	668	26.35%
Red Oak Middle	1.22	0.04	Expected	1,012	51.19%
Reedy Creek Middle	1.68	0.16	High	789	44.11%
Reidsville Middle	1.05	0	Expected	769	61.64%
River Road Middle	0.99	-0.03	NR	694	53.60%
Riverwood Middle	1.14	0.04	Expected	1,064	21.52%
Roanoke Middle	1.14	0.04	Expected	311	86.50%
Robert F Kennedy Middle	1.13	0.01	Expected	644	60.09%
Rochelle Middle	0.76	-0.08	NR	624	90.71%
Rockingham County Middle	1.02	-0.01	NR	878	36.79%
Rogers-Herr Middle	1.5	0.1	High	625	40.32%
Roland-Grise Middle	1.34	0.08	Expected	824	37.14%
Roseboro-Salemburg Middle	1.1	0.03	Expected	445	68.99%
Rosewood Middle	0.93	-0.01	NR	476	47.48%
Rosman Middle	0.68	-0.1	NR	301	51.16%
Rowland Middle	0.81	-0.05	NR	185	88.11%
R-S Middle	0.95	-0.04	NR	802	57.11%
Rugby Middle	1.5	0.11	High	811	28.48%
Saint Pauls Middle	1.09	0	Expected	494	79.96%
Salem Middle	2.47	0.29	High	1049	7.63%
Sampson Middle	1.55	0.12	High	692	60.84%
Savannah Middle	1.19	0.02	Expected	296	64.19%
Sedgefield Middle	0.96	-0.01	NR	469	86.35%
Seventy-First Classical Mid	1.57	0.13	High	505	28.91%
Shallotte Middle	0.83	-0.08	NR	822	58.27%
Shelby Middle	1.37	0.08	Expected	803	57.91%
Sherwood Githens Middle	1.03	0	Expected	944	57.10%

Smithfield Middle	1.1	0.02	Expected	847	57.50%
South Asheboro Middle	1.23	0.06	Expected	556	45.86%
South Brunswick Middle	1.19	0.03	Expected	780	50.26%
South Charlotte Middle	2.08	0.2	High	991	9.99%
South Davie Middle	1.29	0.07	Expected	751	60.59%
South Stanly Middle	1.75	0.13	High	413	45.04%
South View Middle	1.2	0.02	Expected	907	61.08%
Southeast Guilford Middle	1.18	0.02	Expected	1,036	32.43%
Southeast Middle	0.84	-0.05	NR	722	41.27%
Southeast Middle	1.72	0.15	High	939	37.06%
Southeastern Randolph Mid	1.12	0.01	Expected	641	52.11%
Southeastern Stokes Middle	1.14	0.02	Expected	530	40.75%
Southern Middle	1	-0.04	NR	696	54.31%
Southern Middle	1.01	-0.01	NR	703	45.80%
Southern Middle	1.27	0.06	Expected	818	33.01%
Southern Nash Middle	1.24	0.05	Expected	1,061	55.04%
Southwest Guilford Middle	1.21	0.03	Expected	1,097	40.93%
Southwest Middle	0.87	-0.08	NR	742	70.62%
Southwest Middle	1.12	0.01	Expected	556	49.64%
Southwest Middle School	1.04	-0.02	NR	1143	44.62%
Southwestern Middle	1.07	-0.01	NR	522	86.78%
Southwestern Randolph Mid	1.32	0.08	Expected	663	49.32%
Spaugh Middle	0.92	-0.02	NR	548	92.52%
Speight Middle	0.98	-0.04	NR	482	63.69%
Spring Hill Middle	1.66	0.15	High	530	66.23%
Spring Lake Middle	0.96	-0.01	NR	502	77.69%
Springfield Middle	0.7	-0.11	NR	509	55.99%
Stanley Middle	0.95	-0.04	NR	517	42.94%
Statesville Middle	1.4	0.08	Expected	554	69.13%
Sun Valley Middle	1.31	0.07	Expected	1,182	29.02%
Swain County Middle	1.3	0.09	Expected	417	65.47%
Swansboro Middle	1.24	0.05	Expected	794	44.96%
Sycamore Lane Middle	1.41	0.1	Expected	545	69.36%
Table Rock Middle	1.67	0.14	High	704	60.37%
Tabor City Middle	1.17	0.05	Expected	239	74.90%
Terrell Lane Middle	1.5	0.12	High	590	64.07%
Thomasville Middle	1.22	0.07	Expected	584	67.64%
Toisnot Middle	1.35	0.05	Expected	515	69.71%
Topsail Middle	1.36	0.1	Expected	723	31.81%
Trexler Middle	1.16	0.02	Expected	691	43.13%
Troutman Middle	2.12	0.19	High	427	47.07%
Tucker Creek Middle	1.08	-0.01	NR	548	29.38%
Turrentine Middle	1.31	0.1	Expected	930	42.80%
Tyro Middle	1.49	0.08	Expected	621	42.03%
Union Middle	1.23	0.04	Expected	483	79.30%
Uwharrie Middle	1	-0.03	NR	430	40.47%
Valley Springs Middle	1.68	0.16	High	819	38.10%
W P Grier Middle	0.78	-0.08	NR	820	53.90%
Wake Forest-Rolesville Mid	1.21	0.03	Expected	1,142	34.68%
Wakefield Middle	1.71	0.14	High	1,287	18.34%

