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## The relationship between NCLB variables and selected variables with high school subject area test scores

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THE RELATIONSHIP BETWEEN NCLB VARIABLES AND SELECTED  
VARIABLES WITH HIGH SCHOOL SUBJECT AREA TEST SCORES

By

Kenyon Maurice Barron

A Dissertation  
Submitted to the Faculty of  
Mississippi State University  
in Partial Fulfillment of the Requirements  
for Degree of Doctor of Education  
in Technology  
in the Department of Instructional Systems, Leadership and Workforce Development

Mississippi State, Mississippi

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VARIABLES WITH HIGH SCHOOL SUBJECT AREA TEST SCORES

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No Child Left Behind (NCLB; 2002) requires student assessment to be reported by school districts based on certain demographic variables. Research indicated that other variables may relate to student achievement. This study calculated the relationship between average school district scores and the demographic variables required by NCLB (ethnicity, gender, socio-economic status, special needs, migrant status and English language learners) as well as literature identified variables (source of district funding, pupil-to-teacher ratio, average teacher salary, per-pupil-expenditure, school district population size.) The subject area tests used for this study were Algebra I, Biology I, English II and United States History tests for all districts in the state of Mississippi.

The study found that there was a relationship between ethnicity, and socio-economic status of students and the district's average scores on the subject area tests, and

the gender of students showed a very weak relationship. Source of funding and per-pupil-expenditure returned a significant relationship, and population size and teacher salary was significant, but weaker and more sporadic. Further research is suggested for some of the variables.

## DEDICATION

I would like to dedicate this to my incredible wife whose support and love enabled me to survive this process. Also to my three sons who were supportive and helpful while going through this process. A special thanks to my parents and siblings as well for their words of encouragement and support.

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## CHAPTER I

### INTRODUCTION

In the earliest days of the Republic, the federal government deferred control of education to the state and local governments' domain by the passage of the Tenth Amendment to the Constitution (Arif & Smiley, 2003). From 1787 until the mid-20<sup>th</sup> Century, the federal government largely ignored education, except in the areas of property allocation and vocational education (Rebore & Rebore, 1993). Although the federal government had an unstated policy of refraining from involvement in educational matters, educational opportunity has been the goal of the nation since its inception (Mondale & Patton, 2001). The third President, Thomas Jefferson stated that:

*"...every government degenerates when trusted to the rulers of the people alone. The people themselves are its only safe depositors and to render them safe, their minds must be improved to a certain degree"* (Wrager, 1998).

Jefferson also noted that democracies or republics had to ensure the literacy and education of its citizens if it was to grow (Arif & Smiley, 2003). Further, Jackson and Paige (2004) stated that education is the final method for people to obtain a more equal opportunity. Without a quality education, a person's future holds less promise.

In the last 50 years, the federal government's interest in public education has rapidly increased (Rebore & Rebore, 1993). When state and local governments did not

take steps to correct problems related to certain issues (racial segregation, financial discrepancies between schools and districts, denying opportunities to students who have disabilities, etc.), the federal government took it upon itself to correct the injustices. To protect the privilege of education the federal government exerted a greater role in the development of local and state policies. Title I legislation, known when passed in 1965 as the Elementary and Secondary Educational Act, Title IX, guaranteed equality and equal access to female students as well as male students, federal court decisions regarding racial desegregation and *IDEA* legislation which made it illegal to discriminate against students with disabilities, were passed to address inequalities, but these legislative acts also expanded the federal government's role in public education.

During the Eisenhower Administration, the new Department of Health, Education and Welfare was created (Cross, 2004). In the 1960s, President Lyndon B. Johnson's administration introduced and congress passed the Elementary and Secondary Education Act (1965), which provided funds for economically disadvantaged and minority children. The Elementary and Secondary Education Act was an attempt to provide more equitable funding for all schools. Originally, educators endorsed the move across the nation, but it has led to an interesting set of circumstances (Cross, 2004). Gone were the days of primarily local and state control, instead the federal monies were accompanied by their rules and regulations. Educators soon became disgruntled with these rules and regulations. During President George H. W. Bush's administration, the Department of Education increased its role when then Secretary of Education, William Bennett, introduced a suggested curriculum for elementary and secondary schools.

Despite the federal government's increasing role in education, the educational system still seemed to be lacking in its efforts to adequately prepare students. Through numerous reports, beginning with *A Nation at Risk: The Imperative for Educational Reform* (1983) and continuing with Goals 2000, which was signed into law in 1994, the nation began to come to terms with its shortcomings in some of the local school districts throughout the country (United States Department of Education, 2001).

According to Marshall and Tucker (1992) the average American 25 year old with only a high school diploma, has eighth grade academic skills and practically no vocational training. Murphy (2000) noted that the level and quality of education in the United States is less than many desire and states that American schools are less than acceptable in higher order cognitive skills, encourage student drive and determination, academic success, employment preparation, and basic skills of American citizens. Matthews expanded the point further noting that Americans see the problems with the school system and realize the problems are getting worse (1996).

These educational shortcomings negatively impact the students throughout their lives (Desimone, 1999). When students do not receive adequate educational opportunities, it hinders their lifelong employment opportunities (Hernandez, 1994) and reduces their future earnings potential (Murnane & Levy, 1996). Lagemann (1993) noted that education could never be good enough; as society changes, education must continue to change. Educational goals compare to shooting a moving target, as the economy, culture, citizenry changes, so must the outcomes of the educational system. Weaver

(2003) goes even further stating that there cannot be a one size fits all prescription for student achievement.

In an effort to address the shortcomings identified in the various educational reports, the No Child Left Behind (NCLB) legislation was introduced by President George W. Bush and passed. NCLB is a sweeping re-authorization of the 1965 Elementary and Secondary Education Act (ESEA), passed originally in 1965, which provided federal dollars to schools to compensate for students who lived in impoverished areas and struggled to find academic success. NCLB had no comparison in the history of the nation as it related to size and reach of a federal program upon public education (Hardman, Rosenberg, & Sindelar, 2005). The law inserted the federal department of education into local public education more than any prior by requiring student assessment, high qualifications of teachers, and research validation for methods and instruction.

According to Rebores and Rebores (1993), if a school district accepts any federal monies for any program in any capacity, that district is subject to all federal guidelines in every activity or program. Thus, school districts that accept federal funds may be denied those funds if the district fails to comply with NCLB.

The NCLB legislation requires that states develop an assessment plan in which no less than 95% of all students in various subgroups should meet Adequate Yearly Progress (AYP) requirements (Borman, 2003). To meet AYP, the assessment plans were required to go deeper than the overall student population proficiency and include expected proficiency levels for various subgroups. The subgroups were based on ethnic

background, exceptional needs status, socio-economic status, English language learners, as well as other considerations. The assessment plans included an annual or bi-annual increase in the percentage of students scoring at proficient or advanced level. The student scores were required to be disaggregated according to the subgroups, and each subgroup must have a certain percentage of those students who score proficient or advanced. The levels of assessment required were minimal, basic, proficient and advanced on the tests. The number of students who scored proficient and advanced had to be computed for the entire population and each subgroup. The percentage of students that achieved proficient or advanced levels was required to increase incrementally, ultimately reaching 100% by 2014. The school districts were allowed to decide whether the required increases would be assessed on an annual or bi-annual basis (Coladarci, 2005). (e.g.. If a school's male population scored 20% in 2002 on the English II exam, the district could choose to increase to 26% in 2003, 32% in 2004, 38% in 2005, etc. or 32% in 2004, 44% in 2006, etc.) What alarmed many educators was that by 2014, all subgroups must have 100% of their populations scoring proficient on these state tests (Karp, 2003).

In order to ensure that citizens have access to overall student achievement information, NCLB required schools to develop and publish a "District Report Card." Individual schools, school districts, and states were required to publicize student achievement and other data in these report cards. The information was required to be clear and concise. Individuals could then access the report card and use it to determine if the local schools are successfully educating their students.

NCLB also placed emphasis on the educators in each classroom, by stating that all instructors must be “highly qualified” by 2006 (Spoehr, 2004). To be “highly qualified,” teachers were required to be certified with a degree in the subject they are teaching. The teacher must hold a degree with at least 21 collegiate hours of study in the subject area they teach or have received a Master’s degree in the field. At the time, teacher shortages existed in various geographic regions of the nation as well as certain subject areas; there was speculation that this bill will exacerbate the current problem. A recent United State Department of Education report cited that of the English, mathematics, science and social studies teachers currently employed, no more than 50%, 47%, 55% and 55%, respectively, met highly qualified status (Bracey, 2003).

According to the 13<sup>th</sup> Annual Report of G. W. Bracey on the condition of public education (2003), if a school failed to meet AYP in any of its given subgroups, the entire school would be classified as “needing improvement.” Bracey went on to note that Robert Linn, President of The American Educational Research Association, observed that at the last decade’s rate of improvement, American fourth grade students would reach 100% proficiency around 2056, while eighth graders will reach the goal sometime near 2060. Further results indicated that twelfth graders will not reach 100% mathematics proficiency until 2166 (Bracey, 2003).

The NCLB legislation, which authorized a series of consequences for school districts that fail to meet Adequate Yearly Progress (AYP), obtained the undivided attention of the nation. Federal dollars comprised 7% of educational budgets, and that 7% has educational officials, teacher unions, and citizens expressing concerns (Spoehr, 2004;

Howell & Miller, 1997). The consequences for not meeting AYP requirements included, but are not limited to: parents or guardians may transfer their children to better schools within the district, school district must pay for tutoring either provided by the school or a private entity, dismissal of administrators and instructors, and ultimately school districts may be forced to provide funds for students to attend private educational institutions (Tench, 2003). An example of one state's consequences can be found in the Mississippi Department of Education's published brochure discussing test scores in the state that outlined the ramifications of NCLB in greater detail as it related to scores in the state. If a school does not meet AYP for two consecutive school years, that school will be titled as "needing improvement." At that time students will be given the choice to transfer to other schools within the district, and the district will be required to provide transportation for them. After a third year of failure to meet AYP, the district will be forced to provide extra services such as after school tutorial, weekend school, longer hours, curriculum adjustments or other alternative services. A fourth consecutive year of failure to meet AYP would cause the school to be required to hire consultants from outside the district to set up a plan for corrective action. The fifth year would require that the school district prepare to enact a plan of complete reorganization and the sixth year of not meeting AYP would lead to the school being closed and reopened as a public charter school (MDE, 2004).

There have been positive outcomes associated with NCLB. Ken Meyer (2004) noted that NCLB was designed to bring all students up to grade level by 2013-14 in mathematics, science and reading. He further stated "education has been and always

continue to be a state responsibility.” Another key point to consider is that to score proficient on the state required subject area test still would indicate that the students are only functioning at eighth or ninth grade levels depending upon the test taken. These tests are not an advanced super assessment that will be impossible for students to master, rather they should already have little problem succeeding on them.

Although researchers and psychometrists have tried to explain the hazards of using standardized testing to judge a school’s performance, policymakers have continued the push for these test scores in the name of accountability (Cuban, 1998). Further, reliance on these tests has led districts in directions that are not useful or productive. Bracey (2003) reiterated this point when he noted that improving test scores seldom improves educational outcomes. The focus of educators on the tests and preparing students for those tests has tended to divert energy and attention away from the skills and knowledge that the course required. Although the debate has raged over the tests that have been put in place to calculate the success of schools, the fact remains that students must pass them to graduate. Public school educators and school district personnel desire positive test results to procure funding.

Supporters of the law have argued that the stakeholders are not limited to educators, students and their parents. Property owners and business people possess a stake in the bid for higher test scores because such success will theoretically improve local property values, and provide a larger, more prepared future workforce thus increasing future income potential for state and local governments.

## Problem Statement

NCLB required school districts and state departments to report the assessment scores of each school within the district and then an overall report on the entire district. The variables that were required to be reported were simply demographic variables and there were other variables identified in the literature that may show a relationship to scores.

Under the guidelines of NCLB, school districts are required to assess student achievement through a plan approved by the given state department of education. NCLB required that schools report the aggregated scores and other demographic information in their “report cards” to indicate the schools’ success. Research has indicated that each demographic characteristic is related to achievement, but little research into the amount of variance that can be accounted for by the presence of a combination of these variables has been conducted. In addition, research has also identified other variables associated with achievement that schools are not required to include on their “report card.” In the state whose data used in this study, Mississippi, the reporting process included: school district name and number, demographic information, student/teacher information, Special education information, Career/Technical Education information, District Finance, Title I information, Other information, Explanation of the Testing Information, and Definition of the subgroups. The demographic information was divided into Accreditation status of the school district, and the enrollment. Student/Teacher Information included attendance as a percentage of enrollment, percentage eligible for free lunches, number of Carnegie units taught, number of dropouts, percentage of teachers with advanced degrees, percent

of teachers who were serving on an emergency certificate, and percentage of population classified as gifted students. Special Education was broken down by percentage of students who have disabilities that allow them to have a ruling that would order supplemental services, percentage of those students who will receive a diploma, the percentages of funds for special needs students that are federal and the percentage that is state/local. Career/Technical education reported the number of career/technical teachers, and the percentage of students who were enrolled in career/tech education. Financial information included per-pupil-expenditures, state and local per-pupil-expenditures, percentage of district administration expenditures, total operational levy, debt service levy, and valuation per pupil based on average daily attendance. Title I was explained according to allocation, percentage of enrollment served and the number of Title I schools in the district. Other information referred to number of advanced placement courses taught, graduation rate, and ACT scores and the percentage of college prep students. The final two sections explained the testing procedures and information regarding the test results, as well as the subgroups that are in the districts (Mississippi Department of Education).

### Purpose of the Study

With the advent of adequate yearly progress being tied to funding, school districts and educators found themselves in a precarious position of bringing the students in their schools up to a proficient level on the selected state tests or be taken over by the state department of education. The subgroups in the district were required to score at certain levels or the districts are in jeopardy of having the previously mentioned penalties

initiated. Further, students, parents, property owners and business owners all possess a very vital stake in student assessment. Students must successfully pass the exit subject area tests in order to complete high school. The local tax burden causes a very keen interest from some citizens who otherwise would not have any concern for school report cards. The local citizens were faced with the possibility of dealing with increased taxes and a dwindling local economy if young families relocated to other portions of the nation due to poor test scores and lack of business interests in areas where school districts suffer. As shown through studies, districts with lower property values are forced to tax their citizens at higher millage rates in order to procure the capital necessary for educational expenditures equivalent to those in districts that have higher property values. Perceptions of local school district quality have played a significant role in choices by homeowners and business owners regarding location of property purchases and development (Jones-Saipei, 1998). Further studies have shown that increased property values indicated increased average proficiency test scores (Dills, 2004). Brunner, Murdoch and Thayer (2002) found that for every dollar increase in pupil expenditures in public schools, there is a \$6 increase in housing prices. This offered insight into the direct relationship between student achievement and local economics. The majority of citizens are impacted in some capacity by the success or lack of success of the students in local public schools, whether directly as parents of these students, or indirectly as business owners attempting to staff their company, local taxpayer whose taxes are impacted, or their property value fluctuates.

The interest of educators in student achievement, although theoretically should be the primary goal of all employed, now has piqued as job security, funding, and the very future of public education has been bonded to the students success or failure on these subject area tests. Through the passage of NCLB, school districts have a renewed interest with student test scores, because with the failure of any subgroup, the district is in danger of having its governance system taken over by the state or eventually the Federal Department of Education.

This study analyzed five literature identified variables and six variables mandated by NCLB in an attempt to gauge if any of these variables were related to student achievement and which related variables accounted for the greatest amount of variance in student test scores. The first five variables were the researcher-selected variables; the final six are the variables that were required by NCLB to be reported.

Group A (Literature identified variables)

1. Funding sources (federal, state and local)-percentages of each district's budget that is derived from the differing source.
2. Per-pupil-expenditures
3. Teacher-to-pupil ratios
4. Average teacher salary
5. Size of the student population in the school district

Group B (Variables required to be reported by NCLB)

6. Percentage of students on free and/or reduced lunches (Economically Disadvantaged, Non-Economically Disadvantaged)

7. The ethnic make up of the school district (Black, White, Asian, Native American, Hispanic)
8. Percentage of the student population that qualify as English Language Learners
9. Percentage of the district's students that qualify as exceptional needs students (Disabled Students Only, Non-Disabled Students Only)
10. Gender ratios (Male or Female)
11. Migrant Students

#### Research Questions

The following research questions guided the study:

1. Was there a statistically significant relationship between student achievement on exit Subject Area Tests and the demographic variables required for the NCLB report card?
2. Was there a statistically significant relationship between student achievement on the exit Subject Area Tests and the variables identified in the literature showing a relationship to student achievement (per-pupil-expenditures, origination of funding, teacher salary/experience, teacher-to-pupil ratio, size of student population)?
3. To what extent can the report card variables and the variables identified in the literature predict student achievement on the exit subject area tests?

## Limitations of the Study

Several factors played a role in limiting this study. The schools were confined to a set strictly from Mississippi public schools, which due to socio-economic constraints, geographic location, gender and ethnic makeup, sources of funding, legislation from federal and state entities, and educational background of the citizens of the region, make this study primarily restrained to this particular state/region.

Other important considerations to be mentioned are the background students received in their local elementary and middle schools was not considered as this data was strictly focused on public high school students and the fact that this study collected data from one school year, one testing class. The quality of the feeder programs was not considered in this study. Also, the administrative setup of the school was not taken into account. Some of the school districts involved in the study utilized principals who were in control of K-12, while others managed only the 9-12 program. The attendance center principals (K-12) possessed direct control over the preparation of the students throughout their educational career.

A problem that could arise from the use of only one test group would be that many schools find a cycle in the academic success of different classes. Some grades are especially gifted in certain areas while others are in differing ones.

## Definition of Terms

**Adequate yearly progress (AYP)** – the progress determined by the state department of education for each school district to attain in order to avoid being classified as needing improvement

**Average teacher salary** – the average salary of the teachers in the school district, a simple mean of all salaries paid to instructional personnel in the school district

**Elementary and Secondary Act (1965)** – law passed in 1965 by the United States Congress that attempted to place national emphasis on education

**English Language Learners (ELL)** – students who live in a home where English is not the primary language spoken

**Ethnicity** – the background that the student identifies with (Black, White, Asian, Hispanic, Native American)

**Funding Source** – the percentage of the school district’s budget that is derived from the differing levels of government (federal, state and local)

**Gender** – male or female

**Migrant students** – students who relocated within the past thirty-six months with their parent or spouse to obtain employment in a seasonal, agricultural or fishing industry

**No Child Left Behind (2002)** – reauthorization of the Elementary and Secondary Education Act which added testing requirements, penalties for failure to achieve benchmarks, and reporting requirements for each state and local department of education

**Per-pupil-expenditures** – the amount of funds in a district spent, divided by the number of students enrolled

**Pupil-to-teacher ratio** – the number of students enrolled in the district divided by the number of teachers employed

**Report Card** – the method required by No Child Left Behind (2002) to report average student achievement in each local school, school district and state school district

**Size of student population** – the total enrollment of students in the school district

**Subject area test scores (SATP)** – scores used by the state to test students' achievement.

In Mississippi (the state whose districts were used for the study) SATP scores are given at the high school level in Algebra I, Biology I, English II and United States History.

### Overview

With recent legislation and new accountability mandates, all stakeholders must be provided all available information necessary to make decisions and adjustments to ensure the best opportunity for student success. Through this study, parents, policymakers, educators and business leaders in each community will have insight that may be applied to school districts across the state or region. This data will provide insight to where change may be needed, and offer the chance for enhancement of student learning.

Chapter two included a literature review of the factors related to standardized test scores, an overview of federal education legislation, litigation, and other factors that have contributed to the current governing and funding situation in public education and various legal issues that play a role in the differing variables' impact on student achievement. There was an initial overview of student achievement and testing. The literature review focused on published studies, as well as court rulings, policy statements, and legislative declarations related to the subject. In reviewing the literature, each variable was individually discussed through research already completed.

Chapter three described the methodology of this study. The data was collected and analyzed using a multiple regression model in an attempt to determine the amount of variance in test scores that could be accounted for by one or more of the variables under

study. The study focused on four different state exit tests and analyzed the variable data against each test score to determine if the variables were related to one subject but not another.

## CHAPTER II

### REVIEW OF PERTINENT LITERATURE

#### Overview of No Child Left Behind

No Child Left Behind (NCLB), signed into law January 8, 2002, was a reauthorization of the Elementary and Secondary Education Act originally passed in 1965 (Robelen, 2005). This reauthorization resulted in new, challenging requirements that were linked to the federal financial supplementary funds. From higher achievement standards for specific subgroups of students, to ensuring all schools require identical content and testing in mathematics, science and language arts, No Child Left Behind has changed much about public education (Orlich, 2004).

The changes in assessment requirements were in response to a wide variety of criticism of the educational system. Hanushek (1996) stated that a random selection of student achievement over the past three decades showed that it had stayed constant at best and probably had declined slightly. Data showed in 1994 that there was practically no improvement in mathematics, reading and science with students scoring almost no higher on standardized tests (Hanushek, 1996). Meyer reported that over 30% of American college freshmen required remediation and American seniors ranked in the lowest group of nations in math and science comprehension and application (2004). Glickstein (1995) also noted that American students were performing below educational acceptability; the past half-century has seen achievement steadily declining. Murphy stated that the real

problem was not the under achievement, but the increase in competition and the technical international employment market. NCLB has been labeled the most noteworthy of recent attempts to reform education and enhance achievement and was potentially the most significant act focused on education in recent decades (Simpson, LaCava, & Graner, 2004). NCLB was aimed at improving student achievement by holding schools accountable and requiring schools to publicly report student achievement (Robelen, 2005), through very exacting and demanding standards (Albrecht & Joles, 2003). The implementation of NCLB moved the federal Department of Education past the role of assistant and into a role that is more of a position of director, where it now dictated what was required and what was expected (Hardman & Mulder, 2003; cited in Simpson, LaCava, and Graner, 2004). Algozzine (2003) further stated that, although the federal government had no power in public education, they exercised control through fiscal leverage. In addition to establishing these new accountability requirements, the United States Department of Education increased its funding to a record level of over \$10 billion (Borman, 2004).

According to Meyer (2004), the four primary principles of NCLB are accountability, flexibility, using research, and engaging parents. The legislation required schools to issue a “report card” that conveys to parents and community residents how the local school is performing. The achievement reports are required to be broken down by ethnic group, socio-economic status, exceptional education, gender, migrant status, and English Language Learners (MDE, 2004; Tajalli and Opheim, 2005).

The enrolled student population was to be divided into subgroups and each subgroup must have 95% of their enrolled population tested. Students' scores were required to be reported in four categories: limited, basic, proficient and advanced. A pre-determined percentage of those students tested should score at a proficient or advanced level on these tests. The pre-determined percentage was established as a directive of the NCLB legislation in 2002 and each subsequent year (or every second year) the percentage of enrolled students scoring at a proficient or advanced level was required to increase. If the school district failed to test 95% of an enrolled student subgroup or if the pre-determined percentage of students failed to score at the proficient or advanced level, the entire school was identified as failing (Bracey, 2003). There could be no less than forty participants for the scores of any subgroup to be considered. If the subgroup had less than forty members, it would not be used to calculate the school or district's success. However those students in schools or districts that did not meet the minimum number requirement counted toward the district and the state's average, assuming there are enough students of the subgroup at the district or state level to count (MDE, 2004).

If the school district, or schools within that district, failed to meet the mandated growth for two consecutive years, that school was identified as "needing improvement" (MDE, 2004, Tench, 2003). If a school was still failing after the second year, students in schools that "need improvement" were to be allowed to transfer within the district to a school that is not identified as "needing improvement." If a school was again identified as "needing improvement" after the third year, the district was required to either extend the school day, increase the number of days in the school year, or provide supplementary

services. A fourth year of failure required the district to hire outside consultants to advise and implement a new curriculum. A fifth year of “needing improvement” classification resulted in the school entering a restructuring phase and a sixth year forces a school to be taken over by the state department of education, staff removed, and the school reopened as a public charter school (MDE, 2004; Tench, 2003).

Highlighting the positive aspects of NCLB, Meyer (2004) stated that NCLB was designed to ensure all children are functioning at grade level in mathematics, science, and reading by the 2013-14 school year. Johnson (2004) also points out that NCLB has changed how education is approached nationwide (Simpson, LaCava and Graner, 2004).

NCLB has brought about positive results. According to a study by the Education Trust (New Report, Dec. 2004-Jan.2005), reading and mathematics achievement have risen nationwide, and there was a narrowing of the achievement gap between the racial subgroups. The report added that the scores must rapidly accelerate to meet the growth demands of NCLB. Despite these positive results, Coladarci (2005) stated that in spite of the “unprecedented challenges” for public education, tying funding directly to achievement scores and benchmarks, has provided greater motivation for districts and educators to meet the new NCLB accountability levels.

A large bloc of support for the law has come from groups of citizens who wish to have school choice or a variation of such (Kafer, 2005; Forman, 2004). Although most of the focus revolved around vouchers for private schools and the opening of charter schools, Stephens (2005) indicated that another option was open enrollment. In utilizing an open enrollment policy, research indicated that schools reported a 7.6% increase in

graduation rates (Levitt, 2004). Borland and Howson (2000) state that competition between educational entities has led to improvements in student achievement.

NCLB required all students to be brought to the level of proficiency on state assessment measures within the next decade. Recognizing the importance of the teacher's role in student achievement, NCLB also required schools to employ educators who were trained and prepared to educate the students using methods that are research based.

Hill and Barth (2004) are concerned that it will become increasingly difficult for schools to retain quality teachers and that the highly qualified teachers may attempt to avoid assignments to high poverty, high minority schools or school districts due to fear of negative repercussions associated with school failure. Exstrom (2003) warned that the stress and pressure of NCLB requirements have increased the exodus of the more highly qualified teachers, by giving them added motivation to retire or consider other career options.

One of the primary criticisms related to NCLB was the lack of funding provided to schools in order to meet the NCLB requirements (Spoehr, 2004). Since federal funding only provided less than 10% of the average funding for school districts, NCLB requirements forced those districts to redistribute their funds and thereby caused them to spend local and state funds on NCLB directives and initiatives (Hoff, 2005). NCLB also increased the federal Department of Education's role in the operations of local school districts to a degree never before witnessed (Rosenberg, & Sindelar, 2005). Orlich (2004) questioned the legality of this increased role stating that "this new federalism encroaches on states' rights, guaranteed by the 10<sup>th</sup> Amendment to the Constitution (Second

Continental Congress, 1791).” The legality of this increased role has not yet been decided but the issue was argued even in the halls of Congress (Marks, 2005).

Another concern related to NCLB was the high expectations based on the current state of student achievement. Karp (2003) stated that up to 80% of America’s public schools could be classified as failures. According to Bracey’s report (2003), if student achievement continued to improve at the rate of the previous decade, schools will not reach 100% proficiency until nearly 2060.

A major argument against NCLB was the degree of importance placed on test scores. Many psychometrists and others have questioned the use of test scores as the primary measure of student achievement (Cannell, 1988; Koretz, Mitchell, & Stretcher, 1996). Horn (2003) indicated that the impacts of testing are negative and severe. Cuban (1998) noted the methods of test calculation and analysis could lead to school districts being labeled as successful even though student achievement is unchanged. Kohn argued that as achievement scores increase, a shallow approach to learning and comprehension occurred, by focusing less on higher level thinking skills and more on attempting to provide demonstration of success on the standardized tests, due in part to educators focusing their efforts on the students’ ability to pass the test rather than master more advanced skills (Kohn, 2001). A focus on test scores and their improvement does not reflect an increase in educational quality (Bracey, 2003). The NCLB report card was designed to disseminate information to the citizens and parents of the school districts. Each state department of education was required to enact a system that would measure student achievement in each school district. Upon acceptance of the system, the school

districts were required to test every student enrolled and report their results, broken down into dictated subgroups (ethnicity, gender, socio-economic status, exceptional services needs, migrant status and English language learner status).

There were six key measurements required on the NCLB report card that schools and school districts were required to publicly report. All six have been studied over the past half-century (ethnic background, gender, socio-economic status, migrant status, English Language Learner status, and students with exceptional needs.) The literature cited in the upcoming pages indicates that each of these variables has been researched; yet, questions remain regarding their importance in relation to student achievement.

#### Ethnic Background of Students

A considerable amount of research has been conducted examining the relationship between ethnicity and student achievement. According to Horn (2003), the average proficiency level of Caucasian 13-year-old students is about the same as 17-year-old Hispanic and African-American students. Continuing, Horn noted that of the students who had to repeat the Massachusetts state exit exam, 82% of Caucasian students passed, 41% of Hispanic students and 48% of African-American students. Sherman and Grogan (2003) found that Caucasian students performed higher than African-American students on vocabulary, reading, and mathematics tests designed to measure scholastic aptitude. They further stated that the achievement gap between Caucasian students and African-American students begins in kindergarten and widens throughout their years of schooling.

Ware and Galassi (2006) stated that there is a notable gap between the average scores of minorities and non-minorities. Bracey (2006) pointed out that there are issues

with using the passing rate as a guide. The actual scores showed that the achievement gap between the highly successful whites and minorities is actually expanding. Further Machtinger (2007) found an increase in the gap between black students and white students, while the deficiency decreased between whites and Hispanics.

At the tenth grade level, schools where the majority of the student population was Caucasian showed improved test scores (Tajalli, & Opheim, 2005). The schools with higher minority populations reported lower achievement scores than schools with higher percentages of Caucasian students (Bol, & Berry, 2005). In schools where the minority student population were higher, there was a 3.1-3.6 point decline in state test score averages for tenth graders when compared to schools with higher populations of Caucasian students (Andrews, & Fiyassa, 1991). African-American students were under-represented in the upper level coursework in public high schools nationally (Bol, & Berry, 2005), as well as in the upper level of achievement (Horn, 2003). Caucasian students scored higher than African-American and Hispanic students at all levels of education (Valentina, & Alvarez, 2003) and the typical African-American student scored below 75% of Caucasian students standardized assessments.

Phillips, Crouse and Ralph (1998) stated that nationally half the achievement gap between African-American and Hispanic students and Caucasian students could be attributed to a lack of skills upon entry. The other half could be attributed to the lower levels of progress throughout the educational process (Borman, 2003). The lack of involvement of non-Caucasian parents, as well as poorer educational opportunities (lower per-pupil-expenditures, fewer qualified teachers, larger class sizes, etc.) was another

factor associated with the significant difference in achievement between the races (Desimone, 1999). Valentina and Alvarez (2003) found that the higher number of minority students which also have a higher representation in low SES subgroups was a key factor in accounting for variance in test scores, or the achievement gap.

In a study done by Levitt (2004), the results indicated that although African-American students enter kindergarten with an equal skill level, by the end of five-year old kindergarten, they scored .64 standard deviations lower than their Caucasian counterparts on educational assessments. Through the educational process, African-American students tended to decline, thereby increasing the gap an average of .20 standard deviations on educational assessments annually when compared to Caucasian students with similar backgrounds.

Borman (2003) reported different findings than those identifying a widening gap citing that the National Assessment of Educational Progress indicated a narrowing of the achievement gap. The gap narrowed in reading scores in sixteen states and in mathematics in seventeen (Reading Today, 2004). One research study reported that the achievement gap had narrowed significantly, particularly in racially diverse schools (Green, McIntosh, Cook-Morales, & Robinson-Zanarton, 2005).

There were some questions raised by psychologists and educators regarding cultural bias in testing. One study indicated that contextual influences from family and individual levels indicated a level of variance in the test gap between minority students and Caucasians (Banks, 2006). The bias could take on differing forms and types. Zurcher (1998) noted that picture depictions, unfamiliar content, and bias that resulted

from the test being referenced against the general population rather than against those of similar background to the test takers.

### Gender of Students

Gender has also been examined for its relationship to student achievement. According to a recent study conducted at Duke University, males and females scored almost equivalent on a wide array of key educational indicators (Samuels, 2005). The report went on to state that females still retained an edge in reading scores, while males were slightly better in mathematics. Ware and Galassi (2006) stated that female students' achievement improved a slightly higher rate than their male counterparts. Kettley (2006) noted that the academic difference between the genders was miniscule.

### English-Language-Learners and Migrant Students

A more recent area of educational research was the relationship between English-language-learners (ELL) and their achievement scores. English-Language-Learners (ELL) refers to students whose household speaks a language other than English as their primary language. McNeil and Valenzuela (2001) reported that Texas students who demonstrated a limited grasp of English struggled to pass the exit exam required for graduation. Horn (2003) found that 84% of English Language Learners in Massachusetts failed to pass that state's exit exam. Bol and Berry (2005) cited studies by Fernandez and Neilson (1986), Secada (1992), and Bradby (1992), which found a positive relationship between English proficiency and success on mathematics assessment exams.

Migrant students are those who change locations frequently and may include all races, socio-economic groups and genders. Reyes and Fletcher (2003) identified several factors that were related to migrant students' opportunity to succeed in their educational pursuits, such as mobility, expectations from educators, school attendance, self esteem, SES level and ELL status.

#### Socio-economic Status of Students

Another highly scrutinized item on the NCLB report card was the socio-economic status of the students and its relationship to their achievement. Okpala, Okpala, and Smith (2001) found that as the percentage of economically disadvantaged students increased, the mathematics scores decreased. Tajalli and Opheim (2005) stated in their findings that student socio-economic status had a direct and significant impact on student achievement. They found that for each percentage point increase in the economically disadvantaged student population, the chance that the school may attain high performing status declined significantly. Bol and Berry (2005) also found that socio-economic status affected student achievement, an increase in student socio-economic status indicated higher achievement scores. Accordingly, Orr (2003) stated that as the socio-economic status of the students increased, student achievement improved. Lezotte and Pepperl (1999) counter that student achievement was not strictly based upon their socio-economic status.

There are researchers who found no correlation between student achievement and socio-economic status. Cuban (1998), while studying the Effective School Ideology, determined that socio-economic status was a non-factor. Student achievement was more

closely tied to the school, its set up, expectations and what the educators did, rather than the families' financial situation or background of the student population (Lezotte, 2001).

Increased financial local resources have shown a positive impact on student achievement (Grissmer, Flanagan, Kawata, & Williamson, 2000). The lower a community's financial resources, the lower the amount of materials, supplies, and support the school has at its disposal. This lack of materials and other support has led to a more challenging environment for students (Borman, 2003, Hanushek, 1996).

#### Students with Exceptional Educational Needs

The final subgroup in the report card was students who have exceptional needs. These students were those who have varying degrees and types of disabilities. School districts, parents and social services departments all play a role in determining the student's needs, but over-identification or simply placing students into this category to avoid being accountable for their lack of success had become a problem. Although these students received extra services with the intent that these services would provide the necessary assistance for them to succeed, Horn (2003) and Koretz and Hamilton (2001) disputed that this was actually the case. They stated that students who receive these extra services still failed to perform at the level of students who did not qualify for the extra assistance.

While NCLB required the reporting of the above-mentioned variables, evidence suggested that other variables may show indication of influence on district average test scores. Further the following variables were independent and therefore may, in theory,

be manipulated. In the event that relationship was shown, school districts, governments and other stakeholders may be more adequately equipped to approach the problem.

### Educational Funding Sources

Public education institutions have three primary sources of funding: federal government sources, state government sources, and local government sources. The primary source of school funding has historically been predominantly local, with state funding being the second largest source, and the federal funding being minimal. Lunenberg and Ornstein (2000) stated that in the earliest decades of the 20<sup>th</sup> Century, local funds accounted for 82% of local educational budgets. By the end of the century, local support had fallen to 47%. Guthrie (1997) reports that state funding portions have risen from 20% of average district budgets to 45%, which explained why the percentage of funding from local sources decreased. By 1997, the federal financial input to public education accounted for 7% of the total local school district budgets (Howell & Miller, 1997). Glickstein (1995) found that in 1971 local monies accounted for 52% of school funds, and by 1991 that amount had decreased to 45.5%, while state portions of funds increased from 44.1% to 48.3% over the same period and federal funding dropped from 6.9% to 6.2%. Barry and Herderman (2000) noted that fewer students per school, lower percentage of the state's budget originating from federal funds and higher teacher to pupil ratio showed a positive relationship to improved student achievement.

Key issues that have been researched related to funding sources include property values, property taxation, and the role of federal government. There are two opposing sides related to the allocation of funds: those who want the federal government to

supplement local funding and those who have wealthier school districts and prefer to exist free of the involvement of outside rules and regulations. Those who want total local control argue that the federal government should not be involved. A key issue was the argument that districts with high property values were able to generate more local revenue for schools, thus having an unfair advantage over schools with lower property values.

A study conducted by Jones-Saipei (1998) found a correlation between the perception of local schools and property values in the area. Dills (2004) reported no significant relationship between achievement scores and property valuation, but did find a relationship between increased property values and proficiency on state test scores.

The reliance on property taxes for local funding caused those in the district with lower property values to pay much higher property taxes in order to provide equitable student services (Bol & Berry, 2005). Yet, these tax increases were still failing to reach equitable levels of per student expenditures. Glickstein (1995) noted that in 1985-86, the one hundred poorest school districts in Texas were taxed at a rate of 74.5 cents and per-pupil-expenditures were an average of \$2978, while in the one hundred wealthiest districts, the tax rate was 47 cents and while spending \$7233 per-pupil.

#### Per-pupil-expenditures

Per-pupil-expenditure has become an important educational funding issue. Studies done by the Heritage Foundation and Annie E. Casey Foundation calculated that per-pupil-expenditure has no significant impact on student achievement (Glickstein, 1995).

The Heritage Foundation is a conservative think tank based on individual freedom,

traditional values, free enterprise and restricted government (Heritage Foundation, 2006). The Annie E. Casey Foundation is an organization devoted to assisting children who are in lower families and those who spend time in foster care facilities (Annie E. Casey Foundation, 2005). E. A. Hanushek (1996) believed that the focus needed to be redirected from how much money was spent to the more important issue of how the money was spent. Brunner, Murdoch and Thayer (2002) and Okpala, Okpala, and Smith (2001) both stated that increases in per-pupil expenditures showed no significant relationship to changes in student achievement. Dee (2005) failed to find a significant relationship between increased financial resources and test scores which seemed to support these findings. Other research has also failed to find a significant relationship between educational spending and achievement. Studies by Chubb and Moe (1990), Okpala (2002), and Tajalli and Opheim (2005) also failed to find a relationship between achievement and spending.

In contrast, other studies have found a relationship between spending and achievement. Studies by Ferguson (1992), Greenwald, et al (1996), and Childs and Shakeshaft (1986) all found some degree of a significant positive relationship between per-pupil-expenditure and student achievement. Hedges, Lane and Greenwald also found a significant relationship between per-pupil-expenditure and student test scores (Tajalli & Opheim, 2005).

#### Pupil to Teacher Ratio

As funding increases, some school districts chose to increase the number of educators on staff, thereby lowering the pupil-to-teacher ratios. Research related to pupil-

to-teacher ratios and student achievement has had varied findings. Hanushek (1996) found that of 277 studies that examined pupil-to-teacher ratio and student achievement 15% found a significant, positive relationship, 13% found a significant, negative relationship and 52% found no relationship, 20% of those studies showed unknown sign of the results. Hanushek noted that there were various possible explanations for the differing results. The differing variables that were assessed, or selected groups of variables, or the instruments used to measure the student performance all could have accounted for the different results the various studies found. Further, using NAEP reading scores, Johnson (2000) found no relationship between achievement and pupil to teacher ratio, which mirrored Hanushek's (1999) study. Andrews and Fiyassa (1991) and Tajalli and Opheim (2005) however found a significant, positive relationship between student achievement and lower pupil to teacher ratios. Borman (2003) also noted that lower pupil-to-teacher ratios benefited minority students.

Robertson (2005) noted that class size was inconsequential as it related to student achievement. The highest scores in the study were achieved in classes of over thirty students. Robertson (2005) further stated that only 2% of student achievement variance could be accounted to class size. The American Legislative Exchange Council's Report Card on American Education (2002) found no significant relationship between pupil to teacher ratio, per-pupil-expenditures and student achievement.

#### Average Teacher Salary

Another funding issue examined in relation to student achievement was teacher salary. A review of the literature indicated there was not a significant relationship

between achievement and teacher salary. One of the primary issues regarding increased teacher salary was the increase of an acceptable employee pool and retention of those teachers (Hanushek, 1996; Darling-Hammond, 1999). The majority of studies revealed no significant relationship between teacher salary and student achievement. Hanushek (1991) analyzed studies that examined the relationship and found that 49 of the 65 studies reviewed showed no significant relationship. Loeb and Page (2000) reviewed three other studies (Grogger, 1996; Betts, 1995; Altonji, 1988) that corroborated Hanushek's and Rivken's (1997) findings.

There have been studies that found significance, which should be mentioned. Tajalli and Opheim (2005) cited a survey of studies by Vestegen and King that found 17 of 19 studies showed a significant relationship between teacher salary and student achievement. Tajalli and Opheim (2005) found that an increase of one thousand dollars per year in a teachers' average salary increased middle school students' chances of becoming labeled highly performing by 36.5%. Machtinger (2007) stated that as small of an increase as \$1800 per year in teacher salary had some positive impact.

Borland and Howson (2000) stated that Hanushek's (1991) survey of studies found three studies that showed a significant negative relationship, while thirteen showed a significant positive relationship. Borland and Howson (2000) further stated in their article that as teacher salaries increased, student achievement declined. Borland and Howson (2000) go on to state that it was not completely uncommon to find such results. They cite a study of Hanushek's from 1991 where out of sixty-five studies, he found three that returned significant and negative relationship between teacher salaries and

student achievement. Borland and Howson explained that it was not at all surprising to find the negative relationship due to the high number of variables that could affect student achievement.

### School District Population Size

Another variable researched in relation to student achievement was school district population size. Research in this area was not as prevalent, but there was some information on the size of the school district as it related to student achievement. Andrews and Fiyassa (1991) reported that the student population size in a school district was a significant indicator of student achievement at the seventh grade level. The size of the district was significantly related, such that for every ten thousand students in the district, achievement scores were .87 points lower. However Glickstein (1995) stated that larger districts were more effective and efficient and advocated the consolidation of smaller districts. Noguera (2002) found that smaller schools served students of color better. Finally Tajalli and Opheim (2005) found that smaller schools had better achievement scores for students with lower socio-economic status, while more affluent students tended to be more successful in larger schools. Lamb (2007) stated that the data from smaller school districts may be unreliable and have greater fluctuation year over year.

CHAPTER III  
METHODOLOGY AND EXPLANATION OF THE STUDY

Problem Statement

No Child Left Behind required school districts and state departments to report the assessment scores of each school within the district, and then an overall report on the entire district. The variables that were required to be reported were simply demographic variables and there were other variables identified in the literature that may show a relationship to scores.

Under the guidelines of No Child Left Behind, school districts are required to assess student achievement through a plan approved by the given state department of education. The NCLB required that schools report the aggregated scores and other demographic information in their “report cards” to indicate the schools’ success. Research has indicated that each demographic characteristic is related to achievement, but little research into the amount of variance that can be accounted for by the presence of a combination of these variables has been conducted. In addition, research has also identified other variables associated with achievement that schools are not required to include on their “report card.”

In the state whose data used in this study, Mississippi, the reporting process included: school district name and number, demographic information, student/teacher information, Special education information, Career/Technical Education information,

District Finance, Title I information, Other information, Explanation of the Testing Information, and Definition of the subgroups. The demographic information was divided into Accreditation status of the school district, and the enrollment. Student/Teacher Information included attendance as a percentage of enrollment, percentage eligible for free lunches, number of Carnegie units taught, number of dropouts, percentage of teachers with advanced degrees, percent of teachers who were serving on an emergency certificate, and percentage of population classified as gifted students. Special Education was broken down by percentage of students who have disabilities that allow them to have a ruling that would order supplemental services, percentage of those students who will receive a diploma, the percentages of funds for special needs students that are federal and/or state/local. Career/Technical education reported the number of career/technical teachers, and the percentage of students who were enrolled in career/tech education. Financial information included per-pupil-expenditures, state and local per-pupil-expenditures, percentage of district administration expenditures, total operational levy, debt service levy, and valuation per pupil based on average daily attendance. Title I was explained according to allocation, percentage of enrollment served and the number of Title I schools in the district. Other information referred to number of advanced placement courses taught, graduation rate, and ACT scores and the percentage of college prep students. The final two sections explained the testing procedures and information regarding the test results, as well as the subgroups that are in the districts (Mississippi Department of Education).

## Research Questions

To address these problems, the following research questions will guide the study:

1. Was there a statistically significant relationship between student achievement on exit Subject Area Tests and the demographic variables required for the NCLB report card?
2. Was there a statistically significant relationship between student achievement on the exit Subject Area Tests and the variables identified in the literature showing a relationship to student achievement (per-pupil-expenditures, origination of funding, teacher salary/experience, teacher-to-pupil ratio, and size of student population)?
3. To what extent can the report card variables and the variables identified in the literature predict student achievement on the exit subject area tests and what amount of the variance in achievement can be attributed to test scores?

## Selecting Participants

The researcher used the school districts' average test scores from the State of Mississippi's subject area test scores. The state is ethnically, socio-economically and linguistically diverse. Average subject area test scores from all 152 school districts, which included all the students in the public educational institutions across the state, will be used in the sample. The scores were reported to the state's department of education and an average was calculated for that district. The state required every student, who received a high school diploma in that state, to have successfully passed these subject area tests. The selected state measured the achievement of students in grades 9-12

through four Subject Area Tests (Algebra I, Biology I, United States History and English II). These achievement scores were required to be disaggregated and reported in those selected subgroups (ethnicity, gender, English Language Learners, socio-economic status, migrant status and students with exceptional needs). There are other researcher-selected dependent variables that were studied to determine if statistical significance was shown in relation to those Subject Area Test Scores.

### Data Sources

The State of Mississippi has 152 school districts, four of which are agricultural schools that are considered separate school entities. In accordance with the NCLB legislation, the state instituted a policy of testing four key subjects in the high schools, Algebra I, Biology I, English II and United States History. There were instances, in which students were not required to take the assessments, and in some cases, the students took the tests before they entered their respective high school, therefore they were eliminated from this study. Mississippi is primarily rural, with growing metropolitan areas throughout the state, and a diverse ethnic population. 3.6% of the state's population speaks a language other than English in their home, 72.9% of the citizens over the age of 25 possess a high school diploma, 16.9% have a bachelor's degree, and 52% are female and 48% male. The state has a population density of 60.6 people per square mile. (United States Census Bureau) The ethnic make up of the state is 59% Caucasian, 37% African-American, 2% Hispanic, and 2% who identify themselves as "other." The median household income is \$31,330 (Henry J. Kaiser Family Foundation).

Each school district reported their Subject Area Test scores to the State Department of Education, which calculated and disseminated the results according to the federal standards and requirements. The researcher used public information that was submitted in this form, as well as the state Superintendent's Report (see Appendix I). The report included school district information, size of enrollment in the district, personnel, type of district (municipal, county, other), school board members, size of the schools within the district by enrollment, and school accreditation. The report went on to discuss enrollment and average daily attendance, enrollment over the past decade, graduates, graduates and other completers, graduates by race and gender, promotions and non-promotions, and dropouts.

The next chapter of the report discussed the district personnel, superintendents' and their assistants' ages and experience levels, number of personnel and average salary, instructional personnel, training of instructional personnel, number and average salary of classroom teachers, average salary and expenditures per pupil, and instructional personnel by years of experience. The next chapters focused on facilities, transportation, school safety, vocational and technical schools and workforce development, state operated special schools and an overview of the statewide assessment program.

Finally, the report explained educational finance and data by district. The finance chapter included expenditures for public schools, the adequate education program, receipts for public schools and appropriations for public education in the state. The statistics were broken down by district include net student population in the state, average daily attendance, enrollment and attendance, average salaries of certified instructional

personnel, number of classroom teachers, teacher to pupil ratio, average teacher salary, revenue by source (federal, state or local), expenditures per pupil, assessment and tax levy information, and assessment and ad valorem tax statistics, some of which were included the researcher selected variables.

### Variables

NCLB dictated certain subgroups into which the test scores must be divided and reported (see appendix B). Research indicated that student achievement varied according to the membership in any of the given subgroups: Ethnicity (Andrews & Fiyassa, 1991; Bol & Berry, 2003; Borman, 2003; Desimone, 1999; Green, McIntosh, Cook-Morales, & Robinson-Zanarton, 2005; Horn, 2003; Levitt, 2004; Phillips, Crouse & Ralph, 1998; Sherman & Grogan, 2003; Tajalli & Opheim, 2005; Valentina & Alvarez, 2003.) Gender (Samuels, 2005) English Language Learners (Bradby, 1992; Fernandez & Neilson, 1986; McNeil & Valenzuala, 2001; Secada, 1992) Migrant (Reyes & Fletcher, 2003) Socio-economic status (Coleman, et. al., 1966; Cuban, 1998; Jencks, et. al., 1972; Lezotte, 2001; Okpala, Okpala & Smith, 2001; Orr, 2003; Tajalli & Opheim, 2005) Students with exceptional needs (Horn, 2003, Koretz & Hamilton, 2001)

Table 3.1  
Explanation of Variables

<i>Variable</i>	<i>Source</i>	<i>Range</i>	<i>Mean</i>
District Avg. Algebra I scores	NCLB	303.9-409.9	353.35
District Avg. Biology I scores	NCLB	301.8-408.8	356.29
District Avg. English II scores	NCLB	301.4-356.7	331.00
District Avg. U. S. History scores	NCLB	326.9-411.6	361.76
Pupil-to-teacher-ratio	Literature cited	10.01-17.57	14.48
School district population	Literature cited	299-31,611	3274.13
Percent federal funding	Literature cited	6.6%-36.5%	
Percent state funding	Literature cited	34.3%-69.6%	
Percent local funding	Literature cited	11.3%-51.5%	
Average teacher salary	Literature cited	\$34,200-\$45,833	\$39,058.23
Per-pupil-expenditures	Literature cited	\$5695.51-\$12,766.64	\$7432.48
Percent Population Black	NCLB	2.72%-100%	56.47%
Percent Population White	NCLB	0-95.5%	41.81%
Percent Population Native Am.	NCLB	0-7.92%	.161%
Percent Population Asian	NCLB	0-3.72%	.478%
Percent Population Hispanic	NCLB	0-11.59%	1.075%
Percent Population Male	NCLB	46.66%-55.98%	50.9738%
Percent Population Female	NCLB	44.02-53.34%	49.203%
Percent Population in Poverty	NCLB	19.48-100%	65.078%

## Methodology

The researcher collected the district average scores for Algebra I, Biology I, English II and United States History. The independent variables included the variables in the two subgroups:

Group A (Literature Identified Variables) –

1. Funding sources (federal, state or local)
2. Per-pupil-expenditures
3. Teacher-to-pupil ratios
4. Average teacher salary
5. Student population size of the school district.

Group B (NCLB mandated variables) –

1. Students with exceptional needs
2. Socio-economic status of the students
3. English language learners
4. Ethnic makeup
5. Gender ratios
6. Migrant students

After the data was collected, the researcher ran Pearson  $r$  correlations using each subgroup of variables and the individual subject area tests score average for the schools. Each subject area test was used individually, for its own sample. The researcher input the data into a multiple regression model, using only variables that show significance at the .05 level. The variables were introduced beginning with the one that demonstrates the

greatest degree of correlation, and ended when a variable arrived that did not demonstrate significance.

### Significance of the Study

Due to student testing and accountability tied to NCLB, all stakeholders will benefit from the results of this study. Readers of the study should be cautious to remember that the data may show correlation, but that should not be considered a cause and effect relationship. Any of the given variables may show relationship to any particular test score average.

### Limitations of the Study

Several factors played a role in limiting this study. The schools were confined to a set strictly from Mississippi public schools, which due to socio-economic constraints, geographic location, gender and ethnic makeup, sources of funding, legislation from federal and state entities, and educational background of the citizens of the region, make this study primarily restrained to this particular state/region.

Other important considerations to be mentioned are the background students received in their local elementary and middle schools was not considered as this data was strictly focused on public high school students and the fact that this study collected data from one school year, one testing class. The quality of the feeder programs was not considered in this study. Also, the administrative setup of the school was not taken into account. Some of the school districts involved in the study utilized principals that were in control of K-12, while others managed only the 9-12 program. The attendance center

principals (K-12) possessed direct control over the preparation of the students throughout their educational career.

A problem that could arise from the use of only one test group would be that many schools find a cycle in the academic success of different classes. Some grades are especially gifted in certain areas while others are in differing ones.

## CHAPTER IV

### STUDY RESULTS

This study was conducted to examine the variables depicted on the NCLB report card and their relation to the mandatory high school subject area exit exams. The study also examined variables identified in the literature as potentially related to achievement. The average subject area test scores of 151 school districts (148 school districts and four agricultural schools) were used for this study and served as the study population. One school district was not used in the study because the students transfer to another district for 9-12 grades, therefore the district does not offer these four subject area tests.

According to NCLB each state department of education was required to devise a method to assess student achievement and submit that plan to the National Department of Education for approval. The state department of education was required to release a “report card” listing students’ performance and other information about the school districts and schools in the state (Appendix A).

A school district’s test scores are an important factor in whether a school district is categorized as successful or failing, which directly impacts the district’s funding and the level of federal, state, and district control over the school. A school categorized as failing over a period of multiple years could be faced with the loss of local control to other entities (federal or state authorities or a private company).

## Description of Independent Variables

The variables identified in the literature as potentially being related to test scores included teacher to pupil ratio, district population size, per pupil expenditure, average instructor salary, and revenue source (federal, state or local). For the purposes of this study certain parameters were used for operational purposes. The teacher to pupil ratio, district enrollment, and per pupil expenditure used came from the State Superintendent's Report. The teacher to pupil ratio was calculated by dividing the total number of students by the total number of teachers in the selected school district for grades K-12. The per-pupil expenditure was the budget amount divided by the district enrollment.

Another literature-identified variable gathered from the Superintendent's report was average teacher salary, which was the average income (without benefits) of the teachers in the district. In the selected state, the State Department of Education set a scale for teachers according to years experience and degree obtained. The state provided each district the funds to pay teacher salaries. There were two factors that determined how much funding the state department of education provided to school districts for teacher salaries. First, the state determined how many teachers the school district needed based on a state department calculation formula. Finally, the state department determined the amount of money to distribute to school districts using a formula based on years of experience and degree earned (an A license indicated a Bachelor's degree, AA Master's degree, AAA Specialist degree and AAAA Doctoral degree). Instructors with higher degrees and more years of experience were paid higher salaries. Local school districts also had the option of the amount of the local supplement that was provided to their

teachers in addition to the state's base salary schedule. The local supplements range from fifty dollars to over six thousand dollars per year.

The final variable found on the State Superintendent's report was the school district revenue sources. The source of revenue represented the percentage of funds from different government levels (federal, state, and local), which made up the school districts' total budget.

The NCLB report card variables or subgroups that were included in the study were gender, ethnicity, and socio-economic status. According to the guidelines of No Child Left Behind, if there are 40 students in a subgroup who completed the exam, then the subgroup's scores should be reported. For this study, the English language learner group, students with exceptional needs, and migrant status students were not examined because the number of districts reporting scores for these groups was not large enough for analysis (less than 20 school districts in the state).

In calculating the NCLB variables for this study, the researcher used the total percentage of students in that subgroup rather than the performance of the members of that subgroup on the exam. This allowed the population N to stay consistent at 151 school districts.

The intent of this study was to analyze the subject area tests given at the high school level in the selected state to determine if there was a relationship between the previously discussed variables and achievement on the high school subject area exit exams. For the purposes of this study, only the high school grade levels were observed

(9-12). The state of Mississippi utilized a system to assess students in each of the four major subject areas: Social Studies, Mathematics, Language Arts, and Science.

A series of research questions were established to ascertain the goals and objectives of the research. The following is a summation of the questions and the findings of the study.

#### Research Question 1

Was there a statistically significant relationship between student achievement on exit Subject Area Tests and the demographic variables required for the NCLB report card?

NCLB dictated that the school district must disaggregate the student test scores according to ethnic background, gender, socio-economic status, English Language learner status and migrant status. Using SPSS software a simple Pearson  $r$  correlation was run using each of the variables to determine relationship (Table 4.1). Elifson, Runyon, and Haber (1998) stated that a positive or negative  $r$  in the range of .71-.99 is considered a strong correlation, while a positive or negative  $r$  in the range of .31-.70 is moderate, and a positive or negative  $r$  in the range of .01-.30 is a weak correlation.

Table 4.1

Relationship Between District Average Subject Area Test Scores and Demographic Variables Established by NCLB Pearson Correlation and Significance on 2-Tailed Test (N=151)

<i>Variables (Level of 2-tailed significance)</i>	<i>Algebra I</i>	<i>Biology I</i>	<i>English II</i>	<i>US History</i>
Asian	.382**	.490**	.436**	.378**
Black	-.617**	-.722**	-.751**	-.554**
Hispanic	.215**	.322**	.264**	.220**
Native	.001	.090	.074	.087
White	.609**	.706**	.740**	.542**
Female	-.125	-.208*	-.166*	-.073
Male	.125	.208*	.166*	.073
Percent in Poverty	-.643**	-.742**	-.757**	-.590**

\* $p < .05$ ; \*\* $p < .01$

#### Algebra I Subject Area Test

Data analysis revealed a significant moderate positive relationship ( $p \leq .01$ ) between the Algebra I exit exam scores and the proportion of the student population identified as Asian and White. There was a significant moderate negative relationship ( $p \leq .01$ ) between the Algebra I exit exam scores and the proportion of students identified as in poverty and students who are Black. There was a weak positive relationship ( $p \leq .01$ ) between the Algebra I exit exam scores and the proportion of students identified as Hispanic.

### Biology I Subject Area Test

Data analysis revealed a significant strong positive relationship ( $p \leq .01$ ) between the Biology I exit exam scores and the proportion of the student population identified as White. There was a significant strong negative relationship ( $p \leq .01$ ) between the Biology I exit exam scores and the proportion of the student population identified as in poverty and Black. Analysis further revealed a significant moderate positive relationship between the Biology I exit exam scores and the proportion of students identified as Asian and Hispanic. Gender was weakly related ( $p \leq .05$ ) to the Biology exit exam scores—positive for male students and negative for female students.

### English II Subject Area Test

A strong positive significant relationship ( $p \leq .01$ ) was found between the English II exit exam scores and the proportion of students identified as White. A significantly strong negative relationship ( $p \leq .01$ ) was found between the English II exit exam scores and the proportion of students identified as in poverty and students identified as Black. Analysis further indicated a significantly moderate positive relationship between the English II exit exam scores and the proportion of students identified as Asian. Finally, a significantly weak positive relationship was found between the English II exit exam scores and the proportion of students identified as Hispanic ( $p \leq .01$ ) and the proportion of students identified as male ( $p \leq .05$ ), with a significant weak negative relationship between female students ( $p \leq .05$ ).

## United States History Subject Area Test

An analysis of the U.S. History exam scores revealed a significant moderate positive relationship with the proportion of Asian and White students ( $p \leq .01$ ) and a significant moderate negative relationship with the proportion of Black students and students in poverty ( $p \leq .01$ ). A significant weak relationship was also discovered between the U.S. History exit exam scores and the proportion of students identified as Hispanic ( $p \leq .01$ ).

## Research Question 2

Was there a statistically significant relationship between student achievement on the exit Subject Area Tests and the variables identified in the literature showing a relationship to student achievement (per-pupil-expenditures, origination of funding, teacher salary/experience, teacher-to-pupil ratio, and size of student population)?

## Algebra I Subject Area Test

An analysis of the Algebra I exam scores revealed significant moderate positive relationship ( $p \leq .01$ ) with the percentage of the school district's budget that is derived from local sources (Table 4.2). A significant moderate negative relationship was discovered between Algebra I exam scores and percentage of the school district budget derived from federal sources and per-pupil-expenditures ( $p \leq .01$ ).

Table 4.2

Relationship Between District Average Subject Area Test Scores and Literature Identified Variables Pearson Correlation and Significance on 2-Tailed Test (N=151)

<i>Variables (Level of 2-tailed significance)</i>	<i>Algebra I</i>	<i>Biology I</i>	<i>English II</i>	<i>US History</i>
District Enrollment	.098	.189*	.173*	.140
Average Instructor Salary	.125	.184*	.158	.327**
Teacher to Pupil Ratio	-.024	.049	.111	.077
Per-pupil-expenditures	-.327**	-.383**	-.462**	-.313**
Percent of funds Local Sources	.359**	.424**	.369**	.455**
Percent of Funds State Sources	.071	.043	.126	-.056
Percent of Funds Federal Sources	-.600**	-.662**	-.678**	-.592**

\* $p < .05$ ; \*\* $p < .01$

#### Biology I Subject Area Test

Data analysis revealed a significant moderate negative relationship ( $p \leq .01$ ) between the proportions of funding derived from federal sources and Biology I subject area scores as well as per-pupil-expenditures and Biology I scores (Table 4.2). A weak positive relationship was found between test scores and average instructor salaries as well as with the size of the school district population ( $p \leq .05$ ). Finally there was a significant moderate relationship between an increase of local funding and Biology I scores ( $p \leq .01$ ).

### English II Subject Area Test

An analysis of English II subject area test scores revealed that there was a significant moderate relationship ( $p \leq .01$ ) with an increase in percentage of local funding (Table 4.2). There was also a significant moderate negative relationship between scores and the percentage of federal funding as well as per-pupil-expenditures ( $p \leq .01$ ). Finally there was a significant positive weak relationship between scores and the size of the school district population ( $p \leq .05$ ).

### United States History Subject Area Test

Data analysis showed that there was a significant moderate relationship ( $p \leq .01$ ) between U. S. History scores and percentage of funding from local sources and the average salary of the instructors in the school district (Table 4.2). A significant moderate negative relationship was found between U. S. History scores and percentage of funding from federal sources as well as with per-pupil-expenditures ( $p \leq .01$ ).

### Research Question 3

To what extent can the report card variables and the variables identified in the literature predict student achievement on the exit subject area tests?

After analyzing the relationship between the individual variables and test scores, a stepwise inclusion regression was run to determine which variables contributed significantly to each individual exam score. The model summary indicated that the percent of students living in poverty had the highest partial correlation with the Algebra I

exit exam scores and that the partial correlation for the percentage of Asian students and district enrollment was also significant (Table 4.3).

Table 4.3

Multiple regression results for School District Average Algebra I test scores (N=151)

<i>Predictor Variables</i>	<i>Unstandardized Coefficient</i>	<i>R</i>	<i>Adjusted R Square</i>
Poverty Rate	-59.135		
Proportion of Asian Students	434.903		
District Enrollment	-0.001	.678	.449

\* $p < .05$ ; \*\* $p < .01$

After analyzing the relationship between the individual variables and test scores, a multiple regression was run to determine which variables contributed significantly to each individual exam score. The model summary indicated that the percent of students living in poverty had the highest correlation with the Biology I exit exam scores and that the correlation for the proportion of students who were Asian, Black, and Hispanic was also significant (Table 4.4).

Table 4.4

Multiple regression results for School District Average Biology I test scores (N=151)

<i>Predictor Variables</i>	<i>Unstandardized Coefficient</i>	<i>R</i>	<i>Adjusted R Square</i>
Poverty Rate	-28.138		
Proportion of Asian Students	582.925		
Proportion of Black Students	-24.427		
Proportion of Hispanic Students	155.179	.799	.629

\* $p < .05$ ; \*\* $p < .01$ 

After analyzing the relationship between the individual variables and test scores, a multiple regression was run to determine which variables contributed significantly to each individual exam score. The model summary indicated that the percent of students living in poverty had the highest correlation with the English II exit exam scores and that the correlation for the proportion of students who were Black and Asian was also significant (Table 4.5).

Table 4.5

Multiple regression results for School District Average English II test scores (N=151)

<i>Predictor Variables</i>	<i>Unstandardized Coefficient</i>	<i>R</i>	<i>Adjusted R Square</i>
Poverty Rate	-16.769		
Proportion of Black Students	-17.712		
Proportion of Asian Students	282.948	.798	.629

\* $p < .05$ ; \*\* $p < .01$

After analyzing the relationship between the individual variables and test scores, a multiple regression was run to determine which variables contributed significantly to each individual exam score. The model summary indicated that the proportion of the budget coming from federal sources had the highest correlation with the United States History exit exam scores and that the correlation for the average instructor salary and the proportion of students who were Black was also significant (Table 4.6).

Table 4.6

Multiple regression results for School District Average United States History test scores (N=151)

<i>Predictor Variables</i>	<i>Unstandardized Coefficient</i>	<i>R</i>	<i>Adjusted R Square</i>
Proportion of Federal Funds	-86.575		
Average Instructor Salary	.002		
Proportion of Black Students	-16.728	.651	.412

\* $p < .05$ ; \*\* $p < .01$

## CHAPTER V

### INTERPRETING FINDINGS

#### Variables Related to Test Scores

##### *Ethnicity*

Past research has reported achievement gaps between ethnic groups on standardized exams (Andrews & Fiyassa, 1991, Horn, 2003, Sherman & Grogan, 2003, Tajalli & Opheim, 2005, Valentina & Alvarez; 2003, Ware and Galassi, 2006, Machtinger, 2007). While this study did not examine gaps between ethnic groups, significant relationships were found between exam scores and the proportion of students who were Asian, Black, Hispanic, and White. Significant negative relationships were found between the proportion of black students and the standardized exam scores. Significant positive relationships were found between the proportion of Asian, Hispanic, and White students and the standardized exam scores. The positive relationship between the proportion of Hispanic students and the standardized exam scores differed from the findings of Horn (2003) and Valentina and Alvarez (2003), who reported that Hispanic students performed at a lower level on standardized exams. The difference in results could be attributed to the design of this study, where the size of the Hispanic population was used to determine scores. It could also be attributed to the small proportion of Hispanics that made up the student population.

### *Socio-economic Status*

The findings of this study were similar to those of Okpala, Okpala, and Smith (2001) who indicated that as the percentage of economically disadvantaged students increased, the school districts' average math scores decreased. Tajalli and Opheim (2005) and Orr (2003) also reported that higher levels of students in poverty showed a significant, negative relationship to the average test scores.

### *Gender*

In reference to gender, Samuels (2005) reported that males and females were almost equivalent, but that males retained a slight edge in math and females in reading. This study found that the proportion of female students had a slight negative relationship to standardized exams in all the exit exam subject areas. Ware and Galassi (2006) and Kettely (2006) stated that any difference in gender was minor. These results were similar to the findings of this study.

### *District Enrollment Size*

School district population size showed a very weak positive relationship with the exit exams in only two subject areas (Biology I and English II). These findings were similar to Andrews and Fiyassa (1991) who reported that school district population size was a significant indicator for lower scores.

### *Average Instructor Salary*

Average instructor salary was statistically significant and positive related to Biology I and United States History exit exam scores. The relationship on Biology I was

weak and on United States History was moderate. These findings differ from those sixty-five studies reviewed by Hanushek (1991) in which 70% (forty-nine of the sixty-five) of the studies found no significant relationship between instructor salary and standardized test scores. Of the studies that did show a statistically significant relationship, thirteen had a positive relationship between teacher salary and achievement and three showed a negative relationship. Loeb and Paige (2000) reported no significant relationship either. Tajalli and Opheim (2005) reported that on their review of nineteen studies, seventeen reported a significant relationship. The two other studies found no significant relationship between teacher salary and assessment scores. This study found very limited evidence on this statement. Borland and Howson (2000) stated that as average teacher salary increased, student achievement decreased. There was no evidence of this as both subject areas that showed a significant relationship were positive in nature.

#### *Pupil-to-teacher Ratio*

The next variable, pupil to teacher ratio showed no statistical significance on any of the subject areas in this study. This result concurred with Robertson (2005), The American Legislative Exchange Council's Report Card on American Education (2002), Hanushek (1996), Johnson (2000) and Hanushek (1999). It opposed Andrews and Fiyassa (1991) and Tajalli and Opheim (2005) findings that reported significance.

#### *Per-pupil-expenditure*

On the next variable, per pupil expenditures, there was a majority of the identified literature that found no statistical relationship. Studies by the Heritage Foundation and

Annie E. Casey Foundation (Glickstein, 1995) as well as reports from Brunner, Murdoch and Thayer (2002); Okpala, Okpala and Smith (2001); Dee (2005); Chubb and Moe (1995); Okpala (2002); Tajalli and Opheim (2005); American Legislative Exchange Council's Report Card on American Education (2002) all found no statistical significance between per pupil expenditures and student achievement. Studies by Ferguson (1992); Greenwald et al (1996); and Childs and Shakeshaft (1986) all reported positive, significant correlations. The findings of this study differed from the aforementioned studies. All subject area scores were statistically significant at  $p < .01$  and were all negative. The relationship was low moderate on the four subject areas.

#### *Source of Funding*

Finally, on funding sources, Grissmer, Flanagan, Kawata and Williamson (2000); Borman (2003) and Hanushek (1996) all reported as local resources increase, test scores improve. This study found a positive relationship that was statistically significant on the four subject area tests. This concurs with these studies. This study had similar findings. There was a statistically significant, negative relationship between increased federal monies and achievement on each of the four subject areas.

#### Predictor Variables

On the Algebra I scores, percentage of students in poverty was the final predictor variable and one of only three that showed statistical significance when calculated with all data. Increases in percentage of students in poverty accounted for 41.3% of the variance, which supported Bol and Berry (2005), Orr (2003) and Tajalli and Opheim

(2005). All three articles reported that there was a statistically significant negative relationship between poverty and test scores. An increase in the percentage of students who are Asian was the second predictor variable, which when coupled with the poverty variable increased the amount of variance to 43.6%. The final variable on the Algebra I scores that was significant was district population size. The three variables combined account for 46.0% of variance. There was a negative relationship between larger school district populations and district Algebra I scores supporting Andrews and Fiyassa's (1991) findings that as student population size increased, test scores incrementally decreased. It also would lead to the inference that Tajalli and Opheim (2005) that smaller school districts are more conducive for students from lower socio-economic backgrounds.

Biology I scores from school districts had four predictor variables that were significant (percentage of students in poverty, percentage of Asian students, percentage of black students, percentage of Hispanic students). As with Algebra I results the literature cited indicated that lower socio-economic status negatively affects scores. This was supported by the results of this study showing that the poverty level accounted for 55.1% of the variance. In connection with Sherman and Grogan (2003), Tajalli and Opheim (2005), Bol and Berry (2005), Andrews and Fiyassa (1991), and Horn (2003) the increase in percentage of black students resulted in a decline of Biology I average scores. When the Hispanic variable was added (percentage of students in poverty + percentage of Asian students + percentage of black students + percentage of Hispanic students = 63.9% of the variance). In this model, there was a positive relationship on this variable.

The English II scores yielded similar results to the Biology I tests. Percentage of students in poverty, percentage of black students and percentage of Asian students were the three variables that were statistically significant which addressed the literature just as it was by the Biology I averages.

The United States History test result differed from the other three subject area tests. Percentage of the district's budget received from federal sources was the first predictor variable, accounting for 35.1% of the variance. The second predictor variable was average instructor salaries which when added to federal funding increased the amount of variance to 38.2%. The finding that average instructor salary showed predictor variable status, which disputed Hanushek (1991), Hanushek and Rivkin (1997), and Loeb and Paige's (2000) findings of no significance between teacher salary and student test scores. It also differs from Borland and Howson's (2000) findings that an increase in teacher salary has a negative affect on achievement. The percentage of black students was the final predictor variable on this subject area.

#### Limitations

These results cannot be generalized to other states. The State of Mississippi, used for this study, is one of the lowest in average income in the nation and has the sixth highest level of ethnic diversity.

The average teacher salary did not strictly address those teachers who were teaching the particular subject or subjects leading up to the state's exit exams, rather it was the average salary for all teachers in the school district.

The allocation of funds was not analyzed for this study. In this study the only accounting of funds and monies was the percentage of the school district's budget that came from the various sources (federal, state, and local). The per-pupil expenditure is based on the total budget of the school district, rather than the individual high schools the students attend. The teacher to pupil ratio was also based on the total number of students in the district divided by the number of teachers.

### Recommendations for Future Studies

The information from this study demonstrates a method in which school districts and states can assess variables related to test scores, which would be helpful in the plans for allocating funds, offering additional services such as extended school hours, tutorial help, and other supplemental services. There is also a pronounced relationship between poverty rates and test scores. Again, fund allocation and supplemental services may be increased or altered to assist in addressing this discrepancy.

There are several possibilities for future studies that can be taken from this. First, a connection between poverty, minorities and federal funding or a connection between percentage of white population and local funding sources could be further analyzed. This study indicated that there was a strong relationship between both poverty levels and percentage of black students in the district (Table 5.1). There could be further study into the possibility that the ethnic and/or socio-economic make up of the school district is in fact tied to funding sources and delve into possible ways to assist lower socio-economic areas to become more active members of their community and school district through ownership.

Valentina and Alvarez (2003) noted that minorities in many instances are in lower socio-economic categories, thereby possibly connecting the two. This study had similar results for black students and high poverty levels. The percentage of students in poverty had a negative relationship on all four subject area tests. This variable was a statistically significant correlation at the  $p < .01$  levels, just as the percentage of black students did. Another point that bears mentioning is how similar the  $r$  value for the percentage of students in poverty and the percentage of black students is to each other on all of the subject area tests.

Table 5.1

Correlation of Black students and poverty rates to each subject area test Pearson correlation significant at the  $p < .01$  (N=151)

<i>Variable</i>	<i>Algebra I</i>	<i>Biology I</i>	<i>English II</i>	<i>US History</i>
Percentage in Poverty	-.643	-.742	-.757	-.590
Percentage Black	-.617	-.722	-.751	-.554

All significant at  $p < .01$

As shown in Table 5.1, the relationship between test scores and both the percentage of students in poverty and the percentage of black students in the district is quite similar. This study cannot adequately report on Lezotte (2001), which stated that student achievement is more related to school environment than percentage of students in poverty. While the indication is that higher poverty rates negatively influenced test scores, the school expectations and set up was not considered in this study.

Interestingly, Borman (2003) stated that lower teacher to pupil ratios benefited minority students. This study could neither support nor refute that assessment.

A second stream of thought could be to further analyze the allocation of funds. The moderate negative relationship between per pupil expenditure and test scores was an interesting finding and should be investigated further. While per pupil expenditure was not significant as a predictor of test scores, further investigation into the independent variables related to per pupil expenditure would provide a better understanding of its relationship to test scores.

Another line to be pursued is a further breakdown of instructor salary, experience and allocation of the teachers to particular subject areas. Schools may give preference to the more talented teachers to retain them and allow them to avoid the subjects that are being tested or pre-requisite classes to those. Also, the compensation of teachers, whether they are Nationally Board certified which greatly increases the compensation in the selected state, years of experience, degrees obtained, all could be reviewed and analyzed for possible relationships.

Additionally, the combined variables of school district size, ethnicity, and socio-economic status need to be studied further. Noguera (2002) and Tajalli and Opheim (2005) noted that smaller school districts serve minorities and students of lower socio-economic status better. The standardized exam data should be further scrutinized to determine whether this is still the case and also examine individual school size to further understand the interaction between these variables.

This study examined the independent variables from a school district perspective. Future research that examining the independent variables from the high school level would provide even further insight into the relationship between these variables and exit exam scores. Population patterns in overall school districts can be skewed as parents' attempt to purchase housing in school districts that are considered to be higher performing; however, even in these school districts, there are often lower achieving schools. This would provide further insight to how the districts fund allocations, where the ethnicities attend, and possibly a more focused vision of minorities' successes or failures on the tests.

Another issue that bears review is the relationship of pupil-to-teacher ratios and student achievement. With various studies showing differing results (Andrews and Fiyassa, 1991; Borman, 2003; Hanushek, 2000; Johnson, 2000; Roberts, 2005; Tajalli and Opheim, 2005), there is a possible need for further analysis.

Finally a systematic analysis of the work that the students do at the elementary and middle schools that feed the high schools could provide more insight. Algebra I and Biology I were at one time ninth grade level classes. Many schools have adjusted to teaching these subjects in the tenth grade to give the high school as much opportunity as possible to prepare the students for these exams. A careful study of elementary and middle school curriculum, instructors, expenditures, leadership and student achievement, could provide details of methods to improve other school districts, focused more on the lower grades rather than the high schools.

## Summary

The implementation of the NCLB made sweeping changes to testing and reporting requirements of school districts throughout the nation (Borman, 2003). Analysis focused on testing requirements and achievement standards indicates that the report card variables that are related to test scores cannot be manipulated in order to improve achievement. The subgroups or variables required on the NCLB report card are primarily demographic data which can be used by school districts to identify subgroups in need of additional assistance and the subject areas where that assistance is needed.

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APPENDIX A

EXAMPLE OF DISTRICT REPORT CARD

<b>Subject Area Testing Program</b>			
Subject	Number Tested	Mean Scale Score	% Passing
Algebra I	236	346.5	91.9
U.S History	261	346.0	87.0
Biology I	321	339.7	86.6
English II MC	295	318.5	69.8
Notes: Minimum N-count for reporting is 10 students. Passing Score = Scale Score of 300 or Above.			

<b>English II Writing Assessment</b>			
Prompt	Number Tested	Mean Writing Score	% Passing
Informative	292	2.0	91.4
Notes: Minimum N-count for reporting is 10 students. Passing Score = Writing Score of 2 or Above.			

<b>Percentage Passing</b>														
Test	All Students	Non Disabled	Disabled Only	Male	Female	Black	White	Asian	Hispanic	Native American	ELL/LEP	Economically Disadvantaged	Not Econ Disadvantaged	Migrant Student
Algebra I	91.9	92.3		93.4	90.8	87.6	95.9					90.2	93.8	
U.S. History	87	86.7		88.8	85	82.1	93.6					82.3	91.9	
Biology	86.6	86.4		94.6	81.2	80	92.7					82.6	82.9	
Engl II MC	69.8	71		72.4	67.9	59.1	80.7					62.6	65.9	
Informative	91.4	91.3		88.2	93.9	92.4	91.2					90.8	90.6	
Notes: Percentages 0-4% are reported as 4% and percentages 96-100% are reported as 96%. Minimum N-count for reporting is 10 students.														

<b>Percentage Scoring Basic or Above</b>														
Test	All Students	Non Disabled	Disabled Only	Male	Female	Black	White	Asian	Hispanic	Native American	ELL/LEP	Economically Disadvantaged	Not Econ Disadvantaged	Migrant Student
Algebra I	82	83		86	79	74	89					80	83	
U.S. History	81	80		82	80	74	91					74	87	
Biology	75	76		83	70	66	84					67	77	
Engl II MC	56	57		56	56	43	69					48	52	
Notes: Percentages 0-4% are reported as 4% and percentages 96-100% are reported as 96%. Minimum N-count for reporting is 10 students.														

<b>Percentage Scoring Proficient or Above</b>														
Test	All Students	Non Disabled	Disabled Only	Male	Female	Black	White	Asian	Hispanic	Native American	ELL/LEP	Economically Disadvantaged	Not Econ Disadvantaged	Migrant Student

Algebra I	47	47		53	42	28	64					36	58	
U.S. History	44	45		52	35	37	52					37	50	
Biology	51	52		60	46	35	66					41	55	
Engl II MC	24	25		24	25	14	35					19	24	
Notes: Percentages 0-4% are reported as 4% and percentages 96-100% are reported as 96%. Minimum N-count for reporting is 10 students.														

### ACT -- 2006 Graduating Class

Group	Number Tested	Mean Scale Score	% Core Curriculum
Core Students	65	19.1	35.7
All Students	145	17.2	
Notes: % Core = # core students taking ACT divided by the month 9 grade 12 enrollment. Minimum N-count for reporting is 10 students.			

### Terra Nova

Grade Level	Number Tested	Mean NCE Score	National Percentile	% in Lowest Quarter
Note: Minimum N-count for reporting is 10 students.				

### Terra Nova Mean NCE Score

Test	All Students	Non Disabled	Disabled Only	Male	Female	Black	White	Asian	Hispanic	Native American	ELL/LEP	Economically Disadvantaged	Not Econ Disadvantaged	Migrant Student
Note: Minimum N-count for reporting is 10 students.														

### District Accreditation Status

Accredited
Notes: Accreditation statuses are assigned only to school districts. Statuses: Accredited, Advised, Probation, Withdrawn.

### Achievement and Growth Models

School Performance Classification	Not Applicable
Achievement Level Index	Not Applicable
Growth Status	Not Applicable
Priority School?	Not Applicable

Notes: Applies only to schools and only if a school serves grade 3 or higher.  
 School Performance Classification: Level 5 Superior Performing, Level 4 Exemplary, Level 3 Successful, Level 2 Under Performing, Level 1 Low Performing.  
 (+) = Held harmless (2005 Results).

<b>NCLB Adequate Yearly Progress and Title I Improvement</b>	
Area	AYP Determination -or- Improvement Status
Reading/Language	Met
Mathematics	Met
Other Academic Indicators	Met
Title I Improvement Status	

Notes: Minimum N for inclusion of subgroup in AYP model is 40.  
 Title I Improvement Status: Improvement Year 1, Improvement Year 2, Corrective Action, Restructuring Plan, Restructuring. Blank means not identified for improvement.  
 OYD = One-year delay of AYP.

<b>Adequate Yearly Progress Subgroup Results</b>		
SubGroup	Reading/Language	Mathematics
All Students	YES	YES
Students with Disabilities	*YES	*YES
Limited English Proficient	< MIN	< MIN
Economically Disadvantaged	YES	YES
Asian	< MIN	< MIN
Black	YES	YES
Hispanic	< MIN	< MIN
Native American	< MIN	< MIN
White	YES	YES

Notes: Minimum N for inclusion of subgroup in AYP model is 40.  
 Yes=Met AYP, \*Yes=Met by Safe Harbor, No=Not Met.

**ABOUT NCLB REPORT CARDS**

The No Child Left Behind Act of 2001 (NCLB) requires school, district, and state report cards containing certain information. The required information falls into three general areas: school improvement, teacher qualifications and test data. A school that fails to make adequate yearly progress in achievement must be identified for school improvement. The report must contain information about the professional

qualifications of teachers in core academic subject areas (English, reading, language arts, science, mathematics, foreign languages, arts, civics and government, economics, history, and geography). Highly qualified teachers are those who satisfied the NCLB criteria during the school year. The report must also contain achievement data for specific subgroups, two-year achievement trends, and student participation rates.

To get a printable NCLB Report Card page, click the "**Print Selected Tab**" button above.

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Most of the information appearing on the NCLB report card (for the state or for the district or school you have selected) can easily be viewed and printed by clicking on one of the data tabs displayed above.

- For test data (overall and disaggregated by subgroup), click the MCT, Writing, or SATP Tabs.
- For accountability results (Achievement, Growth, AYP, Title I Improvement), click the Accountability Tab.

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NCLB Teacher Quality data appears only on the NCLB Report Card.

All of the other data appearing on the printed NCLB Report Card are available in data files that can be downloaded by returning to the MAARS Main Menu (using the button above) and selecting the option to Download Assessment and Accountability Data Files. Downloadable files include

- test data (overall and disaggregated by subgroup),
- accountability results (Achievement, Growth, AYP, Title I Improvement),
- graduation rates, and
- testing participation rates.

APPENDIX B  
STATE SUPERINTENDENT'S REPORT

# Mississippi Department of Education Annual Report



## Reporting School Year 2005- 2006

[Hank M. Bounds](#)

State Superintendent of Education

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## **OFFICE OF VOCATIONAL EDUCATION AND WORKFORCE DEVELOPMENT**

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## **STATEWIDE ASSESSMENT PROGRAM**

[Mississippi Statewide Assessment System](#) [Posted 01-03-2007]

## **FINANCE**

[MS Adequate Education Program](#) [Posted 01/19/2007]

[Expenditures for Public Schools](#) [Re-Posted 01-24-2007]

[Expenditures for Public Schools - Graph](#) [Posted 01-09-2007]

[Receipts for Public Schools](#) [Re-Posted 01/21/2007]

[Appropriations for Public Education in Mississippi \(Graphic\)](#) [Posted 01/19/2007]

## **STATISTICS BY DISTRICT**

Net Membership - First Month Enrollment (September) [PDF Excel](#) [Posted 01-05-2007]

Average Daily Attendance - Months 1-9 (September through May) [PDF Excel](#)  
[Posted 01-05-2007]

Enrollment and Attendance [PDF Excel](#) [Posted 01-05-2007]

Average Salaries of Certified Instructional Personnel [PDF Excel](#) [Posted 01-09-2007]

Classroom Teachers (Number - Pupils Per Teacher - Salary) [PDF Excel](#) [Posted 01-04-2006]

Revenue by Source (Local - State - Federal) [PDF Excel](#) [Posted 01/19/2007]

Expenditures Per Pupil (in ADA) [PDF Excel](#) [Posted 01-09-2007]

Expenditures by Functional Areas [PDF \(2 pages per district\) Excel](#) [Posted 01-25-2007]

Assessment/Tax Levy Information [PDF Excel](#) [Re-Posted 01-19-2007]

Assessment and Ad Valorem Tax Statistics [PDF Excel](#) [Posted 01/19/2007]



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or contact the [Office of Research and Statistics](#).

APPENDIX C  
INFORMATION REQUIRED ON THE STATE REPORT CARD

## Information required to be included on State Report Cards

- District Level Information
  - School District Names
  - School District Numbers (Identification purposes only)
  - Net enrollment
- Student/Teacher Information
  - Attendance as a percentage of Enrollment
  - Percent eligible for Free/Reduced Lunch
  - Number of Carnegie Units taught
  - Number of Dropouts
  - Percent of teachers with advanced degrees
  - Percent of teachers with one-year license
  - Percent of gifted students (Grades 2-12)
- Special Education
  - Percent of students in Special Education
  - Percent of SPED students receiving diplomas
  - Percent of SPED students receiving occupational diplomas
  - Federal SPED expenditures
  - State/Local SPED expenditures
- Career/Technical Education
  - Number of Career/Technical Teachers
  - Percent of students in career/technical programs (grades 7-9)

- Percent of students in career/technical programs (grades 10-12)
- Financial
  - Per-pupil expenditures
  - State and Local per-pupil-expenditures
  - Federal per-pupil-expenditures
  - Percent of District Administrative expenses
  - Total operational levy
  - Valuation per student in average daily attendance (ADA)
- Title I
  - Allocation of Title I funds
  - Percent of enrollment served by Title I funds
  - Number of Title I schools
- Other information
  - Number of Advanced Placement courses offered
  - Graduation rate
  - ACT percent College Prep
- School level information
  - Classification
    - 5=superior performing
    - 4=exemplary performing
    - 3=successful
    - 2=under performing

- 1=low performing

If school is in improvement status

- I1 – improvement Year 1
- I2 – improvement Year 2
- CA – corrective action
- RP – restructuring plan

Test results reported on the Report Card are disaggregated by subgroups as required by federal law. Codes are:

- ALL – All students tested
- NDO – Non-disabled students only
- DO – only students with disabilities
- MAL – Male
- FEM – Female
- BLK – Black
- WHT – White
- ASI – Asian
- HIS – Hispanic
- NAM – Native American
- ELL – English language learners
- ED – Economic disadvantaged
- NED – Non-economically disadvantaged
- MIG – Migrant