Walkertown Middle	1.29	0.06	Expected	614	53.58%
Walter R Johnson Middle	2.28	0.25	High	561	55.79%
Warren County Middle	1.14	0.01	Expected	684	73.25%
Warsaw Middle	0.94	-0.07	NR	540	88.70%
Waynesville Middle	1.4	0.1	Expected	980	44.59%
Weddington Middle	2.3	0.24	High	1,117	8.06%
Weldon Middle	1.28	0.06	Expected	220	89.55%
Wellcome Middle	0.84	-0.06	NR	508	90.55%
West Alexander Middle	1.31	0.08	Expected	660	35.30%
West Cary Middle	1.64	0.17	High	1,112	25.09%
West Craven Middle	0.78	-0.09	NR	901	64.15%
West Hoke Middle	1.06	0	Expected	860	53.84%
West Iredell Middle	1.14	0.02	Expected	796	48.99%
West Lake Middle	1.55	0.13	High	1,329	18.43%
West Lee Middle	1.45	0.11	Expected	1,107	46.52%
West Lincoln Middle	1.46	0.08	Expected	727	40.85%
West Middle	1.09	0.03	Expected	505	52.87%
West Millbrook Middle	1.04	-0.01	NR	1081	41.81%
West Pender Middle	1.27	0.05	Expected	233	77.25%
West Pine Middle	1.98	0.2	High	776	25.90%
West Rowan Middle	1.29	0.08	Expected	740	44.73%
West Wilkes Middle	1.44	0.08	Expected	555	51.17%
Western Harnett Middle	1.4	0.11	Expected	1004	54.78%
Western Middle	1.1	0.04	Expected	792	25.25%
Western Rockingham Middle	1.19	0.03	Expected	594	59.63%
Westover Middle	1.13	0.02	Expected	741	64.78%
Wiley Middle	0.94	-0.03	NR	680	75.15%
William C Friday Middle	0.78	-0.09	NR	626	59.27%
William Lenoir Middle	1.31	0.06	Expected	540	44.07%
William R Davie Middle	0.64	-0.11	NR	450	80.00%
Williamston Middle	1.31	0.03	Expected	406	60.34%
Williston Middle	1.07	0	Expected	854	68.97%
Wilson Middle	0.9	-0.08	NR	750	80.40%
Woodington Middle	1.71	0.14	High	734	57.90%
Woodlawn Middle	1.74	0.19	High	574	34.49%
York Chester Middle	1.2	0.03	Expected	461	88.72%
Zebulon Middle	1.24	0.06	Expected	1002	56.79%

VITA

ANDREW PEOPLES

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University of North Carolina-Chapel Hill, Intermediate Education, A.B., 1984
Appalachian State University, Boone, NC, Middle Grades Education, M.A., 1985
Western Carolina University, Cullowhee, NC, Principal's Certification, 1989
East Tennessee State University, Johnson City Tennessee, Doctor of Education, Ed.D, 2008

Professional Experience: Teacher, Asheville Jr. High School, Asheville, NC; 1985-1989
Assistant Principal, Asheville Jr. High School, Asheville, NC; 1989-1991
Assistant Principal, Asheville High School, Asheville, NC; 1991-1994
Assistant Principal, Asheville Middle School, Asheville, NC; 1994
Assistant Principal, A.C. Reynolds High School, Asheville, NC; 194-1997
Principal, Erwin Middle School, Asheville, NC; 1998-2007
Principal, North Buncombe Elementary School,

Weaverville, NC; 2007-